

UNIVERSITY OF WASHINGTON'S
Seventh Annual Undergraduate Research Symposium
A Celebration of Undergraduates in Research

14 May 2004
MARY GATES HALL
12:00 – 5:00 PM

Please check this schedule often for updated information.

POSTER SESSIONS

FORMAL POSTER SESSIONS: 12:00 – 1:30 AND 3:00 – 3:30

MARY GATES HALL COMMONS AND CLASSROOMS

The formal poster sessions, at which we require all students to be present near their posters, will be from **noon – 1:30 p.m.** and again from **3:00 – 3:30 p.m.** in the Mary Gates Commons. Refreshments will be provided. We ask that all students presenting posters remain with their posters during the formal poster sessions and strongly encourage you to stay near your posters or attend the oral presentation sessions scheduled throughout the afternoon.

My Multiple Life: Personal Information Management Across Different Computer Environments

Adonis Acuario, Senior, Informatics, Psychology

Mentor: Melody Ivory-Ndiaye, Information School

The Effect of Wnt 3a and Wnt 5a on the Proliferation and Migration of Mouse Fibroblasts

Bobby Ahmadi, Senior, Biology

Mentor: Anne Hocking, Plastic Surgery

Mentor: Frank Isik, Plastic Surgery

Powerful Writers Impact Study: Beacon Hill Elementary

Jonathan Aldanese, Senior, Sociology

Zesbaugh Scholar

Mentor: Gary Troia, College of Education

Effects of Small Neutral Osmolytes on the Supercooling Free Energy and Intrinsic Twist and Torsional Rigidity of p30d DNA

Theresa Aliwarga, Senior, Biochemistry, Chemistry

Mentor: David Rangel, Chemistry

Mentor: J. Michael Schurr, Chemistry

Parenting and Marriage: Comparing Parenting Satisfaction of Males and Females and Its Effects on Marriage Quality of New Parents

Jeanne Marie Allen, Senior, Psychology, Communication
Mentor: Sybil Carrere, School of Nursing

Building a Soft X-Ray Diagnostic to View Magnetohydrodynamic Instabilities in Spherical Tokamaks

Annamarie Askren, Junior, Aeronautical and Astronautical Engineering, Astronomy
Mary Gates Scholar, Space Grant Scholar
Mentor: Thomas Jarboe, Aeronautics and Astronautics
Mentor: Roger Smith, Aeronautics and Astronautics

Shape Control Synthesis of Palladium and Iridium Nanoparticles

Leslie Au, Senior, Chemistry, Biochemistry
Mentor: Jingyi Chen, Chemistry
Mentor: Younan Xia, Chemistry

Effects of Exposure to Heterosigma akashiwo Strains on the Embryonic Development of Cyprinodon varigatus (Sheepshead Minnow)

Karen Avery, Senior, Biology
Mentor: Rose Ann Cattolico, Biology
Mentor: Melinda Duplessis, Biology

Imitation Learning in a Robotic Head

Chris Baker, Senior, Computer Science, Statistics
Mary Gates Scholar, McNair Scholar
Mentor: Rajesh Rao, Computer Science and Engineering

How the Ocean affects the Wind

Brandon Ballinger, Sophomore, Physics, Computer Science
Mary Gates Scholar, Space Grant Scholar
Mentor: Kathie Kelly, Applied Physics Laboratory

Assessing Interest Groups Influence on Congressional Decision Making: A Case Study of AIPAC

Rachel Bender, Senior, Political Science
Mary Gates Scholar
Mentor: Bryan Jones, Political Science
Mentor: John Wilkerson, Political Science

The Effect of [Pi] on the Force Generation in Skeletal and Cardiac Muscle: Studying the Molecular Mechanisms of Fatigue

Kristina Bezold, Junior, Bioengineering
Space Grant Scholar
Mentor: Michael Regnier, Bioengineering

A Somatic Palindrome Formation Profile in Pediatric Neuroblastoma Cell Lines

N. Teresa Bleakly, Senior, Neurobiology, Spanish

Mary Gates Scholar

Mentor: Hisashi Tanaka, Biology

Mentor: Meng-Chao Yao, Biology

Robust Statistical Analysis of cDNA Microarrays Utilizing Open-Source Software Packages

Stuart Bowers, Freshman, Chemical Engineering

Space Grant Scholar

Mentor: Hannele Ruohola-Baker, Biochemistry

Mapping the History of First Nations' Education in the Pacific Northwest

Kristen Brady, Junior, Comparative History of Ideas

Zesbaugh Scholar

Mentor: Nancy Beadie, College of Education

Balancing Academics with Activism: The Everyday Lives of Female Graduate Students

Alicia Braman, Senior, Women Studies, Geography

Mentor: Lucy Jarosz, Geography

Swelling Kinetics of Mucin Secretion in a Cystic Fibrosis Cell Line

Maria-Jose Bravo, Junior, Biology

Howard Hughes Scholar

Mentor: Pedro Verdugo, Bioengineering

Dielectrical Sensing For Industrial Applications

Leslie Byrd II, Junior, Materials Science and Engineering

McNair Scholar

Mentor: Kishore Sundara-Rