We believe all children have unique needs and should grow up without illness or injury. With the support of the community and through our spirit of inquiry, we will prevent, treat and eliminate pediatric disease.

Our Vision

We will be the best children’s hospital

We Will:

> Provide patients and their families excellent care with compassion and respect
> Deliver superior, accessible, cost-effective service
> Attract and retain the best talent at all levels of the organization
> Be one of the top five pediatric research institutions in the country
> Be the nation’s premier pediatric educator
> Achieve worldwide prominence by integrating patient care, research, education and advocacy
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Message from Dr. Tom Hansen

CEO of Seattle Children’s Hospital

DEAR COLLEAGUES AND FRIENDS,

I am pleased to share this annual report detailing many of the outstanding achievements made at Seattle Children’s during the past year. We enjoyed a successful year celebrating our 100-year history and envisioning a bold, bright future.

The accomplishments of our physicians, researchers and staff demonstrate our commitment as compassionate experts in pediatric care, making significant clinical, educational and research advances that improve the lives of children around the world.

To address the increasing demand for our services and a need for more inpatient beds, Children’s began working with citizens and the City of Seattle to plan for an additional 130 to 180 beds by 2012, for a total of 600 beds over the next 15 to 20 years. These efforts will ensure that we are here for all children who look to us for a healthier future.

Research serves as the foundation of our quest to eliminate childhood disease. More than $31 million of grant and contract revenue in 2007 supported over 500 studies. The hospital plans to develop nearly 2 million feet of research space in downtown Seattle to support the diagnosis, treatment, outcomes and quality of life for children with a broad range of medical conditions.

As the pediatric training site for the University of Washington School of Medicine, Children’s provided broad clinical expertise to over 700 residents and fellows last year. This strong relationship continues to bring the best medical professionals to the Pacific Northwest.

Thank you for taking the time to read about the significant progress we have been making at Seattle Children’s. The work highlighted in this report and the dedicated professionals behind it are the backbone of our institution. They make progress possible — both in our community and in the world of pediatric medicine.

Thomas N. Hansen, MD
Chief Executive Officer
Seattle Children’s Hospital and Regional Medical Center
Message from Dr. Paul Ramsey

Dean, University of Washington School of Medicine

Dear Colleagues,

Children bring endless joy to our lives and are the hope of the future. When an infant is born with a serious medical condition or illness strikes a young person, the impact is immediate and profound.

Seattle Children's Hospital has always played a key role in providing superb medical care for the Pacific Northwest's children and in seeking solutions for childhood diseases. With the start of the Seattle Children's Hospital Research Institute in October 2006, Children's took a huge step forward toward brighter futures for all children.

The progress made in less than two years by the research institute is remarkable. Dr. Andrew Scharenberg, University of Washington (UW) associate professor of pediatrics, Dr. David Rawlings, UW professor of pediatrics and chief of the Division of Pediatric Immunology, and their colleagues recently received a $23.7 million research grant from the National Institutes of Health. The grant will permit study of gene repair and provide support for the Northwest Genome Engineering Consortium, a partnership of Children's, the UW School of Medicine and Fred Hutchinson Cancer Research Center.

The institute is addressing many areas, including global problems. It recently received a $1 million grant from the Bill & Melinda Gates Foundation to study ways to prevent global prematurity and stillbirth. Dr. Craig Rubens, UW professor of pediatrics, will lead the new Global Alliance for the Prevention of Prematurity and Stillbirth in these efforts.

Training the next generation of pediatric physicians and researchers is key to finding solutions for eradicating childhood diseases. Children's does an outstanding job of providing pediatric training for UW medical students and residents. In specialty training areas, the UW pediatrics program was ranked seventh in the nation by medical school deans and senior faculty in the 2007 U.S. News & World Report Best Hospitals rankings.

It is an honor for UW Medicine to collaborate with Children's in teaching, research and patient care. Through solid collaborations, there is strong hope for the future health and well-being of the world's children.

Paul G. Ramsey, MD
Chief Executive Officer, UW Medicine
Executive Vice President for Medical Affairs and
Dean of the School of Medicine,
University of Washington
Dr. Douglas Hawkins betters the odds for children and teens with cancer by developing clinical studies that improve treatments and lead to higher survival rates.
Investing in the Future of Pediatric Medicine

Welcome to the 2007 Academic Annual Report for Seattle Children’s Hospital.

The vision of a better future for sick and injured children has inspired us since 1907. Our spirit of inquiry and our clinical and research leadership have advanced the practice of healthcare, unraveled medical mysteries and helped improve the well-being of children all over the world.

Because our sole focus is on pediatrics, we are mindful of how the healthcare we provide today affects the physical, mental and emotional development of the infants, children and teens we treat. Providing the safest, most advanced care in a healing environment is at the heart of everything we do.

Across the institution, we are creating a culture of continuous performance improvement based on methods developed by Toyota Motor Corporation. This hospital-wide work helps us remove waste from our processes as a way to create more value for our patients and families while reducing barriers and obstacles for our faculty and staff.

In 2007, much of our energy was focused on creating the facilities our clinicians, researchers and staff need to support their work today and during the next 20 years.

We continued expanding our research campus in downtown Seattle so our researchers will have the lab space and support services they need as they advance our mission to prevent, treat and eliminate pediatric disease.

We also began implementing a plan to help us meet the increasing clinical needs of our rapidly growing region. Our goal is to provide more outpatient specialty care in the communities where our patients live, while centralizing high-intensity services, such as hospital care, at our main campus in Seattle.

Recent successes include opening a new clinic in eastern Washington’s Tri-Cities area and acquiring a 6.6-acre plot east of Seattle near downtown Bellevue on which we will build a 75,000-square-foot outpatient and day-surgery clinic slated to open in 2010. Similar facilities are planned for communities north and south of Seattle.

Our greatest commitment remains to providing care to any child in our region who needs it, regardless of a family’s ability to pay — and to the clinicians, researchers and staff who make it possible to provide these patients with the best medical care available.

Seattle Children’s Department of Surgery has the lowest complication rates, the fewest repeat operations and the shortest hospital stays of any institution doing pediatric surgery in the region.
2007 Achievements

Leading Research

> A study led by Dr. James Olson showed that tumor paint is 500 times better than a standard MRI at helping surgeons distinguish between cancer cells and normal tissue. Olson and his team developed the paint, which is currently being studied in mice models, from a scorpion-derived peptide called chlorotoxin.

> Dr. David Rawlings identified a connection between allergic diseases and autoimmune diseases. His study implies that allergic and inflammatory diseases may trigger autoimmune diseases by relaxing the controls that normally eliminate newly produced self-reactive B cells.

> The Damon Runyon Cancer Research Foundation named Dr. Colleen Delaney one of its Clinical Investigators in 2007 for the potential of her work to create a landmark breakthrough in cord blood transplantation.

> Dr. Dan Doherty was part of an international team that identified a new genetic cause for Joubert syndrome (JS), a rare, often debilitating, inherited condition. Their research links JS to diseases such as nephronophthisis, the most common genetic cause of kidney failure in children.
Dr. Sandra Juul received a $3.5 million grant from the National Institutes of Health to study how best to protect the developing brain from injury due to prematurity, perinatal asphyxia or stroke.

Dr. Dimitri Christakis found that playing with toy blocks may improve language development in young children. In a second study, Christakis showed that while educational videos may hinder language development in infants, they have no positive or negative effect on the vocabularies of toddlers. A third study linked aggression and antisocial behavior in 7- to 9-year-old boys with watching violent television programs in their preschool years.

**National Rankings**

> In 2007, Seattle Children’s was ranked ninth best children’s hospital in the nation by *U.S. News & World Report*, moving up three places from its 12th place ranking in 2006.

> In 2007, *U.S. News & World Report* ranked the University of Washington (UW) School of Medicine’s Department of Pediatrics eighth in the country in its “America’s Best Graduate Schools” issue. Seattle Children’s is the primary pediatric teaching site for the UW School of Medicine, which was ranked number one among medical schools for primary care for the 14th straight year by *U.S. News*.

**Organizational Firsts**

> Seattle Children’s formed the Global Alliance for the Prevention of Prematurity and Stillbirth (GAPPS) to advance understanding of these serious global health problems and help find solutions. Seattle Children’s will host an international conference on prematurity and stillbirth in 2009 with support from the Bill & Melinda Gates Foundation.

> Leaders of Seattle Children’s, including 16 physicians, visited Japan to observe the Toyota Motor Corporation’s approach to improving quality and service. Children’s is one of the first pediatric hospitals in the nation to adapt Toyota’s methods to improve quality of care for patients.

> Seattle Children’s was named Large Non-profit Employer of the Year by the Washington State Governor’s Committee on Disability Issues and Employment. The award recognizes the success of Project SEARCH, a program committed to recruiting and placing people with developmental disabilities in entry-level positions throughout the hospital. To date, Seattle Children’s has employed 26 individuals through Project SEARCH.

**Facility Expansions**

Seattle Children’s continued to grow its research and clinical campuses. In 2007, the hospital made the following progress toward its expansion goals:

> Further developed its downtown research campus by acquiring a second city block adjacent to the two contiguous buildings it purchased in late October 2006. Together, these properties give the Seattle Children’s Hospital Research Institute the capacity for 2 million square feet of laboratory research.

> Announced plans to expand facilities on its main campus beginning in 2010. The proposed expansion, which includes increasing inpatient beds, will meet the region’s growing demand for pediatric specialty care services, while ensuring the continuity of safe, quality care in a healing environment.

> Purchased 6.6 acres in Bellevue, Wash., to build an outpatient care clinic and ambulatory surgery center. The 75,000-square-foot facility is scheduled to open in 2010.
CLOCKWISE FROM LEFT:
Drs. Catherine Karr and Sheela Sathyanarayana work to reduce children’s exposure to environmental toxins at the University of Washington’s Pediatric Environmental Health Specialty Unit.

Dr. Frederick Rivara is a national leader in the field of injury prevention.

Dr. Linda Quan is one of the world’s foremost experts on drowning prevention.
Endowed Chairs

Allison Eddy, MD
Dr. Robert O. Hickman Endowed Chair in Pediatric Nephrology

Hans Ochs, MD
Jeffrey Modell Endowed Chair in Pediatric Immunology Research

Frederick Rivara, MD, MPH
Children’s Hospital Guild Association Endowed Chair in Pediatric Health Outcomes Research

Professional Appointments

Dimitri Christakis, MD, MPH
Appointed member, Health Services Organization and Delivery Study Section, Center for Scientific Review

Beth Ebel, MD, MPH
Appointed director, CDC-supported Harborview Injury Prevention and Research Center, University of Washington

Janet Englund, MD
Appointed member, Advisory Committee on Immunization Practices, Centers for Disease Control and Prevention

Lisa Frenkel, MD
Appointed advisor, HIVResNet, World Health Organization

James Hendricks, PhD
Appointed assistant dean, Research and Graduate Medical Education, University of Washington School of Medicine

Brian D. Johnston, MD, MPH
Appointed editor, Injury Prevention

Carolyn McCarty, PhD
Invited member, Society for Pediatric Research

Carol Miao, PhD
Appointed member, Scientific Review Board, NIH Gene Therapy Resource Program

Daniel Miller, MD, PhD
Invited member, Society of Pediatric Research

John Neff, MD
Appointed member, Technical Advisory Panel, National Quality Forum Project on Establishing Priorities, Goals and a Measurement Framework for Assessing Value Across Episodes of Care

Linda Quan, MD
Appointed member, American Red Cross Advisory Council on First Aid, Aquatics, Safety and Preparedness

David Rawlings, MD
Elected member, Association of American Physicians

Gregory Redding, MD
Elected president, American Lung Association of the Northwest

Frederick Rivara, MD, MPH
Appointed member, Board on Children, Youth, and Families, National Academy of Sciences; Appointed member, Board of Directors, Washington State Academy of Science

Andrew Scharenberg, MD
Elected member, American Society for Clinical Investigation

Sherilyn Smith, MD
Elected member, Executive Committee, Council on Medical Student Education in Pediatrics

Bruder Stapleton, MD
Appointed associate dean, Research and Graduate Medical Education, University of Washington School of Medicine

James Stout, MD, MPH
Appointed member, National Asthma Guidelines Implementation Panel, Agency for Healthcare Research and Quality

Peter Tarczy-Hornoch, MD
Appointed member, Editorial Board, Journal of the American Medical Informatics Association; Appointed member, Editorial Board, Journal of Biomedical Informatics

Troy Torgerson, MD, PhD
Invited member, Society for Pediatric Research

Sandra Watkins, MD
Elected member, 14th Member Council, International Pediatric Nephrology Association

Honors and Awards

Richard A. Hopper, MD
Golden Scalpel Award, Washington Society of Plastic Surgeons

Catherine Karr, MD, MS
Children’s Environmental Health Excellence Award, United States Environmental Protection Agency

Terese L. Massagli, MD
Outstanding Service Award, Association of Academic Physiatrists

Bonnie Ramsey, MD
Lifetime Achievement Award, General Clinic Research Center, University of Washington;
Stephanie Lynn Kossoff Memorial Lectureship in Cystic Fibrosis, Columbia University

Sheela Sathyanarayana, MD, MPH
Children’s Environmental Health Excellence Award, United States Environmental Protection Agency

C. Ronald Scott, MD
Commissioner’s Special Citation, United States Food and Drug Administration

Dr. C. Ronald Scott received the Commissioner’s Special Citation from the Food and Drug Administration for his efforts to get Orfadin approved for commercial use. Before the use of Orfadin, a majority of children with a rare genetic liver disease called tyrosinemia type I died of liver failure in infancy or of cancer of the liver in late childhood.
Accelerating Research Advances to the Bedside

Seattle Children’s is one of the few pediatric institutions to receive a new type of National Institutes of Health (NIH) funding for clinical and translational science. The goal of this program is to better establish clinical and translational research as its own discipline, and jump-start the career development of investigators pursuing this area of research.

The five-year, $62 million grant ($9.4 million directed to Children’s) — known as a Clinical and Translational Science Award (CTSA) — puts Children’s at the forefront of a national effort by the NIH. Twenty-four sites are funded thus far, and the NIH plans to create a network of 60 CTSA sites by 2012.

“The goal is to create an environment that speeds up the processes through which basic science discoveries are turned into clinical practice,” says Dr. Bonnie Ramsey, a co–principal investigator of the CTSA at Children’s. “We want patients to receive the most advanced care as quickly as possible.”

The NIH award combines four existing grants from Children’s and the University of Washington (UW) to create a comprehensive new entity known as the Institute of Translational Health Sciences (ITHS).

The ITHS is based at the UW and serves as a regional hub to unite academic researchers, community-based health-care providers and patients across the Pacific Northwest. Any researcher or individual interested in translational research from any group can become a member of the ITHS through its Web site, www.iths.org.

Children’s offers the pediatric expertise and leadership for this research, along with access to our Pediatric Clinical Research Center. This provides investigators with research facilities and resources — such as nurses specially trained for research, and specimen processing capabilities — to conduct clinical and translational research on childhood diseases.

Breaking down barriers

The NIH created the CTSA program to ease the frustration and burnout among clinical researchers burdened by significant regulatory barriers and high costs that impede initiating and conducting research. For example, some investigators have spent six to 12 months in the start-up phase until their studies were opened to enroll patients. This time loss could be devastating to the career of a junior faculty member.

“Under the new rules of the CTSA, investigators now have more flexibility to be as innovative as possible,” says Ramsey, who also leads the Center for Clinical and Translational Research at Seattle Children’s Hospital Research Institute. “The NIH has sent a clear message that institutions need to anticipate the needs of clinical investigators and be more service-oriented.”

Among the major initiatives underway to improve support and create stronger connections between institutions are:

> Expanding biostatistical and data management services, providing access to UW resources and enabling data sharing between institutions
> Making pilot funding available for clinical and translational science studies that involve children

> Adding cost-sharing between investigators to allow more flexibility in structuring personnel, such as hiring clinical research associates

> Developing a training program about the federal regulations for clinical research

“We are creating a culture of shared knowledge and collaboration,” says Kim Folger Bruce, PhD, the ITHS portal manager. “We want to create innovative partnerships and provide the critical resources that will advance our scientists’ translational research to the next level.”

Folger Bruce is a “one-stop-shop” who connects investigators, institutions and Seattle’s burgeoning biotech community and helps integrate resources among research partners. For example, executives from Children’s, UW and Fred Hutchinson Cancer Research Center now meet regularly to recommend ways to make clinical and translational research more efficient across institutions.

“The big idea is to encourage institutions to step out of their usual practices and work together,” says Ramsey. “You cannot conduct research in a ‘silo’ anymore. These three partners are key, but we want to go beyond that to work with many organizations across the entire Pacific Northwest.”

Continuously improving efficiency

“Our goal is to make it easier and more satisfying for clinical researchers to do the work that improves the way pediatric medicine is practiced,” says Ramsey.

Eliminating duplicate paperwork is one area Children’s is tackling. One example is eliminating the internal review of studies already approved by external funders, which cuts about 50% of the reviews needed to get a project approved, and frees up valuable time for investigators.

“This work dovetails with a larger initiative at Children’s to use continuous performance improvement (CPI) practices to eliminate duplication of efforts from our work.”

“We’ve had calls from around the country asking how we use CPI to eliminate inefficiencies in translational research,” says Ramsey. “Our efforts in this area directly relate to our goal of eliminating barriers to conducting the most innovative, collaborative research possible.”

Supporting Tomorrow’s Clinical Researchers

When Dr. Bonnie Ramsey sat down to write her first NIH grant application, she had no mentorship program to guide her. Young investigators relied on informal connections with more senior research faculty for support as their research careers got underway.

“Frankly, if you didn’t have a strong mentor to help you get through that period, it was hard to make it,” she says. While Ramsey found Dr. Arnold Smith, a well-respected infectious disease researcher, to mentor her early career development, she wants to formalize that opportunity for others.

Children’s new Scholars Mentoring Program provides mentored career development for fellows and junior faculty. The program gives salary support to these investigators, for tuition to earn their master’s in clinical research or for a research study. It also provides a mentor for fellows and junior faculty writing their first NIH grant.

“Support like this award makes it easier for talented young investigators to establish themselves, especially in such a competitive funding environment,” says Ramsey.
Creating a New Model of Care

Shortly after Dr. Ronald Dick joined Seattle Children’s in 2003, he entered the room of a boy with multiple serious medical issues and was greeted by a parent in a way that would keep him awake for many nights. The father came within an inch of Dick’s face and shouted, “Who are you and what are you going to screw up?”

After the man calmed down, Dick asked what put him over the boiling point. The father, whose son had been admitted a month before, explained that he’d grown tired of describing his son’s condition to multiple providers as they went on and off service. He didn’t trust that clinicians fully understood all the aspects of his son’s complex condition or that they were coordinating their efforts. The conflicting information he’d received from doctors and nurses made him suspicious that his son’s care would suffer.

Dick spoke to other parents and realized that this dad’s experience was not an isolated incident. Many parents with medically complex children felt unheard and invisible. “Parents told me, ‘we’re here all the time and you don’t even know us,’” he remembers.

These events motivated Dick, an attending physician in the Division of Hospital Medicine, to develop a new model of care for children on the Medical Unit who have more than one major organ system that is compromised and who require frequent hospital stays.

Though these “medically complex” kids make up a small fraction of the unit’s patient population, they require a large portion of its health-care resources on any given day.

Dick’s new model addresses the unique needs of this small population. Typically, children are admitted for a particular procedure, stay for a few days and are discharged for good. In contrast, medically complex children have a variety of high-intensity chronic medical needs that require continuity of care from providers across many disciplines.

Dick’s Medically Complex Child Service (MCCS) is one of only a few programs of its kind on the West Coast and puts Seattle Children’s ahead of the national curve in improving the inpatient experience for families and their children with medically complex conditions.

A unique population

A child considered medically complex might be developmentally delayed and nonverbal, suffer from cerebral palsy, seizures and respiratory distress, take close to a dozen medications, and be dependent on a G-tube for nutrition, a BiPAP machine for obstructive sleep apnea, and a baclofen pump for spasticity.

In any given year, such a child might average four to six hospital stays lasting two weeks each. While most insurance companies would categorize these children as having “catastrophic illness,” Dick simply sees kids who defy the medical textbooks.

Dr. Ronald Dick

The Medically Complex Child Service hosts two interns per month on the team — a practice requested by families and valued by residents as an opportunity to better understand how to care for this special patient population.
“Each of my patients is unique. They respond to medications and therapies in their own way. There’s no black-and-white answer for most of them,” he explains. “The one thing they all have in common is that they are medically fragile. A common cold can land them in the hospital for several weeks.”

A superior model

Today, 10 beds on Seattle Children’s inpatient Medical Unit are reserved for children with medically complex conditions, and approximately 200 patients have been pre-identified on Seattle Children’s electronic medical record system for quick admission to the new service through the Emergency Department.

But it’s the team of practitioners that make the difference for the patients and their families.

Two nurse practitioners provide medical case management for families and serve as liaisons for in-house faculty and referring providers. They know the idiosyncrasies of their patients and advocate for the medications and therapies that work best for them. A social worker helps families cope with the hospital experience. A care coordinator ensures that everything each patient needs for in-home care is set up prior to discharge, including home nursing, TPN formula, PICC lines, medical equipment and outpatient visits. And eight pediatricians share the role of attending physician, which limits the number of physicians on the service and improves continuity of care.

“The entire MCCS team knows these children and their families,” explains Dick. “Our families are much more relaxed and trusting because they don’t have to repeat their kids’ medical histories or spend as much time interpreting their subtle cues for us. We’re now viewed as a great help instead of a hindrance.”

When a child is admitted to this service, a care conference with all providers is automatically scheduled with the family every two weeks to maximize group communication around unresolved issues. In addition, the MCCS team goes on morning and evening rounds to update the family and the rest of the care team about the child’s plan of care. When MCCS patients are admitted to the ICU, team members attend ICU rounds to improve continuity and communication.

Nationally, the topic of how best to care for children with medically complex conditions is just beginning to be discussed by hospitalists. Recently, the American Academy of Pediatrics’ Committee on Hospital Medicine sent out an e-mail to its members to explore models of complex care. Dick will have a lot to share.
Pioneering New Uses for Existing Technology

When Dr. Harris Baden was a medical student at the Shriners’ Burn Hospital in Texas, he called his dad in the middle of the night and told him, “This is so tragic. I don’t think I can do this.” His father, a retired neonatologist, told him, “As scary as it is for you, think about how scary it is for the patients and their families, and how desperately they need your help.”

Nearly two decades later, his dad’s advice continues to guide Baden as he and his team take pediatric cardiac critical-care medicine to the next level. Since joining the faculty in 2003, Baden’s been busy shifting institutional paradigms about the best way to care for children and teens with congenital heart disease, which is the most common birth defect.

In 2003, he and Seattle Children’s Cardiothoracic Surgery Chief Dr. Gordon Cohen began the process of creating a distinct intensive-care service for cardiac patients — an innovative move undertaken by fewer than a dozen other pediatric hospitals in the nation.

Since joining the faculty in 2003, Baden’s been busy shifting institutional paradigms about the best way to care for children and teens with congenital heart disease, which is the most common birth defect.

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Today, Baden and his team are pioneering the use of mechanical life-support devices to strengthen weak hearts prior to surgery and to speed recovery afterward. Early indications show that these novel therapeutic uses may dramatically improve survival outcomes for children with life-limiting heart conditions.

Powerful restorative therapy

Historically, surgeons and intensivists used a type of heart-lung life support called “extracorporeal membrane oxygenation” (ECMO) as a last-ditch effort to save the most desperately ill children.

Now, Baden and his colleagues are exploring the use of ECMO as a powerful restorative therapy — particularly after the stress of high-risk surgeries such as transplants and single ventricle repairs.

“The plumbing can be fixed, but aggressive surgical approaches and cardiac medications place a lot of stress on the heart. ECMO helps children survive by allowing the heart to rest and recover,” explains Dr. Rob Mazor, medical director of Seattle Children’s Cardiac ECMO program.

“If you strained your bicep, you wouldn’t do curls,” says Baden. “It’s the same principle with the heart.”

Overcoming a challenge

In the past, heart surgery was a relative contraindication for the use of ECMO. The anti-clotting drug heparin — required for children on ECMO — intensifies normal postsurgical bleeding, which can lead to complications and even death.

The Seattle Children’s Cardiac ICU is one of a handful in the nation to regularly use a different type of life-support system to solve this problem.
For up to 24 hours after heart surgery, the Cardiac ICU team puts children on a centrifugal pump system (CPS) with heparin-bonded tubes in the pump. While the heart rests, the drug-coated tubing prevents clotting. After the post-surgical bleeding subsides naturally, children are put on heparin and moved to the ECMO system. The team also uses this approach to get control of chest bleeding when it continues to be a problem more than a few days after surgery.

Mazor says the results of this little-used method are excellent. The team finds that children on the CPS circuit with heparin-bonded tubing have less bleeding and less need for transfusion than children who used to be put on the conventional ECMO circuit and given heparin right after surgery. In fall 2008, Cohen will present these results at the Southern Thoracic Surgical Association meeting, and the paper will be published in the *Annals of Thoracic Surgery*.

**Rigorous standards**

Putting a child on ECMO is never done in a cavalier way. Baden and his team trade the risks associated with the child’s heart condition for the risks associated with mechanical assist: infection, clotting and mechanical failure.

Baden says the secret to a child’s success on life support is the Cardiac ICU team, which consists of a distinct group of intensivists, fellows and nurses dedicated to cardiac critical care. “Daily repetition of practice is the key to our record of clinical excellence,” explains Baden.

Supporting the team’s incredible attention to detail are rigorous protocols instituted and tracked by Dr. Howard Jeffries, the Cardiac ICU’s director of quality.

In March 2005, Jeffries joined Child Health Corporation of America’s effort to reduce bloodstream infections — a process that includes a checklist for line placements and seven standard questions asked daily about each patient. Since then, the team has cut bloodstream infection rates in half and significantly decreased the number of days children need Foley catheters. In July 2007, Jeffries switched to central venous catheter lines (CVL) infused with antimicrobials; since that time, the unit has had only one CVL infection.

Looking ahead, Baden wants to track the long-term neurodevelopmental outcomes of kids on ECMO and continue training the next generation of cardiac critical-care providers.

“We can never lose sight of the need to take cardiac critical-care medicine to the next level,” he says. “But when we look toward the future, we always consider patients and families first.”
Developing New Options for Treating Immune Disorders

In 2007, researchers at Seattle Children’s took a giant step in their quest to find better ways to treat single-gene immune disorders when they received a $23.7 million, 5-year grant from a special program of the National Institutes of Health (NIH). The Northwest Genome Engineering Consortium (NGEC) was one of only nine research groups in the United States funded by the NIH’s Roadmap for Medical Research, a special program designed to address complex research problems that require expertise across multiple scientific disciplines.

Led by Drs. Andrew Scharenberg and David Rawlings of Seattle Children’s, the NGEC combines 11 different projects working to develop ways to correct defective sequences of DNA that cause immune disease. These interrelated projects bring together researchers from Seattle Children’s, the University of Washington (UW) and the Fred Hutchinson Cancer Research Center.

To repair defective genes, the research team must develop customized proteins — known as homing endonucleases — that can bind to and cut a defective sequence of DNA. The team must also develop the system to deliver the protein to the appropriate location within the gene.

“We are trying to find the needle in a haystack and then better design the needle,” says Scharenberg, who is leading the development of the customized proteins.

Half of the team’s NIH funding will support the engineering of homing endonucleases and the other half will test the application of those tools in the laboratory and in animal models of immune deficiency diseases.

“We hope it will be possible to remove a patient’s existing blood stem cells, repair defective genes in the cells and return them to the patient once corrected,” says Rawlings. “This approach potentially bypasses the complications, treatments and costs associated with rejection of bone-marrow cells from an unrelated donor.”

He and Scharenberg are optimistic about gene repair as a potential cure for some primary immune diseases because of a process called selective advantage. If defective genes can be repaired in a small number of cells taken from a child’s bone marrow, these repaired cells will reproduce more effectively than the other cells. If successful, this approach could be applied to cure many other blood and genetic disorders.

The effort requires input from researchers with expertise in diverse fields, including computational protein design, biophysics, cell biology, bioinformatics and immunology. Scharenberg and Rawlings are joined by UW researchers David Baker, PhD, Dr. Ray Monnat Jr. and Nancy Maziels, PhD, and Drs. Barry Stoddard and Hans-Peter Kiem of the Fred Hutchinson Cancer Research Center.

“Our NIH application was well received because our group of investigators was already working together productively,” says Scharenberg.
Finding New Ways to Inhibit Tumor Growth

Though refining chemotherapy has provided tremendous improvement in survival rates for childhood cancers over the past several decades, Dr. Julie Park is looking for something better — novel, less-toxic therapies to treat relapsed or resistant tumors.

“We may have maxed out the options to intensify conventional chemotherapy,” Park says. “Now it’s a matter of finding new ways to build on where we’ve gotten to so far.”

One line of inquiry involves finding ways to cut off a tumor’s blood supply. The more vascular a tumor is, the more likely it will be aggressive, and the more likely it will metastasize. Park is collaborating with Children’s colleague Dr. Douglas Hawkins on a phase I trial of a therapy that would block a tumor’s ability to make new blood vessels by inhibiting one of the proteins, vascular endothelial growth factor (VEGF), that is essential for blood vessel formation. Park says early results in adult tumors are promising. The therapy, known as “VEGF Trap,” has demonstrated anti-tumor and anti-angiogenic activity against a variety of pediatric tumor types — including rhabdomyosarcoma, neuroblastoma and brain tumors — in preclinical laboratory studies, which provides the rationale to perform the planned clinical trial.

Park is also collaborating with Dr. Michael Jensen of City of Hope in Duarte, Calif., to develop new ways to enhance the body’s ability to fight cancer on its own. Using genetic engineering, patients’ T cells are reprogrammed to target the cancer and then reintroduced into the body. Initial phase I trials treating neuroblastoma have been encouraging; Park and Jensen have demonstrated that T cells can be collected, modified and reintroduced with limited toxicity.

“Our next task is to test ways to increase the duration of the modified T cells activity once they are reintroduced to the patient’s body,” says Park. “Our hypothesis is that using a viral-specific TCR/CAR cell product enhanced by an in vivo stimulation of the native TCR might enable the cells to provide long-term protection from disease relapse.”

Together with Drs. Russell Geyer and Blythe Thomson, Park oversees Children’s program of more than 40 active phase I/II clinical research trials for pediatric hematologic and solid tumor malignancies. “Because Children’s is one of the few hospitals in the nation that is a member of all four phase I cooperative groups, our patients have access to early studies not available at many other institutions. In some cases, Children’s is the only hospital on the West Coast where certain experimental protocols are available,” Park says.
Protecting Children From the Flu

In 2007, Seattle Children’s introduced several initiatives to better protect our patients from the potentially devastating impact of the flu.

“In the past, we’d tell parents that everyone in their household should get vaccinated to protect their children, especially those with chronic illnesses, from the flu. We provided flu vaccine to our patients, but didn’t provide it to their family members. It became clear that many families and their children — including many high-risk patients — weren’t getting immunized,” says Dr. Danielle Zerr, the medical director of Infection Control at Seattle Children’s.

Barriers such as arranging transportation or finding a public health clinic were getting in the way. So a team at Children’s initiated a campaign to vaccinate patients and the members of their households while they were at the hospital. The hospital opened a drop-in flu shot clinic and adopted an approach widely used in adult health care: setting standing orders authorizing nurses to screen and vaccinate inpatients and outpatients. As a result, Seattle Children’s vaccinated nearly twice as many patients than the previous year.

360 degrees of protection

Family members and others living in patients’ homes were encouraged to get a free flu shot at the clinic. The idea is to create a ring of protection around patients, which is especially important for those who cannot be immunized because they are too young or they have an underlying health condition. In its first year, the program reached around 1,900 household contacts.

“We’ve offered vaccinations to staff for years, and it was always frustrating that we couldn’t offer that service to family members when we knew they could expose patients to the flu,” says Zerr. “Now we’re making sure our most vulnerable patients have that extra protection.”

Seattle Children’s also stepped up the staff vaccination initiative. In 2007, the program reached 84% of the staff who provide direct care — an exceptionally high rate for an institution where flu vaccinations aren’t mandatory. The American Medical Association and the Centers for Disease Control and Prevention recognized the campaign’s success.

Testing the Vaccines of Tomorrow

In 2007, Seattle Children’s, Group Health Cooperative and the University of Washington received a $23.7 million contract from the National Institutes of Health to form a Vaccine and Treatment Evaluation Unit (VTEU). There are eight VTEUs in the country, and only one on the West Coast.

“Research done by the VTEUs has been instrumental in making vaccines for diseases like meningitis and acellular pertussis available in the United States,” says Dr. Janet Englund, who leads the VTEU at Seattle Children’s. “We’re pleased to be testing vaccines that promise to save children’s lives in the future.”

Dr. Janet Englund leads the Vaccine and Treatment Evaluation Unit at Seattle Children’s.

Dr. Danielle Zerr
Listening to a Hunch

Playing a hunch put Dr. Daniel Rubens on the trail of a tragic and mysterious disease.

Sudden Infant Death Syndrome (SIDS) claims the lives of 2,500 infants in the United States every year. Striking without warning and leaving scant clues about its cause, SIDS has defied all attempts to unlock its secret, casting a shadow of fear over every family with a newborn.

Rubens, an anesthesiologist at Children's, believes the inner ear holds the key to deciphering SIDS. In a study published last July in Early Human Development, Rubens examined the posthumous medical records of 31 Rhode Island babies who died of SIDS and found the same distinctive hearing difference in their newborn hearing tests for the right inner ear.

Although much ground remains to be covered, the study “opens up a whole new line of inquiry into SIDS research,” says Rubens. It could be the compass that finally points physicians toward a way to screen for SIDS with a simple hearing test and intervene before tragedy strikes.

Rubens listened to his intuition when he decided to look in the inner ear for clues to SIDS. “I had the idea that we'd missed something about the way the body controls breathing and that the missing piece might be in the fine hairs of the inner ear,” he says.

These hairs are known to be involved in both hearing and balance functions, but Rubens suspects some also signal the brain to adjust breathing in response to rising carbon dioxide levels in the blood.

If damaged, the hairs are unable to play their normal role in hearing. However, if Rubens is right about the carbon dioxide connection, damage would also prevent them from warning the brain about rising CO2 levels. He believes that SIDS babies suffer some sort of trauma at birth that leads to both the hearing abnormality and the interrupted CO2 signal, causing death by suffocation.

Rubens is building on his first study with three new investigations. One is exploring a possible cause of damage to the fine hairs. Another is a larger, multisite version of the Rhode Island study that will eliminate possible variables involving background noise and the type of testing equipment used.

The third is using mice to test the association between damage to the fine hairs and the brain’s response to CO2. “We're in the preliminary stages, but it does look like there is a connection,” Rubens says.

Acting on his intuition, Dr. Daniel Rubens opens a new door that may reveal a secret to SIDS.
Going to Bat for Sports Safety

Across the nation, sports-related injuries among teens are occurring at higher rates than ever before. Longer sports seasons, more intense participation at younger ages and the focus on playing just one sport contribute to the increase.

Seattle is no exception. In 2007, school-district athletic trainers evaluated about 2,600 sports injuries sustained by the city’s 3,500 high-school athletes. Overuse injuries to the knee from running and jumping, such as patellar tendonitis and tibial tubercle apophysitis, top the list of sports traumas that teens are seen for in the sports medicine program at Seattle Children’s, says Dr. Thomas Jinguji.

To drop-kick these escalating rates, Dr. Ernest Conrad and Jennifer Becker, the medical and administrative leaders of Seattle Children’s Department of Orthopedics, partnered with the Seattle Public School District to pilot courses in sports medicine using seed money from Seattle Children’s. The goal is to give teens at two Seattle high schools the injury-prevention knowledge they need to keep themselves and their peers safe at play while piquing their interest in health-care careers.

Education and advocacy

Becker says that she and Conrad are proud of their work to get the classes up and running because they create greater awareness around injury prevention — a natural fit with Seattle Children’s mission to prevent childhood injury.

Nearly 50 students are taking the sports medicine courses, which are part of the school district’s career and technical education track.

“Kids need to know that they are still growing and developing, and this puts them at higher risk for sports injuries that could impact maturing soft tissues and bones,” explains Conrad. “These courses encourage students to take sports health and safety seriously and become advocates among their peers.”

Historically, the 10 high schools in the Seattle Public School District shared only five athletic trainers. The funding from Seattle Children’s puts a full-time athletic trainer/sports medicine teacher at Seattle’s Ballard and Chief Sealth high schools.

Conrad hopes the increased staffing and new classes will lower sports-injury rates at the two schools — and convince the superintendent of public schools to fund the pilot program at all of Seattle’s high schools.

“We see far too many kids with ankle and knee injuries from gymnastics, football, soccer and basketball, repetitive motion injuries of the shoulder and elbow from baseball and concussions from contact sports like football, lacrosse and rugby.”
Closing a Critical Gap

Like a pebble that kept sneaking into her shoe, the findings kept nagging at Dr. Rita Mangione-Smith. Whenever someone studied the quality of children’s health care, the results made her wince.

Various studies with limited scope were revealing instance after instance in which children weren’t receiving recommended care for numerous common conditions.

“We started to question whether the quality of health care for children in this country was really as high as we assumed it was,” recalls Mangione-Smith, a pediatrician and researcher at Seattle Children’s.

So she led a comprehensive study — the largest examination of the quality of children’s health care in the United States — that provided a definitive answer: Children in the United States fail to get the recommended health care more than half the time.

Given the scope and the stakes, the study is a “wake-up call” that can’t be ignored, Mangione-Smith says. “We know from experience that when we follow recommended standards of care, we improve outcomes for children,” she says.

Besides illuminating the problem, the study also contributes to the solution. The study’s collaborators — Seattle Children’s, the University of Washington School of Medicine and the RAND Corp. — combed the literature to compile 175 recommended standards of care for 12 common conditions including asthma, diarrhea and urinary tract infections. Originally used as benchmarks for the study, those standards are now a resource for physicians seeking the latest recommendations for those conditions studied.

Recommendation change

Preventive care is more critical than ever to keeping children healthy and controlling health-care costs — especially in light of the obesity epidemic and the related rise in conditions such as diabetes and hypertension. Yet Mangione-Smith’s study showed that only 41% of the children received recommended preventive care — including such basics as being weighed and measured during regular checkups. The figure for chronic care — 53% — wasn’t much better.

Those results suggest a need to change the way doctors are educated, says Mangione-Smith. “Residents spend most of their time in hospital settings and become very good at managing kids with acute illnesses, but they’re not as well trained in providing preventive care or caring for kids with chronic illnesses,” she says.

The study also suggests a need to change the way doctors are reimbursed, says Mangione-Smith. The current system rewards them for quantity, not quality, she says. Under pressure to see as many patients as possible, they don’t always have time to deliver every element of recommended care.

The study likely reflects only the tip of the iceberg. Nearly all of the 1,500 children involved had some form of health insurance. “I shudder to think of the overall population because the kids in the study are supposedly getting the best care out there,” Mangione-Smith says.
Department Reports
Faculty members from the Departments of Anesthesiology and Pain Medicine, Dental Medicine, Laboratory Medicine, Neurology, Orthopedics, Psychiatry and Behavioral Medicine, Radiology, and Rehabilitation Medicine have pursued opportunities to develop innovative academic programs, strengthen state and community partnerships, and lead improvements in the practice of pediatric medicine.

Although regional anesthesia has demonstrated results of superior recovery in adults, it is currently an unrecognized opportunity in pediatrics. In 2007, Anesthesiology recruited international expert in regional anesthesia, Dr. Adrian Bosenberg, from Cape Town, South Africa, to lead a regional anesthesiology team, create educational and research opportunities, and ultimately develop a Center for Regional Anesthesia.

Many departments successfully expanded state and community partnerships. Psychiatry worked with the Washington State Department of Health and Human Services to fund two programs: one to support psychiatric consultation to primary care providers, and a second to provide medication review for children with unusual complexity or risk. In addition, Dr. Bryan King became the Principal Investigator for the NIH-funded University of Washington (UW) Autism Center of Excellence. This opportunity will allow integration of autism services for children and families.

We also continue our work to increase access to pediatric specialty services needed in our community and region. Seattle Children’s is partnering with the UW School of Dentistry to build a state-of-the-art Center for Early Childhood Oral Health. This joint program — scheduled to open in August 2010 — will help meet the need of dental caries management in our community. Chief of Neurology Dr. Sid Gospe collaborated with the UW Medical Center Electromyography (EMG) Clinic to develop a training position for pediatric EMG.

Our faculty are also leading efforts to improve the practice of pediatric medicine. An experienced leader in MRI and imaging sciences, Dr. Edward Weinberger, has taken the helm as director of Pediatric Radiology. He will strengthen imaging sciences and guide the provision of optimal care by developing image guided interventions for patients and physicians. In fall 2007, members of the Orthopedics Department traveled with other Children’s leaders to the Toyota plant in Japan to study methods for translating lean principles into practice. They are now applying their new knowledge to develop clinical care guidelines and standard work focused on making practice improvements.
Anesthesiology and Pain Medicine

Pain is an unpleasant sensory and emotional experience associated with actual and potential tissue damage. It is important to manage pain when treating a child: inadequately controlled pain has undesirable effects on a child’s metabolic, physiological and emotional conditions. We are dedicated to improving infant, child and adolescent pain care and quality of life, and we provide our patients relief from a variety of afflictions, including pain related to surgical procedures, cancer, sickle cell disease and other conditions.

Our team includes expert pediatric anesthesiologists, nurse anesthetists and nurse practitioners. Each has special experience and training with issues facing children during anesthesia. Before surgery, a nurse practitioner takes a complete medical history, including post-anesthetic experiences, and provides a complete physical exam. We provide information to the family on how children fall asleep under anesthesia. We also discuss the surgery center routine, recovery and criteria for home discharge. Our team includes attending physicians and advance practice nurses who provide pain management services 24 hours a day.

The Department of Anesthesiology and Pain Medicine provides safe, family-friendly care for children before, during and after surgery. The pain medicine team also consults about, evaluates and treats children experiencing acute or chronic pain.

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**PROFESSIONAL PROFILES**

Lynn D. Martin, MD, is director of the Department of Anesthesiology and Pain Medicine at Seattle Children’s Hospital and professor of anesthesiology and adjunct professor of pediatrics at the University of Washington School of Medicine. He received his MD from the University of Washington School of Medicine. He completed a pediatric residency at Phoenix Children’s Hospital and an anesthesia residency and a fellowship in pediatric anesthesia and critical care medicine at Johns Hopkins University. He is board certified by both the American Board of Anesthesiology and the American Board of Pediatrics, with specialty certification in pediatric critical care medicine. His research interests have involved conventional and nonconventional forms of mechanical ventilation in the OR and ICU. In addition, Martin has become involved in quality improvement and operative outcomes research. He is involved in the supervision of residents, fellows and CRNAs in the OR and ICU.
Corrie T. M. Anderson, MD, is professor in the Department of Anesthesiology and adjunct professor in the Department of Pediatrics at the University of Washington School of Medicine. Anderson graduated from the Stanford University School of Medicine and then went to Boston for his postgraduate training at Boston Children’s Hospital (pediatric residency and anesthesia fellowship) and The Brigham and Women’s Hospital (anesthesia residency). He is board certified in anesthesiology and holds a certificate in special competency in pain medicine. He arrived at Seattle Children’s in 2001 after spending 13 years at the UCLA School of Medicine. In both 2004 and 2005, he was noted as one of Seattle’s Best Doctors.

Sanjay M. Bhananker, MBBS, MD, DA, FRCA, is attending faculty anesthesiologist at Seattle Children’s Hospital, Harborview Medical Center and the University of Washington School of Medicine. He completed residencies in anesthesiology in India and the U.K. and a fellowship in pediatric anesthesiology in Ottawa, Canada. Bhananker is a clinician educator and plays a significant role in the education of anesthesiology residents at the University of Washington. His research interests include pediatric trauma, pediatric burns and pediatric pharmacology. Bhananker has been active in regional, national and international anesthesiology societies and has presented many topics at their meetings.

Jim C. Borowiec, MD, is attending anesthesiologist at Seattle Children’s Hospital and acting assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. Born in Anaheim, Calif., in 1967, Borowiec studied medicine at the University of Washington School of Medicine in 1998. He completed his anesthesia residency at the Mayo Clinic in Rochester, Minn., and a pediatric anesthesia fellowship at Children’s in 2006. After his fellowship, Borowiec decided to join the faculty at Children’s, where he participates in the supervision and training of the anesthesia residents and fellows. Borowiec is board certified in anesthesiology.

Ursula Class, MD, is attending anesthesiologist at Seattle Children’s Hospital and clinical assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. She studied medicine at Eberhard-Karl University in Germany. She completed a pediatrics residency at St. Louis Children’s Hospital and an anesthesia residency at Barnes Hospital, St. Louis. She completed a pediatric anesthesia fellowship at Denver Children’s Hospital. Class served on the faculty at St. Louis Children’s Hospital. At Seattle Children’s, she participates in the supervision and training of anesthesia residents and fellows.

Michael J. Eisses, MD, is an attending anesthesiologist at Seattle Children’s Hospital in the Cardiac Anesthesia Program and assistant professor in the Department of Anesthesia at the University of Washington School of Medicine. He earned his MD at the University of Washington and received the John J. Bonica Award for medical students. He completed a residency in anesthesiology at the University of Washington, followed by a fellowship in pediatric anesthesia at Children’s; he completed a clinical fellowship and a one-year research fellowship in the Department of Laboratory Medicine. He is board certified in anesthesiology and is active in the training of anesthesia residents and fellows. His primary clinical responsibilities include providing anesthesia for neonates, infants and children undergoing procedures to treat congenital heart disease, and heart and liver transplants. He researches mechanisms and complications of coagulation and fibrinolytic activation as they relate to anesthesia and surgery, in particular cardiopulmonary bypass. He collaborates with the University of Washington’s departments of laboratory medicine and bioengineering in constructing computer...
and kinetic models for hemostasis due to cardiopulmonary bypass in children. He received the B. Raymond Fink Research Award from the university in 2004.

**Inge Falk van Rooyen, MBChB,** is attending anesthesiologist at Seattle Children’s Hospital and assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. She completed her anesthesia subspecialty training at the University of Cambridge in the U.K. Falk van Rooyen’s interests include management of the complex pediatric airway, development of safe sedation techniques and education within clinical anesthesia. As a member of the TEE writer group, she is part of the team of specialists that creates exam practice questions for resident education. Her published works reflect her interest in airway surgery, respiratory pathology and physiology, and orthopedic and neurosurgery pediatric anesthesia. She has taught pediatric life support nationally and directed courses locally; she is preceptor and mentor to medical students and anesthesia residents. She is an active member of the Washington State Society of Anesthesiologists, the American Society of Anesthesiologists and the Society for Pediatric Anesthesia.

**Sean H. Flack, MBChB,** is attending anesthesiologist at Seattle Children’s Hospital and acting assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. He completed his MBChB and anesthesiology residency at the University of Cape Town, South Africa. He completed his fellowship at the Royal United Hospital in Bath, U.K., and then returned to the Red Cross War Memorial Children’s Hospital in Cape Town. He is lead anesthesiologist for general surgery. Flack’s clinical interests include regional anesthesia and the role of ultrasound in the practice of pediatric regional blocks. He has also developed an interest in anesthesia for awake craniotomy surgery. His laboratory research focuses on an animal model for the study of intrathecal drug distribution. Clinical research interests include ultrasound-guided peripheral nerve blocks and the use of dexmedetomidine as an adjunct to general anesthesia. He has presented at a national level on a number of these topics. He is an active member of the Washington State Society of Anesthesiologists, American Society of Anesthesiologists, Society for Pediatric Anesthesia and American Society of Regional Anesthesia and Pain Medicine.

**Jeremy M. Geiduschek, MD,** is director of clinical anesthesia services at Seattle Children’s Hospital and clinical professor in the Department of Anesthesiology at the University of Washington School of Medicine. He has been at Children’s since starting his internship in pediatrics in 1983. He completed a residency in anesthesiology and a one-year fellowship in pediatric anesthesiology. He did clinical research in Basel, Switzerland, on the effects of anesthesia on laryngeal mechanics in children. He is board certified in anesthesiology and participates in the supervision and training of anesthesia residents and fellows. Geiduschek has been active in establishing several clinical programs, including the delivery of anesthesia to infants receiving ECMO, provision of anesthesia for children with cancer undergoing painful invasive procedures and use of ECMO in the repair of complete laryngotracheoesophageal fistula. Geiduschek was part of the group that established the national POCA (Pediatric Operative Cardiac Arrest) registry. He has been involved in improving operating room efficiency, patient safety and timely delivery of care. Geiduschek is an active member of the pediatric cardiac anesthesia team and has a strong clinical interest in delivery of anesthesia for children with complex congenital heart disease.

**Charles M. Haberkern, MD, MPH,** is staff anesthesiologist at Seattle Children’s Hospital and clinical professor of anesthesiology at the University of Washington School of Medicine. He is board certified in anesthesiology, pediatrics and neonatal-perinatal medicine. He has worked at Children’s for the majority of years since he came to the hospital as an intern in pediatrics in 1974. He completed fellowship training in neonatology at the University of California, San Francisco; a residency in anesthesiology at the University of Florida, Gainesville; and a fellowship in pediatric anesthesia at Children’s Hospital Boston. He earned an MPH at Harvard University. Haberkern has been active in clinical care, resident and fellow education, operating room management and clinical research. He has maintained research interest in perioperative care of patients with sickle cell disease, health-care services and the POCA (Pediatric Operative Cardiac Arrest) registry that is directed by the University of Washington.
Laurilyn D. Helmers, MD, is attending anesthesiologist at Seattle Children's Hospital and acting assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. She completed her internship in internal medicine at Good Samaritan Regional Medical Center in Phoenix and completed her anesthesia residency and pediatric anesthesia fellowship in Iowa City. She has maintained certification with the American Board of Anesthesiology. She served as division director for pediatric anesthesia and as fellowship program director in the Department of Anesthesiology at University of Iowa Hospitals and Clinics in Iowa City. In the clinical arena, Helmers is involved in the provision of anesthesia to all pediatric age groups. She has an interest in acute pain management in the perioperative period, especially with the provision of regional anesthesia alternatives. Peripheral nerve blockade via single injections or catheters and the safety associated with these techniques are her special interests. In the academic arena, she is involved in teaching anesthesia residents and fellows and has an interest in incorporating alternative teaching methods into the current curriculum, especially in the subspecialty areas of pediatric anesthesia and regional anesthesia.

David S. Jardine, MD, is attending physician at Seattle Children’s Hospital and Harborview Medical Center and associate professor in the Department of Anesthesiology and the Department of Pediatrics at the University of Washington Medical Center. He completed residencies in pediatrics and anesthesiology and a fellowship in pediatric anesthesiology and intensive care. He is board certified in anesthesiology and is active in the supervision and training of anesthesia residents and fellows. He has served as a reviewer for a variety of medical journals and has published widely, with an emphasis on hemorrhagic shock and encephalopathy syndrome. His laboratory interests are using heat shock proteins as biomarkers and examining the protective effect of heat shock proteins during brain injury. He has been principal investigator on several projects. Other interests include medical staffing issues; he helped formulate and interpret a recent American Academy of Pediatrics survey on pediatric intensive care staffing. He serves on the Institutional Review Board at Children’s and on the research committee for the Department of Anesthesiology and Pain Medicine. He serves on the board of the SIDS Foundation of Washington and became president in January 2006.

Nathalia Jimenez, MD, MPH, is attending physician at Seattle Children’s Hospital and acting assistant professor at the University of Washington School of Medicine. She completed her residency at Pontificia Universidad Javeriana in Colombia. She completed her fellowship in pediatric anesthesiology at Children’s and earned an MPH in epidemiology at the University of Washington School of Public Health. As a fellow, she tested a new device for local anesthesia for IV cannulation in children that is now used routinely in clinical practice. As part of her MPH, she worked at the injury prevention center helping educate Latino families about traffic safety. In the American Society of Anesthesiologists Closed Claims Project, she evaluated trends in pediatric anesthesia liability. Her research interests include outcomes in anesthesia and ethnic differences in health services.

Denise C. Joffe, MD, is attending anesthesiologist at Seattle Children’s Hospital and an associate professor in the Department of Anesthesiology at the University of Washington School of Medicine. Born in Suffern, N.Y., in 1962, Joffe studied medicine at McGill University in Montreal, Quebec, in 1981. She completed a mixed internship at a McGill teaching hospital in Montreal, Quebec, and an anesthesia residency at McGill University. She then completed an adult and pediatric cardiothoracic anesthesia fellowship at Mount Sinai Hospital in New York in 1993. She is board certified in anesthesiology and is active in the supervision and training of anesthesia residents and fellows.

Christer S. Jonmarker, MD, PhD, is a pediatric anesthesiologist attending at Seattle Children’s Hospital and an associate professor at the University of Washington School of Medicine. He received residency training in surgery at Virginia Mason Hospital in Seattle and in anesthesia and intensive care at University Hospital in Lund, Sweden. He became a specialist in anesthesia and intensive care in Sweden in 1985 and completed a PhD thesis in respiratory physiology the same year. He was named docent at the University of Lund and was awarded the European Diploma of Anesthesiology in 1989. At University Hospital in Lund, he served as director of cardiothoracic anesthesia (1994–1996) and director of pediatric anesthesia (1996–2000). He was director of cardiac anesthesia at Children’s 2000–2007. Jonmarker’s primary interest is in pediatric pulmonary and circulatory physiology and in resident
and fellow training. He has published articles on pediatric respiration and ventilation, circulation and clinical pharmacology.

Helen W. Karl, MD, has been attending anesthesiologist at Seattle Children’s Hospital since 1990 and is associate professor in the Department of Anesthesiology at the University of Washington School of Medicine. She received her MD from the University of Virginia School of Medicine. She completed an anesthesia residency at Hartford Hospital, Conn., and a pediatric anesthesia fellowship at Children’s Hospital, Philadelphia, Pa. She is board certified in anesthesiology. She is currently interim director of the Pain Medicine Program and participates in the supervision and training of anesthesia residents and fellows.

Jerry H. Kim, MD, is attending anesthesiologist at Seattle Children’s Hospital and acting instructor/senior fellow of anesthesiology with the University of Washington School of Medicine. Born in Staten Island, N.Y., in 1977, Kim studied medicine at Jefferson Medical College, Philadelphia, Pa. He completed his anesthesia residency at Thomas Jefferson University Hospital, Philadelphia. He then went on to complete his first year as a pediatric anesthesia fellow at Children’s in 2007. Currently, Kim is completing his second year, conducting research as a senior fellow. Kim is board certified in anesthesiology.

Anjana Kundu, MBBS, MD, DA, is director of the Complementary and Integrative Medicine Program and associate director of the Pain Medicine Program at Seattle Children’s Hospital. She is an assistant professor at the University of Washington School of Medicine. Kundu earned her MD and board certification in anesthesiology in India. She subsequently completed a residency training program in anesthesiology at Medical College of Wisconsin. She completed her fellowship training in pediatric pain medicine and acupuncture training at Harvard Medical School and Children’s Hospital Boston. She is board certified in anesthesiology and pain medicine. Her main areas of clinical and research interest include complementary and alternative medicine and pediatric pain medicine. Kundu established the first clinical acupuncture service as part of the Complementary and Integrative Medicine Program at Children’s. She provides anesthesia for pediatric surgical procedures, radiological procedures and hematology and oncology services at Children’s and the University of Washington Medical Center. She served as co-director for a regional pediatric pain management conference and has developed a curriculum for a pediatric pain medicine fellowship at Children’s.

Anne M. Lynn, MD, is attending anesthesiologist at Seattle Children’s Hospital and professor in the Department of Anesthesiology and adjunct professor in the Department of Pediatrics at the University of Washington School of Medicine. She received her MD from Stanford University School of Medicine and completed residencies in pediatrics and anesthesiology at the University of Washington. She completed a pediatric critical care fellowship at the Hospital for Sick Children in Toronto. She is board certified in anesthesiology and is active in the supervision and training of anesthesia residents and fellows. She completed a physician medical acupuncture training program in 2007 and is seeing acupuncture patients at Children’s. Lynn has been treasurer, secretary, vice president and president of the Society for Pediatric Anesthesia, the largest pediatric anesthesia professional group in the United States. She is a current member of the ASA Committee on Pediatric Anesthesia and has been an active clinical investigator of pain management in infants, with several studies of morphine use in postoperative infants. She is a pediatric section reviewer for *Anesthesia and Analgesia*. Lynn has been an active member of Children’s committees, chairing the Pharmacy and Therapeutics Committee from 1996 to 2001. She was elected to the board of directors for Children’s University Medical Group in 2006. She has been listed in *Seattle* magazine’s “Seattle’s Top Doctors” every year since 2001 and in “Best Doctors in America” since 2003.

Jennifer L. Meyers, MD, is attending anesthesiologist at Seattle Children’s Hospital and acting assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. Born in Los Angeles, Calif., in 1973, Meyers studied medicine at Pennsylvania State University College of Medicine, Hershey, Pa., in 1997. She completed her anesthesia residency at Baylor College of Medicine, Houston, Texas. She then completed a pediatric anesthesia fellowship at Texas Children’s Hospital, Houston, in 2007.
James J. Mooney, MD, is attending anesthesiologist at Seattle Children’s Hospital and acting assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. Born in Long Island, N.Y., in 1970, Mooney studied medicine at Boston University School of Medicine in 1997. He completed his anesthesia residency at the University of Massachusetts Medical Center, Worcester, Mass. He then completed pediatric anesthesia and pediatric pain management fellowships at Boston, Mass., in 2007.

Rosemary J. Orr, MBCh, is associate professor at Seattle Children’s Hospital and the University of Washington School of Medicine. She is clinical director of remote anesthesia services for Children’s. Orr earned her MB from Queen’s University, Belfast, Northern Ireland, and started a pediatrics residency in Belfast. She completed a pediatrics residency, a pediatric cardiology fellowship and two years as a neonatal biology fellow at the University of Washington School of Medicine. She completed an anesthesia residency at the University of Washington and a fellowship in pediatric anesthesia at Children’s Hospital of Philadelphia. She joined the University of Washington as the first academic anesthesiologist working with the private practice of anesthesia at Children’s Hospital. She is board certified in pediatrics and anesthesiology, and she chairs Children’s sedation committee. She is a clinician and an educator, and her research has been clinically based. She has studied several anesthetic drugs and anesthesia for airway procedures. Other research interests involve gathering data from anesthetics given for procedures outside the operating room.

Martha B. Pankovich, MD, is attending anesthesiologist at Seattle Children’s Hospital and acting assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. Born in Chicago, Ill., in 1970, Pankovich studied medicine at the University of Navarra, Pamplona, Spain, in 1993. She completed her anesthesia residency at Rush University Medical Center in Chicago and a pediatric anesthesia fellowship at Children’s in 2006. After her fellowship, Pankovich decided to join the faculty at Children’s, where she participates in the supervision and training of anesthesia residents and fellows. She is board certified in anesthesiology and speaks three languages (Spanish, Serbian and English).

Andrew J. Pittaway, BM, BS, FRCA, is attending anesthesiologist at Seattle Children’s Hospital and an assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. Born in Yorkshire, U.K., in 1968, Pittaway studied medicine at the University of Nottingham Medical School, graduating in 1991. After several years of postgraduate training in both internal and emergency medicine, he embarked upon specialist training in anesthesiology in 1994 and did his residency at the South West School of Anaesthesia, based in Plymouth, U.K. He has been fortunate to also train abroad in both Australia and Fiji. A former member of the anesthesia faculty in 2002–2003, Pittaway decided to return after doing locum consultant pediatric anesthesia work in the U.K. and voluntary consultant work in West Africa. Pittaway is anesthesia residency coordinator at Children’s and is interested in education, simulation, training in the developing world and regional anesthesia.

Sally E. Rampersad, MB, DCH, FRCA, is attending anesthesiologist at Seattle Children’s Hospital and assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. She earned her MB from the University of Southampton, England, and her diploma in child health (DCH) from the Royal College of Physicians of London. She trained in anesthesiology in the U.K., becoming a fellow of the Royal College of Anaesthetists in 1994. She completed a pediatric anesthesia fellowship at the Hospital for Sick Children in Toronto and worked from 1996 to 1998 as a visiting attending at Seattle Children’s. She repeated residency in anesthesiology at Virginia Mason Medical Center in Seattle and subsequently rejoined Children’s as an attending in 2003. Her professional interests include pediatric anesthesia, regional anesthesia and improving error management in the operating room. She has served as an instructor for pediatric advanced life support (PALS) in the United States and Canada. She is the coordinator for the Department of Anesthesiology QI rounds at Children’s and interim co-director of the OR quality and safety committee.

Michael J. Richards, BM, MRCP, FRCA, is attending anesthesiologist at Seattle Children’s Hospital and an assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. Born in Malvern, England, in 1970, Richards completed
his Bachelor of Medicine at Southampton University, England, in 1993. Following his internship, he completed 18 months of junior residency in internal medicine at Southampton University Hospitals and two years of senior residency in internal medicine, first in Jersey, British Isles, and then at the University of Cape Town, South Africa. During this time, he completed his Member of the Royal College of Physicians qualifications. In 1998 he changed career pathways to anesthesia and completed his two-year junior anesthesia residency at the Royal Devon and Exeter Hospitals, England (part of the Peninsula Medical School). He subsequently completed a five-year senior residency in anesthesia at the Bristol School of Anaesthesia, during which he also completed his Fellow of the Royal College of Anaesthetists qualifications, achieved intermediate training in intensive care medicine and gained a postgraduate certification in medical education. He also completed a pediatric anesthesia fellowship at Bristol Royal Children’s Hospital and spent a year as visiting faculty at Children’s. Richards decided to return to Children’s in 2006 as part of the cardiac and general anesthesia group and has subsequently also taken on the role of director of the pediatric anesthesia fellowship program.

**Daniel D. Rubens, MBBS**, is assistant professor in the Department of Anesthesiology and Pain Medicine at Seattle Children’s Hospital and the University of Washington School of Medicine. Rubens also serves as director of medical simulation at Children’s. He earned his MBBS from the University of New South Wales, graduating with honors. He completed his anesthesia residency training at Liverpool Hospital, Sydney, including rotations to Prince of Wales and Saint Vincent’s Hospitals for intensive care and pediatric retrieval training. Rubens is board certified in anesthesia, and his primary teaching activities include supervising and training residents and fellows. He helped develop SimBaby, the world’s first infant simulator. He is researching the finding of a hearing deficit from inner ear damage, noted at birth in SIDS infants with newborn hearing tests, and its potential relationship to the later mechanism of death.

**Yuko Sano, MD**, is attending anesthesiologist at Seattle Children’s Hospital and acting instructor/senior fellow of anesthesiology at the University of Washington School of Medicine. Born in Manhattan, N.Y., in 1970, Sano studied medicine at the University of Chicago in 1970. Sano studied medicine at the University of Chicago in 1994. She completed her anesthesia residency at the University of California, San Francisco, in 2006. She then completed her first year as a pediatric anesthesia fellow at Children’s in 2007. Currently, Sano is completing her second year, conducting research as a senior fellow. She is board certified in anesthesia. In her free time, Sano enjoys rock climbing, trail running and sculling.

**Nicole E. Webel, MD**, is attending anesthesiologist at Seattle Children’s Hospital and acting assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. Webel studied medicine at Southern Illinois University, Springfield, Ill., graduating in 1994. She completed an anesthesia residency at the Mayo Graduate School of Medicine in 2002 and then went on to complete a pediatric anesthesia fellowship at Children’s in 2003. Webel joined the faculty at Children's in 2005 after being on staff at the Mayo Clinic. She now participates in the supervision and training of anesthesia residents and fellows.

**Karen Wong, MBBS**, is attending anesthesiologist at Seattle Children’s Hospital and acting assistant professor in the Department of Anesthesiology at the University of Washington School of Medicine. She is the lead anesthesiologist for spinal surgery at Children’s. She completed her MBBS at the University of Melbourne, Australia, and an anesthesiology residency at Liverpool Hospital in Sydney. She completed a fellowship at Princess Margaret Hospital for Children in Perth and worked as attending anesthesiologist at Sir Charles Gardiner Hospital in Perth. Wong’s clinical interests include anesthesia for spinal surgery, sedation and simulator training. She has an active interest in anesthesia education and participates in oral board preparation for residents and fellows. She is also actively involved in the use of the simulator baby for the training of pediatric residents in anesthesia and emergency management of the sick child.
Jeffrey R. Zavaleta, MD, is attending anesthesiologist at Seattle Children’s Hospital and acting instructor/senior fellow of anesthesiology at the University of Washington School of Medicine. Born in McAllen, Texas, in 1974, Zavaleta studied medicine at the University of Texas Southwestern Medical Center at Dallas in 1998. He completed his anesthesia residency at Parkland Memorial Hospital in Dallas in 2006. He then went on to complete his first year as a pediatric anesthesia fellow at Children’s in 2007. Currently, Zavaleta is completing his second year, conducting research as a senior fellow. Zavaleta is board certified in anesthesiology.

AWARDS AND HONORS

Chister S. Jonmarker, MD, PhD

Lynn D. Martin, MD
Listed in “Top Doctors.” Seattle magazine. Listed in “Best Doctors in America.”

Jeffrey R. Zavaleta, MD

RESEARCH FUNDING

Continuing
Lynn D. Martin, MD
An open-label, randomized, phase IIIB, multicenter trial to evaluate the pharmacodynamic parameters of intubation bolus, and bolus and infusion maintenance doses of Zemuron in pediatric and adolescent subjects. Organon USA Inc. $73,890.

TEACHING AND PRESENTATIONS

Sanjay M. Bhananker, MBBS, MD, DA, FRCA

SLAM (Street Level Airway Management) course for anesthesiologists, other physicians, CRNAs and paramedics (instructor). Dallas, Texas. June 2007.

Anesthesia and analgesia for pediatric burns (problem-based learning discussion [PBLD]). Postoperative ulnar neuropathy — could I have done something to prevent it? (PBLD). Optimal effective ratio of thiopental:propofol mixture to alleviate pain on injection of propofol. ASA annual meeting. San Francisco, Calif. October 2007.


Jim C. Borowiec, MD

Laurilyn D. Helmers, MD

Chister S. Jonmarker, MD, PhD


Anjana Kundu, MBBS, MD, DA
Anne M. Lynn, MD


Lynn D. Martin, MD

Andrew J. Pittaway, BM, BS, FRCA

Sally E. Rampersad, MB, DCH, FRCA


Nicole E. Webel, MD

Jeffrey R. Zavaleta, MD


Dental Medicine

The Department of Dental Medicine addresses the dental needs of medically complex children and adolescents in the region up to age 17. We provide high-quality specialized dental care available only in the unique setting of a tertiary-level pediatric medical center. The department's professional staff has the expertise and the resources to render care to children referred from a variety of programs at Seattle Children’s Hospital; we’re most closely involved with the craniofacial, hematology/oncology, rheumatology, cardiology, rehabilitation medicine and neurodevelopmental programs.

The Department of Dental Medicine actively pursues clinical research, most often in collaboration with tertiary-care programs at Children’s, to further knowledge about diagnostic and treatment techniques and ensure excellence in clinical care. The department participates in teaching future providers of pediatric medical and dental care, including integration with the teaching programs of the University of Washington, with a primary goal of ensuring continued clinical excellence in the future care of children.

The Department of Dental Medicine acts as a strong advocate for oral health on local, state and national levels. We believe good oral health is critical to the well-being of the children in our society.

FACULTY

Joel H. Berg, DDS, MS, Director
Jason Chang, DDS
Christopher Delecki, DDS, MPH, MBA
Mark A. Egbert, DDS
Geoffrey M. Greenlee, DDS, MSD
James A. Howard, DDS
Lina Kim, DDS
Cynthia L. Koudela, DDS, MSD
Seok Bee Lim, DMD
Jeffrey B. Marks, DDS
M. Lena Omnell, DDS, MSD
Andrea M. Pearson, DDS
Donna J. Quinby, DMD, MSD
Mark M. Schubert, DDS, MSD
Barbara L. Sheller, DDS, MSD
Dennis L. Sipher, DDS
Terry M. Thomas, DDS
Bryan J. Williams, DDS, MSD, MEd
Yoo-Lee Yea, DDS, MPH
Lisa H. Zimberg, DMD

PROFESSIONAL PROFILES

Joel H. Berg, DDS, MS, is director of the Department of Dental Medicine at Seattle Children’s Hospital; he is also professor and Lloyd and Kay Chapman Chair for Oral Health of the Department of Pediatric Dentistry at the University of Washington School of Dentistry. He is a board-certified pediatric dentist and a fellow of the American Academy of Pediatric Dentistry. He is a trustee of the American Academy of Pediatric Dentistry. Berg has held positions as vice president for clinical affairs at Philips Oral Healthcare, head of the scientific department for ESPE Dental AG and director of the postgraduate residency program in pediatric dentistry at the University of Texas, Houston, where he conducted numerous clinical trials evaluating restorative materials. Berg is also a fellow of the Pierre Fauchard Academy and a fellow of the American College of Dentists and the International College of Dentists. He is the author of many manuscripts, abstracts and book chapters about a variety of subjects, including restorative materials for children and other work related to biomaterials. His current research interests include the development of dental caries prevention programs using risk assessment models.
Jason Chang, DDS, is dental provider at Odessa Brown Children’s Clinic in Seattle and part-time faculty member at the University of Washington School of Dentistry in the Department of Restorative Dentistry. Chang earned his DDS at the University of Detroit Mercy. He completed a general practice residency at the University of Texas in San Antonio and an advanced dental practice residency at the University of Washington. He spends most of his clinical time in private practice in Everett, Wash., treating patients of all ages. His interests are in advanced restorative techniques and dental materials. He is a fellow of the Academy of General Dentistry.

Christopher Delecki, DDS, MPH, MBA, is chief of the dental program at Odessa Brown Children's Clinic in Seattle and a faculty member at the University of Washington School of Dentistry in the Departments of Pediatric Dentistry and Restorative Dentistry. Delecki earned his DDS and MPH at the University of Michigan. His received his MBA from City University in Bellevue, Wash. As a commissioned officer in the United States Public Health Service, he received many honors and awards, including the Surgeon General's Outstanding Service Medal. He has provided dental treatment, program management, consultation and preventive dental services on numerous Indian reservations throughout the western United States. He currently serves as the National Oral Health Consultant for American Indian and Alaska Native Head Start Programs. His professional interests include preventive dental care and community-based oral health promotion and policy initiatives for children and families in Washington. A member of the Washington State Oral Health Coalition and the Washington State Dental Association, Delecki is working to ensure access to dental care for all children in Washington. In April 2008, he was elected president of the Seattle–King County Dental Society.

Mark A. Egbert, DDS, is chief of the Division of Oral and Maxillofacial Surgery (OMS) at Seattle Children’s Hospital and associate professor in the Department of Oral and Maxillofacial Surgery at the University of Washington School of Dentistry. He served as chief of OMS trauma services and chair of the dental department at Harborview Medical Center for 12 years. Egbert received his dental and OMS training at the University of Washington and spent one year studying OMS at the Gemeente Ziekenhuis, Arnhem, Netherlands. His particular interests include the biological basis of facial growth and development, the management of cleft lip and palate, applications of distraction osteogenesis in the correction of facial anomalies and the treatment of pediatric oral and maxillofacial pathology. Egbert serves on numerous review boards for journals, including the International Journal of Oral and Maxillofacial Surgery, the American Journal of OMS and Triple O. His professional society memberships include the AAOMS and ACPA, and he has served as president of the Western Society of OMS and the Washington State Society of OMS. He chairs and serves on committees of the American Association of OMS. He has served on the examining committee of the American Board of Oral and Maxillofacial Surgery.

Geoffrey M. Greenlee, DDS, MSD, is attending dentist at Odessa Brown Children's Clinic and clinical assistant professor in the Department of Orthodontics at the University of Washington School of Dentistry. Greenlee was a senior fellow in the Department of Dental Public Health Sciences from 2005 to 2008. He is currently director of predoctoral orthodontics at the School of Dentistry, where he teaches and/or directs a number of graduate-level courses. Greenlee earned his DDS at the University of Michigan and received his MSD and certificate in orthodontics from the University of Washington. He completed a fellowship in cleft lip and
Dental Medicine

palate and craniofacial anomalies at Seattle Children’s Hospital in 2001 and is finishing a public health degree in epidemiology. Greenlee is involved with a clinical trial looking at the impact of early orthodontic treatment in Medicaid children, and he regularly mentors graduate students on thesis research projects.

James A. Howard, DDS, is chief of the Temporomandibular Joint Dysfunction Clinic in the Department of Dental Medicine at Seattle Children’s Hospital. Howard earned his DDS from the University of Washington School of Dentistry and did a special research and clinical fellowship in temporomandibular dysfunction. Howard has a strong international reputation in the management of temporomandibular dysfunction. He has published numerous scientific papers and lectures widely. He is particularly interested in the management of temporomandibular function in children with juvenile rheumatoid arthritis and in jaw problems in vocalists and musicians.

Lina Kim, DDS, is dental provider at Odessa Brown Children’s Clinic in Seattle and a faculty member in the Department of Restorative Dentistry at the University of Washington School of Dentistry. Kim earned her DDS and completed a hospital-based general practice residency at the University of Washington. Her professional interests include providing compassionate and high-quality care to all of her patients while focusing on prevention.

Cynthia L. Koudela, DDS, MSD, is pediatric orthodontist at Seattle Children’s Hospital and affiliate associate professor in the Department of Orthodontics at the University of Washington School of Dentistry. Koudela cares for children in the outpatient Dental Clinic and in the Craniofacial Center at Children’s. She received her DDS from the University of California, Los Angeles, School of Dentistry and completed postdoctoral training in orthodontics at the University of Washington School of Dentistry. Koudela attended at Rhode Island Hospital in Providence and is a diplomate of the American Board of Orthodontics. She has expertise and training in craniofacial and surgical orthodontics and oral appliance treatment for obstructive sleep apnea. Specific areas of clinical and research interest include nasoalveolar molding, nonsurgical correction of congenital auricular deformities and dental treatment for obstructive sleep apnea.

Seok Bee Lim, DMD, is attending dentist at Odessa Brown Children’s Clinic and is on the clinical faculty of the Department of Pediatric Dentistry at the University of Washington School of Dentistry. Lim earned her DMD at Harvard University School of Dental Medicine and received training in hospital dentistry through the general practice residency at the University of Washington. She also holds a certificate in management from the University of Washington’s Foster School of Business. Lim provides direct patient care and mentors residents at the University of Washington.

Jeffrey B. Marks, DDS, is clinical assistant professor in the Department of Dental Medicine at Seattle Children’s Hospital and holds an affiliate faculty appointment in the Department of Pediatric Dentistry at the University of Washington School of Dentistry. Marks supervises postgraduate anesthesia and sedation training at Odessa Brown Children’s Clinic. He served as a residency coordinator in the Division of Pediatric Dentistry at Primary Children’s Medical Center in Salt Lake City. Marks has lectured to many groups, including the United States Turner Syndrome Society. He has submitted his research on the effects of myelomeningocele on intracranial structures to the Journal of Child Neurology and presented the results to the International Association of Dental Research. His current clinical and research interests include craniofacial anomalies, special needs, dental trauma/emergency care and anticipatory guidance for infants and toddlers. He has private practices in the Ballard and Magnolia neighborhoods of Seattle.

M. Lena Omnell, DDS, MSD, retired as chief of orthodontics at Seattle Children’s Hospital in December 2006. She is affiliate professor in the Department of Orthodontics at the University of Washington School of Dentistry. She received dental and orthodontic specialty training in Lund/Malmö, Sweden, and worked as regional chief orthodontist for nine years for the Trellborg District in Sweden. Omnell did research on growth and development at the National Institute of Dental Research in Bethesda, Md., and received her MSD in Washington state. She is involved in team care of children with craniofacial anomalies and provides orthodontic care to children at Odessa Brown Children’s Clinic. Her main research interests are access to orthodontic care and growth and development in children with craniofacial anomalies. She has presented at national and international meetings and authored and co-authored
many articles on these topics in peer-reviewed publications. Omnell is listed in “Best of the U.S.”; she has been involved in the Washington State Society of Orthodontists and serves on the review board for the *American Journal of Orthodontics and Dentofacial Orthopedics* and the *Cleft Palate–Craniofacial Journal.*

**Andrea M. Pearson, DDS,** is dentist at Odessa Brown Children's Clinic and affiliate faculty member at the University of Washington School of Dentistry. She earned her DDS with honors from the University of the Pacific School of Dentistry in San Francisco. She completed a general practice residency at the University of Washington and became certified in intravenous conscious sedation and advanced cardiac life support. Her clinical duties at Odessa Brown Children's Clinic include infant, toddler and adolescent dentistry and dental resident supervision. Pearson is a member of the American Dental Association, Washington State Dental Association, Seattle–King County Dental Society, American Academy of Cosmetic Dentistry and Academy of General Dentistry. She has published several articles advising predental students in national newsletters and has served on committees to help young dentists. Her interests in dentistry include pediatrics, oral surgery and sedation dentistry.

**Donna J. Quinby, DMD, MSD,** is staff dentist at Seattle Children’s Hospital and affiliate clinical assistant professor in the Department of Pediatric Dentistry at the University of Washington School of Dentistry. Quinby graduated from the New Jersey Dental School, University of Medicine and Dentistry of New Jersey. She completed a residency in hospital dentistry at the University of Washington Medical Center. She earned a certificate in pediatric dentistry and her MSD from the University of Washington School of Dentistry. She is board certified in pediatric dentistry. Quinby has interests and expertise in the dental management of children with complex medical problems and is a member of the regional hemophilia team.

**Mark M. Schubert, DDS, MSD,** is attending dentist at Seattle Children's Hospital and professor in the Department of Oral Medicine at the University of Washington School of Dentistry. He has an adjunct appointment in the Department of Otolaryngology–Head and Neck Surgery at the University of Washington Medical Center and is an associate member in the clinical division at Fred Hutchinson Cancer Research Center. He is director of oral medicine at the Seattle Cancer Care Alliance and clinical director of the University of Washington’s undergraduate Dental Education for the Care of the Disabled Program. Schubert received his DDS from the University of Washington and completed a hospital dental residency at the University of Washington Medical Center. He is a diplomate of the American Board of Oral Medicine and has published more than 85 articles and numerous book chapters on oral complications of cancer and cancer therapy. He was a founder of the International Society for Oral Oncology and has served as its vice president and president. He is actively involved with the Multinational Association for Supportive Care in Cancer and is dental director for the Northwest AIDS Education and Training program. He has lectured internationally on oral cancer, HIV/AIDS and general oral medicine. He has served on mucositis advisory boards and as principal investigator on mucositis research.

**Barbara L. Sheller, DDS, MSD,** is attending pediatric dentist and orthodontist at Seattle Children's Hospital and affiliate professor in the departments of Pediatric Dentistry and Orthodontics at the University of Washington School of Dentistry. She directs dental education and resident training at Children's. Sheller received her DDS and MSD in orthodontics from the University of Washington and a certificate in pediatric dentistry from Children’s. Her clinical and research interests include oral health of children with special health care needs and dental emergencies. She is a diplomate of the American Board of Pediatric Dentistry and fellow of the American College of Dentists. Sheller is past president of the Washington State Society of Pediatric Dentistry. On a national level, sponsoring organizations for her educational presentations include the American Association of Orthodontists, the American Academy of Pediatric Dentistry, the California Dental Association Foundation and the California Dental Association. Sheller is a reviewer for many journals, including *American Journal of Orthodontics and Dentofacial Orthopedics, International Journal of Pediatric Dentistry, Acta Odontologica Scandinavica, Pediatric Dentistry* and *Journal of Dentistry for Children.*

**Dennis I. Sipher, DDS,** is pediatric dentist in the Department of Dental Medicine at Seattle Children's Hospital. His clinical interests include sedation in pediatric dentistry and the dental management of children with ectodermal dysplasia. He is a diplomate...
of the American Board of Pediatric Dentistry and past president of the Washington State Academy of Pediatric Dentistry.

Terry M. Thomas, DDS, is chief of periodontics at Seattle Children’s Hospital. Thomas earned his DDS at Loyola University Chicago, specialized in periodontics at Boston University and completed an internship at the University of Washington Medical Center. He was associate at Children’s Hospital in Denver. He is an active member in the Academy of Osseointegration, the American Academy of Periodontology, the American Dental Association and the Seattle–King County Dental Society.

Bryan J. Williams, DDS, MSD, MEd, is pediatric dentist and orthodontist in the Department of Dental Medicine at Seattle Children’s Hospital and staff orthodontist for the craniofacial team. He is affiliate professor at the University of Washington School of Dentistry in the Departments of Pediatric Dentistry and Orthodontics. Williams received his dental training at the University of Western Ontario and received specialty training and his MSD and MEd from the University of Washington. He is a diplomate of both the American Board of Orthodontics and the American Board of Pediatric Dentistry. He lectures internationally on pediatric behavior management, emergency management, cleft palate, craniofacial anomalies and the care of children with complex medical and developmental problems. His professional interests include dental care for children with complex medical problems, management of dentoalveolar trauma and orthodontic management of children with cleft palate and other craniofacial anomalies.

Yoo-Lee Yea, DDS, MPH, is dental provider at Odessa Brown Children’s Clinic in Seattle. Yea earned her DDS at the University of Michigan, Ann Arbor, and completed a pediatric dentistry residency with a public health degree at the University of Washington. Her professional interests include providing compassionate and high-quality care to all of her patients and risk assessment of early childhood caries.

Lisa H. Zimberg, DMD, is staff dentist at Seattle Children’s Hospital and instructor at the University of Washington School of Dentistry. She earned her DMD at Boston University School of Dentistry and completed her residency at Columbia-Presbyterian Hospital in New York. She taught dental students and residents at Columbia College of Dentistry and Oral Surgery in New York. Zimberg is a member of the American Dental Association, Washington State Dental Association and Seattle–King County Dental Society.

TEACHING AND PRESENTATIONS

Joel H. Berg, DDS, MS


Geoffrey M. Greenlee, DDS, MSD

Barbara L. Sheller, DDS, MSD


PUBLICATIONS


The laboratory is staffed by 12 University of Washington faculty members and more than 120 additional staff. In addition, the laboratory administers an extensive point-of-care testing program in the hospital and clinics and for ground and air transport. The laboratories are accredited by the College of American Pathologists. Advanced instrumentation is interfaced to the electronic medical record, and we use techniques established by the Toyota Production System.

All organ subspecialties are covered in anatomic pathology with a broad spectrum of techniques, including histopathology, immunoproteomics and electron microscopy. Technicians complement workups in holistic fashion using in-house flow cytometry, cytogenetics, DNA arrays and molecular pathology investigations. A strong analytical chemistry laboratory includes a regional biochemical genetics section. We continue to move microbiology from conventional culture techniques to more-sensitive and more-rapid molecular assays, both for patient care and for research through the National Cystic Fibrosis Reference Microbiology Laboratory.

Our major improvements in quality are achieved by employing Lean processing through the hospital’s Continuous Performance Improvement program. This year those efforts have been targeted to microbiology.

The Department of Laboratory Medicine/Pathology is a comprehensive analytical facility serving outpatients, inpatients and regional programs and providing testing to more than 175 institutions in the country. We performed more than 900,000 clinical laboratory tests, examined 6,000 surgical specimens, interpreted 600 bone marrow examinations and performed more than 100 autopsies as part of the quality control on medical care at Seattle Children’s Hospital and for regional perinatal and neonatal programs.

**FACULTY**

Joe C. Rutledge, MD, Director
Laura S. Finn, MD
Sihoun Hahn, MD, PhD
Rhona M. Jack, PhD
Raj P. Kapur, MD, PhD
Kent E. Opheim, PhD
Kathleen Patterson, MD
Xuan Qin, PhD
Joseph R. Siebert, PhD
Karen Tsuchiya, MD
Min Xu, MD, PhD

**PROFESSIONAL PROFILES**

**Joe C. Rutledge, MD,** is medical director of the Department of Laboratory Medicine/Pathology at Seattle Children’s Hospital and professor in the Department of Laboratory Medicine at the University of Washington School of Medicine. Rutledge participates in all aspects of the clinical laboratory but spends most of his time in the area of clinical pathology. His research interest in early mammalian development and teratology has been supplanted by research in the area of laboratory operations and the Toyota Production System. He is former president of the Society for Pediatric Pathology, and he and members of his department continue to have major leadership roles in that professional organization. He is a consultant to the National Toxicology Program, CHILDx, the FDA and various medical centers in China and serves on several editorial boards. He is a member of many national organizations.
Laura S. Finn, MD, is staff pathologist at Seattle Children’s Hospital and associate professor in the Department of Pathology at the University of Washington School of Medicine. In addition to general surgical pathology, Finn has a special interest in pediatric renal pathology. Finn has a background in solid organ transplant pathology and serves as the liaison to transplant teams at Children’s. She directs the flow cytometry laboratory, which provides a wide range of diagnostic testing in immunodeficiency and hematopoietic disorders. She serves as education coordinator for the Department of Laboratory Medicine/Pathology and is director of the pediatric pathology fellowship program.

Sihoun Hahn, MD, PhD, joined the faculty at the University of Washington and Seattle Children’s Hospital as professor in the Department of Pediatrics, head of the Biochemical Genetics Program and director of the Biochemical and Molecular Genetics Laboratory. Hahn recently moved from the Mayo Clinic in Rochester, Minn. After receiving his MD/PhD from Korea University College of Medicine in Seoul, Korea, he enrolled in a medical genetics fellowship at the National Institutes of Health, Bethesda, Md., where he was the recipient of a National Research Service Award Fellowship. He is board certified in pediatrics and medical genetics. Hahn’s research has focused on copper metabolism, population screening for Wilson disease and mitochondrial disease. His work focused on developing a test for Wilson disease, a genetic disease in which the body cannot excrete copper properly, leading to its accumulation in various organs including the liver and brain. He serves as a member of the medical advisory committee of the Wilson’s Disease Association. Other research focuses on mitochondrial diseases and peptide fingerprinting analysis by tandem mass spectrometry for various disorders. He serves on the newborn screening advisory committee for Washington state. He hopes to improve clinical practice through integrated laboratory testing — true translational research — and remains a great believer in prevention.

Rhona M. Jack, PhD, is director of chemistry and co-director of the biochemical genetics lab at Seattle Children’s Hospital and clinical associate professor in the Department of Laboratory Medicine at the University of Washington School of Medicine. Jack’s teaching responsibilities include the university medical technology program, postdoctoral clinical chemistry fellowship program and medical students. She is co-director of the clinical chemistry training program in laboratory medicine. Her clinical interests include newborn screening, diagnosis and follow-up of children with genetic metabolic diseases, and lysosomal storage diseases.

Raj P. Kapur, MD, PhD, is staff pathologist at Seattle Children’s Hospital and professor in the Department of Pathology at the University of Washington School of Medicine. He co-directs the Fetal Pathology Service at Children’s, which serves as a diagnostic reference laboratory to multiple hospitals throughout Washington state. He has authored numerous papers related to pathology of the fetus and infant and is an associate editor of Potter’s Pathology of the Fetus, Infant and Child, the authoritative text on this topic. Kapur is an international authority on the pathology of pediatric intestinal dysmotility and has been the principal investigator for a research program related to murine models of Hirschsprung disease and other forms of intestinal pseudo-obstruction. Kapur’s primary research interests involve the molecular and cellular events that underlie normal and abnormal development of the intestinal nervous system. His laboratory pioneered some of the first transgenic mouse models for manipulating gene expression in enteric neural precursors, and his most recent work concerns immunohistochemical approaches to the diagnosis of Hirschsprung disease in humans. Kapur is council member for the Society for Pediatric Pathology and associate editor for Pediatric and Developmental Pathology.
Kent E. Opheim, PhD, is clinical cytogeneticist at Seattle Children’s Hospital and associate professor in the Department of Laboratory Medicine at the University of Washington School of Medicine. He is board certified in clinical chemistry and in clinical cytogenetics, and he is co-director of the clinical cytogenetics laboratory at Children’s. His clinical interests include molecular cytogenetic testing and translational research related to new molecular diagnostic testing, such as microarrays.

Kathleen Patterson, MD, is director of anatomic pathology at Seattle Children’s Hospital and associate professor at the University of Washington. Her clinical duties encompass the full range of anatomic pathology, including surgical and autopsy pathology, with special interests in neuromuscular disorder, pediatric cardiovascular disease and pediatric tumors. Patterson serves as chair of the hospital Tissue Committee and as pathology representation on the Cancer Committee, for which she chairs a subcommittee overseeing the use of tissue for cancer research purposes. She also oversees the pathology aspects of the many ongoing Children’s Oncology Group (COG) research studies at Children’s and actively participates in the review of lung biopsy material with ChILD, a national consortium studying interstitial lung disease in children. Her teaching activities at Children’s center on training University of Washington pathology residents and the Children’s pediatric pathology fellow. She is an active member of the Society for Pediatric Pathology; she chairs the Publications Committee, which oversees publication of the journal *Pediatric and Developmental Pathology*. Patterson is also interested in teaching pediatric pathology internationally, for which she has spent time in Bulgaria and Romania.

Xuan Qin, PhD, is director of the Microbiology Laboratory at Seattle Children’s Hospital and assistant professor in the Department of Laboratory Medicine at the University of Washington School of Medicine. She serves as microbiology consultant to the core laboratory for cystic fibrosis microbiology, Cystic Fibrosis Therapeutic Development Network. She is a member of the faculty of the university postdoctoral training program in medical and public health laboratory microbiology and of Children’s Infection Control Committee. She is also microbiology laboratory adviser to the infectious disease fellowship program in the Department of Pediatrics at the University of Washington School of Medicine. Her teaching and research interests include molecular diagnosis of infectious diseases, antimicrobial drug resistance and laboratory quality assurance.

Joseph R. Siebert, PhD, is program director of autopsy services at Seattle Children’s Hospital. His chief clinical teaching responsibility is training pathology residents and fellows at autopsy, introducing them to a wide variety of fetal and pediatric autopsy techniques and relevant literature. This orientation may also involve laboratory and other technologists, medical students and pediatrics residents and fellows. His research interests center around congenital malformations, particularly of the craniofacial complex.

Karen Tsuchiya, MD, is co-director of cytogenetics and molecular diagnostics at Seattle Children’s Hospital, assistant professor in the Department of Laboratory Medicine at the University of Washington School of Medicine and staff scientist at the Fred Hutchinson Cancer Research Center. Her clinical interests include cytogenetics and molecular diagnostics of pediatric neoplasms. She is a member of the College of American Pathologists Cytogenetic Resource Committee. Tsuchiya’s primary research interest lies in the characterization of chromosome and molecular abnormalities in neoplasia. She is studying genomic abnormalities in mouse models of prostate cancer.

Min Xu, MD, PhD, is staff clinical pathologist and director of core laboratory in the Department of Laboratory Medicine/Pathology at Seattle Children’s Hospital and assistant professor in the Department of Laboratory Medicine at the University of Washington School of Medicine. She is board certified in clinical pathology. Her clinical interests include hematopathology, coagulation, chemistry and immunoassays. She serves as a voting member of the Pediatric Clinical Research Committee.
Awards and Honors

Joseph R. Siebert, PhD
Academic Enrichment Fund. Children’s Hospital.
August 2007.

Research Funding

Continuing
Rhoda Morrow
Clinical epidemiology and pathogenesis of asymptomatic HSV: core B — lab core. NIH/DHHS. $70,079.

Herpevac trial for women. NIAID/NIH/DHHS. $91,707.

Teaching and Presentations

Joseph R. Siebert, PhD


Fetal Pathology Conference. Evergreen Hospital and Medical Center. Kirkland, Wash. Monthly.

Xuan Qin, PhD

Karen Tsuchiya, MD

Publications


The Division of Neurology provides outpatient and inpatient consultation and management services for patients with a variety of neurologic, neuromuscular and neurodevelopmental disorders. Infants, children and adolescents with epilepsy, movement disorders, cerebral palsy, developmental delay, headache, muscular dystrophy, mitochondrial cytopathies and other disorders of the nervous system are evaluated by faculty pediatric neurologists who are certified by the American Board of Psychiatry and Neurology. Patients are also evaluated and managed by pediatric neurology midlevel providers (pediatric nurse practitioners and physician assistants). The clinical program is supported by pediatric neurology nurses, dietitians, neuropsychologists and social workers.

The division operates regular clinics at Seattle Children's Hospital and its regional satellites, and pediatric neurology providers participate in outreach programs in central Washington and Alaska. Faculty members provide inpatient consultation for patients admitted to Seattle Children's and to the intensive care nursery at the University of Washington Medical Center. The division admits children to Seattle Children's for evaluation of complex neurologic disorders and administers an inpatient video-EEG telemetry unit when children are admitted for intensive monitoring of epilepsy and other paroxysmal disorders.

The Division of Neurology partners with several other programs at Children's to provide multispecialty care. Together with the Division of Neurosurgery, the Division of Neurology operates the only comprehensive pediatric epilepsy program within the WWAMI region (Washington, Wyoming, Alaska, Montana, Idaho). Management of children in the program may include epilepsy surgery, the ketogenic diet, use of the vagus nerve stimulator and participation in trials of new anticonvulsant medications. A monthly diagnostic neurogenetics clinic is conducted with the Division of Genetics and Developmental Medicine.

The department has growing basic neuroscience and clinical research programs at Children's and the University of Washington. Faculty research interests include the physiology of motor control, disorders of white matter, basic cellular mechanisms of epileptogenesis, neurotoxicology, mitochondrial cytopathies, infantile spasms, pyridoxine-dependent seizures and risk factors of neonatal encephalopathy.

Children’s is the primary teaching site for the University of Washington residency training program in pediatric neurology, a nationally recognized program that has trained more than 40 pediatric neurologists. Several program alumni hold faculty positions at schools of medicine throughout the country and care for patients at other children’s hospitals, including facilities in St. Louis, Cincinnati, Kansas City and Stanford.

### Faculty

Sidney M. Gospe Jr., MD, PhD, Chief  
Nigel S. Bamford, MD  
Heidi K. Blume, MD, MPH  
Anthony A. Bouldin, MD  
Raymond Ferri, MD, PhD  
Laura A. Jansen, MD, PhD  
John Kuratani, MD  
Lauren L. Plawner, MD  
Russell P. Saneto, DO, PhD  
Hillary Shurtleff, PhD, ABPP/CN  
Ednea Simon, MD  
Mary H. Warner, PhD

### Professional Profiles

**Sidney M. Gospe Jr., MD, PhD**, is chief of the Division of Neurology at Seattle Children’s Hospital. Gospe is professor in the departments of Neurology and Pediatrics and holds the Herman and Faye Sarkowsky Endowed Chair in Child Neurology at the University of Washington School of Medicine. Gospe has been at Children’s since 2000 and previously was on the faculty at the University of California, Davis, for 13 years. He received his MD and PhD from Duke University and trained in pediatrics and pediatric neurology at Baylor College of Medicine in Houston. Gospe’s clinical interests include general pediatric neurology and pediatric neuromuscular disorders. His research concerns the
Neurology

This year, we are opening a new neurology subspecialty clinic to address pediatric multiple sclerosis. Until now, patients diagnosed with MS at Children’s were sent to adult neurologists for follow-up care. Now, our patients and families will receive comprehensive pediatric care in collaboration with the Western Multiple Sclerosis Center at the University of Washington Medical Center.

effects of maternal exposures to toxicants on the neurological development of their offspring, as well as the clinical and genetic aspects of pyridoxine-dependent seizures. At Children’s, he directs the division’s clinical and teaching programs, including the University of Washington residency training program in pediatric neurology. Gospe is a member of the American Board of Pediatrics, an examiner and vignette committee member for the American Board of Psychiatry and Neurology and a member of the editorial board of the journal Pediatric Neurology.

Nigel S. Bamford, MD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Neurology and adjunct assistant professor in the departments of Pediatrics and Psychology at the University of Washington School of Medicine. Bamford received his doctoral degree from the University of Utah and trained in pediatrics and neurology at Columbia College of Physicians and Surgeons in New York. He treats patients with movement disorders and other neurological disabilities at Children’s and seeks answers to their problems in the laboratory. His research focuses on synaptic plasticity in the mammalian basal ganglia. This brain region plays an important role in behavior, voluntary movement, learning and memory; its dysfunction is thought to produce a multitude of neuropsychological disorders, including attention deficit hyperactivity disorder, Parkinson’s and Huntington’s diseases, schizophrenia and substance dependence. Bamford serves on the University of Washington Medical School Admissions Committee and the Planning and Awards committees of the Child Neurology Society. His research is supported by R01 and K02 grants from the National Institute of Neurological Disorders and Stroke as well as funding from Children’s, the University of Washington Alcohol and Drug Abuse Institute and the Child Neurology Society.

Heidi K. Blume, MD, MPH, is attending physician at Seattle Children’s Hospital and acting assistant professor in the Division of Pediatric Neurology at the University of Washington School of Medicine. She attended Harvard Medical School and completed residencies in general pediatrics and pediatric neurology at the University of Washington. She completed a research fellowship and earned an MPH in the Robert Wood Johnson Clinical Scholars Program at the University of Washington. Her primary research interests involve the epidemiology of childhood neurological disease, and childhood headache.

Anthony A. Bouldin, MD, is an active clinician in Seattle Children’s Hospital’s inpatient and outpatient neurology programs and also provides outreach clinics in Yakima and Wenatchee, Wash. He is clinical assistant professor in the Division of Pediatric Neurology at the University of Washington School of Medicine. He received his MD from the University of Louisville and completed a pediatrics residency at Tulane University. Bouldin completed pediatric neurology fellowship training at the University of Washington. His clinical interests include general pediatric neurology and neurogenetics.

Raymond Ferri, MD, PhD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Neurology at the University of Washington School of Medicine. His clinical interests are general child neurology and inherited and acquired disorders of central nervous system myelin. Approximately half the children with abnormalities in white matter have no identifiable etiology. Ferri’s research program focuses on identifying factors that regulate the development of normal myelin. In particular, his lab is studying hemichannel function in oligodendrocyte development. Hemichannels are similar to gap junctions and allow for the passage of small molecules, such as ions and amino acids, across cell membranes. They
may play an important role in cell survival. These studies may identify targets for pharmacological treatments for disorders of myelin. Ferri has a pediatric multiple sclerosis clinic for children with this and related disorders and sees children with inherited disorders of myelin. He is also involved in resident and medical student teaching. He supervises pediatric neurology residents in the Continuity Clinic and teaches pediatric neurology residents as well as adult neurology residents, pediatrics residents and medical students rotating on the pediatric neurology service. He also lectures on neural development for a graduate student course.

Laura A. Jansen, MD, PhD, is attending physician at Seattle Children’s Hospital. She received her MD and PhD from St. Louis University School of Medicine. She completed pediatrics and pediatric neurology residencies at the Washington University School of Medicine, St. Louis. She also did a research fellowship in the Department of Clinical and Experimental Epilepsy at University College London. Areas of clinical interest include general pediatric neurology, epilepsy and migraine. Her research activities include investigation of abnormalities in ion channel function in brain specimens from children treated surgically for intractable seizures, with the goals of identifying causes of pediatric epilepsy and optimizing medical treatment of seizures.

John Kuratani, MD, is director of the pediatric EEG laboratory at Seattle Children’s Hospital and associate professor in the Department of Neurology and adjunct associate professor in the Department of Pediatrics at the University of Washington School of Medicine. His clinical interests include the management of infants, children and adolescents with epilepsy; clinical neuro-physiology involving EEG; long-term monitoring and epilepsy surgery. His research interests include epilepsy surgery outcomes and a collaborative project with colleagues from the Division of Neonatology on a treatment for perinatal asphyxia. He is actively involved in educating fellows, residents, medical students and EEG technologists on epilepsy and EEG interpretation.

Lauren L. Plawner, MD, is attending physician at Seattle Children’s Hospital and acting assistant professor in the Department of Neurology at the University of Washington School of Medicine. She obtained her MD from Yale University and trained in pediatrics and neurology at the University of California, San Francisco, and Stanford University. She is assistant program director of the University of Washington pediatric neurology residency program. She has strong academic interests in the education of residents, students and primary care providers. She is involved in writing evidence-based practice parameters and online resources to be used by primary care providers and ED physicians at the initial point of patient care. She is currently involved in a national clinical research project on the pharmacologic treatment of spasticity in children. Her clinical interests are in the natural history and radiographic features of developmental disorders of brain formation and in improvement of delivery of medical care. Plawner is a member of the Child Neurology Society and the American Academy of Neurology.

Russell P. Saneto, DO, PhD, is attending physician at Seattle Children’s Hospital and associate professor in the Department of Neurology and adjunct associate professor in the Department of Pediatrics at Children’s and the University of Washington School of Medicine. Saneto received his DO from Des Moines University in Des Moines, Iowa, and his PhD from the University of Texas Medical Branch in Galveston. He trained in pediatrics, pediatric neurology and pediatric epilepsy at the Cleveland Clinic in Cleveland, Ohio. Saneto’s clinical interests are in epilepsy — in particular, difficult-to-control epilepsy. He is involved in vagus nerve stimulation, the ketogenic diet and epilepsy surgery to control seizures. Saneto’s other interest is the diagnosis, treatment and care of patients with mitochondrial disease. He is particularly interested in patients with both mitochondrial disease and epilepsy. Saneto is board certified by the American Board of Pediatrics and the American Board of Psychiatry and Neurology. He is also on the Washington Professional Advisory Board to the Northwest Epilepsy Foundation. He serves as secretary/treasurer and on the diagnostic evaluation committee of the Mitochondrial Medicine Society. Saneto is an examiner for the American Board of EEG and EP Technologists and a member of the editorial board of the journal Pediatric Neurology.

Hillary Shurtleff, PhD, ABPP/CN, is neuropsychologist at Seattle Children’s Hospital and clinical assistant professor in the Department of Neurology at the University of Washington School of Medicine. She received her training through the University of Washington and Children’s and has more than 20 years’ experience working with children, adolescents
Ednea Simon, MD, is attending physician at Seattle Children’s Hospital and acting assistant professor in the Division of Pediatric Neurology at the University of Washington School of Medicine. She completed a pediatric neurology residency and a neurophysiology fellowship at the University of Washington. Her clinical interests include treatment and outcomes of children with infantile spasms, epilepsy surgery and functional neuroimaging investigation in patients with intractable epilepsy.

Mary H. Warner, PhD, is a board-certified neuropsychologist at Seattle Children’s Hospital and clinical assistant professor in the Department of Neurology at the University of Washington School of Medicine. She obtained her doctorate in clinical psychology from the University of Georgia and did a postgraduate fellowship in clinical neuropsychology at the University of Washington. She previously worked in comprehensive epilepsy programs at Harborview Medical Center and Swedish Medical Center in Seattle. She is the treasurer and past president of the Pacific Northwest Neuropsychological Society. Her principal interests are in the integration of the cognitive, social, emotional, educational and vocational aspects of epilepsy and other neurological disorders with children, adolescents, adults and families. She has a particular interest in neuropsychological aspects of epilepsy surgery, including lateralization and localization of language functions in the brain. She most recently presented at the American Epilepsy Society an epilepsy surgery case she has followed for 17 years.

AWARDS AND HONORS

Heidi K. Blume, MD, MPH

Russell P. Saneto, DO, PhD
Listed in America’s Top Pediatricians.
Listed in Who’s Who in Medicine and Health Care.

Ednea Simon, MD
Best Teaching Award. Division of Pediatric Neurology, Department of Neurology. University of Washington.

RESEARCH FUNDING

New
Nigel S. Bamford, MD
Dopamine-induced striatal synaptic plasticity. NINDS. $196,875.

Gestational cocaine exposure mediates long-term changes in striatal function. University of Washington Alcohol and Drug Abuse Institute. $20,000.

Russell P. Saneto, DO, PhD
A double-blind, placebo-controlled, dose-ranging clinical study to evaluate the safety, tolerability and antiepileptic activity of ganaxalone in treatment of patients with infantile spasms. Pharmaceutical Research Association. $237,405.

An open-label clinical study to evaluate the safety, tolerability and antiepileptic activity of ganaxalone in treatment of patients recently diagnosed with infantile spasms. Pharmaceutical Research Association. $134,191.
Continuing

Nigel S. Bamford, MD
Presynaptic activity of corticostriatal terminals is regulated by D2 dopamine receptors. Child Neurology Society. $20,000.

Presynaptic regulation of striatal excitation. NINDS. $179,788.

Laura A. Jansen, MD, PhD
GABA-A receptor function in pediatric focal cortical dysplasia. NINDS/NIH/DHHS. $168,291.

TEACHING AND PRESENTATIONS

Nigel S. Bamford, MD

Glutamate release in the ventral striatum is mediated by D1 and D2 receptor activity. Methamphetamine induces locomotor changes and striatal synaptic plasticity that are dependent on D1 dopamine receptors. Repeated amphetamine produces locomotor sensitization by reversing chronic corticostriatal depression. Child Neurology Society annual meeting. Québec City, Québec, Canada. October 2007.

Sidney M. Gospe Jr., MD, PhD


Pyridoxine-dependent seizures. Pediatric Grand Rounds, Chang-Gung University College of Medicine, Kwei-Shan. Taoyuan, Taiwan, R.O.C. May 22, 2007.

Russell P. Saneto, DO, PhD


PUBLICATIONS


Scarlis CA, Hanan W, **Bamford NS.** Methamphetamine induces locomotor changes and striatal synaptic plasticity that are dependent on D1 dopamine-receptors. *Ann Neurol.* 2007;62(S1):S95–S97.


Orthopedics

The Department of Orthopedics specializes in providing the highest-quality pediatric care for both general and specialized pediatric orthopedic problems to patients in the Northwest. Our sites of clinical care include Seattle Children’s Hospital and locations in Bellevue, Federal Way, Olympia and Everett as well as outreach facilities in Yakima, Wenatchee, and the Tri-Cities in Washington and in Anchorage, Alaska. Our clinical volumes have increased 50 percent in five years, and our access has decreased from one month to one week. Our quality of care has improved by patient/family surveys and has been integrated into all aspects of care with our Value Stream work at the hospital.

Our faculty includes some of the most accomplished pediatric orthopedic surgeons in North America dedicated to providing immediate access and care to all children in our region. We treat 2,000 pediatric fractures a year in addition to spinal deformities, pediatric foot and hand deformities, and musculoskeletal tumors and infections. We collaborate with our pediatric colleagues on treating complicated neuromuscular disorders, including cerebral palsy and myelomeningocele; congenital deformities; and skeletal dysplasias, including achondroplasia.

Our new pediatric sports program has developed a multidisciplinary sports service dedicated to the health care of the pediatric athlete. That service is at Children’s and in our Bellevue and Federal Way clinics. Pediatricians, rehabilitation specialists, pediatric cardiologists, trainers and sports psychologists will join our pediatric orthopedic team for managing this important patient population. We expect to establish new guidelines of care and participation for the active, growing athlete.

FACULTY
Ernest U. Conrad III, MD, Director
Cora C. Breuner, MD, MPH
Michael J. Goldberg, MD
Douglas P. Hanel, MD
Thomas Jinguiji, MD
Brian J. Krabak, MD
Wally Krongel, MD
Vincent S. Mosca, MD
Gregory Schmale, MD
Kit M. Song, MD
Theodore A. Wagner, MD
Klane K. White, MD, MS

PROFESSIONAL PROFILES

Ernest U. Conrad III, MD, is director of the Department of Orthopedics at Seattle Children’s Hospital and professor of orthopedic surgery in the Department of Orthopaedics and Sports Medicine at the University of Washington School of Medicine. He completed training at the Hospital of Special Surgery in New York City. He also completed a musculoskeletal tumor fellowship at the University of Florida and a pediatric orthopedic fellowship in Toronto. When Conrad joined Children’s Department of Orthopedics, he instituted the Division of Musculoskeletal Oncology and Transplantation; he also co-founded the Bone Tumor Clinic at Children’s. He co-founded the nonprofit Northwest Tissue Center at the Puget Sound Blood Center and serves as its medical director. Conrad’s research projects include multiple clinical studies in pediatric and adult tumors with a special interest in pediatric limb-sparing procedures, benign pediatric tumors and soft-tissue sarcomas in adults. His research interests include the metabolic imaging of sarcomas, the clinical and biologic description of hereditary multiple exostoses and the response...
Spotlight on Team Member — Patience Peale, RN, BSN

Over the last 18 months, we’ve improved clinic flow, increased access and decreased order errors. Our goal is to provide patients and families with a seamless transition from clinic to operating room to inpatient unit to home. When hiring, I now include a family member on the interview panel — a practice that instills the importance of family-centered care to all staff members.

Cora C. Breuner, MD, MPH, is a board-certified adolescent medicine specialist and board-certified pediatrician. She received her BA from Franklin and Marshall College in Lancaster, Pa., and her MD from Jefferson Medical College in Philadelphia, Pa. After completing an internship and pediatric residency at the Naval Hospital in San Diego, Calif., she came to the University of Washington, where she completed her adolescent medicine fellowship in 1993. She received her master’s degree in public health from the University of Washington in 1998; her thesis addressed complementary and alternative medicine use in homeless youth. Currently, she is associate professor in the Department of Pediatrics and director of both the outpatient Eating Disorder Program and outpatient Biofeedback Clinic. She recently became a member of the new Children’s Sports Medicine Program as director of the Integrative Medicine Program and has an additional appointment as adjunct associate professor of orthopedics. She is president of the Northwest Society of Adolescent Medicine, co-chairperson of the Work Life Balance Committee and a member of the Physician Well-being Committee. Her clinical interests include the treatment of eating disorders and obesity in the adolescent. She is also interested in alternative management and treatment of adolescents with headaches, abdominal pain and sports-related disorders. Her research interests include the evaluation of yoga as an adjunctive intervention for the patient with eating disorder and the assessment of complementary medicine usage by the pediatric patient with diabetes and musculoskeletal complaints. Her goal is to incorporate complementary and alternative medicine into both the outpatient and inpatient programs at Children’s. She has three teenage children and a black Lab and loves to sing, play the fiddle, kayak and ride her bike.

Michael J. Goldberg, MD, is consulting orthopedic surgeon at Seattle Children’s Hospital and clinical professor in the Department of Orthopaedics and Sports Medicine at the University of Washington School of Medicine. He was chairman of the Department of Orthopedics at Tufts University School of Medicine and Tufts–New England Medical Center, Boston. His clinical interests include skeletal dysplasias and orthopedic syndromes. Goldberg participates in clinics focused on bone dysplasias and orthopedic syndromes at Children’s and in outreach clinics in general pediatric orthopedics in Olympia, Federal Way, Yakima and Wenatchee, Wash. Goldberg’s research activities include orthopedic aspects of syndromes and measuring the outcomes and functional health of children with musculoskeletal conditions. He is past president of the Pediatric Orthopaedic Society of North America and past chairman of the Orthopedic Section of the American Academy of Pediatrics.

Douglas P. Hanel, MD, is chief of the Hand Clinic at Seattle Children’s Hospital, professor at the University of Washington School of Medicine and director of the orthopedic residency program. He trained in orthopedic surgery at St. Louis University and completed fellowships in hand surgery and microvascular surgery at the University of Louisville. He has completed the teaching scholars fellowship at the University of Washington. He has a predominant interest in surgery of the hand and the reconstruction of devastating limb injuries. Hanel has published more than 50 peer-reviewed articles and 13 book chapters; he is co-editor for the second edition of the textbook Harborview Orthopedic Trauma Protocols. He is principal investigator and co-investigator on two projects dealing with the outcomes of distal radius fractures. Hanel has editorial duties on The Journal of Bone and Joint Surgery, Microsurgery, Orthopedics.
Today, The American Journal of Orthopedic Surgery and Techniques in Hand and Upper Extremity Surgery. He has been honored for his teaching efforts at St. Louis University and Medical College of Wisconsin.

**Thomas Jinguji, MD**, is a pediatrician at Seattle Children’s Hospital and clinical assistant professor in the Department of Orthopaedics and Sports Medicine at the University of Washington. He earned his MD at the University of Washington and completed his residency, chief residency and sports medicine fellowship at the University of Washington. He is a fellow of the American Academy of Pediatrics. His specialty interests include sports medicine and nonoperative pediatric orthopedic care.

**Brian J. Krabak, MD**, is attending physician in orthopedics and rehabilitation medicine at Seattle Children’s Hospital; he is clinical associate professor in the Department of Orthopaedics and Sports Medicine and in the Department of Physical Medicine and Rehabilitation at the University of Washington School of Medicine. Krabak was born in New York City and attended State University of New York at Buffalo, School of Medicine. He completed his residency in physical medicine and rehabilitation at New England Medical Center Hospitals, Tufts University School of Medicine Boston, and a fellowship in sports medicine at the Mayo Clinic, Mayo Graduate School of Medicine, Rochester, Minn. He joined Johns Hopkins School of Medicine as an assistant professor of orthopedic surgery and physical medicine and rehabilitation. He also earned an MBA from Johns Hopkins University. His clinical interest is in sports medicine; his research interests include physical medicine and rehabilitation. An outdoor enthusiast, Krabak serves as the medical doctor for the Four Deserts Run each year, which takes him worldwide. He is highly sought out for his expertise in sports medicine and has been frequently interviewed.

**Wally Krengel, MD**, is clinical associate professor of orthopedic surgery and spine program chief at Seattle Children’s Hospital; he is a faculty member in the Department of Orthopaedics and Sports Medicine at the University of Washington School of Medicine. He completed an internship and residency at the University of Washington and a fellowship in spine surgery at the University of Washington associated hospitals in 1991. Krengel was previously in private practice orthopedic spine surgery with Proliance Surgeons in Bellevue, Wash. He was a previous board member of Proliance Surgeons and is the current Washington State Orthopedic Association president and a member of the Industrial Insurance Medical Advisory Committee for Washington state. Krengel is a member of the Scoliosis Research Society and North American Spine Society. His focus is on evaluation, treatment and outcomes of pediatric and adult spine problems, including deformities, arthritis and nerve compression syndromes. In the past five years, he was a principal investigator in an FDA Phase II trial of recombinant human thrombonin in spine surgery and a Phase III FDA trial on safety and effectiveness of titanium surgical mesh and pedicle screws for lumbar fusion. His current academic and administrative focus is on the development of standardized clinical outpatient and inpatient pathways and outcomes assessment for patients with spine conditions.

**Vincent S. Mosca, MD**, is pediatric orthopedic surgeon at Seattle Children’s Hospital and associate professor of orthopedics at the University of Washington School of Medicine. He completed his orthopedic surgery residency at Duke University Medical Center in North Carolina and a fellowship in pediatric orthopedics at The Hospital for Sick Children in Toronto, Ontario, Canada. Approximately 70 percent of his clinical work and most of his publications and lectures pertain to understanding and treating deformities of the child’s foot. Mosca has authored or co-authored 22 articles, 20 book chapters and four monographs. He has been an invited guest speaker in more than 60 medical centers and conferences in the United States and more than 20 internationally. He is chairman of the Education Council for the Pediatric Orthopaedic Society of North America and serves on the editorial board of the Journal of Pediatric Orthopaedics (United States) and the Journal of Children’s Orthopaedics (Europe). He is listed in 12 national and international Who’s Who directories and has been listed in The Best Doctors in America since 1996. Mosca was director of the Department of Orthopedics at Children’s and chief of pediatric orthopedics at the University of Washington School of Medicine for 13 years. He maintains a very busy clinical practice.

**Gregory Schmale, MD**, is program director of orthopedics medical education at Seattle Children’s Hospital and assistant professor in the Department of Orthopaedics and Sports Medicine at the University of Washington School of Medicine. He earned his MD at the University
of Washington and completed fellowship training in the Department of Orthopedics at Children's and the University of Colorado Health Sciences Center. His clinical interests include general pediatric orthopedics and sports medicine. His research activities include anterior cruciate ligament reconstruction in the skeletally immature. He mentors medical students at the University of Washington.

Kit M. Song, MD, is assistant director of pediatric orthopedic surgery, acting head of spine surgery and head of the brachial plexus injury clinic at Seattle Children's Hospital; he is associate professor of orthopedic surgery at the University of Washington School of Medicine. He completed his fellowship training in pediatric orthopedics at Texas Scottish Rite Hospital and was a member of the hospital staff there for three years. He is a member of the American Orthopaedic Association. His clinical interests include pediatric spinal deformities with an emphasis on infantile deformities, musculoskeletal problems in children with neuromuscular disease, osteogenesis imperfecta, arthrogryposis and hip problems. His research includes bone and joint infections, functional activity of typically developing and disabled children, spinal cord monitoring for scoliosis surgery, vertical expandable prosthetic titanium rib (VEPTR) for the treatment of thoracic dysplasia and Legg-Calvé-Perthes disease in children.

Theodore A. Wagner, MD, is attending physician at Seattle Children's Hospital; he is clinical professor of spine surgery and joint clinical professor of neurosurgery at the University of Washington School of Medicine. He completed a residency at the University of Washington and a fellowship in spine surgery in Hong Kong. He has directed the orthopedic physician associates spine fellowship and is a member of the International Scoliosis Research Society. Wagner's special interests have been in spinal deformity and in establishing physician exchange programs with the developing world. The focus of his clinical energies is spinal deformity resulting from fracture, tumor and adolescent deformities of kyphosis and scoliosis.

Klane K. White, MD, MS, is pediatric orthopedic surgeon at Seattle Children's Hospital and assistant professor in the Department of Orthopaedics and Sports Medicine at the University of Washington School of Medicine. He also sees patients at Children's Bellevue Orthopedics Clinic. He earned his MD from George Washington University School of Medicine in Washington, D.C., and his MS in biological oceanography from the University of Southern California. He completed a general surgery internship and a residency in orthopedic surgery and served as an NIH fellow at the University of California, San Diego. He completed a fellowship in pediatric orthopedics and scoliosis at Texas Scottish Rite Hospital for Children in Dallas. His specialty interests include the treatment of pediatric hip disease, scoliosis–spinal deformity and skeletal dysplasias. White is a member of the Pediatric Orthopaedic Society of North America, Washington State Medical Association and King County Medical Society. He is active in orthopedics research and has published in clinical pediatric orthopedics and spine biomechanics.

**AWARDS AND HONORS**

Cora C. Breuner, MD, MPH
Listed in “Top Doctors.” Seattle Metropolitan magazine.

Michael J. Goldberg, MD
Honorary membership. Società Italiana di Ortopedia e Traumatologica Pediatrica.

Brian J. Krabak, MD
High Performance Award. USA Swimming.
Listed in “Best Doctors in America.”
Listed in Who’s Who in America.

Vincent S. Mosca, MD
Listed in “Best Doctors in America.”
Listed in “Top Doctors.” Seattle magazine.
Listed in “Top Doctors.” Seattle Metropolitan magazine.
Outstanding Physician. Puget Sound Consumers’ Checkbook.

Kit Song, MD
Listed in “Best Doctors in America.”
Listed in “Top Doctors.” Seattle magazine.
TEACHING AND PRESENTATIONS

Cora C. Breuner, MD, MPH


Michael J. Goldberg, MD


Thomas Jinguji, MD

Vincent S. Mosca, MD


Brian J. Krabak, MD


**Gregory Schmale, MD**


**Kit Song, MD**


**Klane K. White, MD, MS**


**PUBLICATIONS**


The Department of Psychiatry and Behavioral Medicine provides a continuum of behavioral health services including inpatient, outpatient and hospital and community consultations for youth with a wide spectrum of developmental, psychiatric and behavioral problems.

The programs at Seattle Children’s Hospital are in the top tier of pediatric behavioral sciences services in the country and are recognized as a national and regional resource. Children’s leads in areas including mood disorders, autism spectrum disorders, coexisting medical and psychiatric illness, early-onset psychosis and remote consultation using telemedicine links. Research is particularly active in psychiatric genetics, developmental psychopathology and health services related to understanding the origins, course and treatment of mental illness in children and adolescents.

In conjunction with the University of Washington Department of Psychiatry and Behavioral Sciences, Children’s is a center of clinical training, research and pediatric mental health care for the WAMI region (Washington, Alaska, Montana, Idaho).

The Department of Psychiatry and Behavioral Medicine at Children’s is proud of its tradition as a leader in advancing knowledge of the origins and treatment of mental illnesses in youth, training clinician scientists and improving access to care. We are committed to growing these efforts to reach the increasing numbers of children and families in need.

**FACULTY**

Bryan H. King, MD, Director
David Breiger, PhD
Zoran Brkanac, MD
Rosemary Calderon, PhD
L. Lee Carlisle, MD
Brent R. Collett, PhD
Cynthia A. Flynn, PhD
Amy J. Henry, MD
Robert Hilt, MD
Stefanie A. Hlastala, PhD
Ray Hsiao, MD
Jeffrey P. Kaiser, MD
Jon S. Kuniyoshi, MD
Elizabeth A. McCaulay, PhD, ABPP
Jon M. McClellan, MD
Kathleen M. Myers, MD, MPH, MS
Heather Carmichael Olson, PhD
Carol M. Rockhill, MD, PhD, MPH
Kelly A. Schloredt, PhD
Matthew L. Speltz, PhD
Michael G. Storch, MD
Stephen I. Sulzbacher, PhD
Ann Vander Stoep, PhD
Christopher K. Varley, MD
William M. Womack, MD

**PROFESSIONAL PROFILES**

**Bryan H. King, MD**, is director of the Department of Psychiatry and Behavioral Medicine at Seattle Children’s Hospital and professor and vice chair in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. He joined the university from Dartmouth Medical School, where he served as medical director for New Hampshire’s Division of Developmental Services. King’s clinical and research interests focus on psychiatric aspects of developmental disorders and on severe behavioral disturbances, particularly in autism. He chairs a multisite clinical trial by the National Institutes of Health (Studies to Advance Autism Research and Treatment) examining an antidepressant medication in treatment of children with autism who have significant problems with repetitive behaviors — the largest study of its kind ever conducted. King has received lifetime achievement awards from the American Academy of Child and Adolescent Psychiatry and the American Psychiatric Association for his work in developmental and intellectual disabilities.
David Breiger, PhD, is clinical program director of the Neuropsychological Assessment Service at Seattle Children’s Hospital and clinical associate professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. Children’s Neuropsychological Assessment Service evaluates children and adolescents with medical, neurological, psychological and genetic conditions that affect development, and it provides inpatient and outpatient neuropsychological assessments. Breiger’s interests include neuropsychological outcomes of children with brain tumors, neuropsychological and psychosocial adjustment of long-term survivors of acute lymphocytic leukemia, neuropsychological functioning in children with thought disorders or chronic fatigue syndrome and the cultural context and understanding of autism. He supervises psychology residents at the university and postdoctoral fellows in pediatric neuropsychology; he also lectures psychiatry fellows and pediatrics residents and teaches graduate courses in the Department of Psychology at the University of Washington School of Medicine. Breiger has served as president of the Pacific Northwest Neuropsychological Society.

Zoran Brkanac, MD, is attending psychiatrist at Seattle Children’s Hospital and assistant professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. He is board certified in adult and child and adolescent psychiatry. His research interests include behavioral genetics and the genetics of dyslexia.

Rosemary Calderon, PhD, is attending psychologist at Seattle Children’s Hospital and associate professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. She is clinical director for the Eating Disorders Service in psychiatry and clinical director for Psychiatric Services for the Deaf and Hard of Hearing Program. She is also an attending psychologist on the Inpatient Psychiatric Unit. Her clinical interests include long-term outcomes for adolescents with eating disorders (anorexia nervosa, bulimia nervosa). Calderon is adjunct associate professor in the Department of Otolaryngology-Head and Neck Surgery and a research affiliate in the university’s Center on Human Development and Disability and in the Virginia Merrill Bloedel Hearing Research Center. Calderon is also coordinator of child clinical-track training of the University of Washington psychology internship training program. Calderon lectures regularly to general psychiatry residents, child psychiatry fellows, clinical psychology graduate students and local professionals on the diagnosis and treatment of eating disorders in adolescents.

L. Lee Carlisle, MD, is assistant professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine and attending psychiatrist at Seattle Children’s Hospital. She is a consultant to the Foster Care Assessment Program at Harborview Medical Center and has served for the past four years on the University of Washington School of Medicine Admissions Committee. Carlisle is a member of the Autism and Intellectual Disability Committee and the Diversity and Culture Committee of the American Academy of Child and Adolescent Psychiatry. Her clinical interests include child abuse, post-traumatic stress disorder, pervasive developmental disorders, psychopathology in early childhood and metabolic effects of atypical antipsychotics.

Brent R. Collett, PhD, is attending psychologist at Seattle Children’s Hospital and acting assistant professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. Working in Children’s Early Childhood Clinic, he is involved in evaluation and treatment of children from birth to age 5 and their families, particularly children who have complex medical conditions (e.g., craniofacial
anomalies) in addition to developmental, behavioral or psychiatric problems. His research is primarily in the area of pediatric psychology and includes studies of children with craniofacial anomalies and survivors of childhood cancer. Collett also maintains an active research interest in the developmental psychopathology of disruptive behavior disorders. His teaching activities include supervision of child psychiatry fellows and psychology interns in the Early Childhood Clinic and didactic teaching related to early-onset behavior problems and normative preschool-age development.

Cynthia A. Flynn, PhD, is attending psychologist at Seattle Children's Hospital and acting assistant professor at the University of Washington School of Medicine. She earned her doctoral degree at Vanderbilt University in Nashville, Tenn. She completed her clinical residency through the University of Washington and a postdoctoral fellowship at Children's. Flynn's clinical interests include treatment of child and adolescent suicidality, depressive disorders, eating disorders and disruptive behavioral problems. She conducts research investigating the etiology and treatment of depression and the assessment and treatment of adolescent suicidal ideation and behavior. Her work includes collaboration with school-based mental-health programs to advance use of empirically based treatments in these settings.

Amy J. Henry, MD, is attending psychiatrist at Seattle Children's Hospital and acting assistant professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. At Children's she directs a clinical team in the Inpatient Psychiatry Unit and is medical director of the outpatient psychiatry clinic. She supervises child and adolescent psychiatry residents, general psychiatry residents and medical students, both on the Inpatient Psychiatry Unit and through the outpatient clinic. Henry also provides clinical care and supervises residents at community psychiatry sites, including school-based clinics, Asian Counseling and Referral Services and a rural mental health center in Alaska. Her clinical interests include assessing and treating adolescents with self-harmful behaviors, depressive disorders, developmental disorders and anxiety disorders.

Robert Hilt, MD, is attending psychiatrist at Seattle Children's Hospital and acting assistant professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. His work focuses on consultation psychiatry with primary care and hospital physicians. His clinical and research interests include psychiatric systems of care, improving child psychiatric emergency services and developing and studying care systems for psychiatric consultation to primary care. His teaching interests include a variety of child psychiatric topics likely to be encountered by a referring clinician, and he has experience lecturing to medical students, residents and attending physicians in many areas. He is a member of the American Academy of Child and Adolescent Psychiatry (AACAP) and sits on its Committee on Collaboration with Medical Professions. He is a fellow of the American Academy of Pediatrics and has experience working as a practicing pediatrician. He was awarded membership in the Alpha Omega Alpha honor society and has received the AACAP Outstanding Child Psychiatric Resident Award. He is board certified in both adult and child psychiatry.

Stefanie A. Hlastala, PhD, is attending psychologist at Seattle Children's Hospital and acting assistant professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. Her interests include mood and psychotic disorders in children and adolescents. She is principal investigator for an NIH-funded research grant aimed at adapting an adjunctive psychotherapy (interpersonal and social rhythm therapy) for use with adolescents who have bipolar disorder. She is a co-investigator on a multisite study examining the effectiveness and safety of lithium in youth with mania; she is also a co-investigator on a study examining the effectiveness and safety of antipsychotic medications in youth with schizophrenia spectrum disorders.

Ray Hsiao, MD, is attending physician at Seattle Children's Hospital and acting assistant professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. He is co-director of the Adolescent Center on Substance Use Intervention, Treatment, Education and Research (SUTTER) at Children's. He received his MD from the Feinberg School of Medicine at Northwestern University and completed his general psychiatry residency, child and adolescent psychiatry fellowship and addiction...
psychiatry fellowship at the University of Washington School of Medicine. His clinical and research interests include prevention and treatment of substance use disorders, assessment and treatment of co-occurring disorders and cultural psychiatry. Hsiao is very actively involved with the Washington State Psychiatric Association and has served on the board as its treasurer, then president-elect, while chairing the Continuing Medical Education Committee.

Jeffrey P. Kaiser, MD, is attending psychiatrist and medical director of the Inpatient Psychiatry Unit at Seattle Children’s Hospital. He is acting instructor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. His work focuses on inpatient evaluation and treatment; long-term outpatient medication management and psychotherapy; and resident, fellow, faculty and community psychiatric education. His clinical and research interests include treatments for mood, anxiety and eating disorders, novel approaches to psychiatric education and residency training and the history of psychiatry. He is a member of the American Academy of Child and Adolescent Psychiatry.

Elizabeth A. McCauley, PhD, ABPP, is associate director of the Department of Psychiatry and Behavioral Medicine at Seattle Children’s Hospital and professor at the University of Washington School of Medicine. She attends on Children’s Psychiatry Consultation and Liaison Service. She works with youth who have medical conditions affecting their sexual development, those with gender identity concerns and adolescents with mood disorders. McCauley is a member of the Research Grants Board for the American Foundation for Suicide Prevention and serves on the editorial boards of the Journal of Clinical Child and Adolescent Psychology and the Journal of Abnormal Child Psychology. She was president of the American Psychological Association’s Society of Clinical Child and Adolescent Psychology in 2007. She leads a research program designed to characterize clinical depression in young people and currently has NIH grants exploring the development of depressive and conduct problems, the efficacy of a school-based program to prevent depression in young adolescents and the efficacy of a clinical treatment program for depression. She has also studied the psychosocial and cognitive functioning of girls and women with Turner syndrome. In the past year, she served on NIH task forces to develop the Practice Guidelines for Management of Girls and Women with Turner Syndrome and to address the development of effective treatment strategies for depression in young people.

Jon M. McClellan, MD, is an attending psychiatrist at Seattle Children’s Hospital, associate professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine and medical director of Washington’s Child Study and Treatment Center (CSTC), the state hospital for children and adolescents. He is involved in two primary areas of research: genomic approaches for gene discovery with schizophrenia and other complex neuropsychiatric disorders; and the diagnosis, phenomenology and treatment of early-onset schizophrenia and bipolar disorders. McClellan is involved with two NIH-funded multicenter treatment trials, one for early-onset schizophrenia and the other for early-onset bipolar disorder. He develops treatment guidelines for the American Academy of Child and Adolescent Psychiatry and authored the academy’s practice parameters on early-onset schizophrenia and bipolar disorder. McClellan’s teaching responsibilities include resident supervision, research mentoring and didactic presentations for residents and university medical students.

Kathleen M. Myers, MD, MPH, MS, is director of the Psychiatry Consultation and Liaison Service at Seattle Children’s Hospital and associate professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. Her interests include telepsychiatry, especially for youth living in underserved communities of Washington and Alaska; mood disorders, especially early-onset bipolar disorder; and the mental health needs of medically ill children.

Heather Carmichael Olson, PhD, is attending psychologist at Seattle Children’s Hospital, senior lecturer in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine and adjunct faculty in the Department of Speech and Hearing Sciences at the University of Washington. She directs the Early Childhood Clinic within Child Psychiatry Outpatient Services at Children’s and is an attending psychologist for the Fetal Alcohol Syndrome Diagnostic and Prevention Network at the University of Washington. Carmichael Olson is currently principal investigator for a study of the Families Moving Forward
Program, an intervention research project for children with fetal alcohol spectrum disorders (FASD) and their families. Her research interests include FASD, the impact of parental substance abuse on children's developmental outcomes and infant/early childhood mental health. She is a research affiliate of both the Alcohol and Drug Abuse Institute and the Center on Human Development and Disability. She carries out a wide variety of presentations to professional and lay audiences. Carmichael Olson just completed her tenure as a member of the National FAS Task Force, a congressionally appointed committee designed to advance activities related to FASD. In 2007, she was president of the FASD Study Group, a satellite research organization with an international membership affiliated with the Research Society on Alcoholism (RSA), and she is currently on the RSA Program Committee.

Carol M. Rockhill, MD, PhD, MPH, is attending physician at Seattle Children’s Hospital, with her primary clinical location at the Bellevue site. She is an acting assistant professor at the University of Washington. She earned her MD and PhD at the University of Illinois, Champaign-Urbana campus, as part of the Medical Scholars Program. She earned her MPH at the University of Washington School of Public Health. She has completed residency training in general psychiatry and fellowship training in child and adolescent psychiatry, both at the University of Washington. Her clinical interests include major depression in children, especially when complicated by another diagnosis such as oppositional defiant disorder. She is interested in developing new treatments for youth with comorbid (or co-occurring) psychiatric disorders. She was selected for participation in the Child Health, Intervention and Prevention Services Summer Research Institute program, funded by the National Institutes of Mental Health, in April 2007.

Kelly A. Schloredt, PhD, is attending psychologist at Seattle Children’s Hospital and clinical associate professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. In Children's Inpatient Psychiatry Unit, she supervises and clinically trains child psychiatry fellows, general psychiatry residents, psychology residents and medical students as well as engages in a number of administrative activities related to clinical care and the general milieu program on the inpatient unit. She lectures in the didactic series for child fellows, general psychiatry residents and psychology residents; she has given a number of lectures for organizations, including the Washington State Psychiatric Association. With a research focus on child and adolescent depression, she manages a multisite longitudinal research project following children of depressed parents as their parents undergo treatment for depression. She is also a co-investigator on a treatment development grant focused on adapting behavioral activation therapy for depressed adolescents and examining the efficacy of this treatment.

Matthew L. Speltz, PhD, is chief of outpatient services in the Department of Psychiatry and Behavioral Medicine at Seattle Children's Hospital and professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. Speltz's research and clinical interests focus on the neurobehavioral development of children with craniofacial disorders and other chronic medical conditions, assessment and treatment of attachment disorders, disruptive behavior disorders, autism, anxiety disorders and behavioral medicine.

Michael G. Storck, MD, is attending psychiatrist at Seattle Children’s Hospital and at Washington’s Child Study and Treatment Center (CSTC) and assistant professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. He lectures on growth and development; systems of care; narrative therapy; and cross-cultural psychiatry, spirituality, religion and health. On the faculty of the University of Washington School of Medicine College Program, he mentors six medical students each year in their second year of Introduction to Clinical Medicine and serves as their medical-school advisor. He also supervises child psychiatry fellows in their three-month rotation at CSTC and is preceptor for fourth-year medical students and students in the University of Washington School of Nursing Psychosocial Nurse Practitioner Program. Storck is lead investigator in a small study assessing patient and second-year medical student perspectives on the process of early clinical education and is co-investigator in a study on Southwestern youth and their experience of psychiatric treatment. He co-chairs the American Academy of Child and Adolescent Psychiatry's Native American Child Committee.
Stephen I. Sulzbacher, PhD, is attending psychologist at Seattle Children’s Hospital and the University of Washington Medical Center. He is on the medical staff at Central Washington Hospital in Wenatchee, Wash., and is associate professor emeritus in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine. Sulzbacher’s research focuses on early identification of central nervous system effects of inborn errors of metabolism and on following up on children identified through the Washington State Newborn Screening Program with periodic neuropsychological testing. He is also conducting research to study the effects of pesticides on the health of children of farm workers. Additionally, Sulzbacher does applied research to demonstrate the use of videoconferencing as a way to provide consultation to rural school districts serving children with special health-care needs such as autism. He provides regular telehealth consultation to rural practitioners and clinics throughout the state as an adjunct to outreach clinics in which he participates.

Ann Vander Stoep, PhD, is an associate professor who is a child psychiatric epidemiologist with joint academic appointments in the University of Washington Department of Psychiatry and Behavioral Sciences in the School of Medicine and the Department of Epidemiology in the School of Public Health and Community Medicine. Her research interests include developmental epidemiology of adolescent depression and comorbid disorders, development and evaluation of child and adolescent mental health interventions and transition to adulthood for adolescents with psychiatric disorders. She is a principal investigator for the Developmental Pathways Research Program, a collaborative effort with the Seattle public schools to study the etiology of childhood depression and to develop effective prevention strategies. She teaches epidemiology methods and psychiatric epidemiology, mentors graduate students in the University of Washington School of Public Health and provides research mentorship to junior scientists in the Department of Psychiatry and Behavioral Sciences.

Christopher K. Varley, MD, is an attending psychiatrist in the outpatient psychiatry clinic at Seattle Children’s Hospital, where he developed a service for complex attention deficit hyperactivity disorder. He is professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine and is training director for the Division of Child and Adolescent Psychiatry. He is consulting psychiatrist for the Gateway Center for Human Services in Ketchikan, Alaska. His clinical interests include disruptive behavior disorders and complex psychopathology in children and adolescents and psychopharmacology.

AWARDS AND HONORS

Elizabeth A. McCauley, PhD, ABPP

RESEARCH FUNDING

New
Bryan H. King, MD
Social and affective processes in autism. NIH/DHHS. $142,881.

Continuing
Elizabeth A. McCauley, PhD, ABPP
Behavioral activation therapy for adolescents. NIH/DHHS. $309,949.

Jon M. McClellan, MD

Treatment of early-onset schizophrenia spectrum. NIMH/NIH/DHHS. $170,043.

Heather Carmichael Olson, PhD
Intervention for individuals with fetal alcohol syndrome: transitioning science to community projects. CDC/DHHS. $368,075.

Matthew L. Speltz, PhD
Hemifacial microsomia: psychosocial and other sequelae. NIDCR/NIH/DHHS. $126,372.

Neurodevelopment among infants with deformational plagiocephaly. NICHD/NIH/DHHS. $482,341.
TEACHING AND PRESENTATIONS

Brent R. Collett, PhD

Ray Hsiao, MD

Jeffrey P. Kaiser, MD

Bryan H. King, MD


Elizabeth A. McCauley, PhD, ABPP


Jon M. McClellan, MD


CBS “60 Minutes” interview examining the controversies surrounding bipolar disorder in children. October 2007.


Heather Carmichael Olson, PhD


Christopher K. Varley, MD


PUBLICATIONS


Varley CK. Getting to know your head meds: administering a psychotropic med to young patients can be an uneasy venture, but you can build your comfort level. *Contemp Pediatr.* Oct 2007;24(10):85–101.


Seattle Children’s Hospital’s Department of Radiology has the largest concentration of board-certified specialists in pediatric radiology in the Northwest. Serving the needs of hospital-based physicians and community providers, 21 full-and part-time radiologists provide the complete array of pediatric radiology and medical imaging services. Our dedicated technical and radiologist staff members are uniquely trained and skilled in the care of infants, children, adolescents and their families. Our team of technologists obtains the best possible images in a child-friendly environment while always keeping radiation safety in mind. We performed and interpreted more than 85,000 examinations in 2007.

Our team’s complete range of diagnostic and therapeutic imaging services includes radiography, computed tomography, fluoroscopy, magnetic resonance imaging, nuclear medicine, positron emission tomography, ultrasound, bone densitometry and 3-D imaging data reconstruction and quantitative image analysis. Children’s provides a complete range of diagnostic and therapeutic vascular and interventional radiology procedures. Therapeutic procedures include embolization, chemoembolization, thrombolysis, aspiration, drainage (pleura, peritoneal, biliary, nephrostomy, abscess), radiofrequency ablation of malignant and benign lesions, enteric access (gastrostomy, cecostomy), venous access (central line placement, PICC), joint and tendon injections, sclerotherapy and dilatation (angioplasty, esophageal, biliary, urinary).

Faculty members are authorities in neuroradiology, thoracic and abdominal imaging, musculoskeletal imaging, neonatal radiology, oncologic imaging, and vascular and interventional procedures. We are continually enhancing our digital information capability in such areas as speech recognition software for rapid report turnaround, PACS systems for soft copy reading, and teleradiology review for off-hours consultation. Children’s provides radiation oncology services through our affiliations with the Seattle Cancer Care Alliance and the University of Washington Medical Center. The Department of Radiology, in association with the University of Washington School of Medicine, educates radiology residents from four regional programs and trains fellows in a nationally recognized ACGME-approved pediatric radiology fellowship.

Faculty members are engaged in a variety of research projects in the areas of neuro-oncology, neuroradiology, behavioral disorders, craniofacial malformations, functional brain imaging, oncology, medical informatics, and 3-D and high-resolution image analysis.

FACULTY
Edward Weinberger, MD, Director
David K. Brewer, MD
Teressa Chapman, MD, MA
Stephen L. Done, MD
Eric L. Effmann, MD
C. Benjamin Graham, MD
Fredric A. Hoffer, MD
Gisele E. Ishak, MD
Paritosh C. Khanna, MD, DMRE, MBBS
David C. Moe, MD
Randolph K. Otto, MD
Angelisa M. Paladin, MD
Marguerite T. Parisi, MD, MS
Shawn E. Pamell, MD
Grace S. Phillips, MD
Sumit Pruthi, MBBS
David M. Rosenbaum, MD
Dennis W.W. Shaw, MD
Manrita K. Sidhu, MD
Mahesh M. Thapa, MD
Nghia Vo, MD
PROFESSIONAL PROFILES

Edward Weinberger, MD, is the director of the Department of Radiology, division chief of magnetic resonance imaging and division chief of informatics at Seattle Children’s Hospital; he is vice-chair of the Department of Radiology, professor of radiology, adjunct professor of pediatrics and professor of neurological surgery at the University of Washington School of Medicine. He completed his pediatric residency, diagnostic radiology residency and pediatric radiology fellowship through the University of Washington School of Medicine. He has a clinical interest in pediatric neuroradiology and research interests in medical and imaging informatics. He is a member of many local and national societies, serving on the General and Pediatric Committee of the American College of Radiology Commission on Standards and Accreditation and on the Radiological Society of North America’s Radiology Lexicon Committee. He is a board examiner for the American College of Radiology.

David K. Brewer, MD, is division chief of computed tomography at Seattle Children’s Hospital and associate professor in the Department of Radiology at the University of Washington School of Medicine. He trained as the department’s first fellow in pediatric radiology in 1977. He completed his diagnostic radiology residency and pediatric radiology fellowship through the University of Washington School of Medicine. Brewer performs radiologic-pathologic correlation on many of the department cases and has served as pediatric radiology fellowship director since 1999.

Teresa Chapman, MD, MA, is radiology residency coordinator and attending physician at Seattle Children’s Hospital and acting assistant professor in the Department of Radiology at the University of Washington School of Medicine. She completed her diagnostic radiology residency and pediatric radiology fellowship at the University of Washington. Her clinical interests are clinical education, antenatal diagnosis and CT dose reduction. She is an active member in national radiological societies.

Stephen L. Done, MD, is attending physician at Seattle Children’s Hospital and clinical associate professor of radiology and pediatrics at the University of Washington School of Medicine. He completed his residency in pediatrics at the Letterman Army Medical Center in San Francisco; his diagnostic radiology residency at Massachusetts General Hospital, Harvard Medical School; and a pediatric radiology fellowship at Children’s Hospital Boston, Harvard Medical School. He was chief of diagnostic radiology at Walter Reed Army Medical Center and director of residency training when he retired from the army in 1989. He has a clinical interest in early X-ray recognition of disease, skeletal dysplasias and child abuse. He is an active member in several national radiology societies.

Eric L. Effmann, MD, is professor in the Department of Radiology at the University of Washington School of Medicine. He has served as chief of pediatric imaging at Duke University Medical Center. Effmann has a longtime interest in basic and clinical aspects of pediatric chest disease, with particular interest in early cardiopulmonary development, congenital lung lesions, and quantitative and functional chest imaging. He is a major contributor to the 10th and 11th editions of Caffey’s Pediatric X-Ray Diagnosis. Effmann served in a variety of capacities in the Society for Pediatric Radiology, including president, and received the society’s Gold Medal, its highest honor. He is a member of two honorary societies: the Fleischner Society (chest disease) and the John Caffey Society (pediatric radiology). Effmann serves on the editorial board of Pediatric Radiology and is a regular examiner for the American Board of Radiology for general boards and subspecialty board credentialing.

SPOTLIGHT ON TEAM MEMBER — Jennifer McBroom, RT, RDMS
I am very excited about our research using ultrasound to diagnose appendicitis. We’ve shown that ultrasound produces excellent diagnostic results without having to do a CAT scan, which exposes patients to radiation. I love teaching the sonographers how to perform the exam and interpret it. At Seattle Children’s, we are leaders in using ultrasound to keep kids safe.
C. Benjamin Graham, MD, is attending physician at Seattle Children's Hospital; he is professor emeritus of radiology and pediatrics at the University of Washington School of Medicine. His training included internship, residency and pediatric radiology fellowship through the University of Washington, Children’s and the Karolinska Institute in Stockholm, Sweden. Graham has served as associate director and director of radiology. He continues to work part-time with special interests in teaching, general diagnosis, developmental conditions and skeletal dysplasias. He has 47 publications and is a member of many local, national and international societies.

Fredric A. Hoffer, MD, is section chief of pediatric interventional radiology at Seattle Children's Hospital and professor in the Department of Radiology at the University of Washington School of Medicine. He trained in pediatrics at Upstate Medical Center, in diagnostic radiology at Yale New Haven Hospital, in pediatric radiology at Boston Children’s Hospital (where he spent 13 years) and in pediatric interventional radiology. He holds certificates of added qualifications for pediatric and interventional radiology through the American Board of Radiology. His interest is cancer control through radiofrequency ablation. He had the world’s only prospective protocol for children for thermal ablation and is applying for a phase II protocol at Children’s to treat benign and malignant lesions in children. He is also interested in vascular anomalies and participates in a monthly clinic and conference and has performed sclerotherapy at Children’s. He is involved with the COG renal tumor committee and receives grant funding for his participation in bilateral Wilms tumor and nephroblastomatosis. He participates in the Children’s solid tumor board. He was the first radiologist to be a keynote speaker at the International Society of Pediatric Oncology in Geneva.

Gisele E. Ishak, MD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Radiology at the University of Washington School of Medicine. She completed her diagnostic radiology residency at American University of Beirut Medical Center. Ishak completed her neuroradiology and pediatric radiology fellowships at the University of Washington School of Medicine. She has a clinical interest in pediatric neuroradiology. Ishak is an active member of several national radiology societies.

Paritosh C. Khanna, MD, DMRE, MBBS, is attending physician at Seattle Children's Hospital and acting assistant professor in the Department of Radiology at the University of Washington School of Medicine. He completed his diagnostic radiology residency at LTM General Hospital and LTM Medical College/University of Mumbai (Bombay), India, and his pediatric radiology fellowship at Children’s National Medical Center at George Washington University. He is active in research and in resident and fellow teaching and has a clinical interest in pediatric neuroimaging and head and neck radiology. He is an active member of national and international radiological societies.

David C. Moe, MD, is attending physician at Seattle Children’s Hospital and acting assistant professor in the Department of Radiology at the University of Washington School of Medicine. He completed his diagnostic radiology residency at the University of Wisconsin, Madison, and his pediatric radiology fellowship through the University of Washington. He has a clinical interest in pediatric vascular-interventional imaging. He is an active member in regional and national radiology societies.

Randolph K. Otto, MD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Radiology at the University of Washington School of Medicine. He completed his diagnostic radiology residency at the University of Texas Southwestern Medical Center and his pediatric radiology fellowship at Children’s Medical Center in Dallas, Texas. He has a clinical interest in cardiac MR and imaging informatics. He is an active member in regional and national radiological societies.

Angelisa M. Paladin, MD, is attending physician at Seattle Children’s Hospital and radiology residency director and assistant professor in the Department of Radiology at the University of Washington School of Medicine. She completed her diagnostic radiology residency at University of Texas Southwestern Medical Center-Parkland Hospital and her pediatric radiology fellowship through the University of Washington. She has a clinical research interest in pediatric urological conditions and the temporal bone. She is a member of several local and national radiology societies.
Marguerite T. Parisi, MD, MS, is division chief of ultrasound at Seattle Children’s Hospital and associate professor of radiology and pediatrics at the University of Washington School of Medicine. She completed her pediatrics residency at Children’s Hospital of Buffalo and trained as a radiology resident with fellowships in pediatric radiology and nuclear medicine. She earned her MS in medical education from the University of Southern California. Parisi’s clinical and research interests center around oncologic imaging, including evaluation of new techniques, modalities, and imaging agents and their utilization; efficacy; and clinical outcomes in pediatric radiology and nuclear medicine. She has special expertise in the use of metaiodobenzylguanidine to image neuroblastoma and the use of iodine-131 radiotherapy to treat pediatric thyroid cancer. She developed the bone densitometry (DXA) program at Children’s. She actively participates in many regional and national radiology societies and in numerous national committees including the national oncology cooperative, Children’s Cancer Group. She is president of the Pediatric Council of the Society of Nuclear Medicine and is also chair of the Nuclear Medicine Committee of the Society of Pediatric Radiology.

Shawn E. Parnell, MD, is attending physician at Seattle Children’s Hospital and acting assistant professor in the Department of Radiology at the University of Washington School of Medicine. She completed her diagnostic radiology residency and pediatric radiology fellowship at the University of Washington. She has a clinical interest in musculoskeletal imaging and skeletal dysplasias. She is an active member in regional and national radiological societies.

Grace S. Phillips, MD, is attending physician at Seattle Children’s Hospital and acting assistant professor in the Department of Radiology at the University of Washington School of Medicine. She completed her diagnostic radiology residency at the Mallinckrodt Institute of Radiology and her pediatric radiology fellowship through the University of Washington. She has a clinical interest in pediatric genitourinary radiology, organ transplant, body imaging and resident education. She is an active member in regional and national societies.

Sumit Pruthi, MBBS, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Radiology at the University of Washington School of Medicine. He completed his diagnostic radiology residency at LTM Medical College and LTM General Hospital in Mumbai (Bombay), India, and his neuroradiology and pediatric radiology fellowships at the University of Washington. He has a clinical interest in neuroradiology and molecular imaging. He is an active member of national radiological societies.

David M. Rosenbaum, MD, is division chief of nuclear medicine at Seattle Children’s Hospital and associate professor in the Department of Radiology at the University of Washington School of Medicine. He completed his diagnostic radiology residency at the Medical Center of Vermont and his pediatric radiology fellowship at Children's Hospital Boston. He has a clinical interest in nuclear medicine and general pediatric radiology. He is an active member in regional and national radiology societies.

Dennis W.W. Shaw, MD, is division chief of pediatric vascular/interventional radiology at Seattle Children's Hospital and professor in the Department of Radiology at the University of Washington School of Medicine. He completed pediatrics and neuroradiology fellowships through the University of Washington. He divides his clinical time between pediatric interventional and neuroradiology services. His research interests include morphometric brain imaging and MR spectroscopy applied to autism. He has a particular interest in neuro-oncologic imaging and is a member of the Radiology Subcommittee within the Children's Oncology Group. He is also a member of the Neuroimaging Committee of the Pediatric Brain Tumor Consortium.

Manita K. Sidhu, MD, is staff radiologist at Seattle Children's Hospital and assistant professor in the Department of Radiology at the University of Washington School of Medicine. She completed her pediatric radiology fellowship at the University of Washington and a fellowship in vascular and interventional radiology at Stanford University Hospital. She has a clinical and research interest in pediatric vascular malformations and tumors. She is an active member of Children's Dialysis Access Committee and Medical Staff Nominating Committee and is part of the expert panel.
of the Agency for Healthcare Research and Pediatric Quality Indicators. She is also an active member of the Vascular/Interventional Committee and Poster Committee of the Society for Pediatric Radiology and a member of the Educational Evaluation Committee of the American Roentgen Ray Society.

**Mahesh M. Thapa, MD**, is attending physician at Seattle Children’s Hospital and acting assistant professor in the Department of Radiology at the University of Washington School of Medicine. He completed his diagnostic radiology residency and pediatric radiology fellowship at the University of Washington. He has a clinical interest in pediatric gastroenterology and musculoskeletal radiology. He is an active member in national medical and radiological societies.

**Nghia Vo, MD**, is attending physician at Seattle Children’s Hospital and clinical assistant professor at the University of Washington School of Medicine. He completed his diagnostic radiology residency at the University of Tennessee Medical Center in Knoxville, his pediatric radiology fellowship at the Cincinnati Children’s Hospital and a vascular/interventional fellowship at the University of Washington. He has a clinical interest in pediatric interventional radiology. He is an active member in national medical societies.

**Awards and Honors**

**Edward Weinberger, MD**
Listed in “Top Doctors.” Seattle Metropolitan magazine.

**Teaching and Presentations**

**Stephen L. Done, MD**


**Eric L. Effmann, MD**


**Fredric A. Hoffer, MD**


**Gisele E. Ishak, MD**

**Paritosh C. Khanna, MD, DMRE, MBBS**

Angelisa M. Paladin, MD
University of Washington School of Medicine review course “Not Just for Residents.” April 4, 2007.


Marguerite T. Parisi, MD, MS


Shawn E. Parnell, MD


Grace S. Phillips, MD


Dennis W.W. Shaw, MD


Manrita K. Sidhu, MD

Mahesh M. Thapa, MD  


Edward Weinberger, MD  


PUBLICATIONS


The Seattle Children’s Hospital rehabilitation program draws on the experience and expertise of its staff of board-certified pediatric physiatrists; nurses; occupational, physical and recreational therapists; speech and language pathologists; teachers; social workers; child clinical psychologists; neuro-psychologists; and nutritionists. These professionals perform a comprehensive assessment of each child’s needs and abilities and develop short- and long-term treatment plans suited to the individual child’s medical and family circumstances.

Rehabilitation services are provided for inpatients and outpatients at Children’s. Outpatient services are offered through the Rehabilitation Medicine Clinic as well as through our arthrogryposis, brachial plexus, limb deficiency and Muscular Dystrophy Association subspecialty clinics. Physician outreach clinics are held in Yakima and Bellingham, Wash., and some outpatient therapy services are available at our satellite location in Bellevue, Wash. Inpatient care is provided in our new 12-bed unit, which is certified by the Rehabilitation Accreditation Commission as a Pediatric Family-Centered Program in Medical Rehabilitation and designated by the State Department of Health as the only Level 1 Pediatric Trauma Rehabilitation Center in Washington.

The Department of Rehabilitation Medicine helps children and their families adapt to changes in functioning brought on by injury, illness or congenital defect. The department includes the divisions of Occupational Therapy, Speech and Language Services, Physical Therapy and Rehabilitation Psychology. As the regional leader in pediatric rehabilitation, we receive patients from the WAMI region (Washington, Alaska, Montana, Idaho).

FACULTY
Kenneth M. Jaffe, MD, Director
Ross M. Hays, MD
Teresa L. Massagli, MD

Kenneth M. Jaffe
MD, Director

PROFESSIONAL PROFILES

Kenneth M. Jaffe, MD, is director of the Department of Rehabilitation Medicine at Seattle Children’s Hospital; he is professor in the Department of Rehabilitation Medicine and adjunct professor in the departments of Pediatrics and Neurological Surgery at the University of Washington School of Medicine. He is board certified in pediatrics and physical medicine and rehabilitation. His clinical activities include inpatient rehabilitation and outpatient clinics at Children’s and consultation at Harborview Medical Center. Jaffe’s clinical interests include care of children with multiple trauma, traumatic brain injury, spinal cord injury, limb deficiency, arthrogryposis and other neurological and neuromuscular disorders. His research interests include outcomes from pediatric trauma and brain injury and management of arthrogryposis and pediatric pain. He has served as principal investigator and co-investigator on numerous research grants. Jaffe completed his
six-year term as editor in chief of *Archives of Physical Medicine and Rehabilitation*, the most highly cited journal in the rehabilitation sciences, in January 2007. He continues to serve on its editorial board as the pediatric section editor.

**Ross M. Hays, MD**, is ethics consultant for the Treuman Katz Center for Pediatric Bioethics and medical director of the palliative care program at Seattle Children’s Hospital. He is professor in the Department of Rehabilitation Medicine and adjunct professor of pediatrics at the University of Washington School of Medicine; he is faculty associate in the university’s Department of Medical History and Ethics. He is medical director for the pediatric hospice and palliative care program at Providence Hospice of Seattle. He is board certified in pediatrics, rehabilitation medicine, and hospice and palliative medicine. He was the principal investigator of the Supporting Children at the End of Life: Improving Access and Quality of Care project sponsored by the Robert Wood Johnson Foundation. He has been the PI on NIH-funded RO1 projects and is the pediatric clinical core leader for the Seattle Cancer Care Alliance, which provides care to children with severe life-limiting illness using a unique model that is highly regarded throughout the country. He also provides consultation on pediatric palliative care to hospitals regionally and nationally.

**Teresa L. Massagli, MD**, is attending physician at Seattle Children’s Hospital and professor in the departments of Rehabilitation Medicine and Pediatrics at the University of Washington School of Medicine. She is board certified in pediatrics and in physical medicine and rehabilitation and subspecialty certified in spinal cord injury medicine. Her clinical activities include inpatient rehabilitation, outpatient clinics at Children’s and at a regional outreach clinic in Bellingham, Wash., and consultative rehabilitation medicine at Fircrest School and Harborview Medical Center. She is also residency program director for physical medicine and rehabilitation at the University of Washington. Massagli’s clinical interests include care of patients with spinal cord injury, traumatic brain injury, and other neurological and neuromuscular disorders. Her research interests are in methods of teaching and evaluation of resident competence in graduate medical education.

**Awards and Honors**

**Kenneth M. Jaffe, MD**
Listed in *America's Top Doctors.*
Listed in “Best Doctors in America.”
Listed in “Top Doctors.” *Seattle* magazine.

**Teresa L. Massagli, MD**
Outstanding Service Award. Association of Academic Physiatrists.

**Teaching and Presentations**

**Ross M. Hays, MD**

**Kenneth M. Jaffe, MD**
Acute pediatric trauma rehabilitation. Pediatric Trauma Care: A Workshop to Develop a National Study on Costs and Outcomes from Pediatric Trauma. Funded by Agency for Healthcare Research and Quality and by support from the Emergency Medical Services for Children Program, Maternal and Child Health Bureau, HRSA. Washington, D.C. March 8–9, 2007.
PUBLICATIONS


Creating a better future for children and their families is central to the discipline of pediatric medicine. This vision inspires every faculty member in the Department of Pediatrics at Seattle Children’s Hospital and the University of Washington School of Medicine. As an academic department, we invest with an eye on the future through our recruitment of highly talented clinicians, scientists, and educators, and by developing innovative programs.

In the past, farsighted leaders in our Department of Pediatrics gazed into the future and created concepts and programs that we now consider common knowledge. Dr. Abraham Bergman recognized the toll of injuries on the lives of children. His efforts led to the passage of legislation mandating flame-retardant sleepwear. A subsequent collaboration with Dr. Fred Rivara raised national awareness that bicycle helmets could avert the terrible morbidity of head injuries. Because Dr. David Shurtleff believed that the neurodevelopmental potential for children born with hydrocephalus was far greater than what his contemporaries believed, he advocated for more aggressive treatments — many of which remain standard practice today. Dr. David Smith, a legend in clinical genetics, understood that congenital malformations came in patterns and described many, now commonly known, syndromes, including fetal alcohol syndrome. Dr. Thomas Shepard astutely noted the relationship between the exposure during pregnancy to drugs and environmental toxins and birth defects. He created a national hotline to assist physicians and families who had concerns or questions about this important concept.

Our pioneering efforts continue today. Dr. Leslie Walker is creating treatment programs for children with substance addiction. Dr. Mark Lewin recently launched a fetal diagnostic center to provide the most advanced care of children with congenital heart disease. Dr. Tom Jones continues to develop new devices that correct congenital heart defects in the cardiac catheterization laboratory. Dr. Michael Bamshad is developing a DNA core repository for future population studies. Dr. Rita Mangione-Smith’s ground-breaking publication in the *New England Journal of Medicine* has sparked a national conversation on the need to improve preventive health services for children.

Many other examples of visionary faculty and divisions are described in this report. 2007 was a most productive year and marked our move into the wonderful new Seattle Children’s Hospital Research Institute. Dr. Andrew Scharenberg received the largest grant ($24 million) in the department’s history, which will quite possibly lead to correcting single gene defects in immune cells. Yesterday’s future is repeating itself today, as we search for new horizons and a better world for children.
Adolescent Medicine

The Division of Adolescent Medicine provides expert consultation, diagnosis and treatment for conditions commonly seen during adolescence, including mental health disorders, sexually transmitted diseases such as human papillomavirus, eating disorders, substance abuse, obesity, chronic fatigue syndrome and general adolescent psychosocial and learning issues. After a request, members of the division also provide medical consultation for patients throughout Seattle Children’s Hospital with conditions such as chronic musculoskeletal pain, gynecologic issues and somatiform disorders.

In the inpatient setting, providers coordinate closely with services such as nutrition and child psychiatry to ensure a multidisciplinary approach to treatment. Patients are seen as outpatients after referral to the Adolescent Medicine Clinic, the Eating Disorders Clinic, the Biofeedback Clinic, the Reflex Neurovascular Dystrophy Clinic and the Adolescent Gynecology Clinic. When appropriate, patients seen in the outpatient setting are seen in consultation by members of our multidisciplinary team, including physical and occupational therapists, social workers and chemical dependency professionals.

Physicians and nurse practitioners in the division provide medical consultation for all patients with eating disorders who are admitted to the medical and psychiatric units.

Members of Adolescent Medicine are committed to providing treatment for underserved adolescents in the community and also see patients at the Country Doctor Homeless Teen Clinic, which incorporates complementary and alternative medicine with acupuncture, massage and naturopathy. An additional clinic at the King County Juvenile Detention Center serves as a training site for pediatric and family medicine residents. Division providers also see patients at Harborview Medical Center as consultants, and in the Children and Teens Clinic and the Public Health Seattle & King County STD Clinic as attendings.

The Division of Adolescent Medicine is committed to education of many levels of trainees and maintains an accredited adolescent medicine fellowship program to help train adolescent medicine leaders for the region and the nation. Researchers in the Division of Adolescent Medicine are involved in studying mental health issues, substance abuse, ADHD and sexually transmitted diseases. They are working to improve understanding and treatment for conditions that disproportionately affect adolescents.

After a national search, Dr. Leslie R. Walker was recruited to lead Adolescent Medicine starting in February 2007. In addition, Dr. Henry S. Berman joined Adolescent Medicine in 2006 and has brought depth and clinical expertise in behavioral problems and mental health concerns such as ADHD and depression.

**PROFESSIONAL PROFILES**

**Leslie R. Walker, MD**, is chief of the Division of Adolescent Medicine at Seattle Children’s Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. She earned her MD from the University of Illinois School of Medicine. She completed residency training in the Department of Pediatrics at the University of Chicago, Wyler Children’s Hospital, and a fellowship in the Division of Adolescent Medicine at the University of California, San Francisco. She developed the adolescent program and served as director of adolescent medicine at Georgetown University Children’s Medical Center and also served as medical director at Woodson High
School's Wellness Center in Washington, D.C. She was elected to the board of directors for the Society for Adolescent Medicine and has served on many national committees and boards dedicated to the health and well-being of adolescents. She is a member of the National Academies of Science, Institute of Medicine Committee on Adolescent Health Care Services, and Models of Care for Treatment, Prevention and Healthy Development. Her research interests and publications are in the areas of ADHD and substance abuse, health-care transition and teenage pregnancy prevention.

Henry S. Berman, MD, is a board-certified pediatrician who has specialized in adolescent medicine since 1971. He is attending physician in the Division of Adolescent Medicine at Seattle Children's Hospital and assistant clinical professor in the Department of Pediatrics at the University of Washington School of Medicine. He received his medical degree from New York University School of Medicine. After completing his internship and pediatrics residency at Lenox Hill Hospital in New York City, and three years in the U.S. Army, Berman began his work in adolescent medicine at Mount Sinai School of Medicine. It was there that he developed the HEADS evaluation, now used nationally in obtaining a social history from teens. In his work at Children's, he specializes in behavioral problems of adolescents, including ADHD, depression, poor school performance (including school avoidance) and anxiety disorders.

Cora C. Breuner, MD, MPH, is a board-certified adolescent medicine specialist and board-certified pediatrician. She received her BA from Franklin and Marshall College in Lancaster, Pa., and her MD from Jefferson Medical College in Philadelphia, Pa. After completing an internship and pediatric residency at the Naval Hospital in San Diego, Calif., she came to the University of Washington, where she completed her adolescent medicine fellowship in 1993. She received her master’s degree in public health from the University of Washington in 1998; her thesis addressed complementary and alternative medicine use in homeless youth. Breuner is associate professor in the Department of Pediatrics at the University of Washington School of Medicine and director of both the outpatient Eating Disorder Program and outpatient Biofeedback Clinic. She recently became a member of the new Children's Hospital Sports Medicine Program as director of the Integrative Medicine Section and has an additional appointment as adjunct associate professor in the Department of Orthopedics. She is president of the Northwest Society of Adolescent Medicine, co-chairperson of the Work Life Balance Committee and a member of the Physician Well-Being Committee. Her clinical interests include the treatment of eating disorders and obesity in the adolescent. She is also interested in alternative management and treatment of adolescents with headaches, abdominal pain and sports-related disorders. Her research interests include the evaluation of yoga as an adjunctive intervention for the patient with eating disorders and the assessment of complementary medicine usage by the pediatric patient with diabetes and musculoskeletal complaints. Her goal is to incorporate complementary and alternative medicine into both the outpatient and inpatient programs at Children's. She has three teenage children and a black Lab and loves to sing, play the fiddle, kayak and ride her bike.

Ann E. Giesel, MD, is a board-certified adolescent medicine specialist and board-certified pediatrician who has been with adolescent medicine at the University of Washington since she completed her fellowship at Seattle Children's Hospital in 1991. She received her BA from Yale University and MD from the University of Louisville. After completing her pediatric residency at the University of Washington, she was a fellow in child sexual abuse at Harborview Medical Center before doing her fellowship in adolescent medicine. She is clinical associate professor in the Department of Pediatrics.
at the University of Washington School of Medicine, serves as the medical director of the King County Juvenile Detention Center Health Clinic, is chief of pediatric and adolescent gynecology at Children’s, and is the medical director of the evening clinics for homeless youth at the Country Doctor Free Teen Clinic.

Rachel Katzenellenbogen, MD, is attending physician in adolescent medicine at Seattle Children’s Hospital and assistant professor of pediatrics at the University of Washington School of Medicine. Her clinical interests include adolescent gynecology and STD management as well as general preventive medicine. Katzenellenbogen conducts research on high-risk human papillomavirus infection, which is the most common sexually transmitted infection and is linked to cervical cancer, at the Fred Hutchinson Cancer Research Center. She has a Child Health Research Center grant from the National Institutes of Health and will begin career development awards through the National Cancer Institute and the National Institute of Allergy and Infectious Diseases to support her research.

Laura P. Richardson, MD, MPH, is associate professor in the Department of Pediatrics at the University of Washington School of Medicine and holds an adjunct appointment in the Department of Psychiatry. She earned her MD from the University of Michigan and her MPH at the University of Washington. She completed an internal medicine and pediatrics residency at the University of Michigan and a fellowship in adolescent medicine at the University of Washington. Richardson’s research focuses primarily on adolescent mental health and somatic disorders, and on improving detection and management of child and adolescent depression in primary care settings. Her most recent work involves the evaluation of quality of follow-up care for depressed youth and designing health system interventions to improve the delivery of evidence-based care and health outcomes for depressed adolescents in primary care settings.

Taraneh Shafii, MD, MPH, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. Shafii is the attending adolescent medicine specialist in the Children and Teens Clinic at Harborview Medical Center and serves as deputy medical director for the Public Health Seattle & King County STD Clinic at Harborview. Shafii received her MD from the University of Louisville School of Medicine in Kentucky and her MPH from the University of Washington School of Public Health and Community Medicine. She completed a fellowship in adolescent medicine and sexually transmitted diseases (STDs) at the University of Washington School of Medicine. She was invited to be on the faculty for the Adolescent Health Reproductive Education Health Project. Her clinical interests include adolescent sexuality and reproductive health care; health manifestations of stress, anxiety and depression; and overweight/eating disorders in adolescents. In 2007 she was awarded a five-year Career Development Award from the NIH/NICHD to develop a clinician-delivered behavioral intervention to reduce high-risk sexual behaviors in adolescents. Shafii’s research focuses on the development and assessment of primary and secondary behavioral interventions to reduce sexual risk and the associated morbidities of STDs and unintended pregnancy. Her interests include early reproductive health education for youth who are not yet sexually active and risk-reduction interventions for adolescents engaging in high-risk sexual behaviors.

AWARDS AND HONORS

Cora C. Breuner, MD, MPH
Listed in “Top Doctors.” Seattle Metropolitan magazine.
Listed in Who’s Who in America’s Pediatricians.

Leslie R. Walker, MD
Listed in “Best Doctors in America.”

RESEARCH FUNDING

New
Laura P. Richardson, MD, MPH
Improving depression screening and treatment among Group Health adolescents. Group Health Community Foundation. $66,808.

Taraneh Shafii, MD, MPH
Brief clinician intervention for high-risk behavior in adolescents. NIH/NICHD. $126,792.
Continuing

Cora C. Breuner, MD, MPH
Healthcare for the homeless youth. Seattle–King County Department of Public Health. $55,688.

Laura P. Richardson, MD, MPH
Improve primary care management of adolescent depression. NIH/NIMH. $159,268.

TEACHING AND PRESENTATIONS

Cora C. Breuner, MD, MPH


Ann E. Giesel, MD


Rachel Katzenellenbogen, MD


Laura P. Richardson, MD

Taraneh Shafii, MD, MPH


Leslie R. Walker, MD


PUBLICATIONS


Bioethics

The Division of Bioethics has three primary goals: consultation with families, health-care providers, researchers and policy makers on care practices and policies; scholarship on ethical issues related to pediatric health care and research; and training the next generation of pediatric bioethicists.

The division coordinates the Clinical Bioethics Consult Service, advising families and clinicians about ethical issues in health-care decisions. Faculty have played a leadership role in the development of the Research Bioethics Consult Service, part of the Institute for Translational Health Sciences, which provides advice to researchers, research participants and institutional review boards. This program serves Seattle Children’s Hospital, the University of Washington, the Fred Hutchinson Cancer Research Center and WAMI affiliates.

Our research focuses on the interface between population and individual concerns, with an emphasis on how these issues relate to parental decision making and chronic illness. Current projects examine research recruitment, genetic testing in children, justice and global health, adolescent decision making, treatment decisions for vulnerable populations and quality improvement in ethics.

Ongoing educational activities include a weekly bioethics seminar for faculty and staff of Children’s and the University of Washington School of Medicine, a monthly conference for pediatrics residents and an annual conference focused on current controversies in pediatric health care. The division hosts a case-based ethics Grand Rounds three times a year and sponsors an annual endowed lectureship.

Our pediatric bioethics fellowship program trains clinicians for academic careers in bioethics. The program includes a mentored research project and training in clinical and research ethics consultation. The first fellow will complete training in 2009.

**PROFESSIONAL PROFILES**

**Benjamin S. Wilfond, MD**, is director of the Treuman Katz Center for Pediatric Bioethics at Seattle Children’s Hospital and professor and chief of the Division of Bioethics in the Department of Pediatrics at the University of Washington School of Medicine. He is adjunct professor in the Department of Medical History and Ethics. Wilfond attends in the Chest Clinic in the Division of Pulmonary Medicine at Children’s. He is the co-director of the Regulatory Support and Bioethics Core for the Institute of Translational Health Sciences (ITHS) and coordinates the ITHS Research Bioethics Consult Service. He earned his MD from the University of Medicine and Dentistry of New Jersey-New Jersey Medical School. He completed his pediatric residency and his fellowship in pediatric pulmonology and medical ethics at the University of Wisconsin. He has held faculty appointments at the University of Arizona, National Institutes of Health and Johns Hopkins University. He conducts research on ethical and policy
Bioethics

Seattle Children’s Hospital
Seattle, Washington

Bioethics issues related to genetic testing, genetic research and pediatrics research. He has recently worked on issues related to newborn screening, disclosure of genetic research results and pediatric biobanks. He is a member of the Ethics Subcommittee of the FDA Pediatric Advisory Committee and the National Children’s Study Federal Advisory Committee.

Douglas S. Diekema, MD, MPH, is director of education for the Treuman Katz Center for Pediatric Bioethics and an attending physician in the Emergency Department at Seattle Children’s Hospital. He is professor in the Division of Bioethics in the Department of Pediatrics at the University of Washington School of Medicine and adjunct professor in the Department of Medical History and Ethics. He is also an adjunct professor in the Department of Health Services at the University of Washington School of Public Health. He earned his MD from the University of North Carolina and an MPH in health services and medical ethics from the University of Washington School of Public Health. He has been a member of Seattle Children’s Hospital Ethics Committee since 1991, has served as an ethics consultant since 1993 and is chair of the Institutional Review Board. He serves as chair of the Committee on Bioethics of the American Academy of Pediatrics and is a member of the Ethics Committee of the American Board of Pediatrics. He is consulting editor of AAP Grand Rounds. Diekema is co-author of Christian Faith, Health and Medical Practice and the author of numerous scholarly publications in medical ethics and pediatric emergency medicine.

Ross M. Hays, MD, is ethics consultant for the Treuman Katz Center for Pediatric Bioethics and medical director of the palliative care program at Seattle Children’s Hospital. He is professor in the Department of Rehabilitation Medicine and adjunct professor in the Department of Pediatrics at the University of Washington School of Medicine; he is faculty associate in the Department of Medical History and Ethics. He is the medical director for the pediatric hospice and palliative care program at Providence Hospice of Seattle. He is board certified in pediatrics, rehabilitation medicine and hospice and palliative medicine. He was the principal investigator of the Supporting Children at the End of Life: Improving Access and Quality of Care Project sponsored by the Robert Wood Johnson Foundation. Hays has been the PI on NIH-funded R01 projects and is the pediatric clinical core leader for the Seattle Cancer Care Alliance, which provides care to children with severe, life-limiting illness using a unique model that is highly regarded throughout the country. He also provides consultation on pediatric palliative care to hospitals regionally and nationally.

Maureen Kelley, PhD, is an ethics consultant for the Treuman Katz Center for Pediatric Bioethics, assistant professor in the Department of Pediatrics in the Division of Bioethics at the University of Washington School of Medicine and adjunct assistant professor in the Department of Medical History and Ethics and in the Department of Philosophy. She earned her PhD in philosophy at Rice University. She has held faculty appointments at Baylor College of Medicine and the University of Alabama. She serves on the Regulatory Support and Bioethics Core of the Institute of Translational Health Sciences (ITHS) and on the steering committee for the Global Health Pathway in the University of Washington School of Medicine’s pediatric residency program. Kelley conducts research on ethical issues in pediatric global health and international research ethics and on moral conflict resolution. She is involved in international research projects in Siberia and Zambia. Current projects include supporting adolescent decision making for runaways, street children and orphans; improving criteria of vulnerability and risk for orphans and street children in the context of

Spotlight on Team Member — Maureen Kelley, PhD
The new pediatric residency pathway in global health is exciting, not only for the residents and those of us working in global health, but also for the broader Seattle Children’s community. Once you appreciate that the central problems surrounding global health have no borders, it opens one’s perspective to the ethical, socioeconomic and health challenges facing all of us.

Faith, Health and Medical Practice and the author of numerous scholarly publications in medical ethics and pediatric emergency medicine.

Ross M. Hays, MD, is ethics consultant for the Treuman Katz Center for Pediatric Bioethics and medical director of the palliative care program at Seattle Children’s Hospital. He is professor in the Department of Rehabilitation Medicine and adjunct professor in the Department of Pediatrics at the University of Washington School of Medicine; he is faculty associate in the Department of Medical History and Ethics. He is the medical director for the pediatric hospice and palliative care program at Providence Hospice of Seattle. He is board certified in pediatrics, rehabilitation medicine and hospice and palliative medicine. He was the principal investigator of the Supporting Children at the End of Life: Improving Access and Quality of Care Project sponsored by the Robert Wood Johnson Foundation. Hays has been the PI on NIH-funded R01 projects and is the pediatric clinical core leader for the Seattle Cancer Care Alliance, which provides care to children with severe, life-limiting illness using a unique model that is highly regarded throughout the country. He also provides consultation on pediatric palliative care to hospitals regionally and nationally.

Maureen Kelley, PhD, is an ethics consultant for the Treuman Katz Center for Pediatric Bioethics, assistant professor in the Department of Pediatrics in the Division of Bioethics at the University of Washington School of Medicine and adjunct assistant professor in the Department of Medical History and Ethics and in the Department of Philosophy. She earned her PhD in philosophy at Rice University. She has held faculty appointments at Baylor College of Medicine and the University of Alabama. She serves on the Regulatory Support and Bioethics Core of the Institute of Translational Health Sciences (ITHS) and on the steering committee for the Global Health Pathway in the University of Washington School of Medicine’s pediatric residency program. Kelley conducts research on ethical issues in pediatric global health and international research ethics and on moral conflict resolution. She is involved in international research projects in Siberia and Zambia. Current projects include supporting adolescent decision making for runaways, street children and orphans; improving criteria of vulnerability and risk for orphans and street children in the context of
HIV/AIDS; managing the ethical dilemmas raised by infant-feeding practices among HIV-infected mothers in resource-poor settings; and examining the role of moral compromise in global health practice and policy.

David E. Woodrum, MD, is clinical director for the Treuman Katz Center for Pediatric Bioethics at Seattle Children’s Hospital. He is professor in the Department of Pediatrics at the University of Washington School of Medicine and faculty associate in the Department of Medical History and Ethics. Woodrum’s clinical and teaching activities are focused on convalescing preterm infants and on pediatric biomedical ethics issues for residents, fellows and other health-care providers. His research explores the determinative elements of parental decision making. He is co-director of the Pediatric Interim Care Center in Kent, Wash., a nationally recognized program providing medically supervised care for drug-exposed infants.

**RESEARCH FUNDING**

**Continuing**

Douglas S. Diekema, MD, MPH


**TEACHING AND PRESENTATIONS**

Douglas S. Diekema, MD, MPH


Maureen Kelley, PhD


**Benjamin S. Wilfond, MD**

Ethical issues in pediatric outcomes research. Pediatric Trauma Care: A Workshop to Develop a National Study on the Costs and Outcomes from Pediatric Trauma. Washington, D.C. March 9, 2007.


**PUBLICATIONS**


The Division of Cardiology is part of Seattle Children's Heart Center, a specialized team of pediatric cardiologists, cardiac surgeons, pediatric cardiac intensive care specialists, cardiac anesthesiologists, nurses, echocardiography technicians and caring staff. We are a comprehensive cardiac care provider for the fetus to the adult, and our commitment to the best possible outcome for each patient includes ongoing research into new treatments and technologies.

We have a reputation for excellence in services ranging from advanced therapeutic catheterization procedures for common cardiac defects and heart rhythm disorders to heart transplantation for infants with more complex cardiac problems.

The Division of Cardiology is committed to achieving greater national recognition for leadership in innovation, collaboration and excellence. Our faculty's intellectual curiosity and spirit of inquiry define our culture, and our research and clinical care partnerships provide models for our peers.

The Division of Cardiology is part of Seattle Children's Heart Center, a specialized team of pediatric cardiologists, cardiac surgeons, pediatric cardiac intensive care specialists, cardiac anesthesiologists, nurses, echocardiography technicians and caring staff. We are a comprehensive cardiac care provider for the fetus to the adult, and our commitment to the best possible outcome for each patient includes ongoing research into new treatments and technologies.

We have a reputation for excellence in services ranging from advanced therapeutic catheterization procedures for common cardiac defects and heart rhythm disorders to heart transplantation for infants with more complex cardiac problems.

The Division of Cardiology is committed to achieving greater national recognition for leadership in innovation, collaboration and excellence. Our faculty's intellectual curiosity and spirit of inquiry define our culture, and our research and clinical care partnerships provide models for our peers.
at Vanderbilt University Medical Center in Nashville, Tenn. Boucek was the first medical director for the pediatric heart transplant programs at Vanderbilt and at the University of South Florida/All Children’s Hospital. He is active in clinical care and research in heart failure and cardiac transplantation. His basic research includes collaboration on myocardial regeneration strategies as applied to right ventricular failure. He is co-investigator on American Heart Association–funded projects to enhance the regenerative potential of heart cells. Boucek’s vision is to bring cardiac regeneration strategies to pediatric patients with an exciting initiative involving recruitment of experienced investigators and collaboration with the University of Washington’s Institute for Stem Cell and Regenerative Medicine.

Terrence U. Chun, MD, is attending pediatric cardiologist and pediatric electrophysiologist at Seattle Children’s Hospital and assistant professor at the University of Washington School of Medicine. Chun received his MD from Hahnemann University School of Medicine in Philadelphia, Pa., and completed his pediatrics residency at Cedars-Sinai Medical Center in Los Angeles, Calif. He also completed fellowships in pediatric cardiology at Cincinnati Children’s Hospital and a joint pediatric electrophysiology fellowship at the University of California, San Francisco, and Stanford University School of Medicine. Chun has expertise and training in pediatric cardiology, pediatric electrophysiology and implantation of pacemakers and defibrillators. Specific areas of clinical interest include catheter ablation of cardiac arrhythmias, postoperative arrhythmias, implantable device therapy for treatment of arrhythmias, heart failure and prevention of sudden cardiac death.

Michelle Z. Gurvitz, MD, MS, is attending physician at Seattle Children’s Hospital and assistant professor of pediatrics and adjunct assistant professor of medicine at the University of Washington School of Medicine. She cares for children on an outpatient basis in Children’s Heart Center and at Group Health Eastside and attends and consults on the inpatient service at Children’s. Gurvitz also participates in a unique program with Children’s and the University of Washington that supports the transition of older children with congenital heart disease from pediatric to adult cardiology care. She participates in a weekly clinic at the university for adults with congenital heart disease. Gurvitz received her MD from the University of California, Los Angeles, School of Medicine. She completed her internal medicine–pediatrics residency at the Cedars-Sinai Medical Center and her pediatric cardiology fellowship at the Mattel Children’s Hospital at UCLA. Gurvitz earned an MS in Health Services Research at the UCLA School of Public Health. She is board certified in pediatrics, pediatric cardiology and internal medicine. Gurvitz has expertise and training in adolescent and adult congenital heart disease. Specific areas of clinical research interest include the transition of adolescents with congenital heart disease to adult care and the epidemiology and long-term outcomes of adults with congenital heart disease.

Bruce Hardy, MD, is a pediatric cardiologist who maintains a close affiliation with Seattle Children’s Hospital. He practices in Missoula, Mont., and in outreach clinics throughout western Montana. Hardy travels monthly to Children’s and participates twice a week in cardiology conferences as part of telemedicine. He earned his MD at the University of Washington School of Medicine. He completed an internship at the University of Vermont, a pediatrics residency at the University of Utah and a pediatric cardiology fellowship at Oregon Health Sciences University. He is board certified in pediatrics and pediatric cardiology. He is a fellow of the American Academy of Pediatrics and the American College of Cardiology. Hardy also teaches in the Department of English at the University of Montana, specializing in James Joyce.

SPOTLIGHT ON TEAM MEMBER — Mary (Libs) Schlater, ARNP

For the last several years, Seattle Children’s and the University of Washington have provided a seamless model of medical care that allows teenagers and young adults with congenital heart defects to easily transition from pediatric to adult care. Our partnership with UW ensures that Seattle Children’s patients go on to maintain the best quality of life possible into adulthood.
Troy A. Johnston, MD, is the fellowship director and assistant director of the Cardiac Catheterization Laboratories at Seattle Children's Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine. He is certified by the American Board of Pediatrics and the sub-board in pediatric cardiology. Johnston is director of the pediatric cardiology clerkship, a curriculum that exposes the trainee to the basics of the subspecialty, and he works with residents and students on a one-on-one basis. He also supervises residents and students on the inpatient cardiology service. Johnston has participated in many multi-institutional clinical trials of devices used in transcatheter treatment of congenital heart disease and has led a research project examining the use of technology to improve the auscultation skills of pediatric trainees. He has been an abstract reviewer for the annual scientific session of the Society of Cardiovascular Angiography and Interventions.

Thomas K. Jones, MD, is a professor of pediatrics and adjunct professor of medicine at the University of Washington School of Medicine and has been the director of the Cardiac Catheterization Laboratories at Seattle Children's Hospital since 1991. He is a graduate of the Jefferson Medical College in Philadelphia; he completed his pediatrics residency at the University of Washington and his pediatric cardiology fellowship at the University of Colorado and the Denver Children's Hospital. He is a fellow of the American Academy of Pediatrics, the American College of Cardiology and the Society for Cardiovascular Angiography and Interventions. His work focuses on congenital and structural interventional cardiac catheterization. He has worked to pioneer several less invasive techniques to correct congenital heart conditions. He has participated as an investigator for most multicenter clinical trials in the United States, evaluating devices and procedures designed for these patients. His research interests are now focusing on percutaneous heart valve implantation. He serves on numerous national committees and task forces promoting guidelines and practice standards for patients with congenital heart disease. Jones collaborates with emerging technology companies to develop and test new products designed to treat congenital and structural heart conditions.

Isamu Kawabori, MD, is attending cardiologist at Seattle Children's Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. He attends in Children’s Heart Center, Children’s Bellevue Cardiology Clinic, Swedish Medical Center and Central Washington Hospital in Wenatchee, Wash. His teaching responsibilities at the university include pediatric cardiology and rehabilitation courses.

Yuk M. Law, MD, is director of Cardiac Transplant and Heart Failure Service at Seattle Children’s Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. He earned his MD at the University of California, Los Angeles, and completed his pediatrics residency at Yale–New Haven Hospital. He completed postgraduate training in pediatric cardiology at The Hospital for Sick Children, University of Toronto, Canada. He was director of the fellowship training program and director of the Heart Failure and Transplant Service at Doernbecher Children’s Hospital. Law is board certified in pediatric cardiology. He has an academic interest and clinical expertise in cardiopulmonary failure and heart transplant, and has subspecialty expertise in heart failure, pulmonary hypertension and thoracic organ transplant.

Aaron Olson, MD, is a general pediatric cardiologist with a special clinical interest in Kawasaki disease and cardiac manifestations of genetic disorders. He is involved in clinical research projects concerning novel treatments in Marfan syndrome and Kawasaki disease. His basic science research concerns cardiac hypertrophy and maintaining cardiac function in the face of hemodynamic stressors.

Michael A. Portman, MD, is director of research in the Division of Cardiology at Seattle Children’s Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine. He is attending physician at Children’s Heart Center and the Cardiology Clinic at Providence Everett Medical Center. Portman’s research activities include pharmaceutical clinical trials, basic science research projects focused on cardiac metabolism in animal models and mentoring future clinical researchers. He is an editorial board member of the American Journal of Physiology — Heart and Circulatory Physiology and co-investigator for a grant on cardiovascular research training.
Jack C. Salerno, MD, is director of the Electrophysiology and Pacing Service at Seattle Children’s Hospital and an assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. He earned his MD and completed a pediatrics residency at the University of California, San Diego. He completed his general pediatric cardiology fellowship followed by an advanced electrophysiology fellowship at Baylor College of Medicine/Texas Children’s Hospital in Houston, Texas. In 2007, Salerno was a planning committee member for the Parent Heart Watch National Convention on the Prevention of Sudden Cardiac Death in Young Athletes, an event sponsored by the University of Washington CME. Salerno has expertise and training in pediatric cardiology, electrophysiology studies with therapeutic ablation and implantation of cardiac pacemakers/rhythm management devices. Specific areas of clinical interest include long QT syndrome and sudden death in athletes.

Amy H. Schultz, MD, MSCE, sees patients at the main Seattle Children’s Hospital campus and at Children’s Olympia, attends in the echocardiography laboratory and attends on the inpatient cardiology service. Schultz is a graduate of the University of Pennsylvania School of Medicine. She completed her pediatric training at Johns Hopkins Hospital and her pediatric cardiology training at The Children’s Hospital of Philadelphia, and earned a master’s degree in clinical epidemiology at the University of Pennsylvania.

Stephen P. Seslar, MD, PhD, is attending physician at Seattle Children’s Hospital and assistant professor of pediatrics at the University of Washington School of Medicine. He is one of three pediatric electrophysiologists in the Division of Cardiology. He earned his MD and PhD (in cell biology) at Georgetown University. His clinical interests include arrhythmia management in adults with congenital heart disease, medical informatics and database design. He conducts clinical research on a variety of topics within pediatric and adult congenital electrophysiology.

Brian D. Soriano, MD, is attending cardiologist at Seattle Children’s Hospital and assistant professor of pediatrics at the University of Washington School of Medicine. He co-directs cardiac MRI at Children’s, where he helped establish the program in late 2007. After completing medical school at the University of Toledo he completed his combined residency in pediatrics and internal medicine at the University of Illinois in Chicago. He finished his training in clinical cardiology at Children’s Hospital Boston. At the same institution he spent an additional year as a senior fellow in noninvasive imaging, and maintained his interest in adult congenital heart disease. He is board certified in pediatric cardiology, general pediatrics and internal medicine. His clinical and research interests include cardiac MRI, echocardiography and 3-D echocardiography.

Stanley J. Stamm, MD, FAAP, FACC, is attending cardiologist at Seattle Children’s Hospital and clinical professor of pediatrics at the University of Washington School of Medicine. He earned his MD at St. Louis University. His clinical interest is general cardiology. He is board certified in pediatric cardiology and general pediatrics. His teaching includes 24 pediatric residents rotating through his clinic. His special interest is the Stanley Stamm Children’s Hospital Camp for special-needs children.

Karen Stout, MD, directs the Adult Congenital Heart Disease Program, a collaborative program between Seattle Children’s Hospital and the University of Washington. Stout spends half of her time at Children’s and half at the University of Washington, seeing adolescent and adult congenital heart disease patients at both institutions. She continues to teach medical students, residents, fellows and other faculty in various settings, including medical school courses, outpatient and inpatient clinical arenas, conferences and CME events.

Margaret M. Vernon, MD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. Vernon sees outpatients at Seattle Children’s and Children’s Bellevue, attends and consults on inpatients at Children’s and is part of the echocardiography and telemedicine team at Children’s. In addition, she participates in the Prenatal Diagnosis and Treatment Program, a unique combined program of the University of Washington and Children’s focusing on the prenatal diagnosis of and management of complex anomalies. Vernon earned her MD from the University of Rochester School of Medicine; she completed her pediatric residency at Children’s and her pediatric cardiology fellowship at Children’s Hospital Boston. She is board certified in pediatrics and pediatric cardiology. Vernon has an academic interest and clinical expertise in the prenatal diagnosis of congenital heart disease and arrhythmias.
Delphine Yung, MD, is attending cardiologist at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. She cares for children in the outpatient clinic in Children’s Heart Center and also attends and consults on the inpatient service. Yung received her MD from Stanford University. She completed an internship and junior residency in pediatrics at Children’s Hospital Boston and a senior residency in pediatrics at Lucile Packard Children’s Hospital at Stanford. She completed her pediatric cardiology fellowship at Children’s Hospital of New York, Columbia University. Yung has expertise and training in all aspects of pediatric cardiology, particularly pulmonary hypertension and exercise testing. Her clinical interests include cardiomyopathy, pulmonary hypertension, transplant and the exercise lab at Seattle Children’s Heart Center. Her current research focuses on exercise capacity in patients with chronic diseases.

RESEARCH FUNDING

New
Michael A. Portman, MD
Etanercept in Kawasaki disease. Amgen. $78,272.

FcR mutations in Kawasaki disease.
NHLBI/NIH/DHHS. $270,739.

Continuing
Michael A. Portman, MD
Thyroid regulation in the developing heart.
NHLBI/NIH/DHHS. $299,321.

Triostat in children during CPB. U.S. Food & Drug Administration. $87,500.

Delphine Yung, MD
Registry to evaluate early and long-term pulmonary and arterial hypertension disease management.
Cotherix, Inc. $95,185.

TEACHING AND PRESENTATIONS

Robert J. Boucek Jr., MD


Michelle Z. Gurvitz, MD, MS


Bruce Hardy, MD

Thomas K. Jones, MD


Mark B. Lewin, MD


Karen Stout, MD

PUBLICATIONS


Craniofacial Medicine

The Division of Craniofacial Medicine provides the highest quality interdisciplinary care for patients with congenital and acquired craniofacial conditions. Our faculty’s expertise spans the fields of epidemiology, genetics, developmental biology and clinical research. We provide outpatient and inpatient care at Seattle Children’s Hospital and comprehensive consultations at both Children’s and the University of Washington Medical Center.

Pediatric craniofacial medicine faculty coordinate care through Children’s Craniofacial Center and several specialty clinics. Currently we have a weekly team interdisciplinary clinic that provides comprehensive multispecialty care for children with malformations of the head and neck. In addition to our team clinic, we provide smaller specialized interdisciplinary clinics focused on particular patient groups. These clinics include the Plagiocephaly Clinic, which provides the diagnosis and management of postnatal deformational plagiocephaly; the Prenatal Clinic, which provides prenatal assessment, education and counseling for mothers and families after the prenatal diagnosis of a craniofacial condition; the Craniofacial Genetics Clinic, which provides diagnostic evaluations, education and counseling for families affected by craniofacial conditions; and the 22q clinic, which provides care coordination for children born with 22q11.2 deletion (velocardiofacial/DiGeorge syndrome).

These clinical programs provide long-term management of craniofacial conditions, including family education.

The chief of the Division of Craniofacial Medicine also directs the Center for Craniofacial Research, which supports interdisciplinary research for the division. We pursue state-of-the-art basic science and clinical research to develop improved diagnostic, preventive and health-care delivery strategies while discovering new information on the pathogenesis of these conditions. Our long-term goal is to develop an interdisciplinary research program that parallels our clinical center and to become an international leader in craniofacial-related science.

**FACULTY**
Michael L. Cunningham, MD, PhD, Chief
Timothy C. Cox, PhD
Carrie L. Heike, MD, MS
Anne V. Hing, MD
Charlotte W. Lewis, MD, MPH
Wendy Mouradian, MD, MS
Jacqueline R. Starr, PhD, MS, MPH

**PROFESSIONAL PROFILES**

**Michael L. Cunningham, MD, PhD,** is chief of the Division of Craniofacial Medicine at Seattle Children’s Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine. Cunningham is medical director of Children’s Craniofacial Center and holds the Jean Renny Endowed Chair in Craniofacial Medicine. He is also adjunct associate professor at the University of Washington School of Medicine and School of Dentistry in the Departments of Biological Structure, Oral Biology and Pediatric Dentistry. Cunningham balances responsibilities in administration, patient care and research. He does bedside teaching of medical students, dental students and pediatrics residents. His clinical interests focus on the diagnosis and long-term interdisciplinary care of children with craniofacial malformations, with a particular interest in craniosynostosis. He is co-investigator on several clinical research projects, ranging from the
The breadth and depth of the Craniofacial Center’s interdisciplinary team has recently expanded with the addition of pediatric dentistry and additional speech therapy, nursing, clinical nutrition and surgery practitioners. I’m excited about this growth because it helps us provide a higher quality of holistic care to our current patients, while being better staffed to serve new patients and their families.

Epidemiology of positional plagiocephaly to the risk factors for obstructive sleep apnea. Cunningham’s basic molecular and developmental biology lab has been open since 1993 and is using mouse and tissue culture models to investigate the molecular causes of craniosynostosis and developmental pathogenesis of midface hypoplasia associated with syndromic craniosynostosis. In 2008 Cunningham will lead an NIH-funded project bringing together investigators from Children’s and the University of Washington to identify new molecular causes of craniosynostosis.

Timothy C. Cox, PhD, is research associate professor in the Department of Pediatrics at the University of Washington School of Medicine. He is also an adjunct faculty member in the Department of Oral Biology and an affiliate member of the Center on Human Development and Disability. He obtained his PhD from the University of Adelaide, Australia, and has held several leading positions in craniofacial medicine in Australia, including director of genetic programs at the Australian Craniofacial Unit. His primary research interests focus on the genetic and epigenetic factors that regulate development of the craniofacial region and how perturbations in these factors contribute to the presentation of craniofacial malformations, in particular, cleft lip and palate. He has also had a long interest and involvement in both X-linked and mitochondrial diseases. His research team employs existing and newly developed in-house genetic technologies and state-of-the-art 3-D imaging capabilities to investigate mouse and chick embryo models of cleft lip and palate.

Carrie L. Heike, MD, MS, is attending physician at Seattle Children’s Hospital and acting assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. Heike completed her clinical fellowship in the Craniofacial Center at Children’s. Her research focuses on the genetic epidemiology of craniofacial conditions. Heike has a special interest in working with families and children with 22q11.2 deletion syndrome. She is investigating the genetic variation in children with this syndrome and aims to understand whether this variation contributes to the development of craniofacial anomalies in 22q11.2 deletion syndrome. She is also using 3-D imaging combined with anthropometry to quantify the craniofacial variation in children with and without conditions that affect craniofacial structures.

Anne V. Hing, MD, is attending physician at Seattle Children’s Hospital, assistant professor in the Department of Pediatrics at the University of Washington School of Medicine and adjunct faculty member in the Division of Medical Genetics. Hing’s clinical interests include the diagnosis and management of infants, children and adolescents with craniofacial and genetic conditions. She works in the Craniofacial and Craniofacial Genetics Clinic and the Limb Deficiency Clinic, and also serves as a genetics consultant in seven different outreach genetics clinics throughout the states of Washington and Alaska. Hing coordinates the craniofacial resident elective course and provides bedside teaching. She has served as Children’s principal investigator in a multi-center international study of the genetics of cleft lip and palate for the past seven years. She is also mapping a rare autosomal recessive craniofacial disorder and is a co-investigator in a study looking at potential causes of hemifacial microsomia.

Charlotte W. Lewis, MD, MPH, is attending physician at Seattle Children’s Hospital. Dr. Lewis is an associate professor in the Department of Pediatrics at the University of Washington School of Medicine. She is an adjunct associate professor in the Department of Pediatric Dentistry. Her primary research interest is improving the oral health of children with craniofacial conditions and other special needs. She also does
research in disparities in health and health-care access, with a specific focus on oral health and access to dental care. Her research has involved documenting disparities in access to oral health services for low-income and special-needs children as well as developing and evaluating strategies to improve children’s oral health.

Wendy Mouradian, MD, MS, is professor of pediatric dentistry and pediatrics at the University of Washington, with adjunct appointments in dental public health sciences and health services at the School of Public Health and Community Medicine. Mouradian is faculty associate in the Department of Medical History and Bioethics. She is director of Regional Initiatives in Dental Education and was recently named associate dean for Regional Affairs; she will oversee the implementation of the school’s new distributed, community-based model for education of dental students in eastern Washington. Previously, she was director of the craniofacial program at Seattle Children’s. She earned her MD from Columbia University and her MS from the Massachusetts Institute of Technology. She completed a fellowship in developmental pediatrics and a certificate in health-care ethics at the University of Washington. Mouradian has played a national role in calling attention to the importance of children’s oral health and in addressing oral health training needs for medical professionals. She received several national awards for her role organizing and chairing The Face of a Child: Surgeon General’s Conference on Children and Oral Health, and was recognized by the American Dental Education Association for her efforts to advance children’s oral health. She was elected to the University of Washington chapter of the dental honor society, Omicron Kappa Upsilon. Her research areas include quality of life for children with craniofacial conditions, ethics and policy related to children’s oral health.

Jacqueline R. Starr, PhD, MS, MPH, is epidemiologist at Seattle Children’s Hospital and research associate professor of pediatrics and epidemiology at the University of Washington School of Public Health and Community Medicine. Starr works full-time in Children’s Craniofacial Center. Her primary research interests relate to identifying genetic variants that may contribute to the occurrence of craniofacial anomalies, with a particular focus on craniofacial microsomia. She also collaborates on research projects that broadly target the causes and outcomes of craniofacial anomalies.

**RESEARCH FUNDING**

**New**

Timothy C. Cox, PhD, and Michael L. Cunningham, MD, PhD  
Acquisition of image analysis equipment. M.J. Murdock Charitable Trust. $381,500.

Charlotte W. Lewis, MD, MPH  
Caries prevalence in orofacial clefting: a pilot study for an oral health case management RCT. NIH/NIDCR. $148,867.

Jacqueline R. Starr, PhD, MS, MPH  
Craniofacial microsomia: the vascular disruption hypothesis. NIDCR/NIH/DHHS. $105,750.

Craniofacial microsomia and genetic variation in homeostasis and vasculogenesis. NIDCR/NIH/DHHS. $382,079.

**Continuing**

Carrie L. Heike, MD, MS  
Craniofacial and genetic variation in 22q11.2 deletion syndrome. NIDCR/NIH/DHHS. $125,925.

**TEACHING AND PRESENTATIONS**

Timothy C. Cox, PhD  


Michael L. Cunningham, MD, PhD


Charlotte W. Lewis, MD, MPH

Jacqueline R. Starr, PhD, MS, MPH


PUBLICATIONS


The Division of Critical Care Medicine delivers comprehensive state-of-the-art critical care medicine focused in three clinical arenas: cardiac intensive care at Children’s Hospital, medical-surgical intensive care at Children’s and trauma intensive care at Harborview Medical Center. Children’s Pediatric Intensive Care Unit (PICU) and Cardiac Intensive Care Unit (CiCU) represent an epicenter for a number of high-profile Children’s programs, including the Heart Center, Seattle Cancer Care Alliance, solid organ transplant, neurosurgery, craniofacial surgery, hematology-oncology, Airlift Northwest and a range of extracorporeal life-support technologies. With a “right care right now” attitude, 12 Critical Care Medicine faculty and seven fellows oversee all care in Children’s ICUs.

Several crucial concepts first evolved within Children’s ICUs, including family-centered care, formal quality-improvement and patient-safety initiatives, computerized physician order entry, severity-of-illness risk-adjusted outcomes analysis and innovative infection-control programs. Children’s ICUs received a design award from the Society of Critical Care Medicine and the American Institute of Architecture and serve as a family-friendly safe haven for critically ill children in the WAMI region.

Critical Care Medicine faculty are involved in clinical, research, teaching and service activities within the Department of Pediatrics, Children’s, Harborview Medical Center and the University of Washington. Despite the very high clinical intensity involved in intensive care training, Critical Care Medicine fellows all participate in basic, translational-clinical or outcomes research with an expectation of an academic career following fellowship training. The critical care medicine fellowship program is an ACGME-accredited three-year program with seven hospital-funded fellowship positions. Fellows divide their clinical time between Children’s PICU and CiCU and the Harborview Medical Center Neurosurgical ICU. Fellows take a lead role in directing the care of all infants and children while providing supervision and education for pediatric and anesthesia residents on rotation.

Major areas of research for faculty include patient safety and continuous quality improvement, Lean process, pulmonary ventilation-perfusion matching, innate immunity in critical illness, cardiac mechanical assist support, applied gene therapy acute lung injury and repair, critical asthma therapy, in vivo intracellular oxygen transport and consumption, endogenous and exogenous corticosteroids in pediatric sepsis, computerized decision support tools, disaster preparedness and long-term outcome measures following pediatric critical illness. Children’s is a charter performance site in the NIH/NCiHD Collaborative Pediatric Critical Care Research Network.

Current administrative projects include 24/7 attending staff in-house coverage, rapid response team development, extracorporeal life-support implementation during cardiopulmonary resuscitation, transport extracorporeal life support, standardized sedation/analgesia protocol, NACHRI bloodstream reduction initiative and PICU/CiCU continuous quality improvement implementing a Lean focus value-stream methodology.

**Faculty**

Jerry J. Zimmerman, MD, PhD, FCCM, Chief

Harris P. Baden, MD

Thomas V. Brogan, MD

Michael P. Davis, MD

David S. Jardine, MD

Howard E. Jeffries, MD, MPH, MBA

Robert Mazor, MD

John K. McGuire, MD

Joan S. Roberts, MD

Kenneth A. Schenkman, MD, PhD

Lincoln Smith, MD

Ofer Yanay, MD

**Professional Profiles**

Jerry J. Zimmerman, MD, PhD, FCCM, is chief of the Division of Critical Care Medicine and director of the Pediatric Intensive Care Unit at Seattle Children’s Hospital. He is professor of pediatrics and anesthesiology at the University of Washington School of Medicine. Zimmerman has been chair of the Scientific Advisory Committee for Children’s Clinical Research Center since its inception. He is a member of the Society of Critical Care Medicine and a charter member of the
American College of Critical Care Medicine. With Dr. Bradley Fuhrman, Zimmerman is co-editor of the textbook for the field, Pediatric Critical Care, now in its third edition. Additionally, Zimmerman serves on the editorial boards for Critical Care Medicine and Pediatric Critical Care Medicine, and is book review editor for both journals. He provides ad hoc review for a number of other journals and has served on a number of NIH review panels. Zimmerman is interested in the disequilibrium between the systemic inflammatory response syndrome and compensatory anti-inflammatory response syndrome that occurs as an important aspect of pathophysiology in critical illness. He is intrigued by the integrated role of neurological, endocrinologic and inflammatory cross talk involved in the stress response to critical illness. Zimmerman was chosen as a charter principal investigator for the recently established Collaborative Pediatric Critical Care Research Network. Recently he has undergone Lean Leadership Training in Seattle and Japan as a novel tool for directing continuous quality improvement within the PICU/CICU.

Harris P. Baden, MD, is director of the Cardiac Intensive Care Program at Seattle Children's Hospital and associate professor of pediatrics and director of the pediatric critical care medicine fellowship program at the University of Washington School of Medicine. He completed his fellowship training in the Department of Anesthesiology at Children's. Baden serves on the ICU Leadership Committee and the hospital Quality Improvement Steering Committee and is medical director of the Point of Care Testing Program for the hospital. His clinical, teaching and research interests relate to pediatric cardiac intensive care, quality improvement, professionalism and medical education.

Thomas V. Brogan, MD, is an attending physician at Seattle Children's Hospital and Harborview Medical Center and associate professor of pediatrics at the University of Washington School of Medicine. He completed a residency in pediatrics and a fellowship in pediatric critical care medicine. Brogan has published a number of peer-reviewed articles and several chapters with an emphasis on respiratory physiology. He has also published a number of articles related to pediatric critical care, including studies on mechanical ventilation, necrotizing fasciitis and ECMO. Brogan's laboratory-based research centers on pulmonary blood flow, the effects of carbon dioxide on changes in pulmonary blood flow and the matching of ventilation to pulmonary blood flow. He has been a collaborating researcher on several research projects. He also serves as reviewer for a number of medical journals. In addition to his research he has served as director of PICU extracorporeal support services at Children's since 2001. He also serves as a member of the Airlift Landing Review Committee.

Michael P. Davis, MD, is assistant professor of pediatrics at Seattle Children's Hospital and medical director of the PICU at Harborview Medical Center. He completed his residency at the University of Maryland and a fellowship in critical care at Seattle Children's. In addition to providing clinical care, he serves on multiple committees including the Blood Utilization and Transplant committees at Children's, and on the Trauma Council, Pediatric Council and ICU Steering Committee at Harborview. He has special interest in education and is responsible for resident education in the PICU; he is responsible for quality improvement measures in the PICU at Harborview as well. Davis is also a member of the Governor's Emergency Medical Services and Trauma Care Steering Committee Technical Advisory Committee.
David S. Jardine, MD, attends in anesthesiology and critical care at Seattle Children’s Hospital and pediatric critical care at Harborview Medical Center, and he is associate professor of anesthesiology and pediatrics at the University of Washington School of Medicine. He completed residencies in pediatrics and anesthesiology, and a fellowship in pediatric anesthesiology and intensive care. He has published numerous chapters and peer-reviewed articles, with an emphasis on hemorrhagic shock and encephalopathy syndrome, which is a special interest of his. His laboratory-based research interests are in using heat shock proteins as biomarkers and in examining the protective effect of heat shock proteins during brain injury. He has been principal investigator on a number of grants. He serves as the Seattle associate PI for the Collaborative Pediatric Critical Care Research Network. He has served as a reviewer for a variety of medical journals. He serves on the Institutional Review Board at Children’s and on the research committee for the Department of Anesthesiology. He is currently the president of the SIDS Foundation of Washington, a position he has filled for the last two years.

Howard E. Jeffries, MD, MPH, MBA, is attending physician at Seattle Children’s Hospital and clinical associate professor of pediatrics at the University of Washington School of Medicine. He completed a residency in pediatrics and a fellowship in pediatric intensive care. Jeffries is the director of quality improvement for critical care services. He has published chapters and peer-reviewed articles, with an emphasis on cardiac intensive care, informatics and quality improvement. He sits on the advisory board for the Virtual PICU and the Washington State Healthcare-Associated Infections Advisory Committee, and has played an active role in the development of a national cardiac ICU database. Other interests include health-care finance, billing and compliance issues. He is the vice-chair of the Children’s University Medical Group (CUMG) Physician Education and Compliance Committee, and is a member of the University of Washington CUMG Retirement & Benefits Committee, the Children’s Hospital Pharmacy & Therapeutics Committee and the Children’s Infection Control Committee.

Robert Mazor, MD, is attending physician in the cardiac ICU at Seattle Children’s Hospital and assistant professor of pediatrics at the University of Washington School of Medicine. He completed a residency in pediatrics and fellowships in pediatric critical care medicine and pediatric cardiology. Mazor has an interest in congenital heart disease and mechanical circulatory support. He also has a special interest in education, serving as the educational coordinator for fellow and resident cardiac critical care electives. He has completed the University of Washington’s teaching scholars program.

John K. McGuire, MD, is attending physician in the PICUs at Seattle Children’s Hospital and Harborview Medical Center and assistant professor of pediatrics at the University of Washington School of Medicine. McGuire earned his MD from Northwestern University, and trained in general pediatrics and pediatric critical care medicine at Children’s Memorial Hospital and Northwestern University in Chicago. He is board certified in general pediatrics and pediatric critical care medicine and is a member of several academic societies including the American Thoracic Society and the American Society for Matrix Biology. McGuire is a member of the University of Washington Center for Lung Biology. His laboratory work is directed at understanding how matrix metalloproteinases (MMPs) regulate epithelial repair and contribute to tissue fibrosis and chronic organ dysfunction in the lung and kidney. Related projects are focused on elucidating the role of MMPs in viral and bacterial lung infections. McGuire serves as a member of the Accreditation Council for Graduate Medical Education Board of Appeals Panel for Pediatrics and serves on the Lung, Resuscitation and Respiration study section for the American Heart Association.

Joan S. Roberts, MD, is attending physician in the PICUs at Seattle Children’s Hospital and Harborview Medical Center and assistant professor of pediatrics at the University of Washington School of Medicine. Roberts earned her MD at the University of Nevada. She did her pediatrics residency at Children’s and served as chief resident; she also completed her critical care training at Children’s. Roberts has authored more than two dozen scientific manuscripts and abstracts. She has been a Children’s representative to the national Pediatric Acute Lung Injury and Sepsis Investigators
(PALISI) Network. She is interested in clinical outcomes research and in decreasing time needed for mechanical ventilation in sick children with lung disease and asthma. Roberts is director of the Children's Hospital Mock-Code Team and also chairs the Hospital Code Blue Committee.

Kenneth A. Schenkman, MD, PhD, is attending physician in the PICUs at Seattle Children's Hospital and Harborview Medical Center; he is associate professor of pediatrics and anesthesiology and adjunct associate professor of bioengineering at the University of Washington School of Medicine. He is director of critical care medicine research at Children's. Schenkman received his MD from Indiana University and completed a pediatrics residency at Children's Hospital of Pittsburgh, where he also served as chief resident. He trained in pediatric critical care at Seattle Children's and received a PhD in bioengineering from the University of Washington. He has an active research program developing optical spectroscopic technologies for clinical assessment of intracellular oxygenation and mitochondrial function. Schenkman has been awarded a U.S. patent and has filed three additional patent applications in the last two years for his pioneering work on developing an intracellular oxygen monitor. Schenkman has published dozens of manuscripts and abstracts in the field of optical spectroscopy for physiologic and clinical applications and has published several book chapters on pediatric critical care topics. He has also been an active reviewer for journals in the fields of medicine, physiology and engineering.

Ofer Yanay, MD, is attending physician at Seattle Children's Hospital and Harborview Medical Center and assistant professor of pediatrics at the University of Washington School of Medicine. He completed a residency in pediatrics and a fellowship in pediatric critical care. He has published chapters and peer-reviewed articles with an emphasis on gene therapy. His laboratory-based research centers on lentivirus-based vectors and on gene therapy-based treatment for diabetes.

RESEARCH FUNDING

Continuing
John K. McGuire, MD
Matrilysin in lung epithelial cell migration. NIH/National Heart, Lung, and Blood Institute. $121,972.

Jerry J. Zimmerman, MD, PhD, FCCM
1st tier drugs ± theophylline in pediatric severe asthma — parent and various protocols. NICHD/NIH/DHHS. $368,171.

PUBLICATIONS


The Division of Emergency Medicine provides 24-hours-per-day, 365-days-per-year care for children from birth through age 21. We provide specialized physician, nursing, social services and environmental expertise in management of urgent, emergency and critical medical and surgical issues.

Emergency Medicine is dedicated to providing premier quality, up-to-date, consistent, safe and efficient pediatric emergency care in a family-centered environment. Our team’s focus on excellence and process improvement has increased patient satisfaction, decreased length of stays and improved other metrics of emergency medical-care delivery. We opened an additional 7-bed acute emergency treatment area in January 2007, which increased our total beds to 25, with an additional 8 beds available during evenings and weekends. This and a corresponding increase in physician, nursing and administrative time have improved our ability to respond to our patients and community and to ensure optimal quality and efficiency.

Emergency Medicine treats approximately 32,000 patients per year, with half of all patients who are admitted to Children’s initially cared for in the department. Over 120 residents from the University of Washington pediatrics training program and multiple family medicine and emergency medicine programs train in our division each year. We are also invested in the education of medical, nursing and paramedic students. The division sponsors an ACGME-approved pediatric emergency medicine fellowship program, currently with four fellows with a background of pediatrics or emergency medicine.

Our 17 faculty physicians and 15 clinical pediatric physicians provide care in the department and in Urgent Care Centers. Dr. Jennifer Reid and Dr. Kimberly Stone joined the division in 2007. We are involved in primary and collaborative clinical research focusing on education, sedation, respiratory illnesses, infectious diseases, injury management, injury prevention, informatics, quality, resuscitation and safety.

Our physicians are world leaders in the field of injury prevention. We are among the first to begin to evaluate the causes of and solutions to racial disparities in drowning and other types of injury. Dr. Linda Quan is a national leader in addressing the most common cause of drowning — open-water drowning. We are spearheading an international group to develop consensus-based recommendations for prevention of this global-health issue.

**FACULTY**

George A. Woodward, MD, MBA, Director
Julie C. Brown, MD, MHSc, MPH
Dena R. Brownstein, MD
Mark A. Del Beccaro, MD
Douglas S. Diekema, MD, MPH
Brianna K. Enriquez, MD
Ron L. Kaplan, MD
Eileen J. Klein, MD, MPH
Suzan S. Mazor, MD
Russell T. Migita, MD
Carolyn A. Paris, MD, MPH
Linda Quan, MD
Jennifer R. Reid, MD
Stephanie H. Richling, MD
Richard Shugerman, MD
Kimberly P. Stone, MD, MS
Paige Wright, MD, MS

**PROFESSIONAL PROFILES**

**George A. Woodward, MD, MBA,** is director of the Division of Emergency Medicine at Seattle Children’s Hospital and professor in the Division of Pediatric Emergency Medicine, Department of Pediatrics at the University of Washington School of Medicine. He is director for Transport Medicine at Children’s. He received his MD from Temple University Medical School and his MBA from The Wharton School at the University of Pennsylvania. He completed an internship and residency at St. Christopher’s Hospital for Children in Philadelphia and a fellowship at the Pediatric Emergency Medicine Program at Children’s Hospital of Philadelphia. He held faculty positions at the University of Pennsylvania School of Medicine and Primary Children’s Medical Center in Salt Lake City.
Utah. Woodward is a member of the Children’s University Medical Group board of directors. He has been awarded the Norcliffe Foundation Endowed Chair in Pediatric Emergency Medicine and has been elected as member of the American Pediatric Society, a society exclusively for pediatric research. Woodward’s specialty and board certifications include being an ACLS provider and an ATLS provider, and being certified as a Pediatric Education for Prehospital Professionals (PEPP) provider and instructor. He has held several editorial positions and authored numerous publications.

Julie C. Brown, MD, MHSc, MPH, is emergency medicine attending physician at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. She received her MD from McGill University, Montreal; an MHSc from the University of British Columbia, Vancouver; and an MPH from the University of Washington. She completed her residency and pediatric emergency medicine fellowship at Children’s. She is board certified in general pediatrics and pediatric emergency medicine by the American Board of Pediatrics. She is a member of the American Academy of Pediatrics and the Ambulatory Pediatric Association. She is also a member of the Scientific Advisory Committee for the Pediatric CRC (Clinical Research Center) funded by the NIH. She is principal investigator for three separate research studies, is ATLS- and ACLS-certified and is an instructor for PALS.

Dena R. Brownstein, MD, is attending physician at Seattle Children’s Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. She is quality improvement coordinator in the Department of Medicine at Children’s. She received her MD from the University of Washington, completing her residency at Children’s and a fellowship in pediatric emergency medicine at Children’s Hospital of Philadelphia. She is board certified in general pediatrics and pediatric emergency medicine by the American Board of Pediatrics, and is diplomate of the National Board of Medical Examiners. Brownstein is coordinator of the University of Washington’s internship for paramedic students and director of the paramedic course. She is co-chair of the American Academy of Pediatrics national Pediatric Education for Prehospital Professionals (PEPP) Steering Committee and a member of the American Academy of Pediatrics–Emergency Medical Services for Children Subcommittee of Quality Indicators. Brownstein is a member of regional and national organizations and is the recipient of numerous awards, including the University of Washington Outstanding Public Service Award. Brownstein was co-investigator on research for the Developmental Center for Education and Research in Pediatric Safety from 2001 to 2004.

Mark A. Del Beccaro, MD, is attending physician at Seattle Children’s Hospital and professor at the University of Washington School of Medicine. He served as associate director of the Division of Emergency Medicine and is now pediatrician-in-chief and vice chair for clinical affairs. Del Beccaro is also the chief medical information officer and chairs the Medical Informatics/Medical Records Committee and Children’s University Physician Billing Education and Compliance Committee. He received his MD from the University of Washington and completed his residency and was chief pediatrics resident at Children’s and the University of Washington Medical Center. He completed a program in medical management at the University of Washington. Del Beccaro is board certified in general pediatrics and pediatric emergency medicine by the American Board of Pediatrics, and he is certified by the American Heart Association in PALS. He is a member of many regional and national associations. He is sought after nationally as a speaker on the subject of medical informatics and has an extensive bibliography.

I work in the ED because of its atmosphere of change. I am surrounded by “can-do” people who embrace change for the good of patients and their families. Our growing patient census presented us with the opportunity to change patient flow and add care teams — an effort that has resulted in a safer and more timely patient-family experience.
Douglas S. Diekema, MD, MPH, is director of education for the Treuman Katz Center for Pediatric Bioethics and attending physician in the Division of Emergency Medicine at Seattle Children’s Hospital. He is professor in the Division of Bioethics in the Department of Pediatrics at the University of Washington School of Medicine, and adjunct professor in the Department of Medical History and Ethics. He is also adjunct professor in the Department of Health Services at the University of Washington School of Public Health. He has been a member of Children’s Ethics Committee since 1991, has served as an ethics consultant since 1993 and is chairperson of the Institutional Review Board. He serves as chair of the Committee on Bioethics of the American Academy of Pediatrics and is a member of the Ethics Committee of the American Board of Pediatrics. He is consulting editor of AAP Grand Rounds. Diekema is co-author of Christian Faith, Health and Medical Practice and the author of numerous scholarly publications in medical ethics and pediatric emergency medicine.

Brianna K. Enriquez, MD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. She received her MD from the University of California in San Francisco. She completed her residency and fellowship at UCLA Medical Center. Enriquez has received certification from the American Board of Emergency Medicine and is board certified in pediatric emergency medicine. She has written several publications during her fellowship and will continue looking for future writing opportunities as she begins her faculty position at Children’s.

Ron L. Kaplan, MD, is emergency attending physician at Seattle Children's Hospital and clinical associate professor at the University of Washington School of Medicine. He earned his MD with highest honors from the University of North Carolina School of Medicine. He completed his residency at the University of North Carolina Hospitals and a fellowship in pediatric emergency medicine at Children’s Hospital Boston. He is board certified in general pediatrics and pediatric emergency medicine by the American Board of Pediatrics. His teaching responsibilities include education in the emergency department and monthly didactic sessions with Children's housestaff. He is involved in the research project Clinical Decision Rule for Identifying Children with Cerebrospinal Fluid Pleocytosis at Very Low Risk for Bacterial Meningitis.

Eileen J. Klein, MD, MPH, is attending physician at Seattle Children’s Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. She is director of the pediatric emergency medicine fellowship at Children’s and the University of Washington. She received her MD from Johns Hopkins School of Medicine and her MPH in epidemiology from the University of Washington School of Public Health. She completed her residency in pediatrics and a fellowship in pediatric emergency medicine at Children’s and the University of Washington. She is a fellow of the American Academy of Pediatrics and a member of the Ambulatory Pediatric Association. She is board certified in general pediatrics and pediatric emergency medicine by the American Board of Pediatrics. She is certified by the American Heart Association in PALS. Klein trains pediatric emergency medicine fellows and regularly teaches locally and regionally. Her main research interest is analgesia and sedation. She is currently studying sedation for minor procedures in the emergency department. She has an extensive bibliography.

Suzan S. Mazor, MD, is emergency attending physician at Seattle Children’s Hospital and assistant professor at the University of Washington School of Medicine. She is pediatric emergency medicine fellowship director at Children’s. She received her MD from University of Illinois at Chicago, Ill. She completed her residency at Children’s Hospital Medical Center in Cincinnati, Ohio; a fellowship in pediatric emergency medicine at Children’s Memorial Hospital, Chicago, Ill.; and a fellowship in medical toxicology at Toxikon Consortium, John H. Stroger Hospital of Cook County, Chicago, Ill. Mazor is associate medical director of the Washington Poison Control Center in Seattle, Wash. She is a member of the American College of Medical Toxicology, American Board of Pediatrics, Ambulatory Pediatric Association and the Section on Emergency Medicine of the American Academy of Pediatrics. She is diplomate of the American Board of Medical Toxicology, Pediatric Emergency Medicine, American Board of Pediatrics and National Board of Medical Examiners.
Russell T. Migita, MD, is attending physician and clinical director of emergency services at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. He earned his MD from the University of California, San Diego School of Medicine. He completed his internship, residency and fellowship at the University of Washington. Migita has received certification from the American Board of Pediatrics and is a certified PALS provider and instructor and ATLS provider. His special responsibilities include membership on Children's Emergency Department Continuous Process Improvement Management Guidance Team and the Emergency Department CME Course Planning Committee. Migita received the University of Washington Fellow Teaching Award in 2004.

Carolyn A. Paris, MD, MPH, is emergency attending physician at Seattle Children’s Hospital and assistant professor at the University of Washington School of Medicine. She received her MD from Cornell University Medical College and her MPH in epidemiology from the University of Washington School of Public Health. She completed a residency at Harbor-UCLA Medical Center and a fellowship at Children’s. She is board certified and licensed through the National Board of Medical Examiners and the American Heart Association in pediatrics. Paris is a member of the American Academy of Pediatrics and the Ambulatory Pediatric Association. Her local responsibilities include Children’s Fellowship Committee, adverse events monitoring for JDRF Study of Autoimmunity and the University of Washington Faculty Senate. She is ad hoc reviewer for the journals *Acta Paediatrica*, *Pediatrics* and *Pediatric Emergency Care*. Paris also has an interest in research. Her extensive bibliography includes her latest study, SEARCH for Diabetes in Youth.

Linda Quan, MD, is emergency attending physician at Seattle Children’s Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine. She received her MD from the University of Washington, where she trained as an intern, resident and fellow. She was chief of emergency services at Children’s for more than two decades. Quan is board certified by the American Board of Pediatrics in emergency medicine. She has served on many committees for the American Academy of Pediatrics, American Heart Association, National Emergency Medical Services for Children Data Analysis Resource Center (NEDARC), Emergency Medical Services for Children (EMS-C) and CDC Injury Prevention Centers. She has spent a large part of her career on research, spearheading a long list of biomedical research grants. She has received numerous awards and has an extensive bibliography. Quan has recently become a member of the Advisory Council on First Aid, Aquatics, Safety and Preparedness sponsored by the American Red Cross.

Jennifer R. Reid, MD, is attending physician at Seattle Children’s Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine. She earned her MD from the University of Washington School of Medicine. She completed her residency at Children’s Hospital of Philadelphia and her fellowship at Seattle Children’s. She is a current member of the code blue response team at Children’s. She has received certification from the American Board of Emergency Medicine and is a certified PALS provider and instructor.

Stephanie H. Richling, MD, is attending physician at Seattle Children’s Hospital and has a dual assistant professorship with the Department of Pediatrics and the Emergency Medicine Section of the University of Washington School of Medicine. She earned her MD from Brown University Medical School. She completed her residency and fellowship at Vanderbilt University Medical School. Richling has received certification from the American Board of Emergency Medicine and is a certified PALS provider and instructor and an ATLS provider. Richling is a member of the American College of Emergency Physicians (ACEP), Pediatric Emergency Medicine Section.

Richard Shugerman, MD, is emergency attending physician at Seattle Children’s Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine. He is director of the pediatrics residency program at the University of Washington. He received his MD from the University of Alabama School of Medicine in Birmingham and completed an internship and a residency in pediatrics at the University of Washington. Shugerman is board certified in pediatrics by the American Board of Pediatrics and certified by the American Heart Association as a PALS provider. As director of pediatrics residency his responsibility is leading the education of 72 pediatrics residents; he leads and participates directly in teaching committees for every service.
through which residents rotate in three local hospitals and four regional practices. Shugerman is active on several regional and national committees and has published extensively.

**Kimberly P. Stone, MD, MS,** is emergency attending physician at Seattle Children’s Hospital and assistant professor at the University of Washington School of Medicine. She received her MA from Tufts University, her MS from the University of California in Berkeley and her MD from the University of California in San Francisco. She completed her residency at Boston Combined Residency Program in Pediatrics at Children’s Hospital Boston, where she began her fellowship. She transferred at the end of fellowship to finish it at the University of Washington School of Medicine. She is a certified PALS provider and instructor. Stone is a member of the American College of Emergency Physicians (ACEP), Pediatric Emergency Medicine Section.

**Paige Wright, MD, MS,** is emergency attending physician at Seattle Children’s Hospital and assistant professor at the University of Washington School of Medicine. She received her MD from Indiana University School of Medicine and her MS in clinical investigation from Northwestern University. She completed a residency and a fellowship at Children’s Memorial Hospital in Chicago, Ill. She was clinical instructor in pediatrics at Northwestern University School of Medicine. Wright is diplomate of the American Board of Pediatrics, and she is certified as an ATLS provider and PALS provider and instructor. Wright is a member of the American Academy of Pediatrics.

**AWARDS AND HONORS**

**Linda Quan, MD**
Stanley Stamm Role Model in Medicine Award. University of Washington Pediatric Residency Program.

**RESEARCH FUNDING**

**Continuing**

**Douglas S. Diekema, MD, MPH**
Promoting pediatric bioethics in health care and research. HRSA. $168,640.

**Eileen J. Klein, MD, MPH**
Improving sedation of children undergoing procedures in the emergency department: evaluation of different dosages and routes of administration of the sedative midazolam. Thrasher Research Fund. $130,637.

**TEACHING AND PRESENTATIONS**

**Dena R. Brownstein, MD**

**Mark A. Del Beccaro, MD**


**Douglas S. Diekema, MD, MPH**


Eileen J. Klein, MD, MPH

Houston, we have a problem: a practical and principled approach to error disclosure. Pediatric Academic Societies. Toronto, Ontario, Canada. May 7, 2007.

Suzan S. Mazor, MD

Russell T. Migita, MD


George A. Woodward, MD, MBA


PUBLICATIONS


The Division of Endocrinology and Diabetes provides consultation and long-term management for children and adolescents with diabetes and endocrine disorders in the WWAMI region. The division’s approach to patient care blends clinical practice, research and education. A multidisciplinary team of dedicated physicians, midlevel providers, certified diabetes nurse educators, dietitians and social workers offers family-centered care in both inpatient and outpatient settings. Endocrinologists work with primary care providers and other subspecialists to manage endocrine disorders in children with complex health-care needs.

Collaborative research efforts are under way in pediatric diabetes, disorders of gonadal function and endocrine function in childhood cancer survivors. New faculty are bringing additional research projects in puberty, gonadal function and childhood obesity.

Since 2005, the division has had an ACGME-accredited subspecialty residency program, enhancing teaching efforts and recruitment potential for pediatric endocrine providers.

**FACULTY**

Catherine Pihoker, MD, Chief
Angela Badaru, MBBS
Helen L. Dichek, MD
Patricia Fechner, MD
Daniel F. Gunther, MD, MA (in memory)
Gail E. Richards, MD
Christian Roth, MD
Srinath Sanda, MD

**PROFESSIONAL PROFILES**

**Catherine Pihoker, MD,** is chief of the Division of Endocrinology and Diabetes and attending physician at Seattle Children’s Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine. Her clinical focus is inpatient and outpatient attending for endocrinology and diabetes. Her main research interests include investigating factors that predict the clinical course of diabetes, diabetes typology and improving outcomes of children with diabetes. Pihoker is also interested in the impact on children of being overweight and living sedentary lifestyles, and she is involved in proposals studying the quality of life and metabolic measures in the general population as well as in cancer survivors. Other research interests include endocrine dysfunction in childhood cancer survivors and hypothalamic-pituitary function in children with tumors in the pituitary region. The studies Pihoker has been involved with include the SEARCH for Diabetes in Youth, TrialNet and the Type I Diabetes Genetics Consortium. Her teaching activities include didactic and direct teaching of resident physicians, medical students and support staff.

**Angela Badaru, MBBS,** is attending physician at Seattle Children’s Hospital and acting assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. Her clinical focus is
inpatient and outpatient attending for endocrinology and diabetes. She participates in didactic and direct teaching of resident physicians and medical students. Her research interests include disorders of puberty and growth. She is a member of the Royal College of Physicians, U.K.

Helén L. Dichek, MD, is attending physician at Seattle Children’s Hospital and the University of Washington Medical Center; she is associate professor in the Division of Endocrinology in the Department of Pediatrics at the University of Washington School of Medicine. She is a board-certified endocrinologist, with unique expertise in pediatric lipid disorders. Dichek directs the only regional Pediatric Lipid Clinic in the WWAMI area, which meets at Children’s and at the University of Washington Medical Specialties Lipid/Nutrition Clinic. Dichek’s laboratory investigations focus on genetic modifiers of atherosclerosis and lipid metabolism. Her laboratory has recently extended its research focus to include development of animal models of obesity and fatty liver.

Patricia Fechner, MD, is attending physician at Seattle Children’s Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. She is director of the endocrine fellowship program at Children’s. Her clinical and research interests include Turner syndrome, androgen insensitivity syndrome and other disorders of sex determination as well as growth hormone and IGF-1 deficiency. She is associate editor of Sexual Development.

Daniel F. Gunther, MD, MA, passed away in September 2007. He was attending physician at Seattle Children’s Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. His primary clinical and research interests were Turner syndrome, disorders of growth and puberty and intersex disorders. In addition to seeing general endocrine and diabetes patients at Children’s, Gunther attended regional clinics in Federal Way and Yakima, Wash. He served on the Scientific Advisory Board to the CARES foundation, a national education and support group for individuals with congenital adrenal hyperplasia. He was involved in research studying long-term effects of growth hormone treatment in girls with Turner syndrome, and was principal investigator in a study following individuals with Turner syndrome who were diagnosed prenatally.

Gail E. Richards, MD, is attending physician at Seattle Children’s regional clinics in Everett and Federal Way, Wash., and at the community outreach clinic in Wenatchee, Wash. She is professor of pediatrics at the University of Washington School of Medicine. Richards is also affiliated with Seattle Children’s Research Institute Department of Translational and Clinical Science.

Christian Roth, MD, is attending physician at Seattle Children’s Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. He was examiner for medical doctors in specialty pediatric endocrinology and diabetology at the Medical Board North-Rhine, Germany. His work focuses on childhood obesity and disorders of puberty. His obesity research includes metabolic factors in body weight regulation and hypothalamic control of feeding circuits, genes involved in childhood obesity and postcraniopharyngioma obesity. In the field of puberty, he investigates genetic disorders of precocious or delayed puberty, the gene network expressed in the hypothalamus controlling the onset of puberty and the treatment of precocious puberty by antagonistic versus agonistic LHRH-analogues. Roth is a board member of the German Study Group of Pediatric Endocrinology (APE).
Srinath Sanda, MD, is attending physician at Seattle Children’s Hospital and clinical assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. In addition, he is an assistant member and clinical investigator at the Benaroya Research Institute at Virginia Mason. His clinical focus is on general pediatric endocrinology and type I diabetes, and he is active in teaching medical students and residents. His primary research interest is understanding the immune system’s role in glucose metabolism in patients with type I diabetes. He also manages patients enrolled in clinical intervention trials for type I diabetes at the Benaroya Research Institute.

RESEARCH FUNDING

New
Patricia Fechner, MD
Increlex growth forum database-IGFD registry: a patient registry for monitoring long-term safety and efficacy of Increlex. Tercica. $9,000.

Deficiency among children and adolescents with traditional short stature diagnosis. Tercica. $13,000.

Gail E. Richards, MD
Recombinant human insulin-like growth factor-1 (rHI GF-1) treatment of children and adolescents with growth failure associated with primary IGF-1 deficiency: an open label multicenter extension study. Tercica. $52,668.

Christian Roth, MD
Purchase of Luminex multiplex system. 2007 Seattle Foundation Medical Funds Program. $50,000.

Continuing
Patricia Fechner, MD

Catherine Pihoker, MD
JDRF Center for Translational Research. Juvenile Diabetes Foundation International. $154,775.

SEARCH for Diabetes in Youth 2: Washington site. CDC/DHHS. $645,000.

Cerebral edema in pediatric diabetic ketoacidosis. NIH.

Quality of life of overweight youth: a multicultural view. NIDDK. $8,265.

Type I diabetes genetics consortium. NIDDK.

TrialNet clinical agreement, site #307. NIDDK.

TEACHING AND PRESENTATIONS

Patricia Fechner, MD


Catherine Pihoker, MD


Christian Roth, MD

Peripheral monkey α-MSH levels are altered in different energy states and are regulated by glucose (co-presenter). The Endocrine Society’s 89th Annual Meeting. Toronto, Ontario, Canada. June 2–5, 2007.


PUBLICATIONS


The Division of Gastroenterology, Hepatology and Nutrition provides expertise in consultative gastroenterology for a broad range of gastrointestinal, liver and nutritional diseases. Our division provides comprehensive care for a number of children with complex gastrointestinal illnesses. The division is particularly skilled in the care of patients with intestinal failure, inflammatory bowel disease and acute and chronic liver disease. We have the region’s only small bowel transplant program, as well as intestinal care and inflammatory bowel disease programs. We also provide ongoing consultation and treatment for patients with chronic recurrent abdominal pain, gastroesophageal reflux and malabsorptive syndromes.

Technological advances in pediatric gastroenterology have enabled us to apply diagnostic and therapeutic endeavors to the upper intestinal digestive tract and colon. Use of capsule endoscopy has enhanced our ability to care for children with unusual small intestinal diseases. Esophageal motility and anorectal manometry are available to study selected patients. We work in close consultation with our colleagues in general surgery, radiology and pathology in the diagnosis and therapy of patients with gastrointestinal disease. Our emphasis on a team approach from a diagnostic and therapeutic perspective has enhanced our quality of care and provided our patients the most advanced expertise available in the WAMI region (Washington, Alaska, Montana, Idaho).

The division has a long history of contributions to basic science and clinical research, and continues to be a leader in clinical and basic research in gastroenterology. Some of the division’s research investigations include treatment of hepatitis B, hepatitis C and acute liver failure; use of mesalamine in pediatric inflammatory bowel disease; maternal microchimerism in inflammatory bowel disease; and a controlled trial of managing recurrent abdominal pain. The division also participates in the western regional pediatric inflammatory bowel disease registry.

**FACULTY**

Dennis L. Christie, MD, Chief  
Simon Horslen, MBChB  
Mary K. Len, MD  
Karen F. Murray, MD  
David Suskind, MD  
Ghassan Wahbeh, MD  
Jiang Zheng, PhD

**PROFESSIONAL PROFILES**

**Dennis L. Christie, MD**, is chief of the Division of Gastroenterology, Hepatology and Nutrition at Seattle Children’s Hospital and professor of pediatrics at the University of Washington School of Medicine. He is board certified in pediatric gastroenterology. Christie was instrumental in establishing the specialty of pediatric gastroenterology in the Pacific Northwest. He collaborated in the establishment of the safety, efficacy and practicality of using flexible fiber-optic endoscopy in the diagnosis and therapy of children with gastrointestinal diseases. Two of his early publications demonstrated the association between gastroesophageal reflux and recurrent respiratory disease. His research interests relate to inflammation in the intestine. He is actively involved with the Inflammatory Bowel Disease Treatment Center and
We are currently standardizing our gastroenterology-related patient education material so that our patients and families consistently get the best available information at all sites of care. We are also changing our follow-up process for patients who have had endoscopic tests and procedures to deliver quicker diagnostic results and begin the appropriate treatment regimen faster and more efficiently.

the Autism Treatment Network. He serves as vice chairman of clinical affairs for the University of Washington Department of Pediatrics and is a member of the Children’s University Medical Group (CUMG) Advisory Board. He is past president of the pediatric committee for the American College of Gastroenterology, is an active member of the North American Society for Pediatric Gastroenterology and belongs to the American Gastroenterological Association.

Simon Horslen, MBChB, is medical director for liver and intestine transplant at Seattle Children’s Hospital and professor of pediatrics at the University of Washington School of Medicine. He is helping lead the expansion of Children’s transplant program. Horslen earned his medical degree from the University of Bristol, England. He is a founding member and fellow of the Royal College of Paediatrics and Child Health, is a member of the Royal College of Physicians and is accredited in general pediatrics and pediatric gastroenterology. He was medical director of the pediatric transplant program at the University of Nebraska Medical Center. His clinical and research interests include metabolic liver disease, intestinal failure and liver and intestine transplant. Horslen serves as chair of the Education Committee and member of the Nominating Committee for the International Pediatric Transplant Association. He is the incoming chairman of the UNOS Pediatric Transplant Committee.

Mary K. Len, MD, is attending physician at Seattle Children’s Hospital and clinical associate professor at the University of Washington School of Medicine. She was trained in pediatric gastroenterology at the University of California-Los Angeles School of Medicine and is board certified in pediatric gastroenterology. Len has been a member of the outreach pediatric gastroenterology division, attending clinics in Olympia and Federal Way, Wash., and is a member of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. Her research interests include celiac sprue and inflammatory bowel disease.

Karen F. Murray, MD, is director of the Hepatobiliary Program at Seattle Children’s Hospital and program director of gastroenterology education; she is professor in the Department of Pediatrics at the University of Washington School of Medicine. She received her MD from Johns Hopkins School of Medicine and did a pediatrics residency and a chief resident year at Children’s. She completed a clinical and research fellowship in gastroenterology and nutrition in the combined program at Children’s Hospital Boston and Massachusetts General Hospital, Harvard Medical School. Murray has done research and work in Bangladesh and Tanzania. In addition to clinical care in gastroenterology and transplantation, she has an active clinical research program in hepatology. Her main focus is in the treatment and pathophysiology of hepatitis C viral infection, but her studies also include the treatment of hepatitis B viral infection and nonalcoholic fatty liver disease. Murray is president of Children’s medical staff. She is a member of the Gastroenterology Sub-board Credentialing Committee and the Transplant Hepatology Certificate of Added Qualifications Standard-Setting Committee of the American Board of Pediatrics, and is on the steering committees of three National Institute of Diabetes and Digestive and Kidney Diseases clinical research networks related to her research. She mentors pediatrics residents and speaks at the noon conferences at Children’s.
David Suskind, MD, is attending physician at Seattle Children’s Hospital and assistant professor of pediatrics at the University of Washington School of Medicine. An expert in intestinal diseases, Suskind has focused much of his energies into clinical care and research for inflammatory bowel disease. He has been co-chair of the Nutrition Committee at Children’s since 2004, focusing his attention on both enteral and parenteral nutritional needs of children and pediatric patients at Children’s. He is also director of quality assurance and quality improvement in the Division of Gastroenterology at Children’s. He was also named to the medical staff honor roll at Children’s. Suskind earned his medical degree at Louisiana State Medical in New Orleans, La. He currently conducts research in inflammatory bowel disease with research projects in maternal microbiome in inflammatory bowel disease as well as in the effects of herbal medication in inflammatory bowel disease. On a national level, Suskind has been involved in the Nutrition Committee for the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. Suskind’s philosophy in health care centers on patient and family empowerment through education.

Ghassan Wahbeh, MD, is attending physician at Seattle Children’s Hospital and assistant professor of pediatrics and gastroenterology at the University of Washington School of Medicine. He is the director of the Inflammatory Bowel Disease Program. His clinical and research interests include early diagnostic tools in pediatric IBD, causes of Crohn disease and ulcerative colitis, advanced therapies for Crohn disease, advanced imaging with magnetic resonance enterography in complicated IBD, quality-of-life assessment in children in the first year after diagnosis and children’s perception of their disease expressed in artwork. He also has clinical interests in upper gastrointestinal inflammatory conditions in children, capsule endoscopy use in small bowel imaging, gastrointestinal complications following cardiac transplantation and interventional endoscopy.

Jiang Zheng, PhD, is principal investigator at Seattle Children’s Hospital Research Institute and associate professor at the University of Washington School of Medicine. Zheng is a faculty member of the Center for Developmental Therapeutics at the institute. He received his PhD at the University of Kansas and postdoctoral training at the University of California-Davis, where he was trained in medicinal chemistry and toxicology. His research interests include: investigation of the biochemical reactions of electrophilic metabolites of xenobiotics with biomacromolecules, and the toxicological consequence of the chemical reactions; and development of biomarkers as a measure to confirm and assess the exposure of individuals or populations to dietary, environmental or occupational chemical substances, providing a link between external exposures and internal dosimetry.

RESEARCH FUNDING

Continuing

Karen F. Murray, MD

Pegylated interferon +/- ribavirin for children with HCV. NIDDK/NIH/DHHS. $53,397.

TEACHING AND PRESENTATIONS

Dennis L. Christie, MD


Simon Horslen, MBChB


Karen F. Murray, MD


David Suskind, MD

Ghassan Wahbeh, MD


Jiang Zheng, PhD

PUBLICATIONS


The Division of General Pediatrics encompasses academic general pediatrics and adolescent medicine. It is one of the largest divisions in the Department of Pediatrics; members of the division are involved with clinical care, teaching, advocacy, administration and research.

Our mission statement establishes our commitment “to improving the health of children by teaching and modeling the practice of general pediatrics, performing clinical research and promoting the role of the general pediatrician as a provider of primary care and advocate for children and their families.” Our vision is for the division to continue to be the best division of general pediatrics in the nation.

Members of the division provide inpatient and outpatient clinical care at several locations in Seattle: Seattle Children’s Hospital, Harborview Medical Center, University of Washington Medical Center, the medical center’s primary care clinics and Odessa Brown Children’s Clinic. Our faculty are heavily involved with running medical student programs for the University of Washington School of Medicine, the residency program for the Department of Pediatrics and fellowship training programs. The division has a large research portfolio and is a key part of the research programs at the Center for Child Health, Behavior and Development of the Seattle Children’s Research Institute, the Harborview Injury Prevention and Research Center and the Child Health Institute. The division also operates the Puget Sound Pediatric Research Network to collaborate with primary care pediatricians in the community to conduct important research on common clinical problems. Our advocacy activities are intimately linked with our clinical, teaching and research activities.

**FACULTY**

Frederick P. Rivara, MD, MPH, Chief
Abraham B. Bergman, MD
Julia M. Bledsoe, MD
Christine Caldwell, MD, MS
Dimitri A. Christakis, MD, MPh
Benjamin S. Danielson, MD
Julian K. Davies, MD
Donna M. Denno, MD
Beth E. Ebel, MD, MSc, MPh
Kenneth W. Feldman, MD
Elmon A. Graham, MD, MPh
Brian D. Johnston, MD, MPh
Catherine J. Karr, MD, PhD
Cynthia T. Kertesz, MD
Charlotte W. Lewis, MD, MPh
Lenna L. Liu, MD, MPh
Paula Lozano, MD, MPh
Rita M. Mangione-Smith, MD, MPh
Edgar K. Marcuse, MD, MPh
Carolyn A. McCarty, PhD
Heather A. McPhillips, MD, MPh
Sanford Melzer, MD, MBA
Wendy Mouradian, MD, MS
John M. Neff, MD
Suzine Pak-Gorstein, MD, PhD, MPh
Brian Saelens, PhD
Sheela Sathyaranayana, MD, MPh
James W. Stout, MD, MPh
Naomi F. Sugar, MD
James A. Taylor, MD
Monica S. Vavilala, MD
Rebecca T. Wiestler, MD
Jeffrey A. Wright, MD
Kyle Yasuda, MD
PROFESSIONAL PROFILES

Frederick P. Rivara, MD, MPH, is chief of the Division of General Pediatrics at Seattle Children's Hospital, professor of pediatrics at the University of Washington School of Medicine and adjunct professor of epidemiology at the School of Public Health. He is vice chair of the Department of Pediatrics in the School of Medicine. Rivara received his MD from the University of Pennsylvania and an MPH from the University of Washington. He completed residencies at the Children's Hospital Medical Center in Boston and the University of Washington and was a Robert Wood Johnson Clinical Scholar at the University of Washington. Rivara was director of the Harborview Injury and Research Center in Seattle for 13 years. He was founding president of the International Society for Child and Adolescent Injury Prevention and serves as deputy editor of the journal *Injury Prevention*. He is also editor of *Archives of Pediatrics and Adolescent Medicine*. His research interests have included the efficacy and promotion of bicycle helmets, prevention of pedestrian injuries, youth violence, the epidemiology of firearm injuries, intimate partner violence, interventions for alcohol abuse in trauma patients and the effectiveness of trauma systems in the care of pediatric and adult trauma patients. Rivara was elected to the Institute of Medicine in 2005.

Abraham B. Bergman, MD, is professor of pediatrics at the University of Washington. Bergman was head of the Division of General Pediatrics and chief of pediatrics at Harborview Medical Center in Seattle. Bergman practices what he calls “political medicine.” He has been responsible for landmark legislation to improve the health of children and families in the United States, including the Flammable Fabrics Act to make children's sleepwear flame retardant, the Sudden Infant Death Syndrome Act to provide NIH funding for research into SIDS and legislation to create the National Health Service Corps. Locally he has been responsible for legislation to fluoridate water in Washington state; improve the safety of bicyclists, pedestrians and motorcyclists; and create the Consumer Product Safety Commission. More recently Bergman has been a Soros fellow for his work in foster care and is associate editor of *Archives of Pediatrics and Adolescent Medicine*. For the past five years Bergman has headed the Harborview Foster Care Health and Early Learning Project. He also chairs the board of directors of the Seattle Children’s PlayGarden, a facility for children with special needs.

Julia M. Bledsoe, MD, is clinical associate professor of pediatrics at the University of Washington School of Medicine. She is director of the University of Washington Center for Adoption Medicine and staff pediatrician at the university’s Fetal Alcohol Syndrome Clinic. Bledsoe earned her MD at the University of Washington School of Medicine. She has worked for the U.S. Public Health Service on the Navajo reservation in northwestern New Mexico and conducted a faculty practice at the University of Washington’s Roosevelt Primary Care Clinic. She developed a panel of families formed through adoption and became recognized as a national leader in understanding the unique needs of these children over time. Through the Center for Adoption Medicine she provides pre-adoption counseling to families internationally. She also sees newly adopted children in consultation and welcomes local adoptees into her primary care practice. Bledsoe’s clinical interests include health care for foreign and domestic adoptees, travel medicine, strategies for managing complex behavioral issues and the multidisciplinary approach to diagnosing and treating children with alcohol-related neurological disorders.

Christine Caldwell, MD, MS, is attending physician at Seattle Children’s Hospital and pediatrician at the University of Washington Pediatric Care Center. Caldwell received her MD from Baylor College of Medicine in Houston. She completed pediatrics
residencies at Baylor Affiliated Hospitals and David Grant USAF Medical Center/University of California, Davis, with a fellowship in adolescent medicine at the University of Washington Medical Center. She worked as a community pediatrician in Seattle for 10 years. At the Pediatric Care Center, she encourages teens to increase responsibility for their own health.

Dimitri A. Christakis, MD, MPH, is the George Adkins Professor of Pediatrics at the University of Washington, director of the Center for Child Health, Behavior and Development at Seattle Children’s Hospital Research Institute and attending pediatrician at Children’s. He is the author of more than 125 original research articles and a textbook of pediatrics. He is also the author of *The Elephant in the Living Room: Make Television Work for Your Kids*. Christakis is an international expert on children and media. His research focuses on the effects of media on child health and development and has been featured on *Anderson Cooper 360*, the *Today Show* and ABC, NBC and CBS news as well as in major national newspapers. He speaks frequently to national and international audiences of pediatricians, parents and educators about the effects of media on children of all ages.

Benjamin S. Danielson, MD, is attending physician at Seattle Children’s Hospital and clinical professor at the University of Washington. He has been medical director of Odessa Brown Children’s Clinic in Seattle since 1999, and he holds the Janet and Jim Sinegal Endowed Chair for the Odessa Brown Children’s Clinic. The clinic has been an active part of Seattle’s multiethnic Central District since 1970, largely serving children from disadvantaged backgrounds. The clinic offers dental, mental health and medical services and has special programs for children with sickle cell disease, asthma, school underachievement and obesity. Danielson completed his residency training at Children’s. He has worked in a pediatric sports medicine clinic at Harborview Medical Center, a school-based teen health center and a primary care clinic in West Seattle, and was an emergency department attending at Children’s. Danielson splits his time between clinical care, administrative responsibilities, community advocacy and hospital responsibilities. He serves on several community boards, is active in mentoring efforts and participates in a number of Children’s committees.

Julian K. Davies, MD, is clinical associate professor of pediatrics at the University of Washington and staff pediatrician at the university’s Fetal Alcohol Syndrome (FAS) Clinic, the longest-standing FAS center in the United States. He is co-director of the Center for Adoption Medicine, where he provides pre-adoption consultations, post-placement evaluations and ongoing general pediatric care for adopted children. He created and is the primary author of the Center for Adoption Medicine Web site, an online resource for medical and developmental issues in adoption and pediatrics. He has been a volunteer with Maria’s Children, an arts rehabilitation center for Russian orphans, teaching children’s theater and clowning and directing a summer arts camp for children living in Moscow orphanages. Davies is also a coordinator and presenter at Raising Resilient Rascals, an annual regional conference on adoption and foster care, now entering its third year.

Donna M. Denno, MD, is attending physician at Seattle Children’s Hospital, acting assistant professor of pediatrics at the University of Washington School of Medicine, clinical assistant professor at the university’s School of Public Health and attending pediatrician at Harborview Medical Center. She earned her MD at the University of Michigan Medical School. Her clinical and research areas of interest include gastrointestinal infections in children and risk factors related to food safety. She has a strong interest in global medicine and lived and worked in Ghana for three years; her interests include the impact of intermittent presumptive treatment of malaria on anemia, the prevalence of pneumococcal disease in children and determinants of health. She is also interested in global medicine education and field opportunities for physicians in training, particularly residents at Children’s.

Beth E. Ebel, MD, MSc, MPH, is associate professor of pediatrics at the University of Washington School of Medicine and director of the Injury Prevention and Research Center at Harborview Medical Center. She received an MSc in development economics from Oxford University, an MD from Harvard Medical School and the MIT Health Sciences and Technology Program, and an MPH from the University of Washington. Ebel’s research interests include injury prevention, community interventions and health behaviors with emphasis on high-risk populations.
She is principal investigator in a community intervention to improve child passenger safety in Latino communities and is leading a grant to improve the quality of interpreted care at Seattle Children's Hospital. Ebel took leadership of a Fogarty training grant to build capacity for international injury prevention in Ghana. She is also the principal investigator for a study of health-care costs of unrestrained motor vehicle occupants.

**Kenneth W. Feldman, MD,** is attending physician at Seattle Children's Hospital and clinical professor in the Department of Pediatrics at the University of Washington School of Medicine. He is the medical director of the Children’s Protection Program at Children's while maintaining a half-time primary care practice at the Odessa Brown Children's Clinic. He also attends in the emergency department and on the wards at Children’s. He completed his undergraduate and medical school training at the University of Wisconsin, Madison, and his internship and residency at the University of Washington and Children’s. He has conducted research in childhood injuries, both accidental and abusive. He is a member of the executive committee of the AAP’s Section on Child Abuse and Neglect and a member and past executive committee member of the Helfer Society. He was awarded the AAP’s Practitioner Research Award in 1991 for his work on tap water burn injuries.

**Elinor A. Graham, MD, MPH,** is associate professor of pediatrics at Harborview Medical Center in Seattle. Her medical mission is to stimulate and challenge trainees to provide excellent health care to the world’s children through modeling this care; educating trainees about the impact of race, culture, family and socioeconomic factors on the lives of children; and creating advocacy, research and practice settings that allow trainees to learn from their own experience. She earned her MPH at the Johns Hopkins School of Public Health. Graham's work focuses on children and teens from low-income families; she has specialized in helping to build community support structures for these families. She helped set up the Mud Creek Health Project in Floyd County, Ky., to serve disadvantaged communities. She worked for the Seattle–King County Department of Public Health at the Children and Teens clinic for 10 years, emphasizing the expansion of pediatric services at health department clinics in the county, school health, and training low-income and immigrant parents to be more effective advocates for their children's education. After joining the faculty at Harborview, she helped establish the Community House Calls program and EthnoMed Web sites to provide case-management and community-outreach services to immigrant communities. She has supported pediatrics residents in conducting health projects at international sites and has joined them for work with a project in El Salvador.

**Brian D. Johnston, MD, MPH,** is attending physician at Seattle Children’s Hospital and associate professor of pediatrics at the University of Washington School of Medicine. He is chief of pediatrics at Harborview Medical Center, the only Level 1 pediatric trauma center in the WAMI region. He directs Harborview’s medical education programs in pediatrics and oversees hospital resources for pediatric patients. Johnston earned his MD at the University of California, San Diego School of Medicine and his MPH at the University of Washington School of Public Health. His clinical interests include medical consultation for trauma patients and primary care for vulnerable populations. He conducts research on community-based injury prevention, including programs and policy to promote physical activity while reducing the risk of child pedestrian injury. Nationally, Johnston has been involved in efforts to bring evidence-based injury prevention into the work of local child-fatality review teams. He sits on the editorial board of *BMJ (British Medical Journal)* and is the editor-in-chief of *Injury Prevention,* an international peer-reviewed journal.

**Catherine J. Karr, MD, PhD,** is assistant professor in the Department of Pediatrics; she has an adjunct appointment in the Department of Environmental and Occupational Health Sciences. She is director of the University of Washington-based Pediatric Environmental Health Specialty Unit (PEHSU); in 2007 the unit received the Children’s Environmental Health Excellence Award from the U.S. Environmental Protection Agency. Karr earned an MS in environmental health–toxicology, her MD from the University of Washington School of Medicine and her PhD in epidemiology from the university’s School of Public Health. She serves on the American Academy of Pediatrics National Committee on Environmental Health. Her primary research interest is the adverse effects of environmental toxicants on child health. Her current research is in the area of respiratory health and environmental factors with an emphasis on ambient air pollution and pesticide exposure. She is involved in...
primary care pediatrics as attending physician at the University of Washington Pediatric Care Center and also sees specialty pediatric environmental medicine patients.

**Cynthia T. Kertesz, MD,** is attending physician at Seattle Children’s Hospital and clinical assistant professor of pediatrics at the University of Washington. She earned her medical degree at Northwestern University in Evanston, Ill., and completed her pediatric residency at the University of Washington. She is an attending pediatrician at the Pediatric Care Center at the University of Washington and a member of the Center for Adoption Medicine. Her area of expertise is the evaluation of both domestically and internationally adopted children and their ongoing pediatric care. She also maintains a general pediatric faculty practice.

**Charlotte W. Lewis, MD, MPH,** is attending physician at Seattle Children’s Hospital. She is associate professor in the Department of Pediatrics at the University of Washington School of Medicine and adjunct associate professor in the Department of Pediatric Dentistry. Her primary research interest is improving the oral health of children with craniofacial conditions and other special needs. She also does research on disparities in health and health-care access, with a specific focus on oral health and access to dental care. Her research has involved documenting disparities in access to oral health services for low-income and special needs children as well as developing and evaluating strategies to improve children's oral health.

**Lenna L. Liu, MD, MPH,** is clinician at Odessa Brown Children’s Clinic, associate professor of pediatrics at the University of Washington School of Medicine and investigator at the Child Health Institute. She earned her MD from the University of Pennsylvania and her MPH from the University of Washington. Liu is active locally and nationally on childhood obesity prevention and management efforts, particularly with an emphasis on health disparities and low-income populations. Locally, she is a member of the Children’s Obesity Action Team (COAT) and the Seattle–King County Department of Public Health's Steps to a Healthier U.S. project. She is involved in the prevention and management of obesity in primary care settings, a family YMCA–based healthy lifestyle program, community-based nutrition and physical activity promotion projects, and clinical services for overweight youth. Liu is also co-investigator on the SEARCH for Diabetes in Youth study that examines rates of diabetes, particularly type II diabetes, in children and adolescents.

**Paula Lozano, MD, MPH,** is attending physician at Harborview Medical Center and Seattle Children’s Hospital, associate professor of pediatrics at the University of Washington School of Medicine and adjunct associate professor of health services at the University’s School of Public Health and Community Medicine. Lozano is also associate investigator at the Center for Health Studies at Group Health Cooperative in Seattle. She practices and teaches pediatrics at the Children and Teens Clinic at Harborview Medical Center, as well as attending on the general medical service at Children’s. Lozano has conducted several randomized trials of primary care–based interventions rooted in the Chronic Care Model. Special populations of interest include children with asthma, depression and obesity as well as children with medically complex conditions and disadvantaged populations. Lozano’s current activities focus on developing and evaluating interventions to support families in health behavior change, using self-management support models derived from motivational interviewing, in primary care pediatric settings. She has also published in the areas of quality of care, access to care, health literacy, cultural competence and electronic decision support and managed care. As director of the general pediatrics fellowship (NRSA), Lozano mentors young pediatric researchers with diverse interests.

**Rita M. Mangione-Smith, MD, MPH,** is attending physician at Seattle Children’s Hospital, associate professor of pediatrics at the University of Washington and adjunct associate professor of health services at the university’s School of Public Health. She earned her MD at Wayne State University and her MPH at the University of California, Los Angeles. Her primary research interests are quality and appropriateness of care in pediatrics and the development and evaluation of interventions to improve care provided to children. Her currently funded studies focus on the evaluation of quality improvement interventions related to physician-parent communication, antibiotic prescribing, asthma care and the inpatient management of medically complex children. Mangione-Smith has primarily published in the areas of quality of care, appropriate use of antibiotics and physician-parent communication. She serves on the advisory committee for the Academy Health
Through a partnership with the Seattle Public Schools, will improve the lives and mental health of children.

Carolyn A. McCarty, PhD, is research associate professor in pediatrics at the University of Washington and holds an adjunct appointment in the Department of Psychology. Trained as a clinical psychologist, she completed her PhD at the University of California, Los Angeles. Her research has broadly focused on family, peer and cultural influences on children’s mental health. The goal of her research is to use knowledge of youth development to design, implement and test programs that will improve the lives and mental health of children. Through a partnership with the Seattle Public Schools, she is developing and testing a preventive intervention for young adolescents called Positive Thoughts and Actions, designed to reduce depression and improve their mental health, academic success and interpersonal functioning.

Heather A. McPhillips, MD, MPH, is associate residency director for the University of Washington pediatric residency training program at Seattle Children’s Hospital and associate professor of pediatrics at the University of Washington. McPhillips earned her MD from the University of Chicago, Pritzker School of Medicine, and her MPH at the University of Washington. She completed a pediatrics residency at the University of California, San Francisco, and a fellowship at the University of Washington. She focuses her clinical and teaching efforts on the importance of understanding patients and their families in terms of their development, innate and learned behaviors, and the social and medical context in which they live. Her research focus is on health care quality and patient safety as well as graduate medical education. She is a member of the Association of Pediatric Program Directors (APPD) and serves on the research task force and the nominating committee for the APPD. She is also a member of the Ambulatory Pediatric Association and the American Academy of Pediatrics.

Sanford Melzer, MD, MBA, is pediatric hospitalist physician and senior vice president for strategic planning and business development at Seattle Children’s Hospital; he is professor of pediatrics and health services at the University of Washington. Melzer earned his MD from Mount Sinai School of Medicine in New York and his MBA from the University of Washington. He developed and now operates the Children’s Regional Services Network, which provides on-site pediatrics consultation and hospital, neonatal and urgent care services in 28 communities and four states in the Northwest. He is also responsible for new business development and professional exchanges for Children’s. Melzer is considered one of the national experts in “non-face-to-face care” for children, including the use of telemedicine and telephone to provide care at a distance. He is actively involved with the American Academy of Pediatrics in developing policies and practices improving care for hospitalized children. Melzer’s interests include strategic planning and the application of Lean methods pioneered by the Japanese auto manufacturer Toyota to improve quality and...
efficiency in pediatric health care. His research focus includes hospitalist medicine, non-face-to-face care and factors influencing the business performance of hospital pediatrics programs.

Wendy Mouradian, MD, MS, is clinical professor of pediatrics at the University of Washington, with adjunct appointments in pediatric dentistry, dental public health sciences and health services (at the university’s School of Public Health). She is director of regional initiatives for the university’s School of Dentistry and has served as director of the craniofacial program at Seattle Children’s Hospital. Mouradian also heads the Oral-Systemic Theme Committee at the university’s School of Medicine, charged with integrating oral health into the curriculum of medical students. Mouradian earned her MD from Columbia University and her MS from the Massachusetts Institute of Technology. She completed a fellowship at the University of Washington. Mouradian has received several national awards for her role in organizing and chairing The Face of a Child: Surgeon General’s Conference on Children and Oral Health; she was recognized by the American Dental Education Association for her efforts to advance the importance of oral health to the overall health of children. She is associate director of the Center for Leadership Education in Pediatric Dentistry. Her research areas include quality of life for children with craniofacial conditions, ethics and educational policy related to children’s oral health.

John M. Neff, MD, is director of the Center for Children with Special Needs at Seattle Children’s Hospital and professor of pediatrics at the University of Washington School of Medicine. He received his MD from Harvard Medical School. He was a member of the Epidemic Intelligence Service of the Public Health Service and trained in virology and infectious diseases at Children’s Hospital Boston. He was instrumental in determining the prevalence of complications associated with smallpox vaccination in the United States. Neff served on the faculty and in the dean’s office at Johns Hopkins Medical School. He directed the pediatrics program at the Baltimore City Hospitals, where he developed a prepaid practice plan for the city’s foster children. He has worked on issues concerning children with special needs, including identification, delivery of services and finances. He has served as medical director and vice president of Seattle Children’s and associate dean at the University of Washington School of Medicine. He has broad interests in child health and advocacy with two special interests — smallpox and smallpox vaccination, and how to best serve children with special health-care needs in our current environment. He has served on many state and national committees and is engaged in a project to identify the patient population admitted to Children’s by chronic disease groups and severity, and to analyze multiyear trends.

Suzinne Pak-Gorstein, MD, PhD, MPH, is attending physician at Harborview Medical Center and acting assistant professor of pediatrics at the University of Washington School of Medicine. She earned her MD at the Michigan State University Medical School and her PhD and MPH in international health–epidemiology at the University of Michigan School of Public Health. She completed her pediatrics residency training at Seattle Children’s Hospital. She has experience working in Nepal, Indonesia, Bangladesh and India on micronutrient deficiency monitoring and control programs, child survival research projects and national public health faculty and staff training. She has also worked with collaborative WHO technical groups to establish guidelines for monitoring micronutrient deficiency prevalence and control programs. Her research areas of interest include developing culturally sensitive and effective skills and tools for health-care providers to promote healthy infant and child feeding practices among immigrant and refugee families. She is working on the Infant Feeding Cultural Support Project at Harborview. She also works with the AAP Section on Child Health, Children’s and the University of Washington Department of Global Health on developing global health educational opportunities for residents and establishing best practices guidelines for global health training.

Brian Saelens, PhD, is associate professor in pediatrics, psychiatry and behavioral sciences at Seattle Children’s Hospital Research Institute and the University of Washington School of Medicine. Saelens earned his PhD in clinical psychology, with a specialization in child health psychology, from the State University of New York at Buffalo. He completed his psychology residency at Brown University and his postdoctoral fellowship at San Diego State University. Saelens focuses his research on built and social environmental factors that affect physical activity, dietary behaviors and weight status. In addition, he conducts research in the behavioral treatment of pediatric obesity.
Sheela Sathyanarayana, MD, MPH, is acting assistant professor in the Department of Pediatrics at the University of Washington. She teaches and precepts residents in the Harborview Children and Teens Clinic. She specializes in pediatric environmental health and also works in the Northwest Pediatric Environmental Health Specialty Unit (PEHSU) at the University of Washington doing pediatric environmental health consults. She earned a BA from Duke University, an MD from the University of Southern California and an MPH from the University of Washington. Sathyanarayana's research focuses on the effects of prenatal and early childhood exposures to environmental chemicals, such as phthalates and bisphenol A, and she has a special interest in human risk, public health and policy. Her current research is in the area of endocrine-disrupting chemicals and their impact on early childhood development.

James W. Stout, MD, MPH, is pediatrician at Odessa Brown Children's Clinic and professor of pediatrics and adjunct professor of health services at the University of Washington. He earned his MD at Wake Forest University and his MPH at the University of Washington School of Public Health. At Odessa Brown Children's Clinic he has a general pediatric practice, leads the asthma clinic and provides direction for its quality improvement programs. Stout is co-founder of the National Initiative for Children's Healthcare Quality (NICHQ), a nonprofit quality improvement organization headquartered in Boston, and leads QI Partners, a quality improvement group based at the University of Washington Child Health Institute in Seattle. Through these organizations, he works with practice teams on a variety of local, state and national projects with the common aim of improving the quality of children's health care. He also leads Interactive Medical Training Resources at the Child Health Institute. The group’s first training CD-ROM, *Spirometry Fundamentals*, is licensed through the University of Washington Office of Tech Transfer and is being evaluated in randomized controlled trials as part of larger distance-training programs. A training CD-ROM on pediatric sedation is in production.

Naomi F. Sugar, MD, is attending pediatrician at Seattle Children's Hospital and Harborview Medical Center and clinical associate professor at the University of Washington School of Medicine. She is medical director of the Harborview Center for Sexual Assault and Traumatic Stress and child abuse consultant at Harborview Medical Center and Children's. She earned her MD at the Medical College of Wisconsin, completed an internship and a residency in pediatrics at Children's Hospital of Pittsburgh, and completed a fellowship in behavioral pediatrics. She specializes in the evaluation of children and adolescents when there is a concern about physical or sexual abuse, and in health care for children in foster care. Sugar provides training to medical, legal and social service professionals in the medical aspects of child abuse and adolescent and adult sexual assault. Her research interests are in evaluation of child abuse and foster care.

James A. Taylor, MD, is attending physician at Seattle Children's Hospital, medical director of the newborn nursery at the University of Washington Medical Center and director of the pediatrics residency continuity clinic program. He earned his MD from the University of North Carolina School of Medicine; he completed a pediatrics residency at the University of Colorado and a fellowship in general pediatrics at the University of Washington School of Medicine. He is director of the Puget Sound Pediatric Research Network, a collaborative effort of practicing pediatricians in the community, the university's Division of General Pediatrics and Children's. Taylor's research interests include maximizing the effectiveness of immunization delivery in primary care practices, eliminating racial disparities in immunization status, assessing the efficacy of alternative therapies for children, developing and assessing methods to promote the judicious use of antibiotics in children and pediatric patient safety.

Monica S. Vavilala, MD, is attending physician in the Division of Emergency Medicine at Seattle Children's Hospital; she is associate professor in the departments of Pediatrics and Anesthesiology and adjunct associate professor in the Department of Neurological Surgery at the University of Washington School of Medicine. She practices anesthesiology at Harborview Medical Center and is associate director at the Harborview Injury Prevention and Research Center. She is also involved in teaching anesthesiology and pediatrics trainees. Vavilala's research interests include hemodynamics and outcomes in pediatric brain injury, and mechanisms of cerebral edema in pediatric diabetic ketoacidosis.
Rebecca T. Wiester, MD, is a member of the Child Protection Team at Seattle Children’s Hospital and clinical assistant professor of pediatrics at the University of Washington School of Medicine; she is based at Harborview Medical Center. She is also medical consultant for DSHS in Region 4, King County, and intermittent pediatrician for the Seattle–King County Department of Public Health. Wiester completed her pediatrics residency at Cincinnati Children’s Hospital, including a second internship in family practice at University Hospital in Cincinnati. She developed the Federal Way Sexual Assault Clinic in conjunction with the King County Sexual Assault Resource Center; the clinic became part of the Harborview Sexual Assault Center, and she continues to be consulting physician for it.

Jeffrey A. Wright, MD, is associate professor at the University of Washington School of Medicine and adjunct associate professor in the School of Dentistry. He is medical director of the university’s Pediatric Care Center and attending physician in the newborn nursery at the University of Washington Medical Center. Wright earned his MD at the University of Missouri–Kansas City. His research interests include behavioral pediatrics, children with special health-care needs and medical informatics. He is a computer and Web programmer working to use information technology for improving decision support, individualized care and coordination of care.

Kyle Yasuda, MD, is clinical professor of pediatrics at the University of Washington School of Medicine and medical director of the Pediatric Clinic at Harborview Medical Center. He works in the new college program, an integrated four-year curriculum to teach clinical skills and professionalism. He has a background in primary care practice, health policy, nonprofit organizations, and advocacy for children and pediatricians. He is chair of the American Academy of Pediatrics (AAP) Committee on Practice and Ambulatory Medicine, former chair of the Washington Council for the Prevention of Child Abuse and Neglect, former member of the Department of Social and Health Services State Advisory Committee and former member of the Governor’s Commission on Early Learning. He has held leadership positions for the AAP Washington Chapter, including nominee for the primary care health policy fellowship. Yasuda formed and manages the 501c3 nonprofit foundation of the chapter that focuses on community-based collaborative research and education projects involving practicing pediatricians. He received the national 2005 Commissioner’s Award for his contributions to the field of child abuse and neglect.

AWARDS AND HONORS

Kenneth W. Feldman, MD
The Odessa Brown, Ken Feldman Award for Distinguished Service in Promoting Diversity. Inaugural Award.
Listed in Who’s Who.

John M. Neff, MD
Voices for Children Award. Children’s Alliance Annual Meeting. Seattle.

RESEARCH FUNDING

New

Dimitri A. Christakis, MD, MPH
AsthmaNet. NHLBI. $2.5 million.

Charlotte W. Lewis, MD, MPH
Dental care in children with and without special health-care needs. NIH/NIDCR. $156,000.

Oral health behavior and habits of young children with developmental delay. NIDCR/NIH/DHHS. $227,985.

Rita M. Mangione-Smith, MD, MPH
Improving communication during pediatric visits for acute respiratory illness. NIH/NICHD. $292,576.

Outcomes evaluation study for medically complex children at Children’s. Children’s. $52,900.

Frederick P. Rivara, MD, MPH
Disability from pediatric traumatic brain injury Year 2. CDC. $677,126.
Effectiveness of designated-driver programs. CDC. $364,750.

Last Call – Nesholm Family Foundation. Nesholm Family Foundation. $50,000.


**Brian Saelens, PhD**
Neighborhood nutrition and physical activity environments and weight. USDA. $129,445.

**James W. Stout, MD, MPH**

**James A. Taylor, MD**
Homeopathic eardrop study. Standard Homeopathic Company. $120,000.

**Continuing**

**Abraham B. Bergman, MD**
Child Abuse Consultation Network. Washington State Department of Social and Health Services. $60,646.

**Dimitri A. Christakis, MD, MPH**
Internet-based patient-centered asthma management system. NIH/NHLBI. $773,028.

Parent-initiated prevention program. Agency for Healthcare Research and Quality/DHHS. $250,000.

**Beth E. Ebel, MD, MSc, MPH**
Cooperative agreement with HIPRC for injury control. National Highway Traffic Safety Administration. $50,000.

Harborview Injury Prevention and Research Center. CDC. $1,085,078.


**Catherine J. Karr, MD, PhD**
Northwest Pediatric Environmental Health Specialty Unit. Association of Occupational and Environmental Clinics. $172,784.

**Charlotte W. Lewis, MD, MPH**
Caries prevalence in orofacial clefting: a pilot study for an oral health case management RCT. NIH/NIDCR. $148,867.

**Paula Lozano, MD, MPH**
Asthma management support training in pediatrics. NIH/NHLBI. $189,193.

**Rita M. Mangione-Smith, MD, MPH**
Randomized controlled trial of spirometry fundamentals in the primary care setting. American Thoracic Society.

**Carolyn A. McCarty, PhD**
Prevention of depression among preadolescent youth. NIH/NIMH. $151,340.

**Brian Saelens, PhD**
Body fat and hormones in adolescent obesity treatment. NIDDK/NIH/DHHS. $58,005.

Child weight status and neighborhood physical activity and nutritional environment. NIEHS/NIH/DHHS. $487,950.

**James W. Stout, MD, MPH**
Children’s Health Improvement Collaborative. Seattle–King County Department of Public Health. $94,042.

Children’s Health Improvement Collaborative. Children’s Health Improvement Collaborative. $101,846.


**James A. Taylor, MD**
Echinacea for preventing colds in children. NIH/NCCAM. $493,625.

**Monica S. Vavilala, MD**
Cerebral edema in pediatric diabetic ketoacidosis. NIH/DHHS. $170,570.
TEACHING AND PRESENTATIONS

Beth E. Ebel, MD, MSc, MPH


Kenneth W. Feldman, MD


Brian D. Johnston, MD, MPH


Catherine J. Karr, MD, PhD


Charlotte W. Lewis, MD, MPH

Lenna L. Liu, MD, MPH


Rita M. Mangione-Smith, MD, MPH

Ruling out the need for antibiotics: are we sending the right message? Measuring the quality of care in pediatrics: what are the challenges? Perspectives on the quality chasm for children. Pharmaceutical company sponsored research: an uneasy alliance between the academic and corporate worlds. Visiting professorship, Department of Pediatrics, John A. Burns School of Medicine, University of Hawaii at Manoa. Honolulu, Hawaii. Nov. 13–16, 2007.

**Heather A. McPhillips, MD, MPH**
Teach to your strengths and adapt to your learners! Understanding individual teaching and learning preferences to maximize your teaching potential (workshop leader). How does resident participation in hospital-initiated quality improvement activities affect attitudes about quality improvement and hospital engagement? (co-presenter). Association of Pediatric Program Directors Annual Meeting. Toronto, Ontario, Canada. May 4, 2007.

**Sanford Melzer, MD, MBA**


**Suzinne Pak-Gorstein, MD, PhD, MPH**

**Frederick P. Rivara, MD, MPH**


**Naomi F. Sugar, MD**

**James A. Taylor, MD**

**PUBLICATIONS**


The Division of Genetics and Developmental Medicine is committed to providing excellence in clinical care, education and research related to a broad spectrum of genetic disorders, birth defects and developmental disabilities. Approximately 3% to 5% of all newborns will have one of these conditions or some related problem that may seriously influence the quality of the patients’ and their families’ lives.

The division is one of the largest in the United States and is the oldest and most recognized referral center of its type in the Pacific Northwest. Through an extensive network of outreach clinics we also provide outpatient care to children in the WAMI region. Faculty in the division have varied academic backgrounds and are drawn from many disciplines, including human/medical genetics, neurology, developmental/behavioral pediatrics, developmental biology and biochemistry. Through our academic partnerships at the University of Washington, we provide postdoctoral training programs in developmental pediatrics and medical genetics. Our training programs are among the oldest in the country, and many of our alumni hold leadership positions at other institutions.

Faculty in the division are involved in many research areas, including research into neurodevelopmental disabilities (e.g., Joubert syndrome), neurodegenerative disorders (e.g., Charcot-Marie-Tooth neuropathy, Lou Gehrig disease), limb malformations, heart malformations, biochemical/metabolic diseases, gene therapy and population genetics/evolution.

**PROFESSIONAL PROFILES**

Phillip F. Chance, MD, is chief of the Division of Genetics and Developmental Medicine at Seattle Children’s Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine, with a joint appointment as professor in the Department of Neurology. He is the first recipient of the Allan and Phyllis Treuer Endowed Chair in Genetics and Development at Children’s. Chance is director of the Neurogenetics Laboratory in the Department of Pediatrics, which includes trainees, technical staff and the participation of six full-time faculty. The lab conducts research into the molecular basis of several rare neurodevelopmental and neurodegenerative diseases in children, focusing on four main areas: juvenile Lou Gehrig disease (amyotrophic lateral sclerosis or ALS4), Charcot-Marie-Tooth neuropathies, hereditary neuralgic amyotrophy (HNA, also called familial brachial plexus neuropathy) and Joubert syndrome and related cerebellar malformations.

Chance has published more than 80 peer-reviewed articles and communications and authored 40 book chapters; he lectures frequently on his research. He is a member of the steering committee of the University Center for Neurogenetics and Neurotherapeutics. He
serves on the medical advisory committees for the Muscular Dystrophy Association, the Charcot-Marie-Tooth Association, the Les Turner ALS Association and the Joubert Syndrome Association.

**Michael J. Bamshad, MD**, is professor in the Department of Pediatrics and adjunct professor of genome sciences at the University of Washington. His laboratory addresses the origins and affinities of humans, develops novel strategies to find disease susceptibility variants and characterizes genetic variants influencing risk for an assortment of health-related conditions. Bamshad is particularly interested in identifying genetic variants that cause birth defects that alter risk for chronic diseases of childhood, infections and preterm birth, and that influence chemosensory perception such as taste. His laboratory has identified genetic variants that underlie several disorders manifested by either limb defects or heart defects. Bamshad’s lab has recently discovered that mutations in several genes (e.g., TNNI2, TNNT3, TPM2, MYH3) that encode proteins of the contractile apparatus of fast-twitch myofibers cause several syndromes characterized by contractures of the feet such as clubfoot. Researchers in his lab are now trying both to understand the mechanism by which these mutations disrupt muscle function and also to determine whether these genes influence susceptibility to idiopathic clubfoot.

**Craig L. Bennett, PhD**, is research assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. His research is conducted in the Neurogenetics Laboratory and is focused in two areas. The first is the molecular basis of a juvenile-onset form of a motor neuron disease known as amyotrophic lateral sclerosis type 4 (ALS4) that results from mutations of the senataxin (SETX) gene. In recent work, Bennett and co-workers generated mammalian expression constructs of wild type SETX and three mutant forms of SETX associated with ALS4. They also found that the amount and molecular weight of the SETX protein isolated from ALS4 patient lymphoblasts is approximately equal to that from controls. Most important, they have produced murine ALS4 transgenic founders that will likely prove extremely important to understanding the mechanism leading to motor neuron death resulting from SETX mutations. The second area of research is Charcot-Marie-Tooth neuropathy type 1C (CMT1C). Bennett has collaborated to show that the SIMPLE protein (which, through mutation, causes CMT1C) interacts with two proteins, NEDD4 and TSG101, that act sequentially in the lysosomal sorting pathway. Their results show that SIMPLE co-localizes with NEDD4 at the plasma membrane and the Golgi apparatus.

**Forrest C. Bennett, MD**, serves as director for the High-Risk Infant Follow-Up Program at the Center for Human Development and Disability at the University of Washington School of Medicine; he is also director of the Pediatrics WWAMI Program and director of the Pediatric Medical Student Program. Bennett is a member of the university Clinical Curriculum Committee and serves on the Pediatric Residency Committee and the Intern Selection Committee. Bennett was named president-elect of the Western Society for Pediatric Research in 2007 and will serve as president in 2008. His research includes a Phase IV study looking at the role of early developmental intervention for premature infants. Bennett is also participating in collaborative studies evaluating the role of nitric oxide in the treatment of neonatal RDS and long-term outcomes, including developmental and chronic lung disease. Bennett lectures in rehabilitation medicine and in public health and maternal child health courses. He oversees the third-year pediatrics clerkship students and approximately 20 fourth-year medical students. He also serves as a mentor to the regional medical student faculty and gives CME lectures in developmental pediatrics at regional and national courses.

**SPOTLIGHT ON TEAM MEMBER — Kathy Price, MSW, LICSW**

*The concepts of compassionate, comprehensive, family-centered and coordinated care are exemplified in Seattle Children’s new Medically Complex Child Service (MCCS), started in summer 2007. Working hand in hand with parents and providing the gold standard regarding continuity of care, the MCCS team is improving the hospital experience and quality of life for our children and teens with complex medical needs.*
Charles A. Cowan, MD, is attending physician in the Neurodevelopmental Program and leads the Autism Program at Seattle Children’s Hospital; he is clinical professor in the Department of Pediatrics at the University of Washington School of Medicine. Cowan’s clinical interests relate to care of children with complex developmental disabilities, especially autism. He also has Children’s responsibilities as the clinical director of Care Coordination Services. These duties encompass development and supervision of the community hospitalist programs at three regional hospitals: Evergreen Hospital Medical Center, Providence Everett Medical Center and Kadlec Medical Center. His research interests also encompass standardization of care utilizing the Pediatric Health Information System database and development of guidelines and clinical pathways at Children’s. In 2006, Cowan was honored with the Duncan Award for service to children and families with developmental disabilities.

Daniel A. Doherty, MD, PhD, is assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. He is a developmental pediatrician working on Joubert syndrome (JS), an autosomal recessive brain malformation syndrome involving cerebellar vermis hypoplasia with accompanying brainstem abnormalities. Clinically, JS is characterized by hypotonia, developmental delays, abnormal respiratory control, abnormal eye movements and in some cases retinal, renal and hepatic disease. Mutations in five genes cause JS, accounting for less than 50% of patients. With Drs. Glass and Parisi, Doherty led a collaborative effort to identify the RPGRIP1L gene as one cause of JS and to implicate RPGRIP1L in the function of the primary cilium/basal body complex, a subcellular organelle involved in a variety of genetic disorders. The JS group continues to search for the remaining causes of JS using SNP genotyping to identify regions of haplotype sharing in consanguineous families. This work will directly benefit patients with JS through diagnostic testing and improved medical monitoring for complications. It will also shed light on the genetic mechanisms underlying JS and normal brain development. Doherty’s clinical interests include the care of children with brain malformations and prenatal counseling for fetal central nervous system malformations.

Alan G. Fantel, PhD, is professor in the Department of Pediatrics at the University of Washington School of Medicine. His laboratory has two main interests. One is the role of free radical formation and toxicity in the genesis of limb reduction anomalies. He is studying the involvement of nitric oxide and its metabolites in these malformations in mice. The laboratory is also the major NIH-funded facility for the collection and distribution of human conceptal tissue to grant-funded institutions.

Ian A. Glass, MD, MBChB, is director of Medical Genetics at Seattle Children’s Hospital and co-director of the Alaska Genetics and Birth Defects Clinic. He is associate professor in the Department of Pediatrics at the University of Washington School of Medicine and holds an adjunct appointment in the Division of Medical Genetics. He also serves on the Genetics Advisory Committee and the Newborn Screening Committee of the Washington State Department of Health. Children’s programs provide virtually all of the pediatric genetic services for the states of Washington and Alaska. Glass serves as program leader for a focused research project on Joubert syndrome and related disorders of brain development. The project is a collaboration within the Neurogenetics Laboratory that includes several division faculty. His recent work with this group includes two important discoveries, both of which have been recently reported. The first is a description of the NPNH1 gene deletions in patients with a subset of Joubert syndrome. The second relates to a prenatal diagnosis imaging protocol for Joubert syndrome.

Sihoun Hahn, MD, PhD, is attending physician at Seattle Children’s Hospital and professor in the Department of Pediatrics and adjunct professor of medicine at the University of Washington School of Medicine. He is head of the Biochemical Genetics Program and director of the Biochemical and Molecular Genetics Laboratory. Hahn recently moved from the Mayo Clinic in Rochester, Minn. After receiving his MD/PhD from Korea University College of Medicine in Seoul, Korea, he enrolled in a medical genetics fellowship at the National Institutes of Health, Bethesda, Md., where he was the recipient of a National Research Service Award Fellowship. He is board certified in pediatrics and medical genetics. Hahn’s research has focused on copper metabolism, population screening for Wilson
Mark C. Hannibal, MD, PhD, is attending physician at Seattle Children's Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. He completed a combined MD/PhD program at the University of Michigan and a pediatrics residency and medical genetics fellowship at the University of Washington. His clinical work is in the medical genetics, cardiovascular genetics and immunology clinics at Children's. Regionally, he provides genetics consultation throughout Washington and Alaska. His areas of interest are Kabuki syndrome and immunogenetics, particularly immune deficiency associated with syndromes. Hannibal’s primary research focus is studying the molecular basis of hereditary neuralgic amyotrophy. This episodic autosomal dominant disorder is characterized by attacks of sudden, severe, nonabating pain in the shoulder and/or the arm, and weakness with muscle wasting. In some families, non-neurologic findings include excessive skin folds, relatively short palpebral fissures, hypotelorism and bifid uvula or cleft palate. His interest is in the translational aspects of genetic disorders, such as understanding how mutations in the Septin-9 gene cause features of hereditary neuralgic amyotrophy. He is a member of the faculty senate at the University of Washington and the Professional Advisory Board for the Kabuki Syndrome Network.

Ronald J. Lemire, MD, passed away in February 2008. He was the director for inpatient services at Seattle Children’s Hospital, which include the Transport Team and the Intensive Care Unit; he was also attending physician in the Birth Defects Clinic. He was professor of pediatrics at the University of Washington School of Medicine. Lemire served as an interface between the Harborview Medical Center Trauma System and Seattle Children’s, and he was coordinator for the Flight Service. Lemire also provided coverage for the medical director of Seattle Children’s and the chair of the Department of Pediatrics. Lemire’s main research interest was in teratology. With Tom Shepard, he published the 11th edition of the Catalog of Teratogenic Agents. His research studies included anencephaly, holoprosencephaly and other aspects related to normal and abnormal development of the human nervous system. Lemire’s clinical interests included neural tube defects and spinal cord malformations.

John F. (Jeff) McLaughlin, MD, is chief of the Spasticity Management Clinic at Seattle Children’s Hospital. He is a professor in the Department of Pediatrics at the University of Washington School of Medicine, where he is the director of the Clinical Training Unit in the Center on Human Development and Disability. His research interests are in the treatment of spasticity and the comprehensive care of children with disabilities and congenital anomalies. McLaughlin is chair of the annual Duncan Seminar, devoted to developmental disabilities, at Children’s.
J. Lawrence Merritt, MD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. He joined Children’s after completing his pediatric residency, medical genetics residency and biochemical genetics fellowship at the Mayo Clinic in Rochester, Minn. He provides inpatient and outpatient clinical services in biochemical genetics at Children’s and in Spokane travel clinics. His clinical interests include long-term follow-up of infants with abnormal newborn screens, urea cycle disorders and fatty acid oxidation disorders. He is chair of the ad-hoc Professional Development Committee of the American Society of Human Genetics.

Daniel G. Miller, MD, PhD, is attending physician at Seattle Children’s Hospital, assistant professor in the Division of Genetics and Developmental Medicine and adjunct professor in the Department of Genome Sciences at the University of Washington School of Medicine. Miller is interested in using gene therapy strategies to treat human genetic disease. His research is focused in three principal areas: the first focuses on characterization of the integration sites for adeno-associated virus (AAV). Other research focuses on gene-targeting keratinocytes for possible treatment of epidermolysis bullosa. A third area relates to the evaluation of DUX4 expression during myogenesis in a transgenic animal model for facioscapulohumeral muscular dystrophy. Miller was elected to the Society of Pediatric Research in 2007. His clinical work is in the pediatric Medical Genetics Clinic at Children’s.

William R.A. Osborne, PhD, is research professor in the Department of Pediatrics and director of gene therapy research at the Center on Human Development and Disability (CHDD) at the University of Washington School of Medicine. His current research is in two areas. The first is developing gene transfer therapies to treat cyclic neutropenia in dogs. This research entails the in vivo lentivirus-mediated delivery of canine granulocyte/colony stimulating factor and also its delivery using encapsulated cells. The second area is in gene therapy to treat type I and type II diabetes. This work entails the development of specific cell lines to secrete insulin and glucagon-like peptide 1 for transplantation into diabetic rats. It also involves developing methods permitting implantation of allogeneic islet cells for long-term survival and therapy not requiring immunosuppression. Osborne is a member of the Scientific Editorial Board for Human Gene Therapy; he is also a member of the Musculoskeletal Tissue Engineering Study Section at the NIH and a member of the Scientific Review Board for the National Gene Vector Laboratories also based at the NIH. He has trained numerous postdoctoral fellows.

Robert A. Pagon, MD, is attending physician at Seattle Children’s Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine. She is principal investigator for GeneTests: Genetic Testing Information Resource, an NIH-funded database used by clinicians to identify genetic testing laboratories and apply genetic testing to the diagnosis, management and genetic counseling of patients with inherited disorders and their families. Pagon is the review board coordinator for the Collaboration, Education and Test Translation (CETT) Program funded by the Office of Rare Disorders of the NIH. The CETT Program is focused on facilitating translation of genetic testing from research laboratories into clinical practice. Pagon’s clinical interests are hereditary eye disorders and disorders of sexual differentiation. In addition to seeing patients in the genetics clinic at Children’s, she attends in the genetics clinics in the Washington State Regional Genetics Program and the Alaska Genetics and Birth Defects Clinic. Pagon has served on the board of directors of the American Society of Human Genetics, the board of directors of the American Board of Medical Genetics and the Board of Scientific Counselors of the National Human Genome Research Institute at the NIH.

Melissa A. Parisi, MD, PhD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. Her clinical work is performed primarily through the Medical Genetics Clinic at Children’s. She also sees patients in the State of Alaska Outreach Clinics, participates in genetics clinics in Bellingham, Wash., and provides consultation in genetics at Swedish Hospital in Seattle, Wash. Areas of special interest include congenital brain disorders and disorders of sex development. Parisi’s research is focused on identifying the molecular basis of genetic disorders of brain development, particularly those involving the hindbrain or cerebellum. She is involved in studies on the prenatal diagnosis and natural history of cerebellar malformation syndromes. Many of her publications focus on Joubert syndrome and related cerebellar disorders, a group of conditions with the
shared feature of the molar tooth sign on MRI. She and her colleagues have identified several new causative genes for Joubert syndrome, and they are actively seeking other genetic causes for these disorders. Parisi is chair of the Scientific Advisory Board for the Joubert Syndrome Foundation and Related Cerebellar Disorders parent support group. She also serves on the steering committee for the Puget Sound Women’s Pediatric Society and is involved in work-life balance initiatives at Children’s.

Janine E. Polifka, PhD, is lecturer in the University of Washington School of Medicine and clinical instructor in the School of Pharmacy. She is co-director of CARE (Counseling and Advice on Reproductive Exposures) Northwest, a teratogen information service at the University of Washington that receives approximately 75 inquiries per month regarding pregnancy and lactation exposures. She also manages TERIS (Teratogen Information System), a computerized database that provides information on the effects of environmental agents on the developing embryo/fetus. She received her PhD in experimental psychology from the University of Louisville and a postdoctoral training fellowship in teratology at Thomas Jefferson University in Philadelphia, Pa. Her clinical and research interests include clinical teratology and teratogenic risk assessment. She serves on the Pediatric Environmental Health Specialty Unit (PEHSU) Committee, which addresses the concerns of health-care professionals and their patients about exposures to environmental contaminants. Polifka is also on the staff of the Community Outreach and Education Core (COEC) of the Center for Ecugenetics and Environmental Health (CEEH) at the University of Washington. Polifka is a past president and active in several committees of OTIS (Organization of Teratology Information Services), which oversees 19 teratology information services in North America. She also serves on several committees of the Teratology Society.

Michael L. Raff, MD, is attending physician at Seattle Children’s Hospital and assistant professor at the University of Washington School of Medicine. He provides clinical genetics services in the Medical Genetics, Biochemical Genetics and Metabolic Bone clinics at Children’s, in the Washington State Regional Clinics program and in the Biochemical Genetics Clinics for the state of Alaska. Raff’s clinical and research interests include disorders of energy metabolism (including CPT1 deficiency) and metabolic disorders of bone. Other interests include medical genetics teaching and curricula for medical students and medical residents, and the use of telemedicine to provide clinical genetics services.

C. Ronald Scott, MD, is attending physician at Seattle Children’s Hospital and professor in the departments of Pediatrics and Medicine at the University of Washington School of Medicine. He has special clinical expertise in the diagnosis and management of children and adults with inborn errors of metabolism. He is director of the Phenylketonuria and Metabolic Disease Clinic at the University of Washington and has initiated a program for the diagnosis and management of children or adults with lysosomal storage diseases. Scott’s research focuses on collaboration with the University of Washington’s Department of Chemistry in the development of special applications of tandem mass spectroscopy for the diagnosis of biochemical disorders through newborn screening programs. He has multiple grants from federal and private agencies in support of detecting metabolic diseases through newborn screening and for the management of lysosomal storage disorders. Scott is board certified in pediatrics, biochemical genetics and molecular genetics. He serves as an advisor on genetics for the Washington State Legislature and Department of Health. He serves as a consultant to companies who manufacture special infant formulas and to pharmaceutical companies regarding the appropriate management of individuals with lysosomal storage diseases. He has served on the board of directors for the Society for Inherited Metabolic Disorders, the American Board of Medical Genetics and the American Society of Human Genetics. Scott recently received the FDA Commissioner’s Special Citation for his work on hereditary tyrosinemia I and has been listed in “Best Doctors in America” since 1992.

Katherine A. TeKolste, MD, is clinical associate professor in the Department of Pediatrics and developmental pediatrician at the University of Washington School of Medicine. Since 1993, TeKolste has worked with the Washington State Medical Home Project to improve care for children and youth with special health-care needs. She co-directs the UW’s Medical Home Leadership Network and is co-director of the Medical Home Learning Collaborative of the Washington State Collaborative to Improve Health. In addition, she serves as director of the Adolescent Health Transition Project (AHTP) supported by the Washington State Department
of Health. The AHTP aims to improve the transition of adolescents with disabilities and childhood-onset chronic conditions from pediatric care into adult health care. TeKolste has worked with many state and regional projects, including the Kids Get Care/Children’s Preventive Healthcare Initiative in King County, Wash., and the CHILD Profile materials review committee. As co-primary investigator on a CATCH grant from the AAP, she worked to improve mental health services in the primary care pediatric practice. She has been involved in HB1088 implementation efforts. TeKolste served for many years as a member of the State Interagency Coordinating Council for Birth to Three services in Washington state. She has been active in regional efforts to improve developmental screening and oral health services for children, including work with the Interdisciplinary Children’s Oral Health Promotion (ICOHP) project. She was part of the multi-state team for the Assuring Better Child Development (ABCD-I) grant from the Commonwealth Fund and the National Academy for State Health Policy. TeKolste worked on the Infant Health and Development Program (IHDP) multicenter study of premature infants and has served as interim director of the university’s High-Risk Infant Follow-up Clinic. She served for six years as president of the Northwest Society for Developmental and Behavioral Pediatrics.

Cristine M. Trahms, MS, RD, is senior nutritionist for the Biochemical Genetics Clinic and the Metabolic Genetics Clinic at Seattle Children’s Hospital. She is program director and senior nutritionist for the Phenylketonuria (PKU) Clinic at the University of Washington School of Medicine. She coordinates cooperative educational and support activities, including a live TV downlink to the Spokane PKU Clinic. She serves on the editorial board and the advisory board for the National PKU News. She also writes a quarterly self-management column, “Just for Kids,” and is reviewer for The Journal of the American Dietetic Association. In addition to many committee and board memberships, Trahms is nutrition discipline leader for the Leadership Education in Neurodevelopmental and Related Disabilities (LEND) training project at the university’s Center on Human Development and Disability (CHDD). She is a member of the core faculty of Nutritional Sciences in the School of Public Health and Community Medicine and co-teaches courses and mentors students. Trahms developed and continues to refine and update a regional PKU treatment protocol/manual — which incorporates current evidence-based medical and nutritional care — as well as the PKU Clinic Web site. Trahms has been recognized for Excellence in the Practice of Clinical Nutrition by the American Dietetic Association and named Outstanding Dietitian of the Year by the Washington State Dietetic Association.

William O. Walker Jr., MD, is director of the Neurodevelopmental/Birth Defects Clinic at Seattle Children’s Hospital. He is associate professor in the Department of Pediatrics at the University of Washington School of Medicine and serves as director of the developmental behavioral pediatrics fellowship program. He is also adjunct associate professor of pediatrics at the Uniformed Services University of the Health Sciences, F. Edward Herbert School of Medicine, Bethesda, Md. Walker’s clinical interests are focused on improving coordination of patient care across medical and surgical specialties in the Neurodevelopmental/Birth Defects Clinic and improving access to neurodevelopmental outpatient services by utilizing referral pathways and pre-referral guidelines. He is subspecialty boarded in neurodevelopmental disabilities and developmental behavioral pediatrics. Walker has collaborative research projects under way in the areas of continence and quality-of-life measures for spina bifida patients. He frequently lectures at national conferences on spina bifida as well as conferences on intellectual and other developmental disabilities. He is a member of the Professional Advisory Committee, Spina Bifida Association of America; the editorial board for DB:PREP, a subspecialty publication of the American Academy of Pediatrics; and the Treatment Outcomes Committee, American Academy of Cerebral Palsy and Developmental Medicine.

Stephanie E. Wallace, MD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. Her clinical work is performed primarily through the Medical Genetics Clinic at Children’s. She also sees patients in genetics clinics in Bellingham, Yakima and Wenatchee, Wash., and in the State of Alaska outreach clinic. She leads the Neurofibromatosis Clinic and participates in the Skeletal Dysplasia Clinic at Children’s and provides an adult cancer genetics clinic at Tacoma General Hospital. Areas of interest include skeletal dysplasias and cancer genetics.
Samuel H. Zinner, MD, is an assistant professor and a developmental-behavioral pediatrician (DBP) with the University of Washington Center on Human Development and Disability and with the Neurodevelopmental/Birth Defects Clinic at Seattle Children's Hospital. Zinner completed medical school at the University of California, San Diego; a pediatrics residency at Kaiser Permanente in Los Angeles, Calif.; and a DBP fellowship at Children's Hospital, Boston, Mass. His clinical and research interests focus on psychosocial and behavioral aspects of neurodevelopment with particular interest in Tourette syndrome and its associated conditions. Research and educational activities explore quality of life (QoL) for adolescents with Tourette syndrome and their families; enhancement of “Medical Home” capabilities for community providers; and participation with the Autism Treatment Network, a network of research centers that engages in projects to advance understanding of the disease, develop medical treatments and establish standards of clinical care based on research and shared clinical practice. Recent Tourette syndrome presentations include multiple Grand Rounds throughout the United States and in Norway, and on Medical Home in Alabama. QoL work was presented as posters at the annual conference of the Society of DBP. Zinner is director of pediatric residency training in DBP and a member of the Medical Advisory Board of the national Tourette Syndrome Association.

AWARDS AND HONORS

C. Ronald Scott, MD
Commissioner’s Special Citation. U.S. Food and Drug Administration.

RESEARCH FUNDING

New

Michael J. Bamshad, MD
Genetic modifier C.F.-DNA collection. Seattle Children’s Hospital. $150,179.

Craig L. Bennett, PhD

Alan G. Fantel, PhD
Laboratory of Developmental Biology. NIH/NICHD. $417,857.

Daniel G. Miller, MD, PhD
AAV vector integration frequency and associated genome alterations. NIH/NIDDK. $234,000.


Roberta A. Pagon, MD
Rare diseases research testtranslation to clinical testing. NIH/Office of Rare Diseases. $73,738.

C. Ronald Scott, MD
An open-label extension of patients with late-onset Pompe disease who were previously enrolled in protocol AGLU02704. Genzyme Corporation. $71,442.

Continuing

Michael J. Bamshad, MD
Genetic and molecular basis of congenital contractures. NIH/NICHD. $316,023.

Human genes shaping the response to bioterrorism agents. Colorado State University. $266,817.


Phillip F. Chance, MD
Identification and characterization of the ALS4 gene. NIH/NINDS. $86,233.

Molecular basis of hereditary neuralgic amyotrophy. NIH/NINDS. $307,850.

Ian A. Glass, MD, MBChB
Genetic analyses of cerebellar malformations. NICHD/NIH/DHHS. $74,534.

John F. (Jeff) McLaughlin, MD
Improving measurement of pain and fatigue in children and adults with disabilities, University of Washington Center for Outcomes Research in Rehabilitation. NIH. $787,501.
Infusion system performance registry. Medtronic, Inc. $30,000.


Daniel G. Miller, MD, PhD
FSHMD related defects in human myogenesis. Pacific Northwest Friends of FSH Research. $50,000.

William R.A. Osborne, PhD
Canine G-CSF gene transfer. NIH/NIDDK. $235,741.

Roberta A. Pagon, MD

Melissa A. Parisi, MD, PhD
Molecular basis of Joubert syndrome and related diseases. NIH/NINDS. $166,271.

C. Ronald Scott, MD
Novel technologies in newborn screening. NIH/NICHD. $556,465.


Study of Gaucher disease. Genzyme Corporation. $185,000.

TEACHING AND PRESENTATIONS

Michael J. Bamshad, MD
Genetic and molecular basis of congenital contractures. 5th Annual Structural Birth Defects Meeting, National Institute of Child Health and Development. Baltimore, Md. 2007.


Craig L. Bennett, PhD

Charles A. Cowan, MD


Daniel A. Doherty, MD, PhD


Mark C. Hannibal, MD, PhD

John F. (Jeff) McLaughlin, MD

Daniel G. Miller, MD, PhD

Roberta A. Pagon, MD

Robert A. Pagon, MD


Melissa A. Parisi, MD, PhD


Janine E. Polifka, PhD

C. Ronald Scott, MD


Katherine A. TeKolste, MD

**Cristine M. Trahms, MS, RD**


**William O. Walker Jr., MD**


**Samuel H. Zinner, MD**


**PUBLICATIONS**


Huang Y, Bennett CL. Litaf/Simple protein is increased in intestinal tissues from patients with CD and UC, but is unlikely to function as a transcription factor. Inflamm Bowel Dis. Jan 2007;13(1):120–121.


Hematology/Oncology and Bone Marrow Transplant

Seattle Children’s Hospital, Fred Hutchinson Cancer Research Center (FHCRC) and the University of Washington Medical Center bring together their adult and pediatric oncology programs in the Seattle Cancer Care Alliance (SCCA). Children’s is a nationally recognized leader in pediatric cancer diagnosis and treatment, and the Division of Hematology/Oncology and Bone Marrow Transplant provides the pediatric cancer care for the SCCA. The dedicated pediatric specialists in our 33-bed SCCA inpatient unit care for more than 240 new patients each year.

Our multidisciplinary approach to treatment offers real advantages to our patients. A diverse group of experienced pediatric specialists, present in one location and focused on the care of children, is able to deliver the best possible treatments. Members of our team include oncologists, surgeons, midlevel practitioners, nurses, nutritionists, social workers and child life specialists working in inpatient and outpatient settings.

The Hematology/Oncology Clinic offers multiple specialty services, including a bone tumor clinic, bone marrow transplant services, hematologic and sickle cell disease clinics, a multidisciplinary solid tumor oncology clinic, a neuro-oncology clinic, surgical oncology care, palliative care and radiation therapy. Whenever possible, we treat our patients with the Children’s Oncology Group protocols approved by our review board, which include investigational therapy or drugs when there are no effective standard therapies for a given diagnosis.

We offer long-term follow-up through the ACCESS (After Cancer Care Ends, Survivorship Starts) Program, which helps pediatric cancer survivors live healthy lives, and through the Long-Term Follow-up Program, which evaluates effects after hematopoietic cell transplant. Based on our overall dedication to improving survival rates for children with brain tumors, the depth of our program, the clinical resources of our institution and our ability to perform innovative research, Children’s was one of nine institutions in the United States selected for membership in the Pediatric Brain Tumor Consortium.

Our research activities to improve cancer treatment encompass internationally recognized programs at Children’s, the University of Washington and FHCRC. These activities have been responsible for the development of widely used clinical treatments, including hematopoietic stem cell transplantation and a novel targeted therapy for treating acute myelogenous leukemia.

FACULTY

Irwin D. Bernstein, MD, Chief
Tina M. Albertson, MD
Robert G. Andrews, MD
Michael A. Bender, MD, PhD
Marie Bleakley, MD, MMSc
Lauri M. Burroughs, MD
Paul Carpenter, MBBS
Eric Chow, MD, MPH
Mari Dallas, MD
Colleen Delaney, MD, MSc
Debra L. Friedman, MD
J. Russell Geyer, MD
Douglas S. Hawkins, MD
Rebecca H. Johnson, MD
Thomas J. Manley, MD
Dana C. Matthews, MD
Soheil Meshinchi, MD, PhD
James M. Olson, MD, PhD
Julie R. Park, MD
Thomas W. Pendergrass, MD, MSPH
Jessica Pollard, MD
Jean E. Sanders, MD
Akkio Shimamura, MD, PhD
Barbara Small, MD
Blythe G. Thomson, MD
Ann E. Woolfrey, MD

Irwin D. Bernstein
MD, Chief
Hematology/Oncology and Bone Marrow Transplant

PROFESSIONAL PROFILES

Irwin D. Bernstein, MD, is chief of the Division of Hematology/Oncology and Bone Marrow Transplant at Seattle Children’s Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine. He is director of the Division of Pediatric Hematology/Oncology in the university’s Department of Pediatrics and head of the Pediatric Oncology Program at the Fred Hutchinson Cancer Research Center (FHCRC). Bernstein holds the John R. Hartmann Endowed Chair in Pediatric Oncology/Hematology at Children’s and is an American Cancer Society clinical research professor. He has been a board member for the Leukemia & Lymphoma Society, is chairman of the society’s Professional Education Committee and is a member of the Scientific Advisory Board for the University of Minnesota Cancer Center. Bernstein’s research interests include hematopoietic stem cells, antibody targeted therapies for lymphoma and leukemia, and the biology of acute myeloid leukemia. He is principal investigator on a Leukemia & Lymphoma Society SCOR program in immunotherapy of hematologic malignancies; on multiple grants, including those that support his studies of acute myeloid leukemia cells, which have led to the development of Mylotarg, a drug widely used for treating acute myelogenous leukemia; and his current studies of hematopoietic stem cells as well as fetal stem cell transplant and embryonic stem cell–based therapies. His laboratory is studying novel nonhuman primate embryonic stem cell (ESC) lines to characterize the differentiation to hematopoietic stem cells (HSC) and to develop strategies for the use of ESC-derived HSCs for transplant in these preclinical models. His work also includes examining the role of natural killer and mesenchymal stem cells in hematopoietic stem cell transplant.

Robert G. Andrews, MD, is attending physician at Seattle Children’s Hospital and associate professor in the Division of Pediatric Hematology/Oncology at the University of Washington School of Medicine. He is an associate member of the Fred Hutchinson Cancer Research Center (FHCRC) in the Clinical Research Division, and head of stem cell and transplant biology at the Washington National Primate Research Center. Andrews has research interest in hematopoietic stem cell and transplant biology, including gene therapy and expansion of hematopoietic stem cells as well as fetal stem cell transplant and embryonic stem cell–based therapies. His laboratory is studying novel nonhuman primate embryonic stem cell (ESC) lines to characterize the differentiation to hematopoietic stem cells (HSC) and to develop strategies for the use of ESC-derived HSCs for transplant in these preclinical models. His work also includes examining the role of natural killer and mesenchymal stem cells in hematopoietic stem cell transplant.

Michael A. Bender, MD, PhD, is attending physician at Seattle Children’s Hospital and director of the Odessa Brown Comprehensive Sickle Cell Clinic; he is associate professor at the University of Washington School of Medicine. Clinically, Bender has a long-standing commitment to hemoglobinopathies with an emphasis on sickle cell disease, and special emphasis on patient education, community outreach and access to health care. He acts as a consultant to the state newborn screening program regarding hemoglobinopathies, providing advice to the state, community physicians and families. Bender has worked with the Puget Sound Blood Center’s Rare Blood Groups program to increase the number of minority donors by overcoming cultural barriers and improving education and information services, and he received the American Society of Hematology’s Champion for Advocacy award. He has served as session leader and abstract reviewer for the American Society of Hematology. Bender is on the NHLBI Special Emphasis Panel for Comprehensive Sickle Cell Centers, the NIH Sickle Cell Advisory Committee, and the National Coordination and Evaluation Center Steering Committee. He is also a reviewer for the Cooley’s Anemia Foundation RFA and Fellowship Programs and a member of the Sickle Cell Disease Association of America. His research focuses on two main areas: regulation of the chromatin structure in vivo, using the beta-globin locus as a model; and the manipulation of the oxidation/reduction
state in vivo to affect sickle cell disease. Bender is working on multiple research projects, ranging from developing new techniques to analyze chromatin structure, to establishing a statewide collaborative to provide better support for patients, families, practitioners and community members affected by sickle cell disease. He has used several strategies to delete multiple DNaseI hypersensitive sites (HSs) of the beta-globin locus control region (LCR). The LCR is essential for the activation of the locus. Loss of the LCR decreases but does not eliminate expression, but does not lead to a major change in chromatin structure. As this is different than predicted from analysis of a human with an LCR deletion, two approaches were pursued. The first was to extend the deletion further upstream of the LCR. The second was to identify and delete additional candidate regulatory regions from the endogenous locus in mice. Data from several systems has implicated HSs flanking the locus as being important in the regulation of chromatin structure and expression of the locus. Several models have been generated about the role of these regions. Bender has recently published the results of these studies, which demonstrate the inaccuracy of several prior models for globin gene regulation. He is using long-range DNase sensitivity and chromatin immunoprecipitation studies to further characterize the region through erythroid development and generate new models.

Marie Bleakley, MD, MMSc, is attending physician at Seattle Children’s Hospital and in the Clinical Research Division of the Fred Hutchinson Cancer Research Center (FHCRC) and acting instructor in the Department of Pediatrics at the University of Washington School of Medicine. She is an associate in clinical research in immunology at FHCRC and attending physician on the bone marrow transplant service. Bleakley’s primary research focus is the discovery of novel minor histocompatibility antigens expressed on leukemic stem cells. The ability to cure leukemia with allogeneic hematopoietic stem cell transplant requires a type of donor immune cell called a T cell that recognizes and destroys leukemic cells. Some of these T cells can also damage normal cells and cause a condition called graft-versus-host disease (GVHD). Bleakley is conducting research to discover the target molecules on leukemic cells that the immune system recognizes, in order to develop immunotherapy for transplant patients that selectively kills leukemic cells without damaging normal cells. In the past year she has completed the identification of three new target molecules and is continuing to find additional targets. Immunotherapy administered in the form of vaccines or T cell infusions could improve the cure rate of patients with advanced leukemia. Bleakley is also developing a protocol for a clinical trial of selective depletion of specific T cell subsets from donor cells for allogeneic hematopoietic stem cell transplant to prevent GVHD.

Lauri M. Burroughs, MD, is acting assistant professor at the University of Washington School of Medicine and associate in clinical research at the Fred Hutchinson Cancer Research Center (FHCRC). Her research interests include hematopoietic cell transplantation (HCT) for patients with primary immunodeficiencies and other nonmalignant disorders. She is conducting a clinical trial to evaluate whether the addition of the T cell–depleting agent Campath can decrease the incidence of graft-versus-host disease (GVHD) and improve donor chimerism following HCT. In addition, to increase the number of patients who may benefit from HCT, Burroughs developed a clinical trial for patients who do not have HLA-matched related or unrelated donors. Patients will receive cyclophosphamide before and after HCT followed by HLA-haploidentical grafts to remove alloreactive T cells with the goal of improving engraftment and decreasing GVHD. In an effort to
continue to develop the HCT program for patients with nonmalignant disorders, Burroughs is developing two additional protocols. Protocol 2256 is a reduced-intensity conditioning regimen (treosulfan and fludarabine) that will replace our current standard myeloablative treatment plan. In addition, she has developed Protocol 2214, which uses HLA-matched related and unrelated marrow grafts following nonmyeloablative conditioning for patients with bone marrow failure syndromes.

**Paul Carpenter, MBBS,** is attending physician at Seattle Children’s Hospital and the Fred Hutchinson Cancer Research Center (FHCRC) and associate professor at the University of Washington School of Medicine, with a focus on graft-versus-host disease (GVHD). He supervises junior attending staff on the pediatric hematopoietic cell transplant service at FHCRC. His local responsibilities include acting clinical director of HCT. He has made long-standing contributions to the FHCRC Standard Practice Committee and Standard Practice Manual. He chairs a data safety monitoring board for multiple FHCRC protocols and serves on the FHCRC Scientific Review Committee and one of the two institutional review boards. His clinical and research interests focus on GVHD, which is the major and potentially lethal complication of hematopoietic cell transplant. His research continues to explore new therapies for the treatment of acute and chronic GVHD, and he is an active member in both the Bone Marrow Transplant Clinical Trials Network and NIH Consensus Development Project to advance the field of chronic GVHD treatment. Her work in the mouse model demonstrated that murine hematopoietic stem cells cultured on Delta1 reconstituted the T cell compartment more rapidly than noncultured cells. She is translating her findings using human umbilical cord blood progenitors. When applied in a clinical setting, augmentation of transplanted umbilical cord blood cells with Delta1 cultured cells may improve clinical outcomes of patients undergoing transplantation by decreasing the transplant-related mortality secondary to infection.

**Mari Dallas, MD,** is attending physician at Seattle Children’s Hospital, associate in the Clinical Research Division at the Fred Hutchinson Cancer Research Center (FHCRC) and acting instructor in the Division of Pediatric Hematology/Oncology at the University of Washington School of Medicine. She received the Aliana J. Enlow Scholar award from the National Marrow Donor Program and the New Investigator Award from the University of Washington Child Health Research Center. She was also named special fellow in clinical research by the Leukemia & Lymphoma Society. Dallas’ research interests center around bone marrow transplant and immune reconstitution afterward, with the goal of improving immune recovery. Her research focuses on the effects of Notch signaling in regulating multiple cell fate decisions by hematopoietic precursors, including the role of Notch in T cell development. Her work in the mouse model demonstrated that murine hematopoietic stem cells cultured on Delta1 reconstituted the T cell compartment more rapidly than noncultured cells. She is translating her findings using human umbilical cord blood progenitors. When applied in a clinical setting, augmentation of transplanted umbilical cord blood cells with Delta1 cultured cells may improve clinical outcomes of patients undergoing transplantation by decreasing the transplant-related mortality secondary to infection.

**Colleen Delaney, MD, MSc,** is attending physician at Seattle Children’s Hospital, an assistant member of the Clinical Research Division of the Fred Hutchinson Cancer Research Center (FHCRC) and assistant professor at the University of Washington School of Medicine. She is the director of the Cord Blood Transplant Program at FHCRC–Seattle Cancer Care Alliance. She received the Clinical Investigator Award from the Damon Runyon Cancer Research Foundation and “Tomorrow’s PI” Young Investigator of the Year.
Award from *Genome Technology Magazine*. Delaney's research interests include hematopoietic stem cell regulation and the development of novel and clinically feasible ex vivo expansion systems for hematopoietic progenitor cells using the Notch ligand, Delta1, which is a known regulator of cell fate determination. Her goal is to improve the outcome of patients in need of a cord blood transplant. Delaney's research on the role of Notch signaling in hematopoietic stem cell regulation has resulted in the development of a pilot study investigating the use of ex vivo expanded cord blood progenitors to augment conventional cord blood transplantation. She is the lead investigator in this trial, which began accrual in summer 2006. Delaney is principal investigator on four additional FHCRC clinical trials investigating the use of single or double unrelated-donor umbilical cord blood grafts as an alternative source of stem cells for hematopoietic cell transplant, including a multicenter protocol investigating the use of single versus double unrelated-donor umbilical cord blood grafts as the source of stem cells for hematopoietic cell transplantation.

**Debra L. Friedman, MD,** is attending physician at Seattle Children's Hospital, associate professor at the University of Washington School of Medicine, associate member of the Clinical Research Division at the Fred Hutchinson Cancer Research Center (FHCRC) and affiliate investigator in the Division of Public Health Sciences. She is director of the FHCRC Survivorship Program, one of only eight institutions in the nation that are part of the LIVESTRONG Survivorship Center of Excellence Network, funded by the Lance Armstrong Foundation. She also directs the After Cancer Care Ends, Survivorship Starts (ACCESS) Program at Children's and the Medical Oncology Survivor Team (MOST) Program at the Seattle Cancer Care Alliance. She is the vice chair of the Cancer Control and Survivorship Committee and is on the steering committee of the Children's Oncology Group (COG) and of the Fred Hutchinson Cancer Research Center (FHCRC) and affiliate investigator in the Division of Public Health Sciences. She is director of the FHCRC Survivorship Program, one of only eight institutions in the nation that are part of the LIVESTRONG Survivorship Center of Excellence Network, funded by the Lance Armstrong Foundation. She also directs the After Cancer Care Ends, Survivorship Starts (ACCESS) Program at Children's and the Medical Oncology Survivor Team (MOST) Program at the Seattle Cancer Care Alliance. She is the vice chair of the Cancer Control and Survivorship Committee and is on the steering committee of the Hodgkin lymphoma and retinoblastoma committees of the Children's Oncology Group (COG) and heads a study in each of these areas. For retinoblastoma and Hodgkin lymphoma, she has developed novel therapeutic protocols designed to decrease adverse long-term effects of therapy. She is also a nationally recognized expert in cancer survivorship, participating in projects evaluating best practices and models of care. Friedman is principal investigator on seven projects and supporting investigator on six additional projects. She is conducting studies on the interaction between environmental exposures and genetic predisposition toward several types of childhood cancer, neuroblastoma, retinoblastoma and Wilms tumor, as well as second malignant neoplasms (SMNs). She is investigating a diverse group of physiologic and psychosocial outcomes, including health-related quality of life, SMNs, exercise and fitness, endocrinopathies, pulmonary and cardiac dysfunction among survivors of pediatric cancer, hematopoietic stem cell transplant and medical oncology.

**J. Russell Geyer, MD,** is clinical director of the Hematology/Oncology Clinic at Seattle Children's Hospital and professor in the Department of Pediatrics and adjunct professor in the Department of Neurological Surgery at the University of Washington School of Medicine. Geyer holds the Evans Family Endowed Chair in Pediatric Cancer at Children's. He received the University of Washington Junior Faculty Mentor Award. Nationally, Geyer is a member of the COG-CNS Brain Tumors Committee and the CNS Steering Committee of the Children's Oncology Group (COG), the Brain Tumor Strategy Group of the Children's Cancer Group, and the Steering Committee and Quality Assurance Committee of the Pediatric Brain Tumor Consortium (PBTC). Geyer also serves as chairman of the Seattle Cancer Care Alliance Pediatric Cancer Committee and of the Fred Hutchinson Cancer Research Center Consortium Pediatric Scientific Review Committee. He is also COG co-chairman of the Infant Brain Tumor Committee and chairman of the PBTC Phase II brainstem glioma study of Iressa and radiotherapy.

**Douglas S. Hawkins, MD,** is a clinician at Seattle Children's Hospital, associate professor at the University of Washington School of Medicine and associate division chief for the Division of Pediatric Hematology/Oncology. Hawkins is the principal investigator for Children's Oncology Group (COG) activity at Children's and is the Children's Cancer Group, the Brain Tumor Strategy Group of the Children's Cancer Group, and the Steering Committee and Quality Assurance Committee of the Pediatric Brain Tumor Consortium (PBTC). Hawkins focuses on clinical research, particularly in the treatment of pediatric sarcomas. He is the COG chair of two clinical trials, one for Ewing sarcoma and another for rhabdomyosarcoma, and the vice chair of three other COG clinical trials. He is working collaboratively on a pharmacogenomic study investigating cyclophosphamide metabolism and toxicity, both locally and as part of two COG
studies. He collaborates on the use of FDG PET to assess response and guide treatment in pediatric sarcomas. He is the associate director of the Children’s Center of Clinical and Translational Research.

Rebecca H. Johnson, MD, is director of the Adolescent and Young Adult (AYA) Cancer Program at Seattle Children’s Hospital; she is assistant professor at the University of Washington School of Medicine. Her research interests include quality of life and clinical outcomes in adolescents and young adults with cancer. She is a member of the Lance Armstrong Foundation LIVESTRONG Young Adult Alliance.

Thomas J. Manley, MD, is attending physician at Seattle Children’s Hospital. Manley has developed a strategy to identify novel CMV antigens targeted by cytotoxic T cells using a CMV cDNA library in an expression-cloning assay. Using this technique he has identified 10 genes that encode CMV antigens, and he is mapping the epitopes recognized by cytotoxic T cell clones. His planned studies of the function of these cytotoxic T cells using an in vitro reactivation model may provide insight into their role in suppressing viral replication, and may support the inclusion of a more diverse repertoire of CMV-specific cytotoxic T cells into adoptive immunotherapy trials. He will be using the mutant strain of CMV to study CMV-specific immune reconstitution of patients undergoing T cell–depleted haploidentical stem cell transplantation, a group of patients at high risk for CMV reactivation and disease. These efforts will provide the basis for future protocols to examine the biology and therapeutic efficacy of adoptively transferred CMV-specific T cell clones.

Dana C. Matthews, MD, is director of clinical hematology at Seattle Children’s Hospital and head of the Pediatric Hemophilia Program; she is associate professor at the University of Washington School of Medicine. Her research interests include risk-based optimization of the treatment of pediatric thrombosis, and clinical outcomes in patients with hemophilia. In particular, she is participating in projects including an effort to characterize immune responses to factor VIII that result in inhibiting antibodies that significantly complicate the management of hemophilia A, and a prospective study of the development of inhibitors in young patients with hemophilia. Additionally, she is interested in improving the outcome for pediatric patients with thrombosis by developing clinical trials for subgroups of patients with thrombosis. She served on the board of directors for the American Thrombosis and Hemostasis Network, a national organization with the mission to “provide stewardship in the development and support of an accessible national database to support excellence in patient care, research, professional mentorship and public health translation.” She is chair of the hematology-oncology sub-board of the American Board of Pediatrics and has been appointed to be medical editor for this sub-board after completion of her term as member in 2010.

Soheil Meshinchi, MD, PhD, is attending physician at Seattle Children’s Hospital, assistant professor at the University of Washington School of Medicine and assistant member of the Fred Hutchinson Cancer Research Center (FHCRC). He attends on the Hematopoietic Stem Cell Transplant Service. He is co-director of the Children’s Oncology Group (COG) Myeloid Resource Laboratory, vice chair of the COG acute myeloid leukemia (AML) Phase III trial, member of the COG Myeloid Disease Steering Committee and the chairman of the COG committee on the role of RTK activating mutations in pediatric AML. In addition, he serves on several COG committees, including the committee for development of new APL therapy, Phase III AML Committee, Phase II trial of ST1571 for Philadelphia chromosome leukemias and the Infant Leukemia Steering Committee. Meshinchi’s clinical and research interests center around the treatment of pediatric myeloid leukemia. He is principal investigator on six research projects at FHCRC and Children’s, including a study on the biology of the alterations of the signal transduction pathway in pediatric cancers, the biology and prognostic implications of FLT3 mutations in AML and the evaluation of minimal residual disease by multiparameter flow cytometry for risk identification. He supervises the treatment and management of all patients with myeloid diseases (AML, MDS, etc.) in the Seattle Cancer Care Alliance, and he is working to identify novel therapies in AML.

James M. Olson, MD, PhD, is attending physician at Seattle Children’s Hospital and associate member of the Fred Hutchinson Cancer Research Center (FHCRC). He is associate professor in the Division of Pediatric Hematology/Oncology at the University of Washington School of Medicine, where he also holds
affiliate appointments in four graduate training programs. He has mentored more than 30 graduate students and postdoctoral research fellows. He has received the President's Award from the Jordyn Dukelow Memorial Guild. He is chair of a national Phase III clinical trial for high-risk medulloblastoma/PNET patients and a national brain tumor biology protocol. Olson is principal investigator on six projects that focus on developing effective new therapies for pediatric brain tumors, methods that allow surgeons to better visualize the border of brain cancer and normal brain, the molecular mechanisms of cerebellar development and genetic-based endpoints for neuro-degenerative diseases.

Julie R. Park, MD, is attending physician at Seattle Children's Hospital, associate professor in the Department of Pediatrics at the University of Washington School of Medicine and associate in clinical research at the Fred Hutchinson Cancer Research Center (FHCRC). She is director of the pediatric hematology/oncology fellowship at the University of Washington. Park is an active member of the Children's Oncology Group (COG) Consortium, coordinating the center's participation in clinical trials for treatment of neuroblastoma and non-Hodgkin lymphoma. Park is the oncology division director of Advanced Developmental Therapeutics, overseeing participation in national NIH-funded Phase I clinical research consortia, including the COG Phase I Consortium and the New Approaches to Neuroblastoma Therapy (NANT) Consortium. Park’s primary research focus is to discover novel therapies for the treatment of high-risk neuroblastoma, a rare but aggressive form of childhood cancer. As vice chair of the COG Neuroblastoma discipline, she provides national leadership for future development of neuroblastoma clinical research. She is the principal investigator for a national randomized Phase III trial within COG for treatment of newly diagnosed high-risk neuroblastoma. She is also leading the development of novel therapies for neuroblastoma using both adoptive immunotherapy and novel molecularly targeted approaches.

Jessica Pollard, MD, is acting instructor in the Division of Pediatric Hematology/Oncology and Bone Marrow Transplant at Seattle Children’s Hospital and at the University of Washington School of Medicine. She is also a research associate at the Fred Hutchinson Cancer Research Center. Pollard’s research interests include the biology of acute myeloid leukemia (AML) and the impact of disease biology on clinical response. At present she is better defining the maturational states of hematopoietic precursors in which molecular events contributing to leukemogenesis arise, and has demonstrated that pediatric AML patients with an internal tandem duplication of the FLT3 gene do poorly if the mutation is detected in an immature hematopoietic progenitor population. Her ultimate goal is to improve clinical outcomes in AML by enhancing understanding of the biologic events that contribute to leukemogenesis and by determining whether heterogeneity of such events affects clinical response to conventional chemotherapeutics and/or targeted agents like gemtuzumab ozogamicin (GO). She is also exploring methods for enhancing GO efficacy in patients with GO-resistant disease.
Jean E. Sanders, MD, is director of the Clinical Pediatric Hematopoietic Transplant Program at Seattle Children’s Hospital and the University of Washington School of Medicine and a member of the Clinical Research Division at the Fred Hutchinson Cancer Research Center (FHCRC). She is Gerald and Gloria Swanson Endowed Chair in Pediatric Bone Marrow Transplantation. She also received the FACT Inspector Award. For more than 31 years, Sanders’ work has centered around pediatric hematopoietic stem cell transplant, including the design of transplant preparative regimens for children with acute lymphoblastic leukemia, acute myelogenous leukemia, chronic myelogenous leukemia and other hematologic malignancies, and pediatric solid tumors including neuroblastoma, Ewing’s sarcoma and aplastic anemia, and other nonmalignant hematologic disorders. She has also been very involved in donor selection from a matched family member, an unrelated marrow or peripheral blood stem cell donor or an umbilical cord blood donor. Sanders’ major research focus is in the long-term follow-up issues of children surviving after hematopoietic stem cell transplant, such as chronic graft-versus-host disease (GVHD), recurrent leukemia, growth and development problems, and other late effects. Her studies have demonstrated that some patients who relapse after their first transplant may have a successful second transplant, particularly when the first transplant preparative regimen was chemotherapy-based and the second transplant uses a total body irradiation-based preparative regimen. She is involved in research projects to improve the outcome of allogeneic hematopoietic stem cell transplant in the treatment of hematologic malignancies, to improve ambulatory care of the stem cell transplant recipient and to improve the long-term quality of life for children after marrow transplantation. Her research goals include developing interventions to minimize or treat some of the delayed effects of hematopoietic stem cell transplant, such as using a nonmyeloablative preparative regimen for second transplant.

Akiko Shimamura, MD, PhD, is associate professor in the Department of Pediatrics at the University of Washington School of Medicine. Before coming to Seattle, she served as director of the Bone Marrow Failure Clinic at Children’s Hospital Boston. She is a member of the scientific advisory board for the Shwachman-Diamond Syndrome Foundation and served as co-chair of the Fourth International Scientific Congress on Shwachman-Diamond Syndrome. She is the principal investigator for the North American Shwachman-Diamond Syndrome Registry currently under development. She is a member of the editorial board for the American Journal of Hematology. Shimamura’s research interests focus on hematopoiesis and leukemogenesis in the inherited marrow failure syndrome. Her current studies investigate the role of ribosomal dysfunction in marrow failure and malignant transformation. Shimamura is also pursuing studies on translational control of gene expression in hematopoietic stem cells. Her laboratory recently reported a role for mitotic spindle stabilization in genomic instability.

Barbara Small, MD, is attending physician at Seattle Children’s Hospital and assistant professor at the University of Washington School of Medicine. She has presented nationally and internationally on issues surrounding end-of-life and quality-of-life decisions. Small has also taught medical ethics for pediatrics residents and has been a pediatric life support instructor.

Blythe G. Thomson, MD, is clinical associate professor at Seattle Children’s Hospital. She earned her MD magna cum laude from Ohio State University College of Medicine. Locally, she serves on the Human Subjects Protection Advisory Committee, the Department of Pediatrics Recognition Committee, the Scientific Advisory Committee of the General Clinical Research Center, the Ambulatory Oversight Committee and the Institutional Biosafety Committee of the Seattle Cancer Care Alliance. Thomson is a member of the Children’s Oncology Group (COG) Stem Cell Transplant Steering Committee, the Institutional Performance Monitoring Committee and the Accreditation Committee of the Foundation for Accreditation of Cellular Therapies. Her clinical and research interests include bone marrow transplant and leukemia research. She is taking a leading local role on several research projects for the treatment of leukemia. These projects include the INTERFANT study for infant ALL and research studies for newly diagnosed pre-B-cell leukemia. She is a participating member of the Therapeutic Advances in Childhood Leukemia Consortium to investigate novel therapies for relapsed and refractory leukemia. Additionally, Thomson is the local investigator for industry-sponsored trials for relapsed leukemia.
Ann E. Woolfrey, MD, is attending physician at Seattle Children’s Hospital and associate member of the Clinical Research Division at the Fred Hutchinson Cancer Research Center (FHCRC). She is director of the Unrelated Marrow Donor Program for the Seattle Cancer Care Alliance. Nationally, she is co-chair of the Center for International Blood and Marrow Transplant Research of the Chronic Leukemia Working Committee, serves on National Marrow Donor Program committees for histocompatibility and for transplant center contingency response planning, and is on the board of medical advisers of the Immunodeficiency Foundation. Woolfrey’s research interests involve pediatric oncology, particularly leukemia, and processes of stem cell, blood and marrow transplant. She is involved in several studies on overcoming genetic barriers in hematopoietic stem cell transplant, identifying nonmyeloablative transplants for nonmalignant disorders and investigating the use of blood stem cell and marrow transplant from HLA-compatible related and unrelated donors. Woolfrey’s goals include researching nonablative treatments for pediatric diseases, the T cell depletion of peripheral blood stem cells in HLA identical and nonidentical transplants, and the effectiveness of high-dose therapy for autoimmune diseases.

RESEARCH FUNDING

New

Robert G. Andrews, MD
Molecular control of hematopoietic stem cell fate. NIH/NHLBI. $417,440.

Irwin D. Bernstein, MD
Molecular control of hematopoietic stem cell fate. NIH/NHLBI. $1,121,086.

Lauri M. Burroughs, MD
Nonmyeloablative allografting for immunodeficiency and other nonmalignant disorders. NIH/NHLBI. $124,500.

Paul Carpenter, MBBS
Adult Leukemia Research Center, project 3. NIH/NCI. $159,431.

Mari Dallas, MD
Enhanced T cell reconstitution by umbilical cord blood progenitors expanded ex vivo using the Notch ligand Delta1. The Leukemia & Lymphoma Society. $60,000.

Enhanced T cell reconstitution by umbilical cord blood progenitors expanded ex vivo using the Notch ligand Delta1. Ronald McDonald House Charities. $50,000.

Enhanced T cell reconstitution by umbilical cord blood progenitors expanded ex vivo using the Notch ligand Delta1. University of Washington. $75,000.

Colleen Delaney, MD, MSc
Blood & Marrow Transplant Clinical Research Center (single vs. double cord blood transplantation). NCI/NHLBI. $5,043.

Core Center of Excellence in Hematology pilot grant. NIH/NIDDK. $20,000.

Ex vivo expansion of cord blood progenitor cells. Damon Runyon Clinical Investigator Award, Damon Runyon Cancer Research Foundation. $150,000.

Specialized Center for Cell Based Therapy (PTH study). NIH. $41,995.

Umbilical cord blood transplantation. Cuyamaca Foundation. $50,000.

Debra L. Friedman, MD
Community outreach for cancer survivors. Amgen Foundation. $50,000.

Family-based physical activity intervention for preschool-age cancer survivors. NIH/NCI. $24,878.

A multicenter phase I/II study of the prophylactic inhibition of BCR/ABL tyrosine kinase by Tasigna (nilotinib) after hematopoietic cell transplantation for Philadelphia chromosome—positive leukemias. Novartis Commercial Research Agreement. $300,000.
Native People for Cancer Control Telehealth Network. HRSA. $68,697.

Needs assessment for cancer survivors in transition. Lance Armstrong Foundation. $66,000.

Patterns of Care Study. NIH/NCI. $75,544.

**Douglas S. Hawkins, MD**
Children's Oncology Group chair grant. NCI/NIH/DHHS. $77,848.

**James M. Olson, MD, PhD**
CTX: Cy5.5 imaging for early detection of melanoma. FHCRC Synergy Funds. $50,000.

Multifunctional nanovector for diagnosis and treatment of pediatric brain cancer. NIH. $40,470.

Nanovectors for brain tumor diagnosis and treatment. NIH/NCI. $25,549.

Preclinical evaluation of cyclospamine derivative(s) in medulloblastoma mice. Infinity Pharmaceuticals Inc. $9,059.

Tumor paint: a molecular probe for intraoperative visualization of cancer foci. Royalty Research Fund. $50,000.

**Julie R. Park, MD**
Phase I/II safety & exploratory pharmacodynamic study of intravenous temsirolimus (CCI-779) in pediatric subjects with relapsed refractory solid tumors. Wyeth. $206,823.

**Blythe G. Thomson, MD**
A phase I/II dose escalation study of Clolar (clofarabine) plus etoposide and cyclophosphamide in pediatric patients with refractory or relapsed acute leukemia. Genzyme. $279,363.

**Continuing**

**Robert G. Andrews, MD**
In utero transplantation in primates. NIH/NHLBI. $629,387.

**Michael A. Bender, MD, PhD**
Consultant to the Washington State Newborn Screening Program. Washington State Department of Health. $5,000.

Function of human and mouse ß-globin locus control regions. NIDDK. $460,000.

Northwest Sickle Cell Collaborative. HRSA. $183,000.

Quantitating chromatin dynamics during erythropoiesis. NIDDK. $175,000.


**Irwin D. Bernstein, MD**
Career development in pediatric and medical oncology. NCI. $498,000.

Clinical Research Professorship Award. American Cancer Society. $60,000.


Immunotherapy of hematological malignancies. The Leukemia & Lymphoma Society. $1,042,000.


Notch effects on hematopoietic repopulating cells. NIH/NHLBI. $250,000.

Notch mediated expansion of hematopoietic precursors. NIH/NHLBI. $589,716.

Pediatric Oncology Training Program. NIH/NCI. $192,682.
Marie Bleakley, MD, MMSc
Adult Leukemia Research Center, project 6: Targeting alloreactivity for leukemia eradication. NIH/NCI. $618,681.
The Leukemia & Lymphoma Society Fellowship. $45,000.

Lauri M. Burroughs, MD
Nonmyeloablative allografting for immunodeficiency and other nonmalignant disorders. Fighting Children’s Cancer Foundation. $1,500.

Stem cell transplantation: basic/clinical research, subproject 1: allogeneic hematopoietic cell transplantation for nonmalignant diseases. NIH/NHLBI. $163,735.

Eric Chow, MD, MPH
A pilot study to determine the prevalence and risk factors associated with the metabolic syndrome in childhood acute lymphoblastic leukemia survivors. American Society of Clinical Oncology/Lance Armstrong Foundation. $50,000.

Colleen Delaney, MD, MSc
Arnold Smith Research Faculty Development Award. $35,000.
Ex vivo expansion of cord blood progenitor cells. Amgen. $60,000.
Ex vivo expansion of cord blood progenitor cells. NIH/NHLBI. $128,250.
Notch mediated expansion of hematopoietic precursors. NIH/NHLBI. $1,016,676.
Preclinical studies to assess the SCID (severe combined immunodeficiency) repopulating cell activity of primitive human hematopoietic cells from HPUCB (human placental umbilical cord blood). Celgene. $82,806.

Debra L. Friedman, MD
Children’s Oncology Group. NIH/NCCF. $43,851.
Children’s Oncology Group. NIH/NCCF. $21,866.
Children’s Oncology Group. NIH/NCCF. $11,005.
Children’s Oncology Group. NIH/NCCF. $8,718.

Thomas J. Manley, MD
CD8+ T cell immunity to cytomegalovirus. NIH/NIAID. $250,000.
Specificity and function of CMV-specific CD8+ cells T cells. NIH/NCI. $133,850.
Dana C. Matthews, MD
B cell responses to clotting factor VIII. NIH/NHLBI. $250,000.

Soheil Meshinchi, MD, PhD
Biology and prognostic implications of FLT3 mutations in AML. NIH/NCI. $246,478.
Leukemia signatures for risk classification and targeting. NIH. $1,113,255.
Myeloid Leukemia Reference Laboratory. National Center for Children and Families/NIH/NCI. $181,788.

James M. Olson, MD, PhD
bHLH factors in medulloblastoma genesis and maintenance. NIH/NCI. $323,310.
Evaluation of gamma-secretase inhibitors in animal and ex vivo culture preclinical models. Merck & Co. Inc. $231,695.
Genomics based therapy for Huntington's disease. High Q Foundation. $176,007.
Genomics based therapy for Huntington's disease: nanotechnology platform for pediatric brain cancer imaging and therapy. High Q Foundation. $81,202.
Molecular imaging, diagnosis and treatment of medulloblastoma. NIH/NCI. $134,770.
Molecular imaging of neurons in brain. The Dana Foundation. $60,000.
Nanotechnology platform for pediatric brain cancer imaging and therapy. NIH/NCI. $87,000.
Pediatric Brain Tumor Clinical Trials Consortium. Children's/NIH/NCI. $96,415.
The role of NMYC in medulloblastoma genesis. Children's Brain Tumor Foundation. $75,000.
Study chair: Efficacy of carboplatin administered concomitantly with radiation and 13-cis retinoic acid as a pro-apoptotic agent in other than average risk medulloblastoma/PNET patients. National Childhood Cancer Foundation. $11,010.
Targeted therapy in ex vivo medulloblastoma/PNET. NIH/NCI. $223,417.

Julie R. Park, MD
ALS Translational Research Grant for neuroblastoma. Alex's Lemonade Stand Foundation. $100,000.
Novel therapies for high-risk neuroblastoma. NIH/DHHS. $131,220.

Jessica Pollard, MD
Career Development in Pediatric and Medical Oncology Award. NIH/NCI. $134,460.

Jean E. Sanders, MD
Adult Leukemia Research Center, project F: long-term follow-up. NIH/NCI. $214,463.

Akiko Shimamura, MD, PhD
Shwachman-Diamond syndrome: molecular pathogenesis. NIH/NHLBI. $200,000.

Ann E. Woolfrey, MD
Adult Leukemia Research Center, project 1. NIH/NCI. $242,509.
Blood & Marrow Transplant Clinical Research Center, Project BMTO20. $6,000.
Commercial research agreement. Miltenyi Biotech. $13,000.
Gene therapy for Fanconi anemia. NIH/NHLBI. $483,172.
Stem cell transplantation: basic/clinical research, project 1. NIH/NHLBI. $93,800.
TEACHING AND PRESENTATIONS

**Michael A. Bender, MD, PhD**


**Irwin D. Bernstein, MD**


**Lauri M. Burroughs, MD**


**Paul Carpenter, MBBS**


**Eric Chow, MD, MPH**

**Mari Dallas, MD**

**Colleen Delaney, MD, MSc**


Umbilical cord blood: expanding access to hematopoietic cell transplantation. The Division of Pediatric Hematology/Oncology at Doernbecher Children’s Hospital and OHSU Cancer Institute. Portland, Ore. Nov. 9, 2007.


Debra L. Friedman, MD
LIVESTRONG Survivorship Center of Excellence. Seattle Cancer Care Alliance Physician Outreach Presentations: Wenatchee Community Medical Center, Olympic Medical Center, Providence Alaska Medical Center, Deaconess Medical Center.


Douglas S. Hawkins, MD

Soheil Meshinchi, MD, PhD
Lecture on molecular alterations in AML. COG National Meeting. Dallas, Texas. 2007.


Julie R. Park, MD

Jessica Pollard, MD


Jean E. Sanders, MD


Akiko Shimamura, MD, PhD


Ann E. Woolfrey, MD

PUBLICATIONS


The Division of Hospital Medicine consists of pediatricians who serve as attending physicians for inpatients at Seattle Children’s Hospital. Division physicians attend on patients whose primary care physicians prefer a hospital-based physician.

Our physicians ensure that the medical team keeps in close contact with primary care physicians to coordinate inpatient and outpatient care. We provide care using a family-centered model and meet daily with parents, nurses and resident physicians to develop a plan of care and update families on the child’s condition. As hospitalists with particular expertise in caring for pediatric inpatients, division members also take a lead role in treating patients with complex medical needs, and in undertaking quality improvement projects for the inpatient medical service.

Division physicians also participate extensively in medical education, providing formal lectures, bedside teaching and mentoring for medical students and resident physicians.

**FACULTY**

Glen S. Tamura, MD, PhD, Director
Julianne K.J. Bishop, MD
Ronald L. Dick, MD
Janie G. Hallstrand, MD
Michael Leu, MD, MS, MHS
Darren Migita, MD
Anne E. Phalen, MD
Joel S. Tieder, MD, MPH

**PROFESSIONAL PROFILES**

**Glen S. Tamura, MD, PhD,** is medical director of the Inpatient Medical Service at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. Tamura received his MD and PhD from Stanford University, and trained in pediatrics and pediatric infectious diseases at the University of Washington. His clinical interests are focused on general inpatient pediatric medicine and infectious diseases. He is director of the pediatric infectious diseases fellowship program at the University of Washington. He teaches clinical skills to second-year medical students and mentors approximately 40 students throughout their medical school careers. Tamura’s research interests include clinical research into quality improvement and patient-centered care.

**Julianne K.J. Bishop, MD,** is attending physician on the inpatient ward at Seattle Children’s Hospital and clinical instructor in the Department of Pediatrics at the University of Washington School of Medicine. Bishop earned her MD from the University of Kansas and completed her residency in pediatrics at Children’s. She is a fellow of the American Academy of Pediatrics. Bishop’s clinical interests include ethics and palliative care.
I’m excited to be part of Seattle Children’s effort to obtain Magnet Recognition for our excellence in nursing. Magnet Recognition will help us retain and attract gifted staff members and broaden our reputation for quality patient care, research, education and advocacy. As our national reputation grows, so will our ability to provide holistic, accessible care for all children.

Ronald L. Dick, MD, is clinical assistant professor in the Department of Pediatrics at the University of Washington School of Medicine and medical director of the Medically Complex Child Service. Dick earned his MD from the University of Massachusetts Medical School and completed his pediatrics residency at the University of Washington. From 1989 to 1999 he was a general pediatrician at The Everett Clinic in Everett, Wash. In 1999, he started the inpatient pediatric hospitalist service for The Everett Clinic, which he ran from 1999 to 2003. He served as the medical director for the Pediatric Inpatient Services Program at Providence Everett Medical Center from 2002 to 2003. Dick joined Children’s hospital medicine team in 2003. In addition to caring for general medicine patients on the inpatient service, a significant focus of his work has been the care of medically complex children with prolonged hospital stays. He is involved in resident and medical student education through bedside and didactic teaching. He is interested in quality improvement and is a member of the Quality Improvement Steering Committee. He is especially interested in quality improvement issues related to the care of medically complex children.

Janie G. Hallstrand, MD, is attending physician at Seattle Children’s Hospital and clinical associate professor in the Department of Pediatrics at the University of Washington School of Medicine. She works with medically complex children with prolonged hospital stays. She earned her MD at the University of Vermont School of Medicine and completed residency training at Maine Medical Center. Hallstrand is involved with resident and medical student education through bedside and didactic teaching. She is interested in quality improvement and participates in rapid process improvement.

Michael Leu, MD, MS, MHS, is hospitalist and pediatric informaticist at Seattle Children’s Hospital. A Seattle native, he trained in computer science and worked in that industry for several years before attending medical school. He received his MD with Thesis Honors from the University of Washington, completed pediatric residency training at Harbor-UCLA Medical Center and was a Robert Wood Johnson Clinical Scholar at Yale University. Leu is interested in using technology to improve the practice of pediatrics in both the ambulatory and hospital settings. He is currently the applications chair for the American Academy of Pediatrics Council on Clinical Information Technology.

Darren Migita, MD, is pediatric hospitalist at Seattle Children’s Hospital and assistant clinical professor in the Department of Pediatrics at the University of Washington School of Medicine. Migita serves as the director of line management and is involved in efforts to decrease bloodstream infection rates. He is also chief of the pediatric hospitalist section at Evergreen Hospital Medical Center in Kirkland, Wash., a Children’s-sponsored program founded in 1999. Migita has contributed to the Children’s Continuous Performance Improvement (CPI) initiative. Project themes have included improving the inpatient experience for families and providers, maximizing pediatric inpatient and ED throughput efficiency and standardizing the care of pediatric inpatients through the use of evidence-based clinical guidelines. He was also instrumental in creating a single-care-provider hospitalist service at Children’s. With Dr. Dimitri Christakis he co-authored a pediatric handbook, The Saint-Frances Guide to Pediatrics.
Anne E. Phalen, MD, is pediatric hospitalist at Seattle Children’s Hospital and clinical associate professor in the Department of Pediatrics at the University of Washington School of Medicine. She received her MD from Georgetown University Medical School and completed her residency at the Children’s Hospital National Medical Center in Washington, D.C. Phalen works with medically complex children having prolonged medical stays. She also provides didactic and bedside teaching for residents and medical students on the wards. Her interests also include patient care quality-improvement projects.

Joel S. Tieder, MD, MPH, is attending physician and clinical instructor at Seattle Children’s Hospital’s hospitalist program for the Department of Pediatrics at the University of Washington School of Medicine. He provides specialized care for hospitalized children and serves as an educator for residents and medical students. He is also a pediatric hospitalist at Evergreen Hospital Medical Center in Kirkland, Wash. He obtained his MPH in epidemiology from the University of Washington and specializes in inpatient outcomes research. He is studying how standardization of practice affects quality care for inpatients, nationally and at Children’s, for such conditions as apparent life-threatening events (ALTEs) and acute gastroenteritis. He serves on the Children’s Clinical Effectiveness Team and has recently developed and implemented a guideline and pathway for acute gastroenteritis for use at Children’s. He is an active member of the American Academy of Pediatrics Section of Hospital Medicine and serves as chair of a national expert panel on ALTEs.

AWARDS AND HONORS

Darren Migita, MD
Listed in “Top Doctors.” Seattle magazine.
Listed in “Top Doctors.” Seattle Metropolitan magazine.

RESEARCH FUNDING

New
Ronald L. Dick, MD
Outcomes evaluation study for medically complex children. Continuous Performance Improvement Office at Children’s Hospital.

TEACHING AND PRESENTATIONS

Glen S. Tamura, MD, PhD

Joel S. Tieder, MD, MPH


PUBLICATIONS

The Division of Infectious Disease, Immunology and Rheumatology contains three subspecialty sections. All three have internationally recognized faculty and clinical, educational and research programs. Each section is described separately.

The Section of Infectious Disease offers consultation and diagnostic services in the management of suspected and proven infectious diseases in children, in the hospital and in outpatient settings. We treat complicated, chronic and recurrent infections that arise from exposure to infectious diseases and immunosuppressive therapy, and infections that follow hematopoietic cell and organ transplantation and other surgical procedures.

The Infectious Diseases Service provides laboratory assistance in the diagnosis of complex infections and assistance in the selection, dosage and monitoring of antibiotics, antivirals and other forms of therapy. The Virology Clinic provides specialized treatment for difficult viral infections such as herpes and for exposure to and diagnosis with HIV or AIDS.

Our outpatient Infectious Disease Clinic cares for children referred by health-care providers for a wide variety of infectious disease problems. The clinic works closely with Seattle Children’s home care services to support patients on home IV antimicrobial therapy. Children’s infection control program is one of the best in the United States in preventing the spread of infections in the hospital. Our physicians provide one of the largest telephone information consultation services for the hospital, serving community physicians in the WWAMI region. We also provide services related to international travel, including education and recommendations for managing children returning from a foreign country with symptoms of infection.

Our research programs investigate the natural history of infections in children, the specific traits of microbes that infect humans and the molecules that help microbes establish infections, such as pneumonia and bloodstream and brain infections. The section has developed new programs to understand how infections result in premature birth or infection of the fetus. We also investigate the immune mechanisms that thwart infection by human pathogens. These studies include basic science experimentation at the molecular and cellular level and the use of relevant models of human infections. Results from this research are used to identify new drugs for treatment and new vaccines for prevention. Clinical studies investigate how microbes cause disease in childhood and in children with immune-related problems from chemotherapy and transplantation. Clinical studies also test the efficacy of new drugs that may treat and improve the outcome from severe infections, and of new vaccines aimed at preventing infections in children.

FACULTY
Craig E. Rubens, MD, PhD, Chief
Jane L. Burns, MD
Angela J.P. Campbell, MD
Janet A. Englund, MD
Lisa M. Frenkel, MD
Soren M. Gantt, MD, PhD
Tina Guina, PhD
Amanda L. Jones, PhD
Ann J. Melvin, MD, MPH
Tamara C. Pozos, MD, PhD
Lakshmi Rajagopal, PhD
Lynn M. Rose, PhD
Sherilyn Smith, MD
Glen S. Tamura, MD, PhD
Kevin B. Urdahl, MD, PhD
Scott Weissman, MD
Danielle M. Zerr, MD, MPH
PROFESSIONAL PROFILES

Craig E. Rubens, MD, PhD, is chief of the Division of Infectious Disease, Immunology and Rheumatology at Seattle Children’s Hospital and the division in the Department of Pediatrics at the University of Washington School of Medicine. Rubens is adjunct professor of microbiology and holds the Children’s Hospital Guild Association Endowed Chair in Pediatric Infectious Disease Research. He completed his MD, his pediatrics residency and his pediatric infectious disease subspecialty certification at the University of Washington. Rubens is investigating the biologic mechanisms involved in newborn infections and bacterial pneumonia. His work has identified important virulence traits of bacteria that are critical to interaction with the host and for escaping innate immunity. His laboratory has also identified the genetic and biosynthetic basis for production of these virulent traits. His current research has expanded to include how infections with group B streptococci lead to premature births. Rubens has been selected to head a research center that will investigate pediatric infections and premature birth at Children’s Research Institute. His society memberships include the American Society of Clinical Investigation and the American Pediatric Society, and he has served as consultant and grant reviewer for the FDA and the NIH/NIAID. He oversees the program for pediatric infectious disease subspecialty training, participates in graduate student education and training and has served on several university committees to improve faculty and graduate education. Rubens is also regional affiliate investigator for the Center on Human Development and Disability.

Jane L. Burns, MD, is attending physician at Seattle Children’s Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine. She is the clinical director of the Section of Infectious Disease and director of the infectious disease clinic at Children’s. She earned her MD and also did her training in pediatrics and infectious diseases at the University of Washington. Her research interest is in cystic fibrosis microbiology antibiotic resistance, and she directs the Therapeutics Development Network Core Laboratory for Cystic Fibrosis Microbiology. Her work includes both clinical and translational research, and she has been involved in developing and testing new antibiotic medications for use in cystic fibrosis. Burns is nationally and internationally known for her work in cystic fibrosis and is a founding member of the International Burkholderia Cepacia Working Group.

Angela J.P. Campbell, MD, is attending physician at Seattle Children’s Hospital and acting instructor in the Department of Pediatrics at the University of Washington School of Medicine. She earned her MD at Vanderbilt University and completed training in pediatrics and pediatric infectious diseases at the University of Washington. She received the travel award at the Infectious Diseases Society of America’s annual meeting and the poster presentation award from the Pediatric Infectious Diseases Society. Campbell attends the University of Washington School of Public Health. Her clinical and teaching interests include viral infections, particularly respiratory viruses and domestic and international arthropod-borne viral illnesses. Campbell’s research focuses on factors that influence the acquisition of respiratory virus infection and disease progression among immuno-compromised children and adults, with the goal of facilitating new diagnostic, preventive and treatment strategies for respiratory virus infections.

SPOTLIGHT ON TEAM MEMBER — Joan Heath, RN, BSN, CIC

I’m most excited about the work we’re doing to prevent surgical site infections at Seattle Children’s. After implementing a strong and successful program of prevention strategies in our cardiac surgery population, we’re spreading the measures to other services and populations. Adopting standard work based on best practices will lower our infection rates and improve outcomes for patients.

Section of Infectious Disease in Infectious Disease, Immunology and Rheumatology
Janet A. Englund, MD, is attending physician at Seattle Children’s Hospital, associate professor in the Department of Pediatrics at the University of Washington School of Medicine and clinical associate at Fred Hutchinson Cancer Research Center (FHCRC). She serves as co-chair of the Pharmacy and Therapeutics Committee at Children’s, director of the Pediatric Infectious Disease Transplant Service and pediatric infectious disease representative with the Seattle Cancer Care Alliance and at FHCRC. She serves on the Advisory Committee on Immunization Practices (ACIP) at the Centers for Disease Control, the ID Sub-board of the American Academy of Pediatrics and as pediatric representative on the Seasonal Influenza Planning Committee for the Infectious Disease Society of America. Her clinical interests include the diagnosis, prevention and treatment of respiratory diseases in children and immuno-compromised patients. Englund’s research involves the study of live and inactivated influenza vaccines in pediatric populations, including infants, toddlers, school-age children and immuno-compromised patients, and the evaluation of molecular-based methods for the diagnosis of new and emerging respiratory virus pathogens in these populations. She conducts clinical trials for other vaccine-preventable diseases, including pertussis (whooping cough), and has interests in the field of maternal immunization. Her ongoing research involves the study of respiratory syncytial virus (RSV), human metapneumovirus and human coronaviruses in special pediatric populations, including children with cystic fibrosis, Inuit children and children attending day care. Englund has conducted clinical studies with the assistance of practicing pediatricians around Washington state.

Lisa M. Frenkel, MD, is attending physician at Seattle Children’s Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine. Frenkel trained in pediatrics and pediatric infectious diseases at the University of California, Los Angeles. She is director of the HIV Program at Children’s. She received her PhD in molecular biology and biochemistry at Wesleyan University in Middletown, Conn. She is an ad-hoc grant reviewer for the NIH and Dutch Cystic Fibrosis Foundation, and an ad-hoc reviewer for international science journals *PLoS Pathogens, Molecular Microbiology, Cellular Microbiology, Infection and Immunity, Molecular and Cellular Proteomics, FEMS Immunology and Microbiology* and the *Journal of Medical Microbiology*. She studies pathogenesis of highly infectious Gram-negative bacteria that cause severe pulmonary infections. Her

Soren M. Gantt, MD, PhD, is attending physician at Seattle Children’s Hospital and acting assistant professor at the University of Washington School of Medicine. He earned a combined MD/PhD at New York University School of Medicine. He completed his pediatrics residency and a fellowship in infectious diseases at Children’s. His clinical interests include infectious disease consultation as well as general pediatric inpatient medicine. Gantt has developed projects focused on mother-to-child transmission of HIV-1 through breast-feeding in Zimbabwe and Mozambique. He also directs studies in Uganda on human herpes virus 8 infection and Kaposi’s sarcoma. Gantt is a K12 Clinical Research Scholar and Center for AIDS Research New Investigator, and he attends the University of Washington School of Public Health.

Tina Guina, PhD, is research assistant professor in the Department of Pediatrics, Division of Infectious Diseases. Guina is one of the principal investigators of the Northwest Regional Center of Excellence for Biodefense and Emerging Infectious Diseases Research. She received her PhD in molecular biology and biochemistry at Wesleyan University in Middletown, Conn. She is an ad-hoc grant reviewer for the NIH and Dutch Cystic Fibrosis Foundation, and an ad-hoc reviewer for international science journals *PLoS Pathogens, Molecular Microbiology, Cellular Microbiology, Infection and Immunity, Molecular and Cellular Proteomics, FEMS Immunology and Microbiology* and the *Journal of Medical Microbiology*. She studies pathogenesis of highly infectious Gram-negative bacteria that cause severe pulmonary infections. Her
Amanda L. Jones, PhD, is research assistant professor in the Department of Pediatrics at the University of Washington School of Medicine and adjunct research assistant professor in the Department of Pathobiology at the University of Washington School of Public Health. She earned her PhD in microbial pathogenesis from the University of Calgary in Canada. Research in her laboratory focuses on immune evasion strategies used by group B streptococcus and the molecular pathogenesis of neonatal infections. Jones regularly teaches classes in medical bacteriology and on critical thinking and research design at the University of Washington schools of Medicine and Public Health.

Tamara C. Pozos, MD, PhD, is attending physician at Seattle Children's Hospital and acting instructor in the Department of Pediatrics at the University of Washington School of Medicine. She earned a combined MD/PhD at Stanford University. She completed a pediatrics residency at the University of California, San Francisco, and a fellowship in pediatric infectious diseases at Children's. Pozos' research goal is to understand innate immune responses to mycobacterial infection by investigating the interconnected roles of immune cell migrations, matrix metalloproteinase activity and early granuloma formation. Her clinical and teaching interests are pediatric tuberculosis and other infections in children of the developing world, particularly Latin America. Pozos mentors and encourages trainees, particularly women and minorities, to consider careers in academic medicine.

Ann J. Melvin, MD, MPH, is co-director of the HIV Program at Seattle Children's Hospital and associate professor of pediatrics at the University of Washington School of Medicine. She is the primary physician responsible for HIV-infected and HIV-exposed children at Children's and medical director of the HIV early diagnosis program at Harborview Medical Center. She completed an internship in pediatrics at the University of California, San Francisco; she completed a pediatrics residency and a fellowship in pediatric infectious diseases at Children's. Pozos' research goal is to understand the causes and outcomes of infectious diseases by studying the interaction of microbial pathogens with human and animal immune systems. To address these questions, she uses state-of-the-art proteomics approaches, animal and cellular infection models and immunological assays.

Lakshmi Rajagopal, PhD, is assistant professor in the departments of Pediatrics and Microbiology at the University of Washington School of Medicine. She earned her PhD from Jawaharlal Nehru University in India and completed her postdoctoral fellowship in the Department of Pediatrics at the University of Washington. Rajagopal's research interests center on the role of eukaryotic-type signaling in prokaryotic organisms. Her research focuses on elucidating the link between a eukaryotic-type serine/threonine kinase and a two-component regulator in the human neonatal pathogen, group B streptococci. A number of peer-reviewed articles have resulted from her research. In 2007, Rajagopal was awarded an NIH/NIAID RO1 grant to establish the link between eukaryotic-type and two-component signaling in the regulation of GBS toxins.

Lynn M. Rose, PhD, is the director of Clinical Operations and Regulatory Affairs at the Cystic Fibrosis Therapeutics Development Network Coordinating Center (CF-TDNCC) at Seattle Children's Hospital Research Institute. In that capacity, Rose oversees the implementation of several multicenter clinical trials each year. Rose is also a research associate professor in the Department of Pediatrics at the University of Washington and faculty director of the Development of Novel Clinical and Translational Methodologies (DNCTM) Core at the Institute of Translational Health Sciences (ITHS) in Seattle. She directs the DNCTM consulting and educational programs for preclinical development of...
novel therapeutics. She earned her PhD at the University of Geneva, Switzerland, and her BS at the University of California, San Diego. Before joining the CF-TDNCC, she was a senior pharmaceutical executive with extensive experience in biomedical research and product development. Rose has more than 15 years of therapeutics development experience, including management of manufacturing, preclinical and clinical programs. This experience includes seven years of direct regulatory experience with both small molecule products (oral and aerosol delivery) and biologics. Her primary clinical research expertise is in the areas of infectious disease, cystic fibrosis, autoimmune disease, thrombosis and hemostasis. On a national level, Rose is involved in efforts to develop resources for therapeutics development in an academic setting.

Sherilyn Smith, MD, is co-director of the Infectious Disease Clinic, attending physician at Seattle Children’s Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. She completed residency training in pediatrics and served as chief resident at the University of California, San Diego. She completed a fellowship in pediatric infectious diseases at the University of Washington. Her clinical responsibilities include the Infectious Disease Clinic, Inpatient Infectious Disease Consult Service and General Pediatrics Ward Service. She is also associate director of the pediatric clerkship at Children’s and head of the Big Sky College at the University of Washington School of Medicine. Smith is on the editorial board for the Computerized Learning in Pediatrics Project (CLIPP), a national computerized curriculum of pediatric cases for medical students.

Glen S. Tamura, MD, PhD, is medical director of the Inpatient Medical Service at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. He is director of the pediatric infectious diseases fellowship program. Tamura received his MD and PhD from Stanford University and trained in pediatrics and pediatric infectious diseases at the University of Washington. His clinical interests are focused on general inpatient pediatric medicine and infectious diseases with clinical research interests in quality improvement and patient-centered care. He has a strong interest in both graduate and undergraduate medical education, and is developing a research program in the feedback and evaluation of trainees.

Kevin B. Urdahl, MD, PhD, is attending physician in infectious diseases and pediatrics at Seattle Children’s Hospital and assistant professor at the University of Washington School of Medicine. He earned his MD and his PhD in microbiology/immunology at the University of Minnesota. He completed both his pediatric residency and his infectious diseases fellowship at Children’s and the University of Washington. His clinical interests include the diagnosis and management of infants, children and adolescents with infectious diseases, especially tuberculosis and diseases associated with robust immune cell activation (e.g., Kawasaki disease and toxic shock syndrome). He conducts research that characterizes immunity in tuberculosis with the goal of identifying strategies that could lead to the development of an effective vaccine. Recently, he defined a role for a suppressive subset of T lymphocytes that dampens immunity and prevents the immune system from effectively eradicating the bacteria that causes tuberculosis. Urdahl is the recipient of a Burroughs Wellcome Fund Career Award in the Biological Sciences.

Scott Weissman, MD, is attending physician at Seattle Children’s Hospital and acting instructor in the Department of Pediatrics at the University of Washington School of Medicine. He earned his MD from the University of California-Irvine College of Medicine. He completed a pediatrics residency at Kaiser Foundation Hospital, Los Angeles, and a fellowship in pediatric infectious disease at Children’s. His research concerns the evolution of virulence properties in Escherichia coli strains associated with newborn meningitis and urinary tract infection. Specifically, the work focuses on the study of allelic variation in fimbrial adhesion genes to delineate fine phylogenetic relationships between strains grouped together by conventional molecular footprinting techniques such as multiple locus sequence typing. This improved resolution allows the identification of key genetic adaptations, including point mutation, recombination and pathogenicity island acquisition/deletion that promote adaptation to novel niches. Fimbrial adhesion sequence typing (FAST) should provide an important tool in the understanding of genomic plasticity in E. coli evolution, with application in bacterial pathogenesis, population biology and epidemiology. This work has been published and presented at national conferences. Weissman’s clinical interests include the treatment of recurrent urinary tract infections, as well as infections of skin/soft tissue and bone by Staph aureus.
Danielle M. Zerr, MD, MPH, is medical director of infection control at Seattle Children's Hospital, associate professor in the Department of Pediatrics at the University of Washington School of Medicine and affiliate investigator at the Fred Hutchinson Cancer Research Center. Zerr’s research has focused on the epidemiology of human herpes virus 6 (HHV-6) infections in healthy children and immuno-compromised hosts. Zerr is principal investigator on a study of HHV-6 reactivation in hematopoietic stem cell transplant recipients. She is also interested in the epidemiology, viral pathogens and prognosis of nonfebrile seizures occurring in the setting of mild illness as well as the epidemiology and prevention of infections associated with health care.

**AWARDS AND HONORS**

Jane L. Burns, MD  
Listed in “Top Doctors.” *Seattle* magazine.

Soren M. Gantt, MD, PhD  
New Investigator Award. Center for AIDS Research.

Craig E. Rubens, MD, PhD  
Listed in *America’s Top Physicians*.  
Listed in “Top Doctors.” *Seattle Metropolitan* magazine.

**RESEARCH FUNDING**

**New**  
Jane L. Burns, MD  
Multidose safety and tolerability study of dose escalation of liposome amikacin for inhalation in cystic fibrosis patients with chronic infections due to Pseudomonas aeruginosa. Transave Corporation. $294,402.

Lisa M. Frenkel, MD  
IMPAACT Network Virology Specialty Laboratory. NIAID/NIH/DHHS. $127,773.

Lakshmi Rajagopal, PhD  
Eukaryotic-type signaling mediates two-component regulation of GBS virulence. NIAID/NIH/DHHS. $396,380.

Craig E. Rubens, MD, PhD  
New model of ascending infection related premature birth. March of Dimes. $399,967.

**Continuing**  
Jane L. Burns, MD  
Therapeutics Development Center microbiology core. Cystic Fibrosis Foundation. $272,496.

Therapeutics Development Center microbiology core toolkit. Cystic Fibrosis Foundation. $68,972.

Janet A. Englund, MD  
Role of viruses in CF airway infections. Cystic Fibrosis Foundation. $82,288.

Lisa M. Frenkel, MD  
Children’s IMPAACT clinical trials site. NIH/DHHS. $127,773.

Etiology of mastitis in HIV-1 infected women. NIAID/NIH/DHHS. $225,001.

Immunization by HIV exposure during chemoprophylaxis. NIH/DHHS. $292,132.


Pediatric HIV clinical trials network. NIH/DHHS. $450,000.

Reservoirs of drug-resistant HIV-1. NIAID/NIH/DHHS. $303,620.

Women’s HIV Pathogenesis Program. NIH/DHHS. $89,787.

Tina Guina, PhD  
NW RCE-Project 3: bacterial proteome. NIH/NIAID. $234,140.

Craig E. Rubens, MD, PhD  
Academic pediatric infectious disease. NICHD/NIH/DHHS. $304,764.
Early host: microbial interactions in S. aureus pneumonia — SCCOR. NIH/DHHS. $173,697.

Role of a novel signal transduction pathway in GBS. NIAID/NIH/DHHS. $293,937.

Scott Weissman, MD
Type 1 fimbrial variation in E. coli 018:K1:H7 virulence. NIAID/NIH/DHHS. $120,420.

Danielle M. Zerr, MD, MPH
HHV-6 and CNS disease following stem cell transplant. NIAID/NIH/DHHS. $313,116.

TEACHING AND PRESENTATIONS

Jane L. Burns, MD


Janet A. Englund, MD


Lisa M. Frenkel, MD


Soren M. Gantt, MD, PhD


**Tina Guina, PhD**


Cord blood LDL cholesterol is higher in infants exposed to protease inhibitor (PI) therapy in utero versus those not exposed to PIs (co-presenter). Pediatric Academic Societies annual meeting. Toronto, Ontario, Canada. May 5–8, 2007.

**Tamara C. Pozos, MD, PhD**

**Lakshmi Rajagopal, PhD**
Eukaryotic signaling by a bacterial pathogen. Department of Microbiology and Immunology, University of Illinois. Chicago, Ill. March 22, 2007.


**Craig E. Rubens, MD, PhD**


**Sherilyn Smith, MD**

**Kevin B. Urdahl, MD, PhD**


**Scott Weissman, MD**

**Danielle M. Zerr, MD, MPH**

PUBLICATIONS


Immunology is the study of the immune system, the body’s natural defense against infection. Our team diagnoses and treats children and adults with any of the more than 140 complex conditions that together are called primary immune deficiency disorders (PiDD). Because the immune systems of patients born with these inherited disorders are not working properly or are missing essential parts, these people are particularly vulnerable to serious infection and illness.

Seattle Children’s Hospital is one of the few hospitals in the world where doctors both carry out cutting-edge research and provide treatment for immune deficiencies in children. We are the only center in the Northwest that cares specifically for pediatric and adult patients with PiDD. We also evaluate and treat PiDD patients referred from throughout the world.

We offer the most current and extensive testing to identify these disorders and their causes, and are at the forefront of research to find ways to treat and cure PiDD. Because PiDDs represent some of the best candidate disorders for treatment via hematopoietic stem cell gene therapy, our translational research programs include modeling of novel gene and cellular therapies. Working closely with the Fred Hutchinson Cancer Research Center and the Seattle Cancer Care Alliance, we also coordinate care for our patients who are undergoing bone marrow transplants.

We also carry out clinical trials related to optimization of immunoglobulin replacement and for nonmyeloablative hematopoietic stem cell transplant in PiDD. Drs. Rawlings and Scharenberg co-direct the Northwest Genome Engineering Consortium, a group of interdisciplinary investigators in the Seattle area who are developing a new approach to the treatment of inherited diseases using genetic repair in bone marrow stem cells. Members of the Immunology faculty also hold key international leadership positions in advocacy and research related to PiDD.

The Section of Immunology provides inpatient and outpatient training experience for adult and pediatric allergy/immunology fellows and co-directs the University of Washington-based allergy/immunology fellowship program.

**FACULTY**

David J. Rawlings, MD, Chief  
Mark C. Hannibal, MD, PhD  
Carol H. Miao, PhD  
Hans D. Ochs, MD  
Andrew M. Scharenberg, MD  
Troy R. Torgerson, MD, PhD

**PROFESSIONAL PROFILES**

**David J. Rawlings, MD**, is chief of the Section of Immunology, overseeing the Immunodeficiency Clinic at Seattle’s Children’s Hospital. He is also director of the Center for Immunity and Immunotherapies, leading the research programs at Seattle Children’s Hospital Research Institute, and is professor in the Department of Pediatrics and adjunct professor in the Department of Immunology at the University of Washington School of Medicine. He earned his MD with honors from the University of North Carolina School of Medicine and completed a residency and chief residency in pediatrics at the University of California, San Francisco. He was an intramural research fellow at the NIH and a senior fellow at the Howard Hughes Medical Institute, UCLA. He completed specialty training in pediatric rheumatology...
and immunology at Children’s Hospital Los Angeles and directed the pediatric rheumatology program at UCLA. Rawlings has received numerous awards and was elected to the American Society for Clinical Investigation in 2001 and the Association of American Physicians in 2007. His primary research interests include dysregulated B cell development and signaling leading to immunodeficiency, autoimmunity or lymphoid malignancies and the development of gene therapy for primary immune deficiency diseases.

His laboratory uses expertise in basic and clinical immunology, signal transduction and lymphocyte developmental biology to understand how altered signals can lead to immunologic disease, with the ultimate goal of developing translational therapies capable of specifically modulating these disorders. Rawlings is a member of multiple regional and national organizations, an NIH study section member, chairman for the USIDNET XLA patient registry and ad hoc reviewer for various grant programs and immunology journals. He also co-directs the Northwest Genome Engineering Consortium, a research program funded as part of the NIH Roadmap for Medical Research and comprising seven collaborative projects focused on developing enzymatic reagents and delivery methods for site-specific gene repair in hematopoietic stem cells.

Mark C. Hannibal, MD, PhD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. He completed a combined MD/PhD program at the University of Michigan and his pediatrics residency and a medical genetics fellowship at the University of Washington. His clinical work is in medical genetics, cardiovascular genetics and immunology clinics at Children’s. Regionally, he provides genetics consultation throughout Washington and Alaska. His areas of interest are Kabuki syndrome and immunogenetics, particularly immune deficiency associated with syndromes. Hannibal’s primary research focus is studying the molecular basis of hereditary neuralgic amyotrophy. This episodic autosomal dominant disorder is characterized by attacks of sudden, severe, nonabating pain in the shoulder and/or the arm and weakness with muscle wasting. In some families, non-neurologic findings include excessive skin folds, relatively short palpebral fissures, hypotelorism and bifid uvula or cleft palate. His interest is in the translational aspects of genetic disorders, such as understanding how mutations in the Septin-9 gene cause features of hereditary neuralgic amyotrophy. He is a member of the faculty senate at the University of Washington and the Professional Advisory Board for the Kabuki Syndrome Network.

Carol H. Miao, PhD, is principal investigator in the Section of Immunology at Seattle Children’s Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. The major focus of Miao’s research is to develop gene therapy strategies for treating genetic diseases. Her primary interest is to expand and to investigate two prominent gene therapy model systems: hemophilia and primary immunodeficiency disease (PIDD). In hemophilia gene therapy, she pioneered the use of nonviral naked DNA delivery to achieve full correction in both hemophilia A and hemophilia B mouse models. Her research laboratory is pursuing two important projects: development of safer and more efficient nonviral vectors and delivery methods suitable for clinical applications; and immunomodulation strategies involving immunosuppressive regimens and regulatory T cells. These latter studies are crucial to eliminating antibody responses in hemophilia patients that block the benefits of clotting factor treatment. Miao also participates in the gene therapy program for PIDD.
A major current focus for these collaborative studies is lentiviral-based gene transfer in animal and cellular models of Wiskott-Aldrich syndrome (WAS). Miao is active in many regional, national and international scientific societies; she is a member of the Genetic Diseases Committee of the American Society of Gene Therapy and of the Scientific Review Board for the Gene Therapy Resource Program of the NIH's National Heart, Lung and Blood Institute.

Hans D. Ochs, MD, is co-director of the Immunodeficiency Molecular Diagnostic Laboratory at Seattle Children's Hospital. He earned his MD summa cum laude from the University of Freiburg, Germany, in 1961. He completed his residency in pediatrics at the University of Washington in 1969. The focus of his research is the molecular definition of primary immunodeficiency diseases and the investigation of new techniques to confirm the diagnosis. He and his collaborators contributed significantly to the identification of a number of genes associated with PIDD on the X chromosome (CD40L, Wiskott-Aldrich syndrome protein [WASP], FOXP3, gp91phox) or on autosomes (uracil-DNA glycosylase; Rag1, syndrome). Ochs started the Immunodeficiency Clinic at Children's in 1985, providing evaluation and care for both pediatric and adult patients with immunodeficiency disorders. He has initiated clinical trials for new immunoglobulin preparations for intravenous and subcutaneous infusions and has collaborated with the bone marrow transplant team in the design of new protocols for stem cell transplant and gene therapy. Ochs is principal investigator for the U.S. Immune Deficiency Network and co-founder and a member of the summer school faculty devoted to primary immune deficiencies. He was elected to the Henry Kunkel Society and holds the Jeffrey Modell Chair of Pediatric Immunology Research. He is also principal editor for the medical textbook Primary Immunodeficiency Diseases: A Molecular and Genetic Approach and co-editor for Immunological Disorders in Infants and Children.

Andrew M. Scharenberg, MD, is attending physician at Seattle Children's Hospital and associate professor in the Department of Pediatrics and adjunct associate professor in the Department of Immunology at the University of Washington School of Medicine. Scharenberg received his medical degree with distinction from the University of North Carolina School of Medicine and completed his residency training in pediatrics at the University of North Carolina Children's Hospital in 1993. He underwent postdoctoral training in immunology in Dr. Jean-Pierre Kinet's lab at the National Institutes of Health and at the Division of Experimental Pathology, Beth Israel Deaconess Medical Center, before joining the faculty of Harvard Medical School as an assistant professor in 1998. Scharenberg joined the faculty at the University of Washington and the attending staff at Children's in 2000. At Children's, he participates in the Immunodeficiency Clinic and the inpatient immunology consult service, and operates a six-member laboratory at the Seattle Children's Hospital Research Institute focused on lymphocyte physiology and gene repair. He was chosen as winner of the American Pediatric Society/Society for Pediatric Research National Young Investigator Award in 2002. He is co-director of the Northwest Genome Engineering Consortium, a group of interdisciplinary investigators in the Seattle area who are working on a new approach to the treatment of inherited diseases. Scharenberg is a member of the Transplantation Biology Program of the Fred Hutchinson Cancer Research Center Cancer Consortium and was elected to the American Society for Clinical Investigation. His bench research interests include ion channel functions in immune cell biology, application of the immune mechanism of somatic hypermutation to protein engineering and homing endonuclease engineering for gene repair application and animal models for gene repair.

Troy R. Torgerson, MD, PhD, is attending physician at Seattle Children's Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. He is co-director of the Immunodeficiency Molecular Diagnostics Laboratory. He obtained his MD and PhD from Vanderbilt University School of Medicine and completed residency training in pediatrics and a fellowship in pediatric rheumatology and immunology at the University of Washington. He is an elected member of the Society for Pediatric Research. He participates in clinical care of patients with immune deficiency and autoimmune disorders at Children's and coordinates care for immunodeficient patients treated by hematopoietic stem cell transplant (HSCT). His clinical interests include the diagnosis and management of children and adults with primary immunodeficiency diseases (PIDDs) and children with autoimmune disorders. His research interests relate to the identification of basic cellular mechanisms that jointly
promote autoimmunity and immunodeficiency. His research is focused on studies of the molecular basis of immune dysregulation present in patients with immune dysregulation, polyendocrinopathy, enteropathy, X-linked (IPEX). The genetic defect present in this syndrome alters the development and function of regulatory T cells, which are required for controlling immune responses. Torgerson coordinates several joint clinical research protocols designed to optimize HSCT treatment in PIDD.

**RESEARCH FUNDING**

**New**

David J. Rawlings, MD  
Cell and virus core. NHLBI/NIH/DHHS. $827,340.

Gene repair in murine hematopoietic stem cells. NHLBI/NIH/DHHS. $455,000.

Lentiviral gene therapy for Wiskott-Aldrich syndrome. NIAID/NIH/DHHS. $614,879.

Andrew M. Scharenberg, MD  
Directed protein evolution for design of LAGLIDADGs with novel recognition specifications. NCI/NIH/DHHS. $455,000.

Homing endonuclease genes: new tools for mosquito population engineering and control. Foundation for NIH. $150,000.

Northwest Genome Engineering Consortium component 1. NCRR/NIH/DHHS. $557,662.

**Continuing**

Carol H. Miao, PhD  
Modulation of immune responses for hemophilia following replacement therapy. NHLBI/NIH/DHHS. $428,084.

Hans D. Ochs, MD  
Developmental and genetic defect of immunity. NICHD/NIH/DHHS. $357,221.

David J. Rawlings, MD  
Lentiviral gene therapy of X-linked agammaglobulinemia. NHLBI/NIH/DHHS. $367,420.

Model for gene therapy in X-linked agammaglobulinemia. NCI/NIH/DHHS. $297,611.

PKD2 involvement in the Btk-KDCB-NFkB pathway in B lymphocyte development. NIH/DHHS. $59,630.

Regulation of B cell development and signaling by BTK. NICHD/NIH/DHHS. $330,679.

Stem cell transplantation: basic/clinical research: core A, immune function studies. NIH/DHHS. $96,614.

TSLP receptor in the regulation of B cell development. NIAID/NIH/DHHS. $93,567.

Andrew M. Scharenberg, MD  
Bpl phase III study to evaluate gammaplex in PIDD. Bio Products Laboratory, Inc./Research, Inc. $139,381.

Molecular mechanisms of vertebrate Mg2+ homeostasis. NIGMS/NIH/DHHS. $337,539.

Regulation of metal ion homeostasis by channel. NIGMS/NIH/DHHS. $304,732.

**TEACHING AND PRESENTATIONS**

Mark C. Hannibal, MD, PhD  

Carol H. Miao, PhD  


Hans D. Ochs, MD


David J. Rawlings, MD


Andrew M. Scharenberg, MD


Troy R. Torgerson, MD, PhD


PUBLICATIONS


The Section of Rheumatology under the Division of Infectious Disease, Immunology and Rheumatology is the only pediatric rheumatology center in the WWAMI area and plays a major role in providing clinical care, education and leadership in research for our region and beyond. We offer telephone consultation and triage for physicians in our area, as well as an outreach clinic in Anchorage, Alaska. Our large clinical service facilitates interactions with our clinical and basic research endeavors.

Our outpatient service conducts about 4,000 outpatient visits each year, provides inpatient care and responds to consultation requests for patients from other services. Our focus is the diagnosis and management of possible inflammatory, musculoskeletal and autoimmune problems, and comprehensive ongoing management for children who have confirmed rheumatic diseases such as juvenile onset arthritis, spondyloarthropathies, dermatomyositis, systemic lupus erythematosus and vasculitis. Our team includes clinical nurse specialists, a nurse practitioner, a social worker, and physical and occupational therapists to provide comprehensive multidisciplinary care. Because many of our children have multistystem diseases, we work closely with health professionals in other specialties, such as ophthalmology, nephrology and orthopedics, and also with the Pacific Northwest Chapter of the Arthritis Foundation for parent support and advocacy.

Pediatric rheumatology is an underserved field with only 200 board-certified pediatric rheumatologists for the estimated 385,000 children in the United States who have rheumatic diseases. About one-third of medical schools do not have a pediatric rheumatologist, and many practicing pediatricians and family physicians have had no training in these conditions. Our goal is to meet the needs of patients and families with rheumatic diseases, educate present and future physicians about the mechanisms that may initiate the onset of autoimmune diseases.

Our faculty is involved with the education of a variety of trainees at different levels. We participate in the medical school curriculum, precept pediatric residents, offer rotations in pediatric rheumatology to adult rheumatology trainees, teach community physicians and allied health professionals, and train new pediatric rheumatologists and investigators in our fellowship programs.

All our physicians are involved with basic or clinical investigation into the mechanisms, management or outcomes of childhood rheumatic diseases. In the arena of clinical investigation, our center holds a leadership role in the Childhood Arthritis and Rheumatology Research Alliance, a national network of pediatric rheumatology centers undertaking collaborative studies to improve understanding and treatment of rheumatic diseases in children. We offer the opportunity for patients to participate in a number of clinical studies.

In the area of basic science, our section has a special interest in mechanisms that may initiate the onset of autoimmune diseases.

Helen M. Emery, MD, is chief of the Section of Rheumatology, program director of Rheumatology Education and attending physician at Seattle Children's Hospital. She completed a pediatrics residency and a fellowship in pediatric rheumatology at Children's. She established pediatric rheumatology programs at the University of Chicago and the University of California, San Francisco. Her clinical interests involve care of children with rheumatic diseases, with a special emphasis on
rehabilitation of children with juvenile arthritis and dermatomyositis, for which she has an international reputation. Her educational activities have been focused on community physicians, including a project to present educational seminars to primary care physicians, adult rheumatologists and orthopedists about the diagnosis and management of childhood rheumatic diseases; the project also tracks whether children are referred earlier and more appropriately, and their level of impairment. Emery regards training of new investigators and clinicians as a top priority and has graduated many trainees, all of whom hold academic positions. She has received an American College of Rheumatology Clinician Educator Award, which enabled the expansion of educational efforts into the medical school musculoskeletal curriculum. She is an executive board member of the Pacific Northwest Arthritis Foundation Chapter and has been very involved with the chapter’s professional education and parent group activities.

Anne M. Stevens, MD, PhD, is attending physician at Seattle Children’s Hospital and assistant professor at the University of Washington School of Medicine. She completed her residency in pediatrics at the Children’s Hospital Medical Center in Cincinnati and a fellowship in pediatric rheumatology at the University of Washington. In the Rheumatology Clinic and inpatient service at Children’s, Stevens cares for children with chronic inflammatory diseases and teaches residents and students. Her research interest is in the role that maternal cells, passing into the fetus during pregnancy and persisting for years in the child, play in the pathogenesis of autoimmune diseases. She demonstrated that maternal cells can differentiate into myocardial cells in the hearts of infants with neonatal lupus syndrome, where these foreign cells may act as targets for the child’s immune system. Alternatively, maternal cells may respond to tissue injury and aid in repair. Stevens is studying the immune response to chimeric maternal cells in children with lupus, and a mouse model investigating the role of maternal cells in renal injury. Stevens is a co-investigator on studies of Lipitor (atorvastatin), etanercept and the long-term outcome of juvenile rheumatoid arthritis.

Troy R. Torgerson, MD, PhD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. He is co-director of the Immunodeficiency Molecular Diagnostics Laboratory. He obtained his MD and PhD from Vanderbilt University School of Medicine and completed residency training in pediatrics and a fellowship in pediatric rheumatology and immunology at the University of Washington. He participates in clinical care of patients with immune deficiency and autoimmune disorders at Children’s and coordinates care for immunodeficient patients treated by hematopoietic stem cell transplant (HSCT). His clinical interests include the diagnosis and management of children and adults with primary immunodeficiency diseases (PIDDs) and autoimmune disorders in children. His research interests relate to the identification of basic cellular mechanisms that jointly promote autoimmunity and immunodeficiency. His research is focused on studies of the molecular basis of immune dysregulation present in patients with immune dysregulation, polyendocrinopathy, enteropathy, X-linked (IPEX). The genetic defect present in this syndrome alters the development and function of regulatory T cells, which are required for controlling immune responses. Torgerson is a member of the Society for Pediatric Research and coordinates several joint clinical research protocols designed to optimize HSCT treatment in PIDD.
Jennifer K. Turner, MD, is attending physician at Seattle Children’s Hospital and acting assistant professor in the Department of Pediatrics at the University of Washington. She earned her MD at the University of Washington School of Medicine, and completed her pediatric residency training and fellowship in pediatric rheumatology at Children’s and the University of Washington. She is completing a master of epidemiology degree at the University of Washington, with research investigating the maternal and infant outcomes of pregnancies to women with systemic lupus erythematosus. Her clinical interests include auto-inflammatory diseases/periodic fever syndromes such as TNF receptor-associated periodic fever syndrome and familial Mediterranean fever, as well as pediatric sarcoidosis and the overlap between immunodeficiency and autoimmunity.

Carol A. Wallace, MD, is attending physician at Seattle Children’s Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. She received her MD from the University of Michigan. She completed a pediatrics residency and a fellowship in pediatric rheumatology at the University of Washington. Wallace’s main focus has been the aggressive treatment of juvenile idiopathic arthritis (JIA) and other pediatric rheumatic diseases. She has published many of the sentinel studies of the use of methotrexate in the treatment of JIA. She is principal investigator for a multicenter clinical trial of early aggressive therapy in JIA and co-principal investigator for a national collaborative study of autologous stem cell transplantation for severe pediatric rheumatologic diseases. Wallace also participates in many multicenter clinical trials of new biologic agents for the treatment of JIA. She led an international consensus effort to define remission of JIA. Wallace has served on the pediatric rheumatology sub-board of the AAP Section on Pediatric Rheumatology. She is on the Advisory Committee of the Pediatric Rheumatology Collaborative Study Group and is vice chair of the Childhood Arthritis and Rheumatology Research Alliance.

Jennifer Wargula, MD, MSc, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics and Rheumatology at the University of Washington School of Medicine. Her clinical and research interests include juvenile dermatomyositis, localized scleroderma and auto-inflammatory diseases, as well as providing rheumatology care to Alaska native children with rheumatic diseases. Wargula is a fellow of the American Academy of Pediatrics and a member of the AAP Section on Pediatric Rheumatology. She is also a fellow of the American College of Rheumatology and a member of the Childhood Arthritis and Rheumatology Research Alliance.

RESEARCH FUNDING

New
Anne M. Stevens, MD, PhD
Colony PDL1 as a marker of disease activity in pediatric systemic lupus erythematosus. Lupus Foundation of America, Inc. $66,500.

Mechanisms of PD-L1 dysregulation in pediatric lupus. Lupus Foundation of America, Inc. $100,000.

Mechanisms of PD-L1 dysregulation in pediatric lupus. Lupus Foundation of America, Inc. $411,511.

Troy R. Torgerson, MD, PhD
A cell intrinsic role for FOXP3 in the human immune system. NIAID/NIH/DHHS. $237,500.

FOXP3 structure, function and regulatory activity in T cells. NIAID/NIH/DHHS. $119,340.

Carol A. Wallace, MD
CARRA drug safety surveillance project. Pfizer Corporation. $289,050.

Continuing
Anne M. Stevens, MD, PhD
Maternal microchimerism in pediatric systemic lupus erythematosus. Arthritis National Research Foundation. $60,000.
Carol A. Wallace, MD
Childhood Arthritis and Rheumatology Research Alliance Project. Arthritis Foundation. $50,836.

Early aggressive therapy in juvenile idiopathic arthritis (TREAT-JIA). NIH/DHHS. $1,220,807.

TEACHING AND PRESENTATIONS

Anne M. Stevens, MD, PhD


Troy R. Torgerson, MD, PhD


Jennifer K. Turner, MD

Carol A. Wallace, MD


PUBLICATIONS


Neonatology

The Division of Neonatology’s mission is to improve the neonatal outcome of pregnancy by providing the region’s best evidence-based neonatal clinical care, educating the next generation of neonatal caregivers and advancing neonatal scholarship.

Neonatology division faculty provide clinical service and medical direction at four regional neonatal intensive care units (NICUs). The 19-bed NICU at Seattle Children’s Hospital provides care for critically ill newborns and infants with a wide variety of problems including prematurity, infection, and cardiac and surgical defects. Key services include inhaled nitric oxide treatment, high-frequency ventilation and extra-corporeal membrane oxygenation (ECMO). The University of Washington Medical Center is equipped to handle some of the highest-risk deliveries in the nation, and its 32-bed NICU specializes in the care of extremely preterm infants. The 29-bed NICU at Providence Everett Medical Center serves high-risk newborns in the north end of the Seattle region. Division faculty also direct and provide services in a 14-bed NICU at Overlake Hospital Medical Center, on the east side of Lake Washington. Infants at the University of Washington Medical Center, Overlake and Everett needing higher-level subspecialty care or cardiac and surgical services are transferred to Children’s.

Division training programs include an ACGME-accredited fellowship training program, plus medical student and pediatrics resident education. Several fellows choose to combine training in neonatology with a complementary MPH, and there is increasing interest in global neonatal health. Division faculty also participate in and direct regional educational programs in the WWAMI region, Infant Transport Program, Medical Consultation Program and the Center on Human Development and Disability’s High-Risk Infant Follow-up Clinic.

Current bench lab research programs are focused on the effects of narcotics on the developing brain, erythropoietin (Epo) and neuroprotection, and the effects of neonatal stress on neurodevelopment. Clinical research is focused on clinical trials of Epo in preterm infants, biomedical informatics, medical education, use of newborn infant simulators, global health and epidemiologic research.

In 2007, Dr. Maneesh Batra from the University of Washington joined the division, along with Dr. Isabella Knox from the University of Connecticut School of Medicine/Connecticut Children’s Medical Center.

FACULTY

Christine A. Gleason, MD, Chief
Maneesh Batra, MD, MPH
Shilpi Chabra, MD
W. Alan Hodson, MD, MMSc
J. Craig Jackson, MD, MPH
Sandra E. Juul, MD, PhD
Isabella Knox, MD, EdM
David J. Loren, MD
Dennis E. Mayock, MD
Janet H. Murphy, MB, ChB
Michael D. Neufeld, MD, MPH
Thomas P. Strandjord, MD
Peter Tarczy-Hornoch, MD
David E. Woodrum, MD

PROFESSIONAL PROFILES

Christine A. Gleason, MD, is chief of the Division of Neonatology at Seattle Children’s Hospital and the W. Alan Hodson Endowed Chair and professor in the Department of Pediatrics at the University of Washington School of Medicine. Gleason’s primary clinical interest is in the care of high-risk newborns, especially infants born at the limits of viability (<25 weeks gestation). Her research has been focused on the developing brain — specifically, the effects of drugs such as alcohol and cocaine on the cerebral circulation. She and her colleagues are currently studying the long-term effects of severe neonatal stress — and the attempts to ameliorate these effects with narcotics such as morphine — on the developing brain. Her local teaching activities are focused on didactic teaching.
of pediatrics residents and neonatology fellows. Regionally, she teaches as a visiting professor, does case reviews and presentations at regional hospitals and has been invited to serve as a visiting professor at academic medical centers. Gleason is an elected council member of the American Pediatric Society and a member of the American Board of Pediatrics, representing the subspecialty boards. She is co-editor of a major neonatal textbook, *Avery's Diseases of the Newborn.*

**Maneesh Batra, MD, MPH,** is acting instructor/senior fellow within the Department of Pediatrics at the University of Washington School of Medicine. He teaches medical students, residents and fellows at Seattle Children’s Hospital and the University of Washington Medical Center. He is an active participant in the Seattle Children’s Research Institute Section on Prematurity and Childhood Infections, and is collaborating with Dr. Craig Rubens and other investigators from all over the world in performing a landscape review of stillbirth and prematurity in preparation for an international summit to be held in Seattle in 2009. In addition, Batra is a core member of the Children’s Centennial Symposium Planning Committee.

**Shilpi Chabra, MD,** is assistant professor in the Department of Pediatrics at the University of Washington School of Medicine and associate medical director of the Overlake Hospital Medical Center Special Care Nursery. She has a keen interest in teaching residents and fellows. Her main scholarly focus is on the epidemiology of abdominal wall defects — specifically, gastroschisis. Her other scholarly interest is vitamin A status in preterm infants and its association with chronic lung disease. She serves as a mentor for pediatric residents at Seattle Children’s Hospital and is an advisor on the Thesis Committee for students in the University of Washington’s master’s in nutrition and master’s in public health programs. She is also involved in quality improvement projects in the Overlake Special Care Nursery and has helped establish the post-discharge nutrition clinic at Overlake Hospital.

**W. Alan Hodson, MD, MMSc,** is professor emeritus in the Department of Pediatrics at the University of Washington School of Medicine. He was, until 1997, head of the Division of Neonatal and Respiratory Diseases at the University of Washington. His interests and activities include providing assistance and guidance to postdoctoral fellows in their pursuit of excellence as scholars in neonatal medicine, providing clinical service to convalescing premature infants and teaching overall neonatal medicine, fundamental to general pediatrics training. He is also involved in enhancing and improving the participation of other pediatrics subspecialists in the evolving field of fetal medicine. He has developed an interest in global neonatal health issues and in the development of a curriculum for pediatrics residents and post-residents interested in global health training. He continues a long-standing interest in neonatal respiratory disorders and is chair of the NHLBI External Advisory Committee for the Collaborative Program (U-10) on Bronchopulmonary Dysplasia.

**J. Craig Jackson, MD, MPH,** is professor in the Department of Pediatrics at the University of Washington School of Medicine and medical director of the Neonatal Intensive Care Unit at Seattle Children’s Hospital. He serves as associate division head for Clinical Affairs. He works with leaders in perinatology at the University of Washington to build its program in fetal diagnostic services. He serves as leader of the division’s clinical activities, providing support for the division’s neonatal medical directors at the University of Washington Medical Center, Providence Everett Medical Center in Everett and Overlake Hospital Medical Center in Bellevue, and for the leaders of the Children’s infant ground transport team, neonatal respiratory services and neonatal nurse practitioner program.
Sandra E. Juul, MD, PhD, is associate professor in the Department of Pediatrics and director of the neonatology fellowship training program at the University of Washington School of Medicine. She serves as associate division head for scholarship and research. She completed medical training and pediatrics and neonatology subspecialty training at the University of Washington. She earned a PhD in developmental biology at the University of Chicago. Juul has developed clinically relevant animal models to help find better ways to treat and protect the brains of high-risk neonates, and she is principal investigator on studies focusing on the neuroprotective effects of erythropoietin (Epo) in neonatal models of brain injury and neonatal stress. Her research shows that Epo protects the neonatal brain from hypoxia and oxidative injury. Using a variety of approaches, she is working to identify mechanisms of Epo neuroprotection and to discover ways to optimize its function in the developing brain at risk for injury. Her ultimate goal is to bring this new treatment from the laboratory to the bedside.

Isabella Knox, MD, EdM, is associate professor in the Department of Pediatrics at the University of Washington School of Medicine. Her academic focus is in medical education, in particular how to help learners develop effective approaches to learning. She is a co-director of the Pediatric Fellows’ College. She helps faculty and fellows become more effective teachers. Her clinical interests include ethics in the NICU; breast-feeding support for NICU families; tongue tie and frenotomy; individualized developmental care for NICU babies and families; and jaundice and phototherapy.

David J. Loren, MD, is assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. He teaches and supports medical students, residents and fellows at all neonatology clinical practice sites. His teaching and research interests center around the fusion of practical medical ethics, quality improvement and communication. His work with multidisciplinary neonatal intensive care unit (NICU) teams explores how culture and individual behavior support or inhibit strategies for process enhancement. He has developed a parent-as-faculty program in the NICU at Seattle Children’s Hospital that helps medical teams improve their communication skills with families. He is also part of the family-centered care leadership team at Children’s. In the University of Washington Medical Center’s NICU he helps guide the quality leadership team, which has participated in two international collaborations with Vermont Oxford Network: reduction of nosocomial infection and value compass–driven outcome improvement. His work in quality of care focuses on how to provide the best possible experience for parents in the NICU. He has been a participant in the inaugural Pediatric Academic Societies Educational Scholars Program, and he leads a research project to develop a Web-based teaching program for pediatrics residents on safe and effective practices for disclosing medical errors.

Dennis E. Mayock, MD, is professor in the Department of Pediatrics at the University of Washington School of Medicine and medical director of the University of Washington Medical Center neonatal intensive care unit. His basic research interests include evaluation of the effects of fetal alcohol exposure on fetal, neonatal and adult cerebrovascular function. Additionally, he is evaluating the effects of neonatal morphine exposure on adult cerebrovascular function. These studies include testing isolated cerebral resistance vessels and evaluating specific vasoactive mediators such as adenosine and vasoactive intestinal polypeptide. His clinical research interests include evaluation of therapies such as inhaled nitric oxide and late surfactant, which may alter the development of chronic lung disease. He is collaborating on an evaluation of whether high-dose erythropoietin treatment has neuroprotective effects in preterm and term human infants and subhuman primates. He also serves as the section secretary to the American Academy of Pediatrics District VIII Perinatal Section.

Michael D. Neufeld, MD, MPH, is clinical assistant professor in the Department of Pediatrics at the University of Washington School of Medicine and medical director of the neonatal intensive care unit at Providence Everett Medical Center. He is interested in long-term neurodevelopmental outcomes of premature infants and attends in the High Risk Infant Follow-up (HRIF) Clinic at the Center on Human Development.
and Disability. His research focuses on maternal infection and the risk of cerebral palsy in term and preterm infants and on markers of inflammation and the risk of severe retinopathy of prematurity. He manages the division's clinical database and developed a database of the patients seen in the HRIF Clinic. Other interests include quality improvement and medical education.

**Thomas P. Strandjord, MD,** is associate professor in the Department of Pediatrics at the University of Washington School of Medicine and medical director of the NICU at Overlake Hospital Medical Center. He is chair of the University of Washington Medical Center's Perinatal/Neonatal Continuous Quality Improvement Committee and directs resident education in neonatology. His primary clinical interests involve care of critically ill newborn infants. He is particularly interested in the initial stabilization and resuscitation of neonates, and his research focuses on developing techniques for training care providers to resuscitate newborns effectively and safely. He has collaborated in the development of a screen-based computer simulator of newborn resuscitation and is studying its effectiveness as a training tool. Strandjord is also working on various quality improvement projects for the safety of care in the NICU. He is actively involved with developing quality improvement programs for Washington state through the Department of Health's Perinatal Regional Networks program.

**Peter Tarczy-Hornoch, MD,** is professor in the Department of Pediatrics at the University of Washington School of Medicine, head of the Division of Biomedical and Health Informatics (BHI) and adjunct professor in the Department of Computer Science and Engineering. He also serves as director for the University of Washington NIH-funded Biomedical and Health Informatics Research Training grant, biomedical informatics director of the University of Washington Institute for Clinical and Translational Science (an NIH CTSA) and director of Web services and data integration for the University of Washington Medicine Information Technology Services Group. His research interests have included real-time biomedical instrumentation control system, bench research and mathematical modeling of liquid ventilation, clinical information systems, and electronic clinical knowledge resources. His current research, in collaboration with computer scientists, focuses on methods and models for data integration of biomedical and health data, including looking at ways of handling semi-structured data, representing uncertainty at various levels in the system and doing computerized reasoning over integrated data. The challenges and opportunities his research is applied to arise from collaborations with biologists and clinical and translational researchers looking at large-scale functional gene annotation of bacteria and protozoa, single-nucleotide polymorphisms for elucidation of disease mechanisms, expression array experiment analysis and collaborative integrated analysis of a combination of clinical data, experimental biological data and clinical/translational research study data.

**David E. Woodrum, MD,** is professor in the Department of Pediatrics at the University of Washington School of Medicine. He is clinical director for the Treuman Katz Center for Pediatric Bioethics at Seattle Children's Hospital and faculty associate in the Department of Medical History and Ethics at the University of Washington. Woodrum's clinical and teaching activities are focused on problematic fetal-maternal conditions, convalescing premature infants and pediatric biomedical ethics issues. He is co-director of the Pediatric Interim Care Center in Kent, Wash., a nationally recognized program providing medically supervised care for drug-exposed infants.

**AWARDS AND HONORS**

**David J. Loren, MD**  
2007 Outstanding Faculty Teaching Award. Seattle Children's Hospital.

**Peter Tarczy-Hornoch, MD**  
2007 Excellence in Teaching Award in Biomedical and Health Informatics. University of Washington.
RESEARCH FUNDING

New
Christine A. Gleason, MD
Long-term behavioral effects of neonatal pain and morphine treatment in mice. NIH/NIDA. $195,000.

Sandra E. Juul, MD, PhD
Optimizing neuroprotection following perinatal asphyxia. NIH. $706,395.

Thomas P. Strandjord, MD

Continuing
Sandra E. Juul, MD, PhD

Peter Tarczy-Hornoch, MD
II + (SEI): information integration in the presence of uncertainty. National Science Foundation. $167,695.

TEACHING AND PRESENTATIONS

Christine A. Gleason, MD


Sandra E. Juul, MD, PhD


David J. Loren, MD


Dennis E. Mayock, MD

Michael D. Neufeld, MD, MPH

Thomas P. Strandjord, MD

Peter Tarczy-Hornoch, MD


PUBLICATIONS


The Division of Nephrology provides specialized primary and consultative care for infants, children and adolescents with congenital and acquired renal problems. The division serves as the regional referral center for children with end-stage kidney disease and is a national leader in nephrology care. We have extended our service to provide outpatient care regionally at outreach clinics in the states of Washington, Alaska and Montana. The division runs an outpatient dialysis unit and also provides emergency dialysis and ongoing renal support to critically ill hospitalized children, including those in the intensive care units at Seattle Children's Hospital. The need for dialysis services at Children's continues to grow because of the increasing complexity of care for children undergoing cardiac surgery and transplants of bone marrow, heart and intestine. Faculty members also provide nephrology care for children at Mary Bridge Children’s Hospital in Tacoma, Wash.

Division physicians evaluate children who are candidates for kidney transplantation; in conjunction with other members of a multidisciplinary transplant program, they manage the pre- and post-transplant care of renal transplant recipients. Our nephrology team of physicians, specialized nurses, dietitians and social workers provides a variety of support and follow-up services to ensure the best family-centered care. A new pediatric hypertension clinic was established this year.

The nephrology research program at Children’s has become one of the largest and most productive programs in the country. Several division faculty members have been awarded competitive research grants.

We are committed to training physicians for careers in nephrology at academic pediatric centers. Our fellowship program is one of the most sought-after fellowships in the country, with the goal of training future leaders in the field of academic pediatric nephrology. Since 1990, we have trained 22 pediatric nephrologists with support from Children's and a training grant from the National Institutes of Health; six more are currently in the program.

Division members fulfill important educational roles in the community and continually participate in national organizations and societies; several faculty members hold leadership roles in these organizations. Division faculty members are frequently invited to speak at national and international meetings. In 2007, two new physicians were recruited to the division: Dr. Joseph Flynn was recruited from Albert Einstein College of Medicine of Yeshiva University and Children’s Hospital at Montefiore, the Bronx, N.Y., and Dr. Coral Hanevold was recruited from the Medical College of Georgia in Augusta, Ga.

**FACULTY**

Allison A. Eddy, MD, Chief  
Nicole R. Becker, MD  
Joseph T. Flynn, MD, MS  
Coral D. Hanevold, MD  
Sangeeta R. Hingorani, MD, MPH  
Jesús M. López-Guisa, PhD  
Ruth A. McDonald, MD  
Daryl M. Okamura, MD  
Jodi M. Smith, MD, MPH  
F. Bruder Stapleton, MD  
Jordan M. Symons, MD  
Sandra L. Watkins, MD  
Ikuyo Yamaguchi, MD, PhD  
Karyn Yonekawa, MD  
Guoqiang Zhang, MD, PhD

**PROFESSIONAL PROFILES**

Allison A. Eddy, MD, is chief of the Division of Nephrology at Seattle Children’s Hospital, director of the Tissue and Cell Sciences Research Center and professor in the Department of Pediatrics at the University of Washington School of Medicine. In addition to clinical work, she directs a basic science research program and is involved in mentoring, training and administrative responsibilities for all of these programs. Eddy is internationally recognized for her research on the cellular and molecular basis of progressive kidney disease. Her laboratory is conducting two major NIH projects: one investigates the role of the urokinase receptor family in renal scarring, and the other investigates the role of
scavenger receptors in chronic kidney disease. Eddy is program director for the University of Washington Child Health Research Center and principal investigator of the NIH research training program in pediatric nephrology. She is an active member of the editorial board for the journal Pediatric Nephrology and is co-editor of the pediatric section of the British Medical Journal book Evidence-Based Nephrology. Eddy also has an interest in global medicine and was recently awarded a grant from the Puget Sound Partners for Global Health to conduct a study on acute kidney injury in children admitted to Mulago Hospital, Makerere University, Kampala, Uganda.

Nicole R. Becker, MD, is attending physician at Seattle Children’s Hospital and associate clinical professor in the Department of Pediatrics at the University of Washington School of Medicine. She received her MD from the University of Pennsylvania School of Medicine, Philadelphia, Pa. She completed a pediatrics residency and internship at Children’s Hospital of Philadelphia and a pediatric nephrology fellowship at Seattle Children’s. She also completed an adolescent medicine fellowship while working as an attending physician and assistant professor of pediatrics at Rush-Presbyterian–St. Luke’s Medical Center in Chicago, Ill. Becker cares for children in the Nephrology Clinic and is the nephrologist covering Mary Bridge Children’s Hospital in Tacoma, Wash. She is medical director at the Pierce County Juvenile Detention Center in Tacoma, where she provides adolescent medicine for incarcerated youth as well as policy and management oversight for the medical department. She also works with the Pierce County Health Department and superior court judges on the Juvenile Court Executive Committee. Becker is working on a young-adult patient-transitioning plan in the Division of Nephrology and has a special interest in ensuring that adolescents and their parents have normal life experiences, despite chronic illness, and move successfully into adulthood.

Joseph T. Flynn, MD, MS, is attending physician at Seattle Children’s Hospital and professor in the Department of Pediatrics at the University of Washington School of Medicine. He is medical director of dialysis services at Children’s and the director of the new Pediatric Hypertension Program, the only such program in the WAMI region. He earned his MD at the State University of New York, Upstate Medical University in Syracuse, N.Y., and his MS in clinical research methods at the Albert Einstein College of Medicine in the Bronx, N.Y. His clinical interests include hypertension in children and adolescents, cardiovascular disease in children with chronic kidney disease, and dialysis in infants and children. His research has focused on clinical trials of antihypertensive medications in children, complications of obesity and hypertension in children, and early manifestations of cardiovascular disease in children with underlying kidney disease. He has mentored more than a dozen trainees in pediatric nephrology. He is a section editor of the journal Pediatric Nephrology and sits on the editorial board of the American Journal of Hypertension. Nationally, Flynn is a councilor of the American Society of Pediatric Nephrology and has served on advisory committees of the National Heart, Lung and Blood Institute and the National Institute of Child Health and Human Development.

Coral D. Hanevold, MD, is attending physician at Seattle Children’s Hospital and a clinical professor in the Department of Pediatrics at the University of Washington School of Medicine. She received her MD from the Medical College of Georgia and completed a pediatric internship there. She finished her pediatric residency at the University of Virginia in Charlottesville, Va. Hanevold pursued a clinical pediatric nephrology fellowship at St. Christopher’s Hospital for Children in Philadelphia, Pa. From there she did a second fellowship in pediatric nephrology research and transplant immunology at Cedars Sinai Hospital, a division of the
University of California, Los Angeles. Before joining the University of Washington faculty, Hanevold served as the section chief of pediatric nephrology at the Medical College of Georgia. Hanevold cares for children with kidney disease at Children's and at Mary Bridge Children's Hospital in Tacoma, Wash. She serves as the medical director of nephrology at Mary Bridge Children's Hospital, a contract service provided by the Division of Nephrology.

**Sangeeta R. Hingorani, MD, MPH,** is attending physician at Seattle Children's Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. She received her MD from Albert Einstein College of Medicine in the Bronx, N.Y. She completed a pediatrics residency and a fellowship in pediatric nephrology at the University of Washington; she also earned her MPH from the university. Her clinical research program is investigating the pathophysiology of acute and chronic kidney disease after hematopoietic cell transplant. She has prospective studies ongoing at the Fred Hutchinson Cancer Research Center (FHCRC) to gain a better understanding of the timing and mechanisms of renal injury and to identify potential biomarkers for kidney disease after stem cell transplant. Using the database at FHCRC, Hingorani conducted large epidemiologic studies to identify risk factors for both acute and chronic kidney disease after transplant and to evaluate the mortality associated with kidney injury in this patient population. Hingorani is director of the university pediatric nephrology fellowship program. She spends time teaching and mentoring fellows in both the clinical and clinical research arenas. She is a member of the Pediatric Scientific Advisory Committee and serves on several committees within the American Society of Pediatric Nephrology.

**Jesús M. López-Guisa, PhD,** is affiliated research assistant professor at the University of Washington School of Medicine and supervises fellows and research associates at the university. He earned his PhD in biochemistry at the University of Wisconsin–Madison. López-Guisa researches the mechanisms involved in the inflammatory and fibrotic mechanisms in progressive renal diseases. At Seattle Children's Hospital he collaborated with the cardiology faculty on studies of thyroid metabolism and with the rheumatology faculty on the role of microchimerism in renal diseases. He maintains study collaborations outside Children's on the role of the IL-6 family of genes during kidney development and in normal and pathological conditions, and on the role of the IL-6 family of genes in osteoarthritis in a strain of mice he developed. López-Guisa is a member of several minority programs at the University of Washington and is a member of the American Association of Cancer Research and the National Institute of Diabetes and Digestive and Kidney Diseases minority network. He has published numerous papers in peer-reviewed publications.

**Ruth A. McDonald, MD,** is medical director of solid-organ transplantation and clinical director of nephrology at Seattle Children's Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. She also serves as co-director of several outreach clinics in pediatric nephrology in Washington, Alaska and Montana. She earned her MD at the University of Minnesota. She completed her residency and served as assistant chief resident and completed a fellowship in the Division of Pediatric Nephrology at the University of Washington. She serves as principal investigator in many multi-center research studies on pediatric renal transplantation. She serves on the North American Pediatric Renal Trials and Cooperative Studies Board of Directors and is chairwoman of the Participating Centers Committee. She has a special clinical interest in post-transplant lymphoproliferative disorder and viral infections after transplant in all solid-organ transplant recipients. She is an at-large member of the Children's University Medical Group Board of Directors and is chairwoman of the group's Clinical Practice Committee. McDonald is respected nationally as a leader in national organ allocation policy development. She serves on the UNOS Kidney Committee and is an elected member of the UNOS Board of Directors. Additionally, she serves on the pediatric nephrology sub-board of the American Board of Pediatrics.

**Daryl M. Okamura, MD,** is attending physician at Seattle Children's Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. He earned his MD and completed pediatrics residency training at the University of Hawaii and completed his pediatric nephrology fellowship at Children's. His clinical interests include the diagnosis and management of patients with renal vasculitis, dyslipidemia and chronic kidney disease. His research goals are to understand the pathologic
mechanisms of kidney fibrosis to develop therapies to halt or reverse the progression of chronic kidney disease and kidney failure. His current research projects are focused on elucidating the role of oxidative stress and inflammation in the progression of chronic kidney disease. Okamura has presented his research in many regional and national nephrology conferences and published several papers in peer-reviewed journals. He has been appointed to the American Society of Pediatric Nephrology Research Committee.

Jodi M. Smith, MD, MPH, is attending physician at Seattle Children's Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. She earned her MD and completed her pediatrics residency at McGill University in Montreal. She completed a pediatric nephrology fellowship and earned an MPH in epidemiology from the University of Washington. She is studying the role of subclinical viral infections in the development of kidney transplant dysfunction in pediatric recipients.

F. Bruder Stapleton, MD, is chief academic officer and senior vice president at Seattle Children's Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. She earned her MD and completed her pediatrics residency at McGill University in Montreal. She completed a pediatric nephrology fellowship and earned an MPH in epidemiology from the University of Washington. She is studying the role of subclinical viral infections in the development of kidney transplant dysfunction in pediatric recipients.

Jordan M. Symons, MD, is attending physician at Seattle Children's Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. He treats general nephrology, kidney transplant and dialysis patients. He received his MD from Columbia University College of Physicians and Surgeons. He completed a pediatrics residency at Children's Memorial Hospital in Chicago, Ill., and pediatric nephrology training at Children's Hospital Boston. Symons has a primary interest in the care and treatment of acute kidney injury in critically ill patients; he is a founding member of the Prospective Pediatric Continuous Renal Replacement Therapy Registry, a pediatric multicenter consortium engaged in cooperative study of CRRT methods. Symons also has a strong interest in medical education; he is a member of the College Faculty of the University of Washington School of Medicine, a group of 35 medical faculty dedicated to the development and implementation of a four-year integrated curriculum of clinical skills and professionalism. He instructs and mentors approximately 25 medical students per year.

Sandra L. Watkins, MD, is professor emerita in the Department of Pediatrics at the University of Washington School of Medicine. She is immediate past president of the American Society of Pediatric Nephrology. She is a past board member of the Renal Physicians Association and a past member of the Northwest Renal Networks Medical Review Board. Her clinical interests include the full breadth and depth of pediatric renal disease and hypertension. Her research interests include end-stage renal disease therapies, hemolytic uremic syndrome and glomerulonephritis. She is a principal investigator for the Focal Segmental Glomerulosclerosis Clinical Trial, a multicenter interventional trial.

Ikuyo Yamaguchi, MD, PhD, is attending physician at Seattle Children's Hospital and acting instructor in the Department of Pediatrics at the University of Washington School of Medicine. She earned her MD from Kumamoto University and her PhD from Kurume University in Japan. She completed her pediatrics training at Georgetown University Medical Center in Washington, D.C., and pediatric nephrology training at Children's. Her clinical interests include hypertension and chronic kidney disease in children. Her basic research interest is to understand the role of the microvasculature in acute and chronic renal diseases. Yamaguchi has presented her research at many...
Karyn Yonekawa, MD, is attending physician at Seattle Children’s Hospital and a clinical instructor in the Department of Pediatrics at the University of Washington School of Medicine. She received her MD from the University of Pittsburgh School of Medicine. She completed her pediatrics residency at Children’s Hospital of Orange County and her pediatric nephrology fellowship at the University of Washington. Yonekawa cares for children at Mary Bridge Children’s Hospital in Tacoma, Wash. She also conducts basic science research; her interests include the signaling pathways involved in cellular death.

Guoqiang Zhang, MD, PhD, is acting instructor at the University of Washington. He received two years of postdoctoral training at Sheffield Kidney Institute, University of Sheffield, U.K. Zhang’s research at the University of Washington has focused on the molecular mechanisms of chronic renal injury, in particular the control of renal myofibroblast activation. His studies have led to the finding of an alternative urokinase fibroblast receptor. The pathological function of this newly identified urokinase receptor in the progression of kidney disease is being studied intensively. Zhang is expanding his research to develop specific gene silencing approaches for the treatment of cardiovascular complications of chronic kidney disease. His goal is to bring this knowledge and these technologies to the bedside to benefit kidney patients. Zhang serves as manuscript reviewer for the American Journal of Kidney Disease and the Journal of the American Society of Nephrology. He has supervised visiting research fellows, research associates and summer students.

AWARDS AND HONORS

Joseph T. Flynn, MD, MS
Listed in America’s Top Pediatricians.
Listed in “Best Doctors in America.”
Listed in America’s Top Doctors.

Ruth A. McDonald, MD
Listed in “Top Doctors.” Seattle Metropolitan magazine.

Sandra L. Watkins, MD
Listed in “Top Doctors.” Seattle Metropolitan magazine.

Ikuyo Yamaguchi, MD, PhD
Child Health Research Center Young Investigator Award. NIH/NICHD.
Gottschalk and Siegel Research Scholar Grant Award. American Society of Nephrology.

RESEARCH FUNDING

New

Daryl M. Okamura, MD
Role of CD36 in oxidative and inflammatory pathways in renal fibrosis. National Kidney Foundation. $50,000.

Jodi M. Smith, MD, MPH
Renal transplant and subclinical herpesvirus infection. NIDDK/NIH/DHHS. $127,845.
Viral surveillance in pediatric renal transplantation. Roche Laboratories. $75,000.

Ikuyo Yamaguchi, MD, PhD
Regulation of the renal microvasculature by placental growth factor and vascular endothelial cadherin during chronic kidney disease. American Society of Nephrology. $100,000.

Guoqiang Zhang, MD, PhD
Roles of a newly identified alternative urokinase receptor in the development of atherosclerosis and renal injury. American Heart Association. $65,000.

Continuing

Allison A. Eddy, MD
Fibrotic sequelae of childhood renal disease. NIDDK/NIH/DHHS. $156,520.
Molecular mechanisms in renal interstitial fibrosis. NIDDK/NIH/DHHS. $345,376.
Piediatric Nephrology Training Program. NIH/NIDDK. $198,949.

**Sangeeta R. Hingorani, MD, MPH**
Renal injury after hematopoietic stem cell transplant. NIDDK/NIH/DHHS. $152,820.

**Ruth A. McDonald, MD**
Safety in immunomodulatory functions of campath-1H. NIAID/NIH/DHHS. Children’s Hospital Boston. $53,891.

**Daryl M. Okamura, MD**
Multifunctional role of CD36 in progressive renal fibrosis. NIDDK/NIH/DHHS. $128,250.

**F. Bruder Stapleton, MD**
Cancer Center support. NIH/DHHS. $111,100.

Cellular and molecular biology of childhood disease. NIH/NICHD. $430,787.

United States Immunodeficiency Fund. Immune Deficiency Foundation. $52,546.

**TEACHING AND PRESENTATIONS**

**Allison A. Eddy, MD**


Interstitial nephritis (Mrs. Ho Tam Kit Hing Visiting Professorship). University of Hong Kong at Queen Mary Hospital. Hong Kong, P.R.C. May 2007.


**Joseph T. Flynn, MD, MS**


**Sangeeta R. Hingorani, MD, MPH**

Ruth A. McDonald, MD


Daryl M. Okamura, MD


F. Bruder Stapleton, MD


Jordan M. Symons, MD


Sandra L. Watkins, MD


Ikuyo Yamaguchi, MD, PhD

Guoqiang Zhang, MD, PhD


PUBLICATIONS


Smith JM, Corey L, Davis CL, McDonald RA. Primary EBV infection in pediatric renal transplantation: adolescents at higher risk for PTLD. Transplantation. Jun 2007;83(11):1423–1428.


The Division of Pulmonary Medicine comprises 15 pediatric pulmonologists and nurse practitioners. They focus on exemplary clinical service and care, training and education about respiratory conditions and their management, and research on the prevention, diagnosis, understanding and therapies of acute and chronic conditions affecting breathing in childhood. The division provides comprehensive interdisciplinary care to children in the WAMI region. In 2007, more than 2,600 children received care from clinicians of the Division of Pulmonary Medicine at Seattle Children’s Hospital and regional outreach clinics. The division is nationally recognized for its expertise and research contributions.

The Division of Pulmonary Medicine includes a Cystic Fibrosis Center, a Pediatric Sleep Disorders Center and an Asthma Center; each conducts clinical, educational and research activities. The division participates in multiple national networks of research and care, including the Cystic Fibrosis Therapeutics Development Network, the Pediatric Interstitial Lung Disease Network, the Primary Ciliary Dyskinesia Network and the Spine and Chest Wall Deformity Network. The division also provides general pulmonary evaluations for symptoms of cough, shortness of breath, recurrent pneumonia, wheeze, chest pain and exercise intolerance. Division staff members conduct clinical and translational research, and research in molecular genetics, microbiology, epidemiology and health services and outcomes.

Current research focuses include the pathogenesis and treatment of chronic airway infection in children with cystic fibrosis, outcome measures of progressive airway disease in infants with cystic fibrosis, inflammatory markers in exhaled breath condensate among infants who wheeze, gene expression in airway epithelial cells from wheezy infants, functional consequences of spine and chest wall deformities in young children and epidemiology of sleep disorders in high-risk populations such as children with fetal alcohol syndrome and autism.

The division has an accredited pediatric pulmonary fellowship program and participates in the sleep medicine fellowship program administered by the University of Washington School of Medicine. It has won numerous teaching awards from the pediatric residency program and medical students alike. Members of the pulmonary faculty have served in leadership positions on regional and national professional organizations. The Division of Pulmonary Medicine remains productive, with its members publishing more than 35 articles, chapters and national position papers annually over the last three years.

**FACULTY**

Gregory J. Redding, MD, Chief  
Edward R. Carter, MD  
Maida Lynn Chen, MD  
Jason S. Debley, MD, MPH  
Julia C. Emerson, MD, MPH  
Ronald L. Gibson, MD, PhD  
Nicole Mayer Hamblett, PhD  
Lucas R. Hoffman, MD, PhD  
Yemiserach Kifle, MD  
Susan G. Marshall, MD  
Samuel M. Moskowitz, MD  
Bonnie W. Ramsey, MD  
Margaret Rosenfeld, MD, MPH  
Benjamin S. Wilfond, MD

**PROFESSIONAL PROFILES**

Gregory J. Redding, MD, is chief of the Division of Pulmonary Medicine at Seattle Children’s Hospital. He is professor in the Department of Pediatrics and director of the Pediatric Pulmonary Training Center grant at the University of Washington School of Medicine. He earned his MD from Stanford University. He completed a pediatrics residency at Harbor General/UCLA and a pediatric pulmonary fellowship at the University of Colorado. Redding is committed to improvement in children’s health and health care through research, training, advocacy, clinical excellence and improved systems of health care. He is an internationally recognized expert and leader in pediatric pulmonary medicine.
Edward R. Carter, MD, is attending physician at Seattle Children’s Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. He is director of clinical services for the division and head of the Pediatric Asthma Program. His clinical areas of interest are asthma, management of ventilator-dependent children, pulmonary complications of neuromuscular disease and cystic fibrosis. His research interests include asthma management and outcomes and the treatment of empyema. Carter is involved with teaching medical students and pulmonary fellows on inpatient services and in the clinics. He is a member of the steering committee of the American College of Chest Physicians Pediatric Chest Medicine Network. He was named ARTist of the Month for professionalism and patient-centered care at Children’s.

Maida Lynn Chen, MD, is associate director of the Pediatric Sleep Center, attending physician at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. She earned her MD at Northwestern University and completed a pediatrics residency at Rush–Presbyterian–St. Luke’s Medical Center in Chicago, Ill. She completed her pediatric pulmonary fellowship at Children’s Hospital Los Angeles, with special focus on respiratory control and sleep medicine. Her clinical interests center on sleep disorders in infants, children and adolescents. Her research interests focus on respiratory control disorders and sleep-disordered breathing in special-needs populations, including those with fetal alcohol spectrum disorders, obesity and craniofacial anomalies. She is a member of the American Academy of Pediatrics, American Thoracic Society, American Academy of Sleep Medicine and Sleep Research Society.

Jason S. Debley, MD, MPH, is attending physician and director of the Flexible Fiberoptic Bronchoscopy Service at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. Debley received his MD from Northwestern University Medical School, and completed his pediatrics internship and residency at Children’s Memorial Hospital in Chicago, Ill. He completed his pediatric pulmonary fellowship at Seattle Children’s and earned an MPH from the University of Washington. He has clinical expertise in asthma, cystic fibrosis, bronchopulmonary dysplasia, restrictive lung diseases of childhood and the management of acute and chronic respiratory failure. Debley’s research program is focused on the development and utilization of noninvasive measures of airway inflammation in exhaled breath to assist in the diagnosis and management of asthma, with particular interest in improving methods of diagnosing asthma in infants and toddlers and better understanding the origins of asthma in young children. Debley’s research also includes translational/bench work to better understand the role of the lower airway epithelium in the development of asthma and airway remodeling. In addition, Debley is actively involved in medical student, resident and fellow training. He received the pediatric research loan repayment award from the NIH.
Julia C. Emerson, MD, MPH, is epidemiologist at Seattle Children’s Hospital and lecturer in the Department of Pediatrics at the University of Washington School of Medicine. Emerson’s research interests include the natural history of early cystic fibrosis (CF) lung disease, the design of clinical trials to improve CF therapies and the development of better outcome measures for CF clinical protocols. She also collaborates on studies of the genotypic and phenotypic changes in airway pathogens that may be associated with CF lung disease severity and progression.

Ronald L. Gibson, MD, PhD, is director of the Cystic Fibrosis Center, co-director of the pediatric pulmonary fellowship program and attending physician at Seattle Children’s Hospital; he is professor in the Department of Pediatrics at the University of Washington School of Medicine. He earned his MD and PhD at Washington University in St. Louis, and completed pediatrics residency training and a fellowship in pediatric pulmonology at the University of Washington. He is committed to high-quality, multidisciplinary patient care, small-group teaching, research and the acquisition of new knowledge. His primary research focus is on Pseudomonas aeruginosa airway infections in young children with cystic fibrosis (CF). As a co-principal investigator of the university’s Cystic Fibrosis Therapeutics Development Center, he has been lead and co-investigator for several phase I and phase II clinical trials involving novel antimicrobial agents, anti-inflammatory compounds and modulators of ion transport. Gibson is director of the clinical core of the university’s CF research development program with the goal of catalyzing collaborations between local basic and clinical investigators.

Nicole Mayer Hamblett, PhD, is research assistant professor in the Division of Pulmonary Medicine at Seattle Children’s Hospital and in the Department of Pediatrics at the University of Washington School of Medicine. Hamblett is director of Biostatistics and Clinical Data Management at the Cystic Fibrosis Therapeutics Development Network Coordinating Center. Her research interests include the design and analysis of clinical trials, with emphasis in the pediatric and orphan disease setting. She is involved in the development of new clinical outcome measures for cystic fibrosis and, in particular, the validation of biomarkers to enable early evaluation of new therapies. Hamblett also provides statistical training to clinical researchers and scientists, with applications to both the preclinical and clinical fields.

Lucas R. Hoffman, MD, PhD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. Hoffman’s research focuses on chronic lung infections, particularly in patients with cystic fibrosis (CF). Chronic infections have proven to be particularly difficult to treat with standard antibiotic therapies. For example, the lung infections in children with CF are not improved by antibiotics to the degree we would expect. Hoffman is working to understand why chronic lung infections are so difficult to treat and how to improve current treatments. Hoffman is also dedicated to the care of patients and to teaching medical students, residents and fellows. His areas of clinical expertise include asthma, CF, bronchopulmonary dysplasia, restrictive lung diseases and the pulmonary complications of neuromuscular disease. He is a member of the American Academy of Pediatrics, the American Thoracic Society and the American Society for Microbiology.

Yemiserach Kifle, MD, is medical director of the Pediatric Sleep Center at Seattle Children’s Hospital and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. She is also associate director of the Pediatric Pulmonary Leadership Training Center. Her work focuses on diagnosis, management and follow-up of patients with sleep disorders, including obstructive sleep apnea, obstructive hypoventilation, behavioral insomnia of childhood, restless leg syndrome/periodic limb movement disorder, delayed sleep phase syndrome and narcolepsy. Her research interest is in looking at cognitive function of children with sleep apnea before and after treatment with continuous positive airway pressure (CPAP). Her other area of interest is the prevalence of sleep disturbance in children with autism, a project that is part of the national Autism Treatment Network.

Susan G. Marshall, MD, is attending physician at Seattle Children’s Hospital and associate dean for curriculum at the University of Washington School of Medicine. She earned her MD at the University of California, Los Angeles, and completed her pediatrics residency and fellowship at Children’s. Marshall continues to
participate in the Chest Clinic on a weekly basis. Her clinical interests span the entire scope of pulmonary medicine, but she is especially involved with patients suffering from neuromuscular disease and cystic fibrosis, and those with psychosocial issues. At the school of medicine, she is involved in teaching, educational planning and curriculum development. In the pulmonary division she works with medical students, residents, fellows and faculty.

**Samuel M. Moskowitz, MD,** is attending physician at Seattle Children’s Hospital, a full member of the Center for Clinical and Translational Research at Seattle Children's Hospital Research Institute and assistant professor in the Department of Pediatrics at the University of Washington School of Medicine. His clinical interests include all aspects of pediatric pulmonary medicine. His educational interests include training undergraduate students in basic and translational research, training medical students and residents in pediatric pulmonary medicine and providing career guidance to pediatric residents and subspecialty fellows. He serves as a member of the Pediatric Residency Committee at Children's. He also serves as co-chair of the National Resource Center Committee of the Cystic Fibrosis Therapeutics Development Network. His research program focusing on the role of bacterial infections and antibiotic resistance in cystic fibrosis lung disease includes both basic and translational research projects, and is funded by the Cystic Fibrosis Foundation and the National Institute of Allergy and Infectious Diseases.

**Bonnie W. Ramsey, MD,** is director of the Center for Clinical and Translational Research at Seattle Children's Hospital Research Institute. At Children's, she serves as associate director of the Pediatric Clinical Research Center, which she established, and as attending physician in pulmonary medicine. She is professor and vice-chair for research in the Department of Pediatrics and holds the Endowed Chair in Cystic Fibrosis at the University of Washington School of Medicine. Ramsey is a member of the American Pediatric Society and the Association of American Physicians. She earned her MD from Harvard Medical School. She did pediatrics residency training at Boston Children's Hospital and was a resident and fellow at Children's. Her career has focused on clinical care and research in the field of cystic fibrosis (CF). She is internationally recognized for her work in developing new therapies for patients with CF, and she directs the CF Therapeutics Development Network. She is also interested in the ethics of pediatric clinical research and has served on two Institute of Medicine committees focused on this topic. Ramsey has used her expertise in clinical and translational research to help develop infrastructure for research involving pediatric participants at the hospital.

**Margaret Rosenfeld, MD, MPH,** is attending physician at Seattle Children's Hospital and associate professor in the Department of Pediatrics at the University of Washington School of Medicine. Her clinical interests focus on the diagnosis and management of respiratory illnesses in children of all ages. Her research program focuses on the assessment and treatment of early cystic fibrosis (CF) lung disease, including infant and preschool lung function tests, determining risk factors for early acquisition of Pseudomonas aeruginosa, and clinical trials in infants with CF. She is also an investigator in a national network investigating rare disorders of mucociliary clearance, including primary ciliary dyskinesia. She is medical director of the Pediatric Clinical Research Center, associate director of the Seattle Children's Hospital Research Institute Center for Clinical and Translational Research, co-director of the Children’s Hospital Fellows’ College and medical director of the Pulmonary Function Laboratory. She serves as CF consultant to the Washington State Newborn Screening Program.

**Benjamin S. Wilfond, MD,** is director of the Treuman Katz Center for Pediatric Bioethics at Seattle Children's Hospital and professor and chief of the Division of Bioethics in the Department of Pediatrics at the University of Washington School of Medicine. He is also adjunct professor in the Department of Medical History and Ethics. Wilfond attends in the Chest Clinic in the Division of Pulmonary Medicine at Children’s. He is the co-director of the Regulatory Support and Bioethics Core for the Institute of Translational Health Sciences (ITHS) and coordinates the ITHS Research Bioethics Consult Service. He earned his MD from the University of Medicine and Dentistry of New Jersey–New Jersey Medical School. He completed his pediatric residency and his fellowship in pediatric pulmonology and medical ethics at the University of Wisconsin. He has held faculty appointments at the University of Arizona, National Institutes of Health and Johns Hopkins University. He conducts research on ethical and policy issues related to genetic testing, genetic
research and pediatrics research. He has recently worked on issues related to newborn screening, disclosure of genetic research results and pediatric biobanks. He is a member of the Ethics Subcommittee of the FDA Pediatric Advisory Committee and the National Children's Study Federal Advisory Committee.

AWARDS AND HONORS

Ronald L. Gibson, MD, PhD
Listed in “Top Doctors.” Seattle magazine.

Lucas R. Hoffman, MD, PhD
Interscience Conference on Antimicrobial Agents and Chemotherapy Young Investigator Award. American Society of Microbiology.

Yemiserach Kifle, MD
Listed in “Top Doctors.” Seattle Metropolitan magazine.

Bonnie W. Ramsey, MD
Lifetime Achievement Award. University of Washington General Clinic Research Center.
Dr. Alvin J. Thompson Award. Northwest Association for Biomedical Research.
Kossoff Lectureship. Columbia University.

RESEARCH FUNDING

New

Ronald L. Gibson, MD, PhD
A multicenter, double-blind, placebo-controlled, randomized efficacy and safety study of denufosol tetra sodium (INS37217) inhalation solution in patients with cystic fibrosis. Inspire. $100,475.

Aztreonam lysinate for inhalation in cystic fibrosis patients. Gilead Sciences. $73,334.

DNA collections for gene modifier studies. Cystic Fibrosis Foundation. $256,323.

Samuel M. Moskowitz, MD
Polymyxin-resistant pseudomonas in CF lung infection. NIH/NIAID. $631,434.

Bonnie W. Ramsey, MD
Kalobios -173 CSA. Kalobios, Inc. $51,800.

Multicenter, multinational, randomized, placebo-controlled trial of azithromycin in participants with cystic fibrosis 6–18 years old, culture negative for Pseudomonas aeruginosa. Cystic Fibrosis Foundation. $2,290,588.

Novartis 118 task orders 1,2,4,6. Novartis Pharmaceuticals Corporation. $82,066.

Gregory J. Redding, MD
Pediatric Pulmonary Leadership Training Center. Health Resources and Services Administration. $388,450.

Margaret Rosenfeld, MD, MPH
A pilot study to evaluate inhaled 7% hypertonic saline in cystic fibrosis infants. Cystic Fibrosis Foundation. $116,561.

Spirometry in preschool CF patients. Cystic Fibrosis Foundation. $54,552.

Continuing

Jason S. Debley, MD, MPH
Noninvasive measures in wheezy infants and toddlers. NHLBI/NIH/DHHS. $126,645.

Ronald L. Gibson, MD, PhD
Cystic Fibrosis Centers. Cystic Fibrosis Foundation. $103,090.

Therapeutics Development Center. Cystic Fibrosis Foundation. $108,000.

Yemiserach Kifle, MD
Pediatric Pulmonary Training Center. HRSA/DHHS. $71,599.

Samuel M. Moskowitz, MD
Standard vs. biofilm susceptibility testing in cystic fibrosis. Cystic Fibrosis Foundation. $228,355.

Bonnie W. Ramsey, MD
Molecular Therapy Core Centers. NIH/NIDDK. $870,217.

Children's administrative and clinical cores — molecular biology in CF. Cystic Fibrosis Foundation. $51,089.

Early antipseudomonal therapy in cystic fibrosis. NHLBI/NIH/DHHS. $1,234,448.

Efficacy and safety of intermittent antimicrobial therapy for the treatment of new onset Pseudomonas aeruginosa airway infection in young patients with cystic fibrosis (early antipseudomonal therapy in CF) EPIC Observational. Cystic Fibrosis Foundation. $418,650.

Efficacy and safety of intermittent antimicrobial therapy for the treatment of new onset Pseudomonas aeruginosa airway infection in young patients with cystic fibrosis (early antipseudomonal therapy in CF) EPIC Clinical. Cystic Fibrosis Foundation. $720,274.

General Clinical Research Center–pediatric satellite. NIH/DHHS. $1,204,177.

General Clinical Research Center–pediatric satellite. NIH/DHHS. $953,431.

Therapeutics Development Network–coordinating center. Cystic Fibrosis Foundation. $3,419,133.

Therapeutics Development Network–GCRC. Cystic Fibrosis Foundation. $749,000.

Molecular Therapy Core Center–human core. NIDDK. $61,176.

Margaret Rosenfeld, MD, MPH
EPIC Observational Study. Cystic Fibrosis Foundation. $442,126.

Genetic disorders of mucociliary clearance. NIH/DHHS. $80,568.

**TEACHING AND PRESENTATIONS**

**Edward R. Carter, MD**


**Jason S. Debley, MD, MPH**


**Ronald L. Gibson, MD, PhD**


Nicole Mayer Hamblett, PhD
Statistics for laboratory research. Short Course for Pediatric Fellows and Faculty, Seattle Children's Hospital. Seattle, Wash. 2007.

Lucas R. Hoffman, MD, PhD

Yemiserach Kifle, MD


Samuel M. Moskowitz, MD


Polymyxin-resistant pseudomonas in CF lung infection (research seminar). Division of Pediatric Infectious Diseases, Seattle Children's Hospital. Seattle, Wash. June 2007.


Bonnie W. Ramsey, MD


Gregory J. Redding, MD


Margaret Rosenfeld, MD, MPH


Benjamin S. Wilfond, MD
Ethical issues in pediatric outcomes research. Pediatric Trauma Care: A Workshop to Develop a National Study on the Costs and Outcomes from Pediatric Trauma. Washington, D.C. March 9, 2007.


PUBLICATIONS


Department of Surgery
2007 was a successful year for the Department of Surgery, marked by enormous growth in several divisions and a significant overall increase in surgical cases performed.

Recruitment: New faculty members recruited in 2007 included Dr. Mike McMullen to Cardiothoracic Surgery; Dr. Martin Koyle as chief of Urology; Dr. Margarett Shnorhavorian to Urology; Dr. Eunice Chen to Otolaryngology; Dr. Craig Birgfeld to Plastic and Craniofacial Surgery; and Drs. Ken Gow and John Meehan (who joined us in 2008) to General Surgery.

Leadership Changes: New leaders were appointed in three divisions in the Department of Surgery. After a dozen years of strong leadership and creating one of the preeminent craniofacial surgery programs in the world, Dr. Joseph Gruss groomed his successor, Dr. Richard Hopper, who became the division chief in July 2007. In Neurosurgery, Dr. Anthony Avellino succeeded Dr. Richard Ellenbogen as chief of Pediatric Neurosurgery. A national search successfully attracted Dr. Martin Koyle, the former chief of Urology at Denver Children’s Hospital, to lead our Pediatric Urology Division.

Focus on Quality Improvement: As part of Seattle Children’s continuous performance improvement (CPI) work, several divisions within the Department of Surgery created work plans to establish the focus of their work for the next five to 10 years. The department’s participation in several hospitalwide projects has resulted in a significant decrease in both surgical site infection (SSI) and bloodstream infection (BSI).

The department also actively collaborated in a statewide quality improvement project that focused on using evidence-based practices to reduce surgical complications. Dr. Adam Goldin has been a leader in this process and has helped modify the database to permit better analysis of pediatric patients.

Scholarly Activity and Research: Surgical faculty frequently published in peer-reviewed journals in 2007. Basic and translational research was active in almost every division. Extramural funding supported research in Cardiac Surgery, Neurosurgery, Oral and Maxillofacial Surgery and Urology. Additional research focuses on outcomes and on simulation.

International Outreach: Several faculty participated in the hospital’s international health initiatives. Drs. Richard Grady and Richard Hopper both led significant outreach programs to Mozambique and West Africa, respectively. These programs focused on training local surgeons in their areas of expertise and helping develop infrastructure for those surgeons to sustain the specialized surgical care.
The Division of Cardiothoracic Surgery treats neonates, infants, children and teens with congenital heart disease. We perform open and closed heart surgeries specializing in single-stage corrective procedures. Services provided by our team include: new and innovative surgical procedures, consultation and surgery for patients with a prenatal diagnosis, surgical repair of complex defects in neonates, including premature and low-birth-weight infants, treating newborns with hypoplastic left heart syndrome and other complex defects, as well as heart transplantation (including cardiac assist devices). We have a dedicated cardiac intensive care unit with state-of-the-art equipment and an exceptional nursing staff for all cardiac surgical patients.

Areas of research include areas of pediatric heart failure such as developing an implantable ventricular assist device and studying intracellular energetics of myocytes relating to the pathophysiology of the failing heart.

**PROFESSIONAL PROFILES**

**Gordon A. Cohen, MD, PhD,** is chief of the Division of Cardiothoracic Surgery at Seattle Children’s Hospital and professor of pediatric cardiothoracic surgery at the University of Washington School of Medicine. He is co-director of Children’s Heart Center and holds the Sam and Althea Stroum Endowed Chair in Pediatric Cardiovascular Surgery. He received his MD from Tulane University School of Medicine; he earned an MS and a PhD in pharmacology from the University of California, Los Angeles. He completed residencies in cardiothoracic surgery at the University of Washington School of Medicine and in general surgery at UCLA Medical Center. Cohen has been consulting cardiothoracic surgeon at the Great Ormond Street Hospital for Children in London and senior lecturer at the Institute of Child Health at University College London. His interests include complex neonatal repairs, pediatric heart and lung transplant, mechanical cardiac assistance and heart failure. He is conducting research on a pediatric ventricular assist device (VAD) program.
D. Michael McMullan, MD, is a cardiothoracic surgeon and surgical director of ECMO (extra-corporeal membrane oxygenation) at Seattle Children’s Hospital and assistant professor of surgery at the University of Washington School of Medicine. After earning his MD at the University of Texas Southwestern Medical School, he completed a general surgery residency at the University of Texas, a thoracic surgery residency at the University of Washington and a pediatric cardiac surgery fellowship at the Royal Children’s Hospital in Melbourne, Australia. His clinical interests include pediatric and neonatal heart surgery and mechanical cardiopulmonary support. His research interests include developing strategies to improve patient safety during prolonged mechanical cardiopulmonary support. He is interested in international health care and is actively involved with several organizations that work with local physicians to improve medical care for children with heart disease in developing countries.

Lester C. Permut, MD, is attending surgeon in pediatric cardiothoracic surgery at Seattle Children’s Hospital and associate professor in the Department of Surgery at the University of Washington School of Medicine. Permut received his MD from Boston University School of Medicine and did postgraduate training at Beth Israel Hospital in Boston and at the UCLA Medical Center. He has completed the University of Washington’s teaching scholars program. He is director of education for the pediatric cardiac surgery program and cardiothoracic surgery lecturer for the anesthesia and pediatric ICU fellowship programs. His clinical interests include pediatric cardiac surgery and complex congenital heart defects.

AWARDS AND HONORS

Gordon A. Cohen, MD, PhD
Donald B. Doty Educational Award. Western Thoracic Surgical Association.
Listed in “Top Doctors.” Seattle magazine.
Listed in “Top Doctors.” Seattle Metropolitan magazine.

RESEARCH FUNDING

Continuing
Gordon A. Cohen, MD, PhD
Assessing the impact of pediatric ventricular assist device on cardiac cellular function. McMillen Foundation. $486,282.

PUBLICATIONS


The Division of Craniofacial, Plastic and Reconstructive Surgery provides a comprehensive range of plastic and craniofacial services for congenital and acquired conditions affecting infants, children and adolescents. Drs. Richard Hopper, Joseph Gruss and Craig Birgfeld are all members of the large multidisciplinary Craniofacial Center at Seattle Children’s Hospital. They play an integral role in the treatment of patients with cleft and craniofacial conditions and also help manage maxillofacial trauma, tumors and other developmental anomalies of the head and neck. Dr. Jeffrey Friedrich joined the division in September 2007 and is a specialist in congenital and acquired pediatric hand conditions in the interdisciplinary Children’s Hand Program. Dr. Peter Neligan also joined the faculty in 2007 and brings his international reputation in reconstructive microsurgery to the care of our patients. Drs. Birgfeld and Neligan have expanded the services offered by the Division of Plastic Surgery to include microsurgical facial reanimation surgeries for patients with facial paralysis and soft tissue augmentation for patients with hemifacial microsomia. Four faculty members staff an evening pediatric plastic surgery clinic to treat children with general plastic surgical issues such as skin and soft tissue tumors and abnormalities and other reconstructive problems.

FACULTY
Richard A. Hopper, MD, Chief
Craig B. Birgfeld, MD
Loren H. Engrav, MD
Jeffrey B. Friedrich, MD
Joseph S. Gruss, MD
Jennifer N. Keagle, MD
Matthew B. Klein, MD, MS
David W. Mathes, MD
Peter C. Neligan, MD
Hakim K. Said, MD
Nicholas B. Vedder, MD

PROFESSIONAL PROFILES

Richard A. Hopper, MD, is chief of the Division of Craniofacial, Plastic and Reconstructive Surgery as well as surgical director of the Craniofacial Center at Seattle Children’s Hospital. He holds an associate professor position in the Department of Surgery at the University of Washington School of Medicine. Hopper received his MD from Memorial University of Newfoundland in St. John’s, Newfoundland, and Labrador, Canada. He received his plastic surgery training at the University of Toronto, Canada, and completed a craniofacial fellowship at New York University. His clinical practice focuses on the surgical treatment of cleft lip and palate, craniosynostosis, and rare and severe birth deformities of the bones and soft tissues of the face. Hopper’s research interests include quality improvement initiatives in surgical care protocols for children with craniofacial conditions, bioengineering of implants to heal cranial defects after surgery, and design of presurgical devices to minimize the severity of cleft lip deformities and improve surgical outcomes.
Craig B. Birgfeld, MD, is attending surgeon in plastic and craniofacial surgery at Seattle Children's Hospital and assistant professor in the Division of Plastic Surgery at the University of Washington. After attending the College of William and Mary, he completed medical school at the Medical College of Virginia in 2000. He then pursued a residency in plastic surgery at the University of Pennsylvania, including a chief residency at The Children's Hospital of Philadelphia. He then moved to Seattle, where he trained in craniofacial surgery at Seattle Children's Hospital. In 2007 Birgfeld was a recipient of the American Society of Maxillofacial Surgeons (ASMS) CRANIO Fellowship, which provides funding for travel to international craniofacial centers to learn new surgical techniques and treatments. Birgfeld's clinical interests include cleft and craniofacial surgery as well as treatment of hemifacial microsomia and facial reanimation. His research interests include outcomes of craniofacial surgery utilizing facial CT scans and three-dimensional analysis of the growing face. His goal is to make the Craniofacial Center at Children's a world leader and to optimize the care for all children born in the Northwest with craniofacial difference who are treated in our Center.

Loren H. Engrav, MD, is attending surgeon at Seattle Children's Hospital and professor in the Department of Surgery at the University of Washington School of Medicine. He served as chief of the Division of Plastic Surgery from 1977 to 2001 and also attends at University of Washington Medical Center, Harborview Medical Center and the Veterans Affairs Puget Sound Health Care System Hospital. He does didactic and clinical teaching at the University of Washington. His clinical interests include reconstructive burns and general plastic surgery, and his research interests include hypertrophic scarring and wound healing.

Jeffrey B. Friedrich, MD, is an attending surgeon at Seattle Children's Hospital and assistant professor in the Department of Surgery at the University of Washington School of Medicine. He also attends at the Harborview Medical Center where he is primarily based. He earned his MD from University of Texas Houston Medical School, followed by plastic surgical training at the University of Washington as well as a hand surgery special fellowship at the Mayo Clinic in Rochester, Minn. Friedrich's clinical focus is on hand surgery and reconstructive microsurgery. Friedrich does didactic and clinical teaching and has hospital appointments at Children's, Harborview Medical Center, University of Washington Medical Center, Seattle Cancer Care Alliance and the Veterans Affairs Puget Sound Health Care System Hospital.

Joseph S. Gruss, MD, is attending surgeon at Seattle Children's Hospital and professor in the Department of Surgery at the University of Washington School of Medicine. He is the first holder of the Marlys C. Larson Endowed Chair in Pediatric Craniofacial Surgery. He earned his MD in Johannesburg, South Africa, and completed general and plastic surgery training as well as a fellowship in head and neck oncological and craniofacial surgery. He came to Children's in 1991 to establish a state-of-the-art craniofacial surgical program; the Craniofacial Center is now the busiest program of its type in North America. He has pioneered the application of craniofacial techniques to the care of facial trauma and the use of rigid internal fixation of the craniofacial skeleton. In addition he has pioneered numerous techniques in the field of infant cleft and craniofacial surgery. He has supervised and trained fellows from all over the world and is a regular teacher in North America, Europe and the Far East. In 2007, he was an ASMA visiting professor and a specially selected visiting professor at the University of Tennessee, Memphis; Tulane University (New Orleans); Louisiana State University; and Washington University (St. Louis).
Jennifer N. Keagle, MD, is plastic surgeon at Seattle Children’s Hospital and assistant professor in the Division of Plastic Surgery at the University of Washington School of Medicine. She earned her MD from Northwestern University School of Medicine in Chicago. She completed her general surgery and plastic surgery residency at the University of California, San Francisco, and then completed a fellowship in craniofacial surgery at the University of California, Los Angeles. Her clinical practice focuses on acquired and genetic deformities of the face and skull, including cleft lip and palate, deformities of the bones and soft tissues, and jaw abnormalities. Her special clinical interest is in orthognathic/jaw surgery and her basic science research is focused on the genetic basis of facial differences using an inbred mouse model. In 2007, Keagle received an academic enrichment fund for her study “A morphologic and genetic study of mouse craniofacial variability.”

Matthew B. Klein, MD, MS, is attending surgeon at Seattle Children’s Hospital and associate professor in the Department of Surgery at the University of Washington School of Medicine. He also attends at the Harborview Medical Center where he is primarily based. He is the associate program director for the plastic surgery residency program at the University of Washington. He earned his MD from Yale University and an MS in epidemiology from the University of Washington. Klein does didactic and clinical teaching and has hospital appointments at Children’s, Harborview Medical Center, University of Washington Medical Center and the Veterans Affairs Puget Sound Health Care System Hospital.

David W. Mathes, MD, is attending surgeon at Seattle Children’s Hospital and assistant professor in the Department of Surgery at the University of Washington School of Medicine. He is chief of the plastic surgery service at the Veteran Affairs Puget Sound Health Care System Hospital. His clinical interests include plastic and reconstructive surgery, cosmetic surgery and reconstructive microsurgery. His research interest involves the field of composite tissue transplantation. He is currently working with a research group at Fred Hutchinson Cancer Research Center to explore methods of inducing tolerance to foreign tissues.

Peter C. Neligan, MD, is a professor in the Departments of Surgery and Otolaryngology-Head and Neck Surgery at the University of Washington. He is section chief of plastic surgery at the University of Washington Medical Center. He received his medical education at the University of Dublin, Trinity College, and has completed fellowships in surgical research, pediatric plastic surgery, microvascular surgery and burn surgery. He served as chief of plastic surgery at Toronto General Hospital from 1996 to 2007, and was university chair of plastic surgery during that same period. He is active in numerous societies and currently serves as president-elect of the Plastic Surgery Educational Foundation and vice-president of the American Society for Reconstructive Microsurgery. He also serves on the board of the American Society of Plastic Surgeons and the American Head and Neck Society. He is widely published in the area of reconstructive microsurgery and is editor-in-chief of the Journal of Reconstructive Microsurgery. His clinical practice focuses on reconstructive microsurgery, and he is particularly interested in the surgical treatment of facial paralysis using functioning muscle transfer as a means of reanimating the paralyzed face. His current research interest is in the area of functioning component transplantation in the area of facial reconstruction.

Hakim K. Said, MD, is attending surgeon at Seattle Children’s Hospital and assistant professor in the Department of Surgery at the University of Washington School of Medicine. He also attends at the University of Washington Medical Center. He earned his MD from the University of Michigan, followed by plastic surgical training at Northwestern University and a reconstructive microsurgery fellowship at MD Anderson Cancer Center in Houston, Texas. He does didactic and clinical teaching at Children’s, University of Washington Medical Center, Harborview Medical Center and Seattle Cancer Care Alliance. His clinical focus is on microsurgical reconstruction with a special interest in aesthetic reconstruction as well as clinical outcomes research.

Nicholas B. Vedder, MD, is attending surgeon at Seattle Children’s Hospital and chief of the Division of Plastic Surgery at the University of Washington School of Medicine. He is professor in the departments of Surgery and Orthopedics and in the Division of Plastic Surgery at the University of Washington. His clinical and research interests include plastic and reconstructive surgery, hand surgery and reconstructive microsurgery.
AWARDS AND HONORS

Richard A. Hopper, MD
Washington Society of Plastic Surgeons Golden Scalpel Award.
Northwest Society of Plastic Surgery Best Members Oral Presentation.

TEACHING AND PRESENTATIONS

Craig B. Birgfeld, MD


Joseph S. Gruss, MD


Richard A. Hopper, MD


Peter C. Neligan, MD


The Division of General and Thoracic Surgery includes dedicated pediatric surgeons who provide comprehensive care for infants and children with a wide variety of surgical conditions. The division’s patients range from newborns with birth defects to adolescents, teens and young adults with problems that are best treated in a children’s hospital environment. Our faculty’s experience covers the entire spectrum of pediatric surgical problems, including expertise with minimally invasive surgery, and nonsurgical options when appropriate.

Working with the Seattle Children’s Hospital’s outstanding hematology and oncology program and with the bone marrow transplant program, the Division of General and Thoracic Surgery maintains a strong clinical and research interest in childhood cancer treatment. We also partner closely with the nationally renowned Nephrology and Gastroenterology Divisions at Children’s, yielding a wealth of experience with patients who have end-stage organ failure, inflammatory bowel disease and upper gastrointestinal problems. Our research has focused on surgical outcomes, innovative uses of minimally invasive surgery and robotics, surgical oncology and solid organ transplant. The division is actively involved in using the principles of the Toyota Production System and lean methodology and developing ways to apply these concepts to medicine. We believe that these tools will allow us to provide better patient care and be more responsive to the needs of our patients and referring providers.

Surgical education and training is also an important area of scholarship. Several of the division’s faculty are active in University of Washington School of Medicine programs for medical students. General surgery residents from training programs throughout the Puget Sound region do clinical rotations with our service, and we offer an ACGME-accredited fellowship training program in pediatric surgery. Graduates of our program are broadly trained and have taken positions in many academic and private teaching institutions throughout the country, confirming our reputation as one of the top pediatric surgery programs in the country.

**FACULTY**

John H.T. Waldhausen, MD, Chief  
Adam B. Goldin, MD, MPH  
Kenneth W. Gow, MD  
Patrick J. Healey, MD  
Stephen S. Kim, MD  
Daniel J. Ledbetter, MD  
Robert S. Sawin, MD

**PROFESSIONAL PROFILES**

John H.T. Waldhausen, MD, is chief of the Division of General and Thoracic Surgery at Seattle Children’s Hospital and professor in the Department of Surgery at the University of Washington School of Medicine. He also attends at Children’s Bellevue Clinic and at Seattle Children’s in the Division of Transplant Surgery. He is director of the pediatric surgery fellowship and of general surgery resident education at Seattle Children’s. Waldhausen’s primary research is in clinical outcomes. His clinical activities cover the broad range of pediatric surgery with a focus on minimally invasive surgery, congenital surgical problems and pediatric cancer surgery. Waldhausen received his MD from Pennsylvania State University College of Medicine, Hershey, Penn. He completed his residency at the University of Virginia and his fellowship at the University of Washington.
Adam B. Goldin, MD, MPH, is pediatric surgeon at Seattle Children’s Hospital and assistant professor in the Department of Surgery at the University of Washington School of Medicine. He received his MD from Rush Medical College of Rush University, Chicago. He completed his general surgery residency and clinical research fellowship at the University of Washington and earned his MPH in epidemiology at the university’s School of Public Health. He also completed a pediatric surgery fellowship at Children’s Hospital of Wisconsin. Goldin cares for children in Seattle Children’s general and thoracic surgery clinics and has expertise and training in laparoscopic surgery. Specific areas of clinical interest include pediatric tumors, neonatal surgery and laparoscopic surgery. Specific areas of research interest include clinical outcomes and quality of care in pediatric surgery. Goldin believes in maintaining the highest standard of care throughout the scope of pediatric general and thoracic surgery. He believes in continual re-evaluation of surgical care delivery methods, with particular attention to individually and culturally sensitive delivery.

Kenneth W. Gow, MD, is attending surgeon at Seattle Children’s Hospital and associate professor of surgery at the University of Washington School of Medicine, joining the faculty in September 2007. He received his MD at the University of Manitoba. He completed his general surgery residency at the University of British Columbia, a pediatric general surgery fellowship at British Columbia Children’s Hospital and a pediatric surgical oncology fellowship at St. Jude Children’s Research Hospital. His area of interest and research is pediatric surgical oncology. He is interested in developing new tools for visualization of tumors to assist diagnosis, staging and resection.

Patrick J. Healey, MD, is chief of the Division of Transplant Surgery at Seattle Children’s Hospital. He received his MD from Boston University School of Medicine. He completed his general surgery residency at the Hartford Hospital. He completed fellowship training in abdominal transplantation and pediatric surgery at the University of Washington and Children’s, respectively. Dr. Healey has expertise and training in pediatric transplantation, specifically of the liver and kidney. He is a member of the UNOS Organ Availability Committee (2007–2008) and the UNOS Pediatric Committee (2007–2009). His clinical and research interests include transplantation in infants and small children, neonatal surgery, congenital anomalies and pediatric tumors.

Stephen S. Kim, MD, is attending surgeon at Seattle Children’s Hospital; he is assistant professor in the Department of Surgery at the University of Washington School of Medicine and adjunct assistant professor in the Department of Bioengineering. He received his MD from the University of Virginia School of Medicine. He completed his general surgery residency at the University of Chicago hospitals, his surgery research fellowship at Children’s Hospital Boston and his pediatric surgery fellowship at Seattle Children’s. Kim attends and consults on the inpatient service and sees outpatients in the general and thoracic surgery outpatient clinics. His clinical interests include neonatal surgery, minimally invasive and robotic surgery and gastrointestinal diseases. His basic science research interests include tissue engineering of the gastrointestinal tract. Kim’s recent manuscript was honored as best manuscript by a new member by the Association for Academic Surgery. In 2007 he also received Children’s Research Institute’s basic science steering committee award.

daniel J. Ledbetter, MD, is attending surgeon at Seattle Children’s Hospital and associate professor in the Department of Surgery at the University of Washington School of Medicine. He received his MD from University
of Florida College of Medicine. Ledbetter completed his residency at the University of Washington and his fellowship at Children’s. He performs pediatric general and thoracic surgery and has special interests in thyroid, parathyroid and other endocrine surgery and in neonatal surgery. He also has special interest and is certified in surgical critical care of newborns, infants and children.

Robert S. Sawin, MD, is surgeon-in-chief at Seattle Children’s Hospital and vice chairman of the Department of Surgery at the University of Washington School of Medicine. He completed his residency at Harvard’s Brigham and Women’s Hospital and completed a fellowship at Children’s. Sawin helped establish the liver transplant program at Children’s and its ECMO (extra-corporeal membrane oxygenation) program; in 1990 he performed the first pediatric liver transplant in the Northwest with James Perkins, and he performed the region’s first ECMO cannulation. In addition to a clinical interest in pediatric liver and tumor surgery, Sawin developed a research interest in the biology of pediatric tumors. He was an active member of the national oncology cooperative and the Children’s Cancer Group, and has published many articles on subjects related to cancer surgery, including the treatment of neuroblastoma, sarcomas and Wilms tumor. Sawin has been active in many regional, national and international surgical societies, and has served as secretary of the Pacific Association of Pediatric Surgeons and secretary-treasurer of the North Pacific Surgical Association.

Awards and Honors

Kenneth W. Gow, MD
Top Surgeons, Pediatric Surgery.

Robert S. Sawin, MD
Listed in “Top Doctors.” Seattle magazine.
Listed in “Top Doctors.” Seattle Metropolitan magazine.

John H.T. Waldhausen, MD
Distinguished Alumnus Award. Department of Surgery. University of Washington School of Medicine.

Teachings and Presentations

Kenneth W. Gow, MD


Patrick J. Healey, MD


Stephen S. Kim, MD


Robert S. Sawin, MD


John H.T. Waldhausen, MD


PUBLICATIONS


Smith JM, Corey L, Healey PJ, Davis CL, McDonald RA. Adolescents are more likely to develop post-transplant lymphoproliferative disorder after primary Epstein-Barr virus infection than younger renal transplant recipients. *Transplantation.* Jun 2007;83(11):1423–1428.


The Division of Neurosurgery provides inpatient and outpatient surgical services for patients from infancy through young adulthood. The division’s mission primarily focuses on providing cutting-edge operative treatment of the brain and spine, but it also provides excellent routine clinic access five days a week with three board-certified pediatric neurosurgeons and three experienced pediatric nurse practitioners. We have also implemented intermittent weekend clinics to improve access for our patients. Another unique feature of this division is our surgeons’ ability and willingness to provide a continuum of high-quality care at the University of Washington Medical Center and Harborview Medical Center for our adult patients with congenital diseases once they graduate Seattle Children’s Hospital. The neurosurgery staff work in a robust, cooperative, multidisciplinary manner with many medical and surgical specialties at Children’s, consulting with colleagues in anesthesia, neurology, general surgery, developmental pediatrics, genetics, orthopedic surgery, rehabilitation medicine and at the Craniofacial Center.

The emphasis of our Division is treating congenital conditions of the central nervous system as well as brain and spinal cord tumors, epilepsy, vascular diseases, trauma and craniofacial anomalies. Our nationally renowned multidisciplinary referral programs encompass four areas: craniofacial surgery, epilepsy surgery, neuro-oncology (brain tumors) and congenital conditions (hydrocephalus, Chiari malformations and birth defects). The division is also involved in basic, clinical and translational research programs that aim to improve the health of children with neurological disease. There are three areas of research emphasis in our Division: epilepsy; hydrocephalus and CSF proteomics; and molecular imaging and targeting therapies of brain tumors.
trends and mechanisms of protein production in the CSF of children with hydrocephalus. In addition, Avellino is studying evolving endoscopic techniques in a variety of challenging patients with hydrocephalus, with the goal to provide treatments that are minimally invasive and safer for this common condition.

**Richard G. Ellenbogen, MD**, is professor and chairman in the Department of Neurological Surgery at the University of Washington School of Medicine, and he attends at both Harborview Medical Center and Seattle Children's Hospital. He is the current recipient of the Theodore S. Roberts Endowed Chair in Pediatric Neurosurgery at Children's. Ellenbogen received his MD from Brown University in Providence, R.I. Ellenbogen received NIH funding for his study of the imaging and clinical diagnosis of a congenital condition called Chiari malformation and syringomyelia. He maintains a large referral practice of children with this condition with the goal of developing safer and more effective treatments. In addition, he is a principal investigator (NIH/NCI) with Drs. Jim Olson (pediatrics) and Miqin Zhang (engineering/nanotechnology) in the molecular imaging nanotechnology platform at the University of Washington that aims to develop novel intraoperative molecular imaging techniques and safer and more effective targeted therapies in the treatment of malignant brain tumors.

**Jeffrey G. Ojemann, MD**, is an attending neurosurgeon and the director of epilepsy surgery at Seattle Children’s Hospital. He is also an associate professor in the Department of Neurological Surgery at the University of Washington School of Medicine and has held the Richard G. Ellenbogen Endowed Chair in Pediatric Neurosurgery at Children’s since 2004. After graduating with a degree in physics from Princeton University, Ojemann received his MD from Washington University in St. Louis, Mo. Ojemann receives several sources of extramural funding (NIH, NSF and foundations) and leads the research program in surgical epilepsy. He collaborates across many disciplines at the University of Washington and Children’s, such as neurology, computer science and neuropsychology. Ojemann and his team are studying innovative brain mapping approaches that preserve brain function and improve surgical outcomes. He is using fMRI as a less invasive tool to understand brain function and dysfunction. The goal is to gain knowledge on the functional anatomy and physiology of the brain in disease states such as tumors and epilepsy using animal models and noninvasive imaging techniques. His research includes studying signals for a brain–computer interface that could restore neurologic function across many types of injury.

**AWARDS AND HONORS**

**Anthony M. Avellino, MD**
Listed in *Guide to America’s Top Surgeons*.

**Jeffrey G. Ojemann, MD**
Listed in “Top Doctors.” *Seattle Metropolitan* magazine.

**TEACHING AND PRESENTATIONS**

**Anthony M. Avellino, MD**


Richard G. Ellenbogen, MD


Jeffrey G. Ojemann, MD


PUBLICATIONS


Ophthalmology

The Division of Ophthalmology works in conjunction with other specialists to provide the full spectrum of medical and surgical treatment options for eye diseases in childhood. The division includes an outpatient clinic, a visual sensory laboratory and an ocular motor laboratory.

Our Eye Clinic is staffed by two full-time pediatric ophthalmologists, residents from the University of Washington School of Medicine and ophthalmic technicians who are dedicated to providing high-level, comprehensive care for infants and children with eye problems. The Ophthalmology Clinic provides standard eye evaluations for children with straightforward eye problems and consultations for children with complex ocular and medical problems. Diagnostic evaluations, by a team of clinicians and vision scientists, employ state-of-the-art technology. Behavioral testing and visual evoked potential are used to assess vision in preverbal infants and nonverbal children. Electroretinograms probe function of the macula and retina while confocal microscopy provides corresponding anatomic details about these structures in children with retinal diseases. Visual field testing and transient visual evoked potentials measure optic nerve function and supply information about cortical processing of visual inputs to the brain. Children with strabismus and eye movement abnormalities receive the benefit of eye muscle imaging technology and quantitative analysis of their eye movements.

The division's most recent accomplishments include 1) comparison of visual deficits in children with visual pathway tumors using visual evoked potentials and perimetry, 2) assessment of visual development in infantile nystagmus, 3) reappraisal of astigmatism induced by periorcular capillary hemangioma and treatment with intralesional corticosteroid injections and 4) retinal function and corresponding histology in children with advanced retinoblastoma. Our research provides valuable information for the care of our patients and improves our ability to communicate with the family about the underlying problems of their child’s vision disability.

Dr. Francine Baran, a pediatric ophthalmologist, was recruited recently to Seattle Children’s. Her primary focus is patient care and serving the needs of infants and children with routine and complex eye problems. The addition of Baran has enabled Children’s to expand vision services to children across the Northwest region.

FACULTY

Avery H. Weiss, MD, Chief
Francine M. Baran, MD
John P. Kelly, PhD
James O. Phillips, PhD

PROFESSIONAL PROFILES

Avery H. Weiss, MD, is chief of the Division of Ophthalmology at Seattle Children’s Hospital and professor in the Department of Ophthalmology at the University of Washington School of Medicine. His clinical interests include visual disorders, eye movement abnormalities, cataract and glaucoma, retinoblastoma and orbital tumors, ocular malformations and ophthalmological manifestations of systemic diseases. His research focuses on four areas: 1) assessment of optic nerve and visual cortical function in infants with optic nerve and brain malformations, visual pathway tumors, amblyopia and cerebral visual impairment; 2) analysis of eye movement abnormalities in children with brain
tumors, CNS malformations, brain injuries, autism and nystagmus; 3) characterization of abnormalities of the oculomotor plant in craniofacial disorders; and 4) assessment of macular development, probing local retinal function and development of retinal imaging techniques to study congenital and genetic retinal diseases. He served on the editorial board of *EyeNet*, official journal of the American Academy of Ophthalmology, and he received an honor award in recognition of his contributions to the Academy. He served as a medical consultant for ABC News, and he has been ad hoc reviewer for more than 15 journals. He is an active member of COG and several other pediatrics and ophthalmology associations.

**Francine M. Baran, MD**, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Ophthalmology at the University of Washington School of Medicine. She received her MD at MCP Hahnemann School of Medicine, Philadelphia, Pa. She completed fellowship training in pediatric ophthalmology at Children’s Hospital National Medical Center, Washington, D.C. She specializes in pediatric ophthalmology and adult strabismus. Her interests include resident teaching and the mechanisms behind the development of myopia.

**John P. Kelly, PhD**, is a research assistant professor of Seattle Children’s Hospital and adjunct research assistant professor at the University of Washington School of Medicine. He completed a postdoctoral fellowship at the University of Washington. He is responsible for clinical electrophysiology and clinical testing in pediatric patients. His interests include application of signal processing algorithms for objective measurement of visual responses, brain adaptations during treatment of amblyopia, retinal imaging by scanning laser ophthalmoscopy, prognostic research of cortical visual impairment and cortical blindness, optic pathway tumors, optic nerve diseases and other common pediatric vision disorders. His interests also extend to development of advances in technology; he is consultant to the human interface laboratory in the College of Engineering at the University of Washington.

**James O. Phillips, PhD**, is researcher at Seattle Children’s Hospital and research associate professor in the Department of Otolaryngology–Head and Neck Surgery at the University of Washington. His focus is translational research, taking innovations in basic neurophysiology and genetics and applying them to the diagnosis and treatment of clinical disorders in children. The Roger H. Johnson Clinical Oculomotor Laboratory (COL) is a result of this interest. The COL is a world-class clinical and research laboratory created through collaboration between basic scientists and clinicians at Children’s and the University of Washington. The COL uses innovations from testing in nonhuman primates and adult patients at the University of Washington to guide the development of testing in pediatric patients. In addition, the COL is used for basic scientific inquiry into the neural mechanisms underlying pediatric disorders. With his colleagues, Phillips is studying the mechanisms and progression of pediatric vestibular disorders associated with congenital hearing loss, such as Usher syndrome, and the basic cerebellar mechanisms potentially underlying autism and developmental delay.
**RESEARCH FUNDING**

**New**  
*James O. Phillips, PhD*  
Gravitational influence on cerebellar control of gaze movement and adaptation. NASA/FSB. $187,426.

University of Washington Research Core Center. NIDCD. $500,000.

Vestibular and optokinetic testing for research and clinic. NIDCD. $140,000.

**Continuing**  
*James O. Phillips, PhD*  
Linking cerebellar pathology to functioning in individuals with autism: implications for translational research. NAAR. $55,000.

Neurobiology and genetics of autism: project II precursors to language. NIH/NICHD. $30,000.

Neurophysiological studies of electrical stimulation for the vestibular nerve. NIDCD. $353,475.


Deficits in auditory and vestibular function in episodic ataxia type-1: a comparison of auditory and vestibular function in human patients and mouse models. Schmitt Research Award.

Vestibular influences on movement. NIH/NIDCD. $29,511.

**TEACHING AND PRESENTATIONS**

*Francine M. Baran, MD*  


*Avery H. Weiss, MD*  

**PUBLICATIONS**


The surgeons in the Division of Oral and Maxillofacial Surgery provide surgical treatment of congenital and acquired conditions of the jaws, teeth and face. We provide a range of inpatient and outpatient services, including surgical correction of jaw deformity, cleft lip and palate and craniofacial abnormalities. Maxillofacial trauma, head and neck infection and pathology of the oral cavity and jaws are also managed. The division also offers minor oral surgery for medically compromised children. Our staff has extensive experience caring for children of all ages with disabling conditions.

We work closely with orthodontists and surgeons from other specialties to provide comprehensive, coordinated treatments to improve facial function and appearance by creating facial symmetry, properly aligning the jaws and ensuring proper placement of teeth. Research in the division focuses on facial growth, distraction osteogenesis and cleft management.

PROFESSIONAL PROFILE

Mark A. Egbert, DDS, is chief of the Division of Oral and Maxillofacial Surgery (OMS) at Seattle Children’s Hospital and associate professor in the Department of Oral and Maxillofacial Surgery at the University of Washington School of Dentistry. He served as chief of OMS trauma services and chair of the dental department at Harborview Medical Center for 12 years. Egbert received his dental and OMS training at the University of Washington and spent one year studying OMS at the Gemeente Ziekenhuis, Arnhem, Netherlands. His particular interests include the biological basis of facial growth and development, the management of cleft lip and palate, applications of distraction osteogenesis in the correction of facial anomalies and the treatment of pediatric oral and maxillofacial pathology. Egbert serves on numerous review boards for journals, including the International Journal of Oral and Maxillofacial Surgery, the American Journal of OMS and Triple O. His professional society memberships include the AAOMS and ACPA, and he has served as president of the Western Society of OMS and the Washington State Society of OMS. He chairs and serves on committees of the American Association of OMS. He has served on the examining committee of the American Board of Oral and Maxillofacial Surgery.

FACULTY

Mark A. Egbert, DDS, Chief

PUBLICATIONS

The Division of Otolaryngology manages the complete spectrum of pediatric otolaryngologic disorders, including hearing and speech problems, tonsil disease and sleep apnea, head and neck masses including thyroid disease and cancer, upper airway obstruction and voice problems. The division comprises six pediatric otolaryngologists and one nurse practitioner. The division is closely associated with the Childhood Communication Center, which brings together staff from audiology, the cochlear implant team, education, genetics, pediatrics, psychiatry and speech language services to provide multidisciplinary care to children with communication needs. Division members also participate in the Craniofacial Center to serve children with cleft lip and palate and other craniofacial disorders.

The division has several subspecialty clinics. The Hearing Loss Clinic provides a multidisciplinary evaluation of children with hearing problems. The Vascular Anomalies Clinic treats children with birthmarks ranging from port wine stains to large vascular tumors. Other specialty clinics include the Complex Airway Clinic, Voice Clinic, Microtia Clinic, Velopharyngeal Insufficiency Clinic and Chronic Sinusitis Clinic. The division is closely affiliated with the University of Washington and the Virginia Merrill Bloedel Hearing Research Center in its research efforts. In addition, the division supports basic science research focusing on lymphatic malformations. Ongoing research projects include speech processing for young cochlear implant recipients, gene mapping for vasculogenesis in vascular anomalies, immunologic profiling in chronic sinusitis patients, outcomes with speech surgery and ototoxicity.

The Division of Otolaryngology is involved in training otolaryngology residents from the University of Washington and Madigan Army Medical Center. We offer a one-year clinical fellowship in pediatric otolaryngology. Fellows may also pursue a second year of research funded by the University of Washington Department of Otolaryngology NIH Training Grant.

**FACULTY**

Scott C. Manning, MD, Chief  
Eunice Y. Chen, MD, PhD  
Andrew F. Inglis Jr., MD  
Henry C. Ou, MD  
Jonathan A. Perkins, DO  
Kathleen C.Y. Sie, MD

**PROFESSIONAL PROFILES**

**Scott C. Manning, MD,** is chief of the Division of Otolaryngology at Seattle Children’s Hospital and professor in the Department of Otolaryngology-Head and Neck Surgery at the University of Washington School of Medicine. He is president of the Northwest Academy of Otolaryngology. Manning earned his MD from Tulane Medical School, completed his residency at University of Texas Southwestern Medical Center at Dallas, and did a fellowship in pediatric otolaryngology in Pittsburgh. He served as chief of pediatric otolaryngology at Parkland Hospital and Dallas Children’s Hospital. Manning is president-elect of the American Society of Pediatric Otolaryngology. His clinical interests are pediatric sinusitis, chronic ear disease and vascular anomalies.
Eunice Y. Chen, MD, PhD, is the newest member of the Division of Otolaryngology at Seattle Children’s Hospital and acting assistant professor in the Department of Otolaryngology-Head and Neck Surgery at the University of Washington School of Medicine. She earned her MD and PhD in cancer biology at Stanford University School of Medicine and completed residency training in otolaryngology-head and neck surgery at Stanford University Medical Center. She did her pediatric fellowship training at Children’s. Her clinical practice and interests involve all aspects of pediatric otolaryngology while her research focuses on the basic science of vascular anomalies.

Andrew F. Inglis Jr., MD, is attending physician at Seattle Children’s Hospital and assistant professor in the Department of Otolaryngology-Head and Neck Surgery at the University of Washington School of Medicine. His work focuses on pediatric airway diseases and general pediatric otolaryngology. Among his clinical and research interests are diseases of the larynx, including laryngeal stenosis and recurrent respiratory papillomatosis. He is on the national Recurrent Respiratory Papillomatosis Task Force.

Henry C. Ou, MD, is otolaryngologist at Seattle Children’s Hospital and assistant professor in the Department of Otolaryngology-Head and Neck Surgery at the University of Washington School of Medicine. Ou earned his MD at the Washington University School of Medicine, did his residency training in otolaryngology at the University of Washington and obtained a pediatrics fellowship at Children’s and the University of Washington. While he practices all aspects of pediatric otolaryngology, his primary research interests are hearing loss and cochlear implantation.

Jonathan A. Perkins, DO, is otolaryngologist at Seattle Children’s Hospital and associate professor in the Department of Otolaryngology-Head and Neck Surgery at the University of Washington School of Medicine. Perkins earned his DO at the University of Osteopathic Medicine and Health Sciences, did his residency training in otolaryngology at Madigan Army Medical Center in Fort Lewis, Wash., and completed a pediatrics fellowship at Children’s and the University of Washington. While he practices all aspects of pediatric otolaryngology, his primary research interests are communication disorders and vascular anomalies of the head and neck.

Kathleen C.Y. Sie, MD, is director of the Childhood Communication Center at Seattle Children’s Hospital and associate professor in the Department of Otolaryngology-Head and Neck Surgery at the University of Washington School of Medicine. She developed the Childhood Communication Center in 2002 to optimize the multidisciplinary care available to children with complex communication needs. She also participates in the Craniofacial Center. She earned her MD from the University of Michigan Medical School, completed a residency in otolaryngology and a fellowship in auditory research at the University of Washington, and completed a clinical fellowship in pediatric otolaryngology at Children’s Hospital Boston. Her clinical efforts are focused on communication issues of childhood. She directs the Hearing Loss Clinic and co-directs the Cochlear Implant Program. Sie performed the first cochlear implant at Children’s in 1994, and performed all of Children’s cochlear implants until 2005. She also works with speech language pathologists in the evaluation and management of children with velopharyngeal insufficiency (VPI), and she works with colleagues to perform complex auricular reconstruction using autologous tissue and on prosthetic management of microtia. Her research efforts have focused on surgical outcomes in VPI management and epidemiological studies on pediatric cochlear implantation.
AWARDS AND HONORS

Andrew F. Inglis Jr., MD
Listed in “Top Doctors.” _Seattle_ magazine.
Listed in “Top Doctors.” _Seattle Metropolitan_ magazine.

Scott C. Manning, MD
Listed in “Top Doctors.” _Seattle Metropolitan_ magazine.

Jonathan A. Perkins, DO
Listed in _America’s Top Doctors._

Kathleen C.Y. Sie, MD
Family Choice Award. Family Advisory Council.
Listed in “Top Doctors.” _Seattle_ magazine.
Listed in “Top Doctors.” _Seattle Metropolitan_ magazine.
Listed in _America’s Top Doctors._

TEACHING AND PRESENTATIONS

Andrew F. Inglis Jr., MD

Scott C. Manning, MD


Henry C. Ou, MD
Using the zebrafish lateral line to screen an FDA library for compounds that protect hair cells (co-presenter). 2007 Association for Research in Otolaryngology Midwinter Meeting. Denver, Colo. February 2007.

Jonathan A. Perkins, DO

RESEARCH FUNDING

New

Henry C. Ou, MD

Evaluation of candidate otoprotective compounds in the mouse utricle. University of Washington Royalty Research Fund (RRF) grant. $40,000.

Kathleen C.Y. Sie, MD
Hearing loss and quality of life of children and youth. NIH.

Continuing

Susan J. Norton, PhD
Monitoring of risk factors for late-onset hearing loss among children. CDC/DHHS. $210,835.

Kathleen C.Y. Sie, MD
Development of a standardized scale for ototoxicity. American Society of Pediatric Otolaryngology – CORE grant. $20,000.


Kathleen C.Y. Sie, MD


**Publications**


Transplant Surgery

The Division of Transplant Surgery at Seattle Children's Hospital offers comprehensive care to patients with end-stage disease of the intestine, liver and kidneys. It is the only pediatric intestinal transplant program in the Northwest.

Solid organ transplantation is the treatment of choice for end-stage organ disease in children. We provide consultation, diagnosis, treatment and management for end-stage organ failure with skilled teams of health-care professionals focusing on the needs of our patients and families. A candidate’s team includes the appropriate members from our staff of doctors — board-certified pediatric hepatologists, gastroenterologists, nephrologists, surgeons and transplant surgeons — as well as dietitians and pediatric nurses specially trained in the care of transplant patients. We assist our pediatric transplant candidates and their families before, during and after organ transplantation, providing physical, emotional and financial support for this life-changing experience.

We use advanced technologies and the most current treatment protocols, including state-of-the-art interventional radiological procedures, for improved diagnosis, care, management and recovery. We also provide assistance in accessing and coordinating financial resources.

Educating patients and their families is a critical component of our care. We teach them to monitor and to administer anti-rejection medications and to recognize signs of infection and rejection. We also help them return to a normal lifestyle, and we provide education to patients’ school staff as well as other physicians and care providers. We conduct psychosocial evaluations and follow-up and offer referrals to patient and family support groups.

We have developed an Intestinal Care Program for children with diseases of the intestine requiring total parenteral nutrition (TPN). Another way we advance treatment is by participating in numerous clinical research trials that study new medications and treatments.

Faculty
Patrick J. Healey, MD, Chief
Simon P. Horslen, MBChB
Ruth A. McDonald, MD
Karen F. Murray, MD
Jorge D. Reyes, MD

Professional Profiles

Patrick J. Healey, MD, is chief of the Division of Transplant Surgery at Seattle Children’s Hospital and associate professor in the Division of Transplantation and the Division of Pediatric Surgery in the Department of Surgery at the University of Washington School of Medicine. He received his MD from the Boston University School of Medicine. He completed his general surgery residency at the Hartford Hospital and completed fellowship training in abdominal transplantation at the University of Washington and in pediatric surgery at Children’s. Healey has expertise and training in pediatric transplant, specifically of the liver and kidney. He is a member of the UNOS Organ Availability Committee (2007–2008) and the UNOS Pediatric Committee (2005–2007). His clinical and research interests include transplantation in infants and small children, neonatal surgery, congenital anomalies and pediatric tumors.
I am really looking forward to the installation of a new transplant database, which will help our team manage the large amount of patient information required for safe and effective care. With the amount of time the database will save, we will be able to focus on patient satisfaction, program growth and developing a world-class transplant program with outstanding outcomes.

Karen F. Murray, MD, is director of the Hepatobiliary Program at Seattle Children’s Hospital and program director of Gastroenterology Education; she is associate professor in the Department of Pediatrics at the University of Washington School of Medicine. She received her MD from Johns Hopkins School of Medicine and did a pediatrics residency and a chief resident year at Children’s. She completed a clinical and research fellowship in gastroenterology and nutrition in the combined program at Children’s Hospital Boston and Massachusetts General Hospital, Harvard Medical School. Murray has done research and work in Bangladesh and Tanzania. In addition to clinical care in gastroenterology and transplantation, she has an active clinical research program in hepatology. Her main focus is in the treatment and pathophysiology of hepatitis C viral infection, but her studies also include the treatment of hepatitis B viral infection and nonalcoholic fatty liver disease. Murray is president of Children’s medical staff. She is a member of the Gastroenterology Sub-board Credentialing Committee and the Transplant Hepatology Certificate of Added Qualifications Standard Setting Committee of the American Board of Pediatrics, and is on the steering committees of three National Institute of Diabetes and Digestive and Kidney Diseases clinical research networks related to her research. She mentors pediatrics residents and speaks at the noon conferences at Children’s.
**Jorge D. Reyes, MD**, is director of Transplant Services at Seattle Children’s Hospital and chief of the Division of Transplantation in the Department of Surgery at the University of Washington. He received his MD and a surgery residency in Belo Horizonte, Brazil. He also completed surgical residencies, research positions and fellowships at Harvard, New York Medical College and the University of Pittsburgh. Reyes is internationally known for his research in the development of new immunosuppressive drug therapies and strategies, including the weaning of immunosuppression, and tolerance. He established the intestine program at the University of Pittsburgh, as well as the living donor and split liver transplant programs, and made developmental strides in liver transplantation for primary liver tumors in children. Reyes is medical director for LifeCenter Northwest, and serves on various UNOS committees and on the Advisory Committee on Organ Transplantation (ACOT) of the Health Resources and Services Administration (HRSA).

**TEACHING AND PRESENTATIONS**

**Patrick J. Healey, MD**  
Increased risk of transitional cell carcinoma in renal transplant recipients with bladder augmentation.  


**Simon P. Horslen, MBChB**  


**Ruth A. McDonald, MD**  


Karen F. Murray, MD


Jorge D. Reyes, MD


PUBLICATIONS


Smith JM, Corey L, Healey PJ, Davis CL, McDonald RA. Adolescents are more likely to develop post-transplant lymphoproliferative disorder after primary Epstein-Barr virus infection than younger renal transplant recipients. Transplantation. Jun 2007;83(11):1423–1428.


The Division of Urology is nationally and internationally recognized for its long-standing commitment to and expertise in the care of children with complex genitourinary anomalies. The division’s tradition of innovative clinical research and surgical techniques dates back to the seminal work in the primary repair of exstrophy carried out by Dr. Julian Ansell over 30 years ago. Since that time, we have pioneered other approaches, including the complete primary repair of exstrophy originated by our former division chief, Dr. Michael Mitchell, and current division associate chief, Dr. Richard Grady. We continue to embrace the concepts of minimally invasive open, laparoscopic and robotic pediatric urological surgery under the leadership of the new division chief, Dr. Martin Koyle. Complex patients are treated in multispecialty programs that allow collaboration with colleagues in nephrology, transplant, oncology, endocrinology and neurodevelopmental medicine. A specialized clinic, the Bladder Health Clinic, has been developed to evaluate and care for children with disorders of elimination (dysfunctional elimination) under physician faculty guidance and that of Teresa Soucie, PA-C, and four urology nurse specialists. Such common disorders include enuresis, constipation, recurrent lower urinary tract infections and other medically related urological conditions.

To critically evaluate the results of new approaches to the medical and surgical treatment of pediatric urologic conditions, all of the faculty members jointly have created clinical research protocols to follow these patients and are creating a large-scale relational multiplatform database to track children with a variety of urologic conditions. The division’s research efforts are supported by a clinical research nurse, Amy Anderson, BSN, who assists in protocol development and patient recruitment for a number of clinical research trials, such as the evaluation of complementary medical therapies (i.e., cranberries) to treat urinary tract infections in children, novel treatment for vesicoureteral reflux and medical therapies for voiding dysfunction. Junior faculty members Dr. Margarett Shnorhavorian and Dr. Thomas Lendvay are involved in clinical outcomes research pertaining to pediatric tumors and robotic simulation models, respectively. The latter has led to a close involvement with the newly formed Institute for Surgical and Interventional Simulation Center at the University of Washington, which works on the integration of simulation technologies and learning.

The focus of our basic research laboratory, led by James Bassuk, PhD, is growth regulation of the bladder. Previous efforts in the laboratory have led to current initiatives for regenerative medicine approaches allowing direct translation of applications to our patient population.

The division’s teaching commitment includes an ACGME-approved, nationally respected two-year fellowship in pediatric urology and an active role in the University of Washington as well as the Madigan Army Medical Center urology residency programs. The division’s Dr. Byron Joyner continues as director of the University of Washington Urology Residency Program. Division plans include expansion of the clinical and research faculty in order to meet the growing needs of the local, regional and national communities as well as to increase our presence in the Children’s-sponsored satellite clinics.

**FACULTY**
- Martin A. Koyle, MD, Chief
- James A. Bassuk, PhD
- Richard W. Grady, MD
- Byron D. Joyner, MD
- Thomas S. Lendvay, MD
- Margarett Shnorhavorian, MD, MPH
- Teresa Soucie, PA-C

**PROFESSIONAL PROFILES**

**Martin A. Koyle, MD**, is professor of urology at the University of Washington and chief of the Division of Urology and attending surgeon at Seattle Children’s Hospital. He received his postgraduate urological training at Harvard and the University of California after receiving his MD at the University of Manitoba. His clinical interests are focused around urinary tract infections, vesicoureteral reflux and antibiotics, as well as the fields of transplantation and pediatric urological...
oncology. At present, active clinical research is being carried out in projects pertaining to endoscopic injection therapy for vesicoureteral reflux and the use and efficacy of antibiotics for urinary tract prophylaxis and definitive therapy. Clinically, he has gained recognition for his work in minimally invasive open and endoscopic surgeries, and complex genitourinary reconstruction. At present, active research is being carried out in projects pertaining to endoscopic injection therapy for vesicoureteral reflux and the use and efficacy of antibiotics for urinary tract prophylaxis and definitive therapy. Prior to coming to Children’s in 2007, Koyle was chief of pediatric urology as well as professor of surgery and vice-chief of the Division of Urology at the University of Colorado. During his 19-year tenure there, he was the first to perform laparoscopic nephrectomy in an infant and also the first surgeon in the United States to promote the use of the Malone antegrade continence enema (MACE). He was a pioneer in demonstrating the applicability of the laparoscopic approach to varicoceles and the undescended testis, and in describing the utility of the Bianchi approach for inguinal scrotal pathology. Koyle is past president of the Rocky Mountain Urology Society, the Society for Pediatric Urology and the American Association for Pediatric Urology. As well as being on the editorial boards of The Journal of Urology, Journal of Pediatric Urology and Pediatric Surgery International and being associate editor of Dialogues in Pediatric Urology, he has been an author or co-author on more than 200 peer-reviewed publications, chapters and manuscripts. Recently he co-authored the textbook Pediatric Urology: Surgical Complications & Management. Koyle has received numerous awards and honors throughout his years of practice, of which these are just a few: Selected Member of National Register of Who's Who; named one of America’s Top Doctors six times; listed as one of the Best Doctors in America three times; named Colorado’s Physician of the Year in 2003; selected for Who’s Who in American Education three times; selected for Who’s Who in the World in 2007.

James A. Bassuk, PhD, is an associate professor of urology at the University of Washington School of Medicine, director of the Program in Human Urothelial Biology at Seattle Children’s Hospital, and a founding member of the Center for Tissue and Cell Sciences at Seattle Children’s Hospital Research Institute. He obtained his PhD in zoology from Iowa State University by completing a dissertation titled High Mobility Group Proteins of Drosophila melanogaster. His postdoctoral training at the Fox Chase Cancer Center in Philadelphia was focused on fatty acid binding proteins as molecular targets of liver carcinogens. Bassuk’s current research interests are in urothelial cell biology and in tissue-engineered corrective surgeries for hypospadias and the nonfunctional bladder. In collaborative partnerships with University of Washington biomedical engineers and Children’s urologists, Bassuk founded the Center for Bioengineering and Urologic Research and Development in Seattle (CBURDS).

Richard W. Grady, MD, is associate chief of the Division of Urology. He is also the director of the fellowship program and director of clinical research. Grady is attending physician at Seattle Children’s Hospital and associate professor of urology at the University of Washington School of Medicine. Grady received his MD from the University of Michigan and completed a urology residency at the Cleveland Clinic Foundation. His training includes a research scholarship at the NIH in cell-mediated immunity and a fellowship in pediatric urology at Children’s. Grady’s research interests include urinary tract infection. His clinical research interests include the study of complex congenital anomalies such as extrophy, neurogenic bladder conditions and disorders of sex differentiation. Current projects include the development of a multiplatform relational
clinical database, a study of quality of life in patients with spina bifida (as part of a multicenter project) and several clinical research trials studying methods to treat urinary tract infections in children. Grady is active in regional, national and international urologic societies. He has an interest in international medicine and has been a visiting professor internationally in addition to participating in medical missions to India.

Byron D. Joyner, MD, is associate professor at the University of Washington School of Medicine. He completed his residency at Massachusetts General Hospital, a research fellowship at Children’s Hospital Boston and two years of training at the Hospital for Sick Children in Toronto. He served for four years in the U.S. Army as chief of pediatric urology at Madigan Army Medical Center. Joyner is director of the urology residency program at the University of Washington School of Medicine. He trained in the Seattle Children’s teaching scholars program and received the University of Washington’s Julian S. Ansell Teaching Award for his new approaches to teaching residents about interpersonal and communication skills and professionalism. Joyner has interests in clinical research related to voiding dysfunction and urinary tract infections in children. He is an active member of many professional societies including the American Urological Association, American Academy of Pediatrics, Society of University Urologists and American College of Surgeons.

Thomas S. Lendvay, MD, is an assistant professor of urology at the University of Washington School of Medicine and attending surgeon in the Division of Urology at Seattle Children’s Hospital. He graduated from Rice University in Houston, Texas, with a dual degree in German and biology, and received his MD from Temple University School of Medicine in Philadelphia, Pa. He completed a urology residency at Emory University in Atlanta, Ga., and went on to complete a two-year pediatric urology fellowship at Children’s under Dr. Michael Mitchell. Lendvay’s research interests include surgical simulation education and surgical biorobotics development. He is a member of the University of Washington BioRobotics Lab and has been involved in transcontinental telerobotic surgery demonstrations with NASA. He is research faculty for ISIS (Institute of Surgical and Interventional Simulation) and is developing curricula to train surgical residents in robotic surgery. His clinical research interests include the application of surgical robotics in the correction of urologic congenital birth defects and the impact minimally invasive anti-urinary reflux procedures have had on the treatment of vesicoureteral reflux. Current projects include the development of a portable two-armed surgical robot and the development of automated robotic surgical control mechanisms. Lendvay is active in regional and national urologic societies including being the chairman of the Pediatric Surgery Interest Group in the Society of Laparoscopic Surgeons. He has authored and co-authored more than 10 peer-reviewed manuscripts submitted and accepted this year and was awarded “Best Poster” for two abstracts at the 2007 Medicine Meets Virtual Reality Conference in Long Beach, Calif. In addition, he has given interviews regarding research in telerobotic surgery to national and international media organizations including BBC World News, KBS (Korean Broadcast Station), NPR (National Public Radio) and various online science journals and news blogs.

Margarett Shnorhavorian, MD, MPH, is attending physician at Seattle Children’s Hospital. Shnorhavorian is acting assistant professor of urology at the University of Washington School of Medicine. She received her MD from the University of California, San Francisco, and completed a urology residency at Yale. Her training includes a Master in Public Health from the University of California, Berkeley, and a fellowship in pediatric urology at Children’s. She was recruited to develop clinical outcomes research programs for the Division of Urology. Her clinical research interests include management of antenatal hydronephrosis, long-term outcomes in survivors of childhood cancer and congenital urinary anomalies. She received a clinical research award from the Section of Urology at the 2007 American Academy of Pediatrics National Conference for research on clinical outcomes of complete primary repair of bladder extrophy. She is an expert member of the University of Washington Surgical Outcomes Research Consortium. She is an instructor of ambulatory surgery for University of Washington medical students. She has recently been awarded a K–12 grant in the University of Washington Male Reproductive Health Research program for a collaboration with Children’s, the Seattle Cancer Care Alliance and the University of Washington Department of Epidemiology.
**Teresa Soucie, PA-C**, joined Seattle Children’s Hospital in July 2005, after graduating from the MEDEX Northwest physician assistant program in 1994. From 1994 to 2005 she was in family practice caring for a diverse population of patients of all ages, from newborn to senior, with a wide variety of medical conditions. Soucie was a registered nurse at the University of Washington from 1975 to 1992, where she worked with patients with renal failure requiring dialysis and those preparing for renal transplantation as well as patients with a diversity of urologic problems. During the last five years of her nursing career, she was the nurse manager for the Outpatient Urology Clinic and also was a clinical nurse specialist/educator for patients requiring treatment for prostate cancer and bladder cancer. Her professional path has now come full circle back to urology from adults with urologic problems to children with urologic problems. Soucie truly enjoys her current practice and the team of colleagues she works with at Children’s.

**AWARDS AND HONORS**

**Richard W. Grady, MD**
Listed in “Top Doctors.” *Seattle Metropolitan* magazine.
Listed in “Top Doctors.” *Seattle* magazine.

**Martin A. Koyle, MD**
Listed in *America’s Top Doctors*.
Selected for *Guide to America’s Top Urologists*.
Selected for “Leading Health Professionals of the World.”

**Margarett Shnorhavorian, MD, MPH**

**RESEARCH FUNDING**

**Continuing**

**James A. Bassuk, PhD**
Evaluation of heterogeneity in urothelial cells in interstitial cystitis and clinical management of the disease by recombinant modulators. NIDDK/NIH/DHHS. $155,432.

Heterogeneity in urothelial cells. NIH/NIDDK. $124,818.

Proteins as signals in urothelial cell proliferation. NIDDK/NIH/DHHS. $258,664.

University of Washington Bioengineering Undergraduate Scholars in Research Program, Kiran Dyamenahelli. $2,300.

University of Washington Mary Gates Undergraduate Research Scholarship, Bryson Hicks. $6,000.

University of Washington Mary Gates Undergraduate Research Scholarship, Adam Mina. $6,000.

University of Washington Mary Gates Undergraduate Research Scholarship, Kiran Dyamenahelli. $4,500.

**TEACHING AND PRESENTATIONS**

**Richard W. Grady, MD**


**Byron D. Joyner, MD**


**Martin A. Koyle, MD**


Options in the management of penoscrotal transposition (invited lecturer). II World Congress of the Federation of Associations of Pediatric Surgeons — WOFAPS and VII Congress of Pediatric Surgical Association of the South Cone of America — CIPESUR. Buenos Aires, Argentina. September 2007.


Where are we going with current paradigm changes in vesicoureteral reflux? University of Missouri. Columbia, Mo. December 2007.

**Thomas S. Lendvay, MD**


**Margarett Shnorhavorian, MD, MPH**


**PUBLICATIONS**


Centers
Craniofacial Center

Children’s Craniofacial Center is one of the largest programs of its kind in the country and one of the busiest clinics in the hospital. It comprises an interdisciplinary team of more than 48 members from 17 specialty areas. Our team provides diagnosis and long-term management for children with complex craniofacial abnormalities. We treat all craniofacial conditions, from the most common — cleft lip and palate and craniosynostosis — to the rarest, such as Apert and Treacher Collins syndromes. The Craniofacial Center is organized to meet patients’ medical and surgical needs related to their condition, including breathing, feeding, sleeping, growth, hearing, vision and dental. We also offer prenatal counseling and a craniofacial genetics clinic.

Surgical techniques developed by our craniofacial surgeons are revolutionizing the way craniofacial surgery is done all over the world. These innovative procedures enable doctors to address even the most serious and complex craniofacial abnormalities and to provide the benefits of improved health and a more normal appearance for an increasing number of children. Our leadership team includes both a medical and a surgical director, which strengthens our ability to provide the highest-quality outcomes for our patients.
Seattle Children’s Heart Center is one of the nation’s most comprehensive cardiac programs. We provide extensive cardiac care for fetuses, infants, children and teens and assist with the transition of care into adulthood. Our specialized team includes pediatric cardiologists, cardiac surgeons, cardiac intensive care specialists, cardiac anesthesiologists, nurses, echocardiography technicians and caring staff. We have a national reputation for excellence in a full range of cardiac services and procedures, from advanced catheterization for cardiac defects and heart rhythm disorders, to minimally invasive surgery for the simplest problems, to open heart surgical repairs and transplantation for infants with more complex cardiac problems.

We are committed to the best possible outcome for each patient, with ongoing research into new treatments and technologies, ensuring that Children’s Heart Center will continue to provide state-of-the-art care to all children.
Seattle Children’s Transplant Center offers comprehensive evaluation and care to patients with end-stage diseases of the heart, liver, kidneys and intestines. We are committed to providing optimal growth and quality of life for all of our patients — and helping families return to normal, active lives. The Transplant Center is a leader in pediatric liver, heart and kidney transplant and viral surveillance, and our graft and survival outcomes are excellent. Our liver transplant program is at the forefront of improving surgical techniques for split-liver and living donor liver transplants. Our heart transplant program is an innovative clinical program that can handle complex neonate and infant transplants. Children’s is one of the top five pediatric kidney transplant centers in the United States and is actively involved in multicenter studies to reduce patients’ dependence on immunosuppressive drugs. Our pediatric nephrology fellowship program is one of only six in the country funded by the National Institutes of Health. The center’s intestinal care program, established in 2005, brings together Drs. Simon Horslen and Jorge Reyes, who have more combined experience treating children with intestinal failure than any other physician pair in the nation.

Our physician leadership is also actively involved in shaping national organ donation policy through the United Network for Organ Sharing (UNOS).
The Treuman Katz Center for Pediatric Bioethics at Seattle Children’s Hospital is the first program in the United States to focus on pediatric issues with a broad mission of research, consultation, education and training. The Center was established in 2005 to enhance ethical deliberations in pediatric health care and research throughout the country. Our consultation and research programs provide the foundation for training the next generation of pediatric bioethicists and clinicians.

Each year, the Center sponsors a bioethics conference that focuses on current controversies in pediatric care. The 2007 conference, *Navigating Conflicts When Parents and Providers Disagree about Medical Care*, attracted over 200 participants from around the country.

Our research focuses on the interface between population and individual concerns. We pay particular attention to how these issues relate to parental decision making and chronic illness. Current projects examine research recruitment, genetic testing in children, justice and global health, adolescent decision making, treatment decisions for vulnerable populations and quality improvement in ethics.

The Center coordinates the Clinical Bioethics Consult Service, advising families and clinicians about ethical issues in health care decisions. Faculty have played a leadership role in the development of the Research Bioethics Consult Service, part of the Institute for Translational Health Sciences, which provides advice to researchers, research participants and institutional review boards. This program serves Seattle Children’s Hospital, the University of Washington, the Fred Hutchinson Cancer Research Center and WAMI affiliates.

Our pediatric bioethics fellowship program trains clinicians for careers in bioethics. The program includes a strong academic focus and includes a mentored research project and training in clinical and research ethics consultation. The first fellow will complete training in 2009.

**FACULTY**

**Benjamin S. Wilfond, MD**
Director, Treuman Katz Center for Pediatric Bioethics (see also, Department of Pediatrics, Division of Bioethics)

**Douglas S. Diekema, MD, MPH**
Director of Education, Treuman Katz Center for Pediatric Bioethics (see also, Department of Pediatrics, Division of Bioethics, and Division of Emergency Medicine)

**Ross M. Hays, MD**
Ethics Consultant, Treuman Katz Center for Pediatric Bioethics (see also, Department of Pediatrics, Division of Bioethics, and Department of Rehabilitation Medicine)

**Maureen Kelley, PhD**
Ethics Consultant, Treuman Katz Center for Pediatric Bioethics (see also, Department of Pediatrics, Division of Bioethics)

**David E. Woodrum, MD**
Clinical Director, Treuman Katz Center for Pediatric Bioethics (see also, Department of Pediatrics, Division of Bioethics, and Division of Neonatology)
Seattle Children’s Hospital
Research Institute
Seattle Children’s Hospital Research Institute continues to experience phenomenal growth. Throughout 2007, we made major investments in building the infrastructure and critical mass of research talent that will position us to be national leaders in pediatric medical research.

We are actively recruiting prominent investigators to bring their innovative research programs to Seattle and join our growing scientific community. We continue to develop state-of-the-art space so our research teams have the facilities and sophisticated technical resources they need. Our bold mission — discovering the care and cures of the future — guides this swift progress.

In this section, you will find highlights of some of our most innovative research from 2007, along with a special focus on our unique environment and collaborative culture — discriminators that support our researchers in their quest to find tomorrow’s solutions to some of the most daunting challenges in pediatric medicine today.
Investing for Life-Saving Returns

In 2007, Seattle Children's research program made major leaps forward in preparing for the future. Members are now enrolled in nine interdisciplinary research centers. Investigators, staff and high-tech core resources have filled the Seattle Children's Hospital Research Institute’s 216,000-square-foot Building 1 to capacity, and are spilling over into additional research facilities in downtown Seattle. Our investigators received more than $31 million of grant and contract revenue in 2007 — $19 million in National Institutes of Health (NIH) and other federal funding alone — with more than 500 active studies.

Significant research advances were made in areas such as:

> **Immunology:** Dr. David Rawlings identified a connection between allergic diseases and autoimmune diseases. His study implies that allergic and inflammatory diseases may trigger autoimmune diseases by relaxing the controls that normally eliminate newly produced self-reactive B cells.

> **Cancer:** A study led by Dr. James Olson showed that “tumor paint” is 500 times better than a standard MRI at helping surgeons distinguish between cancer cells and normal tissue. Olson and his team, who are working to bring the paint into human trials, developed the paint from a scorpion-derived peptide called chlorotoxin and Cy5.5, a fluorescent, light-emitting molecule.

> **Health outcomes:** Studies led by Dr. Dimitri Christakis offer new insights into child development: playing with toy blocks may improve language development in young children; watching violent television programs between age 2 and 5 is linked to aggressive and antisocial behaviors in boys when they reach age 7 to 9; and watching educational videos may hinder language development in infants, but it has no positive or negative effect on the vocabularies of toddlers. Dr. Rita Mangione-Smith found that children in the United States fail to get recommended health care more than 50% of the time.

> **Neonatology:** Dr. Daniel Rubens found a strong connection between Sudden Infant Death Syndrome (SIDS) and an abnormality in the inner ear. Rubens’ findings may help doctors identify newborns at risk for SIDS by a simple, affordable and routine hearing test administered shortly after birth.

In 2007, Seattle Children’s also received a $23.7 million NIH grant to study new methods for gene repair, an innovative approach to gene therapy. Dr. Andrew Scharenberg and Dr. David Rawlings co-direct the five-year grant, which supports the Northwest Genome Engineering Consortium (NGEC), a collaboration between Seattle Children’s, the University of Washington (UW) School of Medicine and Fred Hutchinson Cancer Research Center (FHCRC).

“We are growing rapidly and recruiting more of the best and brightest scientific minds to help us achieve our mission,” says Dr. James Hendricks, president of Seattle Children’s Hospital Research Institute. “Our investments in research conducted today will directly improve the future of pediatric health care.”
**New Technique Extends Window for Studying Brain Function**

Simply put, time is a major limitation in studying how neurons function in brain tissue. Specimens are typically rushed to the laboratory so they can be studied within hours. Dr. Laura Jansen is pioneering an innovative new “frozen tissue” technique that allows more time to study these tissues — a major improvement that may lead to significant discoveries in brain research.

Jansen’s research, building on a groundbreaking technique developed by a team of Italian scientists, begins by freezing brain tissue specimens in liquid nitrogen. This stabilizes proteins in the cellular membranes, which are then isolated and injected into an egg of a Xenopus frog.

“Once the cellular membranes naturally fuse with the egg membranes, the proteins and receptors on the surface of the human cell are expressed on the surface of the frog cell,” explains Jansen, a pediatric neurologist and member of the Center for Neurosciences. “The frog cell is alive, so now the proteins and neuronal receptors are functional, giving us much more time to study the process.”

This enables Jansen and her team, whose research focuses on the underlying mechanisms that cause seizures, to measure the activity of the proteins and receptors on the surface of the live frog cell and learn how different receptors respond to various drugs.

Ultimately, the goal is to stop seizures before they become intractable — unresponsive to medications or other treatments — and potentially require brain surgery.

“Despite the most advanced care, there are inherent risks in every brain surgery,” says Jansen. “We want to help identify what groups of epilepsy medications will work best for individual children. This new frozen tissue technique allows much greater opportunity to study these questions.”
Creating a culture of collaboration

Ultimately, research is not about square footage or high-tech equipment.

“It is the interactions, the environment and the philosophy that make discovery happen,” says Hendricks.

Seattle Children’s research philosophy is marked by a strong collegial environment of openness, collaboration and teamwork.

“Groundbreaking research does not occur in a vacuum, confined to individual laboratories,” says Dr. F. Bruder Stapleton, chief academic officer and senior vice president at Seattle Children’s.

“The most innovative research happens when experts from bench, clinical and health-outcomes research collaborate. We believe this makes for better science.”

Seattle Children’s facilities are designed to stimulate interaction among researchers from different disciplines and types of research. Our lab bays reflect this “open laboratory” concept, as does the intermixing of researchers from a variety of scientific specialty areas on each of the 11 stories of Building 1.

“The environment here is, ‘Let’s share, let’s work together, let’s not reproduce everything separately,’” says Dr. Lakshmi Rajagopal, a member of the Center for Childhood Infections and Prematurity Research. “Lab teams interact with each other and talk about what’s working, what’s not working. It’s very open here.”

The desire to stimulate interaction underlies the very structure of the research institute: nine centers organized by common focus areas to promote collaboration and interdisciplinary research. This allows experts in multiple areas to grapple with similar questions — and contribute their perspectives as specialists.

“People from different disciplines are always willing to answer questions and help out,” says Dr. Laura Jansen, a pediatric neurologist and member of the Center for Neurosciences. “It gives you access to hundreds of people and their worlds of experience.”

Conducting full-circle research

Ultimately, this philosophy forms the framework for research that can come full circle: An investigator’s idea, perhaps sparked by a clinical encounter, leads to bench research in the laboratory and yields promising results that can then be transferred to patients, igniting new questions for the lab.

“We aim to move our research beyond bench to bedside to include implementation to practice and evaluating health outcomes in populations,” says Stapleton. “Taking the bench-to-bedside philosophy full circle guides future research and makes it more fine-tuned, focused and effective.”

Helping an Infant’s Heart Heal More Quickly

Seattle Children’s director of cardiac research Dr. Michael Portman wants to know how to hasten an infant’s recovery after open-heart surgery. He thinks thyroid hormone — which affects the body’s response to stress — may be one answer.

“During surgery, thyroid levels can drop more than 50% in some patients and often stay low for days,” Portman says. “We want to know if maintaining higher thyroid hormone levels will help an infant’s heart recover faster and enable them to be taken off a ventilator sooner.”

He’s the first researcher to study how the regulation of thyroid hormone impacts the neonatal heart’s ability to recover after blood flow is restored. Portman and his lab team are using a neonatal pig model to emulate cardiopulmonary bypass surgery and examine the effect of thyroid hormone on the heart.

Portman is also the principal investigator for a large multisite study funded by the Food and Drug Administration that tests whether giving children under age 2 a drug called Triostat (triiodothyronine or T3) after surgery will prevent their thyroid levels from dropping. With nearly 200 participants, the study is the largest ever conducted for babies under 2 years old undergoing congenital heart surgery.

While the results are not yet finalized, Portman is optimistic.

“We anticipate this study will provide valuable guidance of where to look next,” he says. “Ultimately, our goal is to prevent the thyroid levels from dropping in the first place, which we believe will improve heart function and response after the surgery.”
Dr. Colleen Delaney's work to improve cord blood transplantation (CBT) by expanding the number of transplantable stem cells harvested from cord blood is directly inspired by her clinical work with patients at Seattle Children's.

“Patient care is my passion,” says Delaney, a faculty member in the Pediatric Hematology/Oncology Division at Seattle Children's and an assistant member at FHCRC. “I see my lab research as an exciting extension of that care. I start by applying my patients’ experiences to my lab research, which informs my work in creating new CBT protocols and leads to new insights in patient care. I can then refine the questions I need to ask back at the lab.”

Delaney now has five new clinical trials underway. Each provides access to stem cell transplants to patients without a conventional donor match. One protocol is a cutting-edge phase I trial evaluating the safety of infusing cord blood progenitors that have been cultivated in the lab. Although early in the course of the trial, results have been quite promising. Delaney will use the outcomes from these transplants to direct her investigations at the bench and back again to the bedside.

**Forming world-class partnerships**

A signature strength of Seattle Children's research is our strong partnerships with world-class institutions, particularly the UW School of Medicine, the nation’s top-funded public research university, and FHCRC, one of the highest-acclaimed cancer research institutions in the world.

Together, we have created the Seattle Cancer Care Alliance, a joint effort to speed laboratory discoveries into cancer treatments. Investigators from Seattle Children’s, UW and FHCRC formed the NGEC, the NIH-funded partnership to pioneer new approaches to gene therapy. We are also at the forefront of a national NIH-funded movement to eliminate barriers to clinical and translational research.

Partnering with patients and families is at the core of our research. In 2007, Seattle Children's continued expanding the research and family liaison (RFL) role to advocate for a truly informed patient consent process. This means obtaining consents in a family's native language, working more closely with patients and families to make sure their questions are answered, and being certain that they clearly understand their rights while participating in a clinical study.

“This communication is vitally important to conduct research under the highest possible ethical standards,” says Hendricks. “So we want to roll this out as a model program nationwide.”

**Connecting with the community**

Forming partnerships with the community is critical to address complex health problems, such as childhood obesity. That’s why Seattle Children’s collaborates with community organizations like the Austin Foundation, which operates community-based fitness training, nutrition and health awareness programs for about 3,000 youth in Seattle.

“We can offer the Austin Foundation some standardized methods and data to help evaluate the effectiveness of its program,” says Dr. Christian Roth, an endocrinologist and member of the Center for Developmental Therapeutics. “And we benefit by learning the community’s perspective about what motivates participation and..."
engagement in these programs. Overall, we hope our partnership will teach us how we, as scientists, can best help improve physical fitness, decrease obesity and improve the quality of life of children in our region.”

Seattle Children’s also receives extraordinary support from generous donors. We boast the largest guild network of any hospital in the country, most of which raises money to support uncompensated care at the hospital. However, special-interest guilds raise money for other areas, such as research programs.

In 2007, these special-interest guilds, including the Mitochondrial Research Guild and the Hydrocephalus Research Guild, raised nearly $495,000 for research. Since 2002, the Mitochondrial Research Guild alone has raised $800,000 for research and improvements in care. The Children’s Hospital Guild Association also designates an annual funding focus for research, which has raised more than $6 million since 2004. Generous community support also helped establish the Jeffrey Modell Endowed Chair in Pediatric Immunology Research in 2007.

“We have an unsurpassed level of guild support that stretches throughout the region,” says Hendricks. “I see it as the ‘power of one’ that just multiplies. In 1994, we had one mitochondrial researcher at Seattle Children’s. Now we have six — largely because of the support of one guild.”

Olson’s “tumor paint” research — which will enable surgeons to distinguish cancer cells from healthy tissue — was originally funded by guild support.

“The support we receive is inspiring,” says Hansen. “Seattle has an incredible entrepreneurial spirit and a community that understands our mission requires a significant investment. They know the return on that investment will be the life-saving care and cures of the future.”

Preventing Prematurity and Stillbirth

Every year, at least 3 million babies are stillborn and more than 1 million die because they were born too early. In 2007, Seattle Children’s formed the Global Alliance for the Prevention of Prematurity and Stillbirth (GAPPS) to address these serious global health problems.

GAPPS is completing a comprehensive literature review of published and unpublished research on the global impact of preterm birth and stillbirth. It is also identifying gaps in current scientific knowledge and challenges to successful preventive strategies.

Findings will be presented in May 2009 in Seattle at another key program initiative, the International Conference on Prematurity and Stillbirth. The conference will bring together experts from around the world to identify and prioritize recommendations for advancing research and developing new, more effective interventions.

“Our goal is to find the most promising next steps to advance understanding of these worldwide problems, inspire research initiatives and help find solutions,” says Dr. Craig Rubens, who leads the alliance and holds the Guild Association Endowed Chair in Pediatric Infectious Disease Research.

The Bill & Melinda Gates Foundation provided funding for the conference, gap analysis and literature review.
Training future leaders in pediatric research

Seattle Children’s strongly emphasizes training and mentoring the next generation of research leaders. In partnership with the UW School of Medicine, we serve as the primary pediatric teaching resource for the region, drawing highly skilled physician-scientists from around the world.

“We have a large pool of talented physician-scientists here who we believe will be very productive in the years ahead,” says Stapleton. “We are institutionalizing ways to help them gain traction in their careers.”

In 2007, Seattle Children’s increased the number of fellowships awarded, provided a forum for fellows to present their research to the broader community, and developed mentorship programs for young investigators. The support is already paying dividends. In 2007, nearly 30 members of the UW Department of Pediatrics received NIH K awards, given to promising physicians and scientists early in their careers.

“Our investigators and staff are the fuel that powers our research engine,” says Hendricks. “We fully support and train them as they pursue the discoveries we hope will radically improve the health of people of all ages.”

This next generation of leaders will help write the next chapter of Seattle Children’s research story.

“Our goal is to never stop striving,” says Stapleton. “We are never satisfied with the results we get and are always studying how to make them better. Failure is if we ever become satisfied.”

2007 NIH CAREER DEVELOPMENT AWARD (K AWARD) WINNERS

The National Institutes of Health funds various K Awards to support the career development of outstanding investigators. In 2007, 29 members of the UW Department of Pediatrics held K awards.

Lauri Burroughs, MD
Mari Dallas, MD
Jason Debley, MD, MPH
Colleen Delaney, MD
Dan Doherty, MD, PhD
Ian Glass, MD
Carrie Heike, MD, MS
Sangeeta Hingorani, MD, MPH
Lucas Hoffman, MD, PhD
Laura Jansen, MD, PhD
Rachel Katzenellenbogen, MD
Charlotte Lewis, MD, MPH
Rita Mangione-Smith, MD, MPH
Thomas Manley, MD
Carolyn McCarty, PhD
John McGuire, MD
Daryl Okamura, MD
Melissa Parisi, MD, PhD
Julie Park, MD
Jessica Pollard, MD

Tamara Pozos, MD, PhD
Laura Richardson, MD, MPH
Brian Saelens, PhD
Taraneh Shafii, MD, MPH
Akiko Shimamura, MD, PhD
Jodi Smith, MD
Troy Torgerson, MD, PhD
Scott Weissman, MD
Ikuyo Yamaguchi, MD, PhD

How Defective Genes Affect Autoimmunity

Children born with gene defects in their immune systems often face dual challenges: Not only are they unprotected from outside infections, but their natural defenses sometimes turn against them, afflicting them with autoimmune diseases like lupus or juvenile rheumatoid arthritis.

Dr. Troy Torgerson, an immunologist in the Center for Immunity and Immunotherapies, studies the basic science underlying autoimmune diseases. His research examines how mutations in a specific gene, FOXP3, affect the function of regulatory T cells, which control other immune cell functions.

“When FOXP3 is defective, it’s like the immune system has no brakes,” says Torgerson. “It gets activated — even by eating food — and can’t be turned off. It’s completely out of control.”

This gene mutation, found only in males, causes a rare autoimmune disease known as IPEX. Newborns with IPEX are afflicted with severe autoimmune bowel disease, dermatitis and endocrine problems. Without treatment — typically a bone marrow transplant (BMT) — many would die before age 2.

Torgerson studies patient tissue samples from around the world in his role as co-director of the internationally renowned Immunodeficiency Molecular Diagnostics (IMD) lab at Seattle Children’s.

“We then analyze this data using gene sequencing and flow cytometry to determine the molecular basis of the mutation, express it in cell lines and learn more about the function of FOXP3,” says Torgerson. “Ultimately, by accumulating this genetic and clinical data of patients from around the world, we’ve been able to modify BMT protocols and improve patient treatments.”
Fellows and Residents

2007–2008

Seattle Children’s Hospital Fellows

Adolescent Medicine
Kym R. Ahrens, MD
Megan A. Moreno, MD

Allergy/Immunology
Kelly A. Hetherington, MD
Anjuli K. Mehrotra, MD
Thomas E. Scarborough, MD

Anesthesiology
Benjamin M. Chang, MD
Svetlana Helms, DO
Iskra I. Ivanova MD
Thomas R. Latendresse, MD
Heather L. Naumann, MD
Nicholas A. Riegels, MD

Cardiology
Nadine F. Choueiter, MD

Child Psychiatry
Daniel J. Crawford, MD
Michael J. Enenbach, MD
Mohammad Jafferany, MD
Ian M. Kodish, MD
John C. Lowry, MD
Jennifer L. Lowry, MD
L. Janine Morris, MD
Maia S. Robison, MD
Tong Shen, MD
Joshua P. Werblin, MD

Critical Care
J. Elaine Albert, MD
Tellon D. Bennett, MD
Kristina H. Deeter, MD
J. Linsley Di Gennaro, MD
Jeremy S. Hertzig, MD
Kihan Kim, MD
Mithya Lewis-Newby, MD

Emergency Medicine
S. Health Ackley, MD
Elena M. Shephard, MD
Patrick B. Solarz, MD

Endocrinology
Harvey K. Chiu, MD
Rohan K. Henry, MD

Hematology/Oncology
Scott C. Borinstein, MD
Scott J. Diede, MD
Rebecca A. Emmons, MD
Abraham P. Fong, MD
Rabi Hanna, MD
Phoenix A. Ho, MD
Elizabeth H. Villavicencio, MD
Trisha E. Wong, MD

Infectious Disease
Michael J. Gilbert, MD
Audrey R. Odom, MD
Thor A. Wagner, MD

Medical Genetics
Ruxandra Bachmann-Gagescu, MD

Neonatology
Marcella T. Mascher Denen, MD
Annie H. Nyugen-Vermillion, MD
Janna Patterson, MD, MPH
Jessica D. Perkins, MD
Jessica D. Slusarski, MD
Pamela A. Statler Chapman, MD

Nephrology
Susan M. Halbach, MD
Kera E. Luckritz, MD
Yosuke Miyashita, MD
David A. Myers, MD
Allison C. Redpath, MD
Priya Verghese, MD

Neurodevelopmental
Gwen M. Glew, MD

Neurology
Alana S. Golden, MD
Mario T. Coleman, MD
Timothy J. Feyma, MD
Ann E. Hyslop, MD
Randal C. Richardson, MD
Olufemi O. Soyode, MD

Pathology
Robyn C. Reed, MD, PhD

Pulmonary
Danny W. Hsia, MD
Don B. Sanders, MD
Amanda M. Striegl, MD

Radiology
Puneet Bhargava, MD
Harigovinda R. Challa, MD
Molly E. Raske, MD

Rheumatology
Kristen N. Hayward, MD
Christi J. Inman, MD
Sarah Ringold, MD
Elizabeth A. Shaw, DO

Surgery
Stephanie P. Aciero, MD
Jeffrey R. Avansino, MD
Seattle Children’s Hospital Pediatric Residents

Chief Residents
Kelly N. Evans, MD
Eric A. Gustafson, MD
Eric A. Michiels, MD

R1
Seema J. Afridi, MD
Abena E. Boateng, MD
Pia A. Bonura, MD
Lisa M. Cranmer, MD
Jaclyn A. Czaja, MD
Alison L. Dickson, MD
James A. Feinstein, MD
Leslie A. Field, MD
Jennifer H. Foster, MD
Lindsay L. Fox, MD
Emily R. Gallagher, MD
Marah E. Gotcsik, MD
Aaron W. Grigg, MD
Akkiko E. Hall, MD
Jocelyn W. Hanna, MD
Sarah L. Hilgenberg, MD
Porah J. Hong, MD
Carl J. Koschmann, MD
K. Casey Lion, MD
Benjamin Mackowiak, MD
Daniel P. Mallon, MD
Maya Maxym, MD
Jenny S. Radesky, MD
Peter A. Rowinsky, MD
Jenny D. Smokey, MD
Lucie M. Turcotte, MD
Louise E. Vaz, MD
Johannes C. von Alvensleben, MD
Allison A. Young, MD

R2
Lisa M. Barker, MD
Susanne H. Baumeister, MD
Shaquita L. Bell, MD
Chelsea E. F. Bodnar, MD
Kathleen L. Broadman, MD
Jill A. Cook, MD
R. Jason Coryell, MD
Luz M. Gonzalez, MD
Brandon K. Hadland, MD
Kate E. Halamay, MD
Kathleen A. Hannifan, MD
Maria C. Huang, MD
Harbir K. Juj, MD
Mara W. Kelley, MD
Samuel M. Kohn, MD
Jessica A. Lindsay, MD
Alison D. Longnion, MD
Jocelyn R. Manangan, MD
Ami D. Mehta, MD
James B. Metz, MD
Katie R. Nielsen, MD
Shreya J. Patel, MD
Abby R. Rosenberg, MD
Nivedita S. Srinivas, MD
Hannah M. Tully, MD
William C. Van Cleve, MD
Anupama V. Vijay, MD
Thu B. Vu, MD

R3
Mikelle D. Bassett, MD
Andrew C. Beckstrom, MD
Rachel S. Berco, MD
Omar J. Bhutta, MD
Matthew S. Blessing, MD
Ann E. Dahlberg, MD
J. Wesley Diddle, MD
Andrew C. Dietz, MD
Yolanda N. Evans, MD
Reid W. Farris, MD
Rachel A. Fleishman, MD
Erica R. Freeman, MD
Sabrina E. Guse, MD
Hiwat Hiruy, MD
Benjamin K. Jackson, MD
Katie M. Kazmier, MD
Malaika L. Little, MD
Nicolas L. Madsen, MD
Jennifer A. Montoya, MD
Lila N. O’Mahony, MD
Jeffrey R. O’Toole, MD
Vijaya L. Soma, MD
Kristina A. Toncray, MD
Kathryn M. Wheeler, MD
Amie C. Wu, MD
Garland G. Youngblood, MD
Financial Summary
Fiscal Year 2006 – 2007

Dollars in thousands

Children’s Health Care System
Sources of Revenues
Patient service revenues $499,020
Research and other government grants 41,107
Other revenues 25,301
Uncompensated care donations 14,922
Unrestricted donations and restricted donations used in operations 22,625
Investment income* 115,136
Total $718,111

*Includes unrealized investment gains

Uses of Revenues
Uncompensated care $65,430
Salaries and benefits 246,969
Supplies and other expenses 219,193
Depreciation and interest 49,663
Provision for renovation, new equipment and new programs 136,856
Total $718,111

Children’s Hospital Foundation, Guild Association and Retail
Sources of Revenues
Fundraising revenues and support $47,702
Children’s retail (net revenue from gift shops and thrift stores) 448
Subtotal $48,150

Expenses
Fundraising and administrative expenses 8,041
Total $40,109

Contributions to Children’s
Sources of Contributions (% of total $ received)

- 9% Corporations
- 24% Guild projects
- 4% Foundations
- 57% Individuals
- 1% Children’s thrift stores
- 5% Organizations & other donors*

* This category includes donations from service groups (such as Elks, Kiwanis, Foresters) as well as workplace campaigns and non-guild special events.

Uses of Contributions

- 30% Uncompensated care
- 28% Greatest need (unrestricted gifts)
- 13% Fundraising & administration
- 17% Fundraising & support services
- 10% Patient care & hospital programs
- 2% Facilities & equipment
- 3% Patient care, outpatient
- 26% Support services
- 2% Research
- 40% Gift shops & thrift stores
- 29% Patient care, inpatient

Volunteers
An average of 1,100 people contributed time and services each month for a total of 137,062 work hours in 2007. Here’s how they spent their time:
Financial Summary

RESEARCH FUNDING

Sources of Extramural Funding
In 2007 our grant and contract revenue (exclusive of philanthropic gifts) totaled in excess of $31 million. Federal grants accounted for 63% of the total revenue. Included in this federal figure is more than $19 million of National Institutes of Health (NIH) funding where Seattle Children’s was the prime recipient of the NIH award. This NIH funding to Seattle Children’s in 2007 increased by 25% compared to 2006. Based on NIH award data from 2007, Seattle Children’s ranked 11th in its peer group.

STAFF STATISTICS

As of Sept. 30, 2007

> 3,973 active staff employed at Children’s Hospital
> 546 research institute staff:
  – 190 investigators
  – 278 grant-funded research staff
  – 78 research support staff
> 1,065 active medical staff
  – 565 hospital-based physicians
  – 100 hospital-based mid-level health professionals
  – 400 private practice providers

Where Our Physicians Travel to Provide Care
(total of 463 clinic days)

> 4% (20 days) Kennewick, Wash.
> 22% (102 days) Yakima, Wash.
> 20% (93 days) Wenatchee, Wash.
> 36% (158 days) Anchorage & other Alaska locations
> 19% (86 days) Other Washington locations
> 1% (6 days) Montana

2007 PATIENT STATISTICS

> 232,569 annual patient visits (72,542 individual patients)
  – 176,608 appointments in outpatient clinics
  – 33,773 visits to the emergency room
  – 12,785 admissions to the hospital
  – 9,403 short-stay visits
> 250 patient beds
> 5.3 days average length of stay (for all admissions)
> 4,839 inpatients who had surgical procedures
> 6,030 outpatients who had surgical procedures
> 82,069 diagnostic imaging tests performed
> 984,238 laboratory tests performed

Where Our Inpatients Come From

Top 10 Reasons for Inpatient Admissions
(# of admissions)

Asthma 467
Chemotherapy 427
Seizure disorders 416
Bronchiolitis and RSV pneumonia 335
Diabetes 243
Non-bacterial gastroenteritis 230
Cellulitis and other bacterial disorders 222
Appendectomy 219
Cleft lip and palate repair 203
Malnutrition, failure to thrive 184
Acknowledgments

Thank you

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Our Vision

We will be the best children’s hospital

WE WILL:

> Provide patients and their families excellent care with compassion and respect
> Deliver superior, accessible, cost-effective service
> Attract and retain the best talent at all levels of the organization
> Be one of the top five pediatric research institutions in the country
> Be the nation’s premier pediatric educator
> Achieve worldwide prominence by integrating patient care, research, education and advocacy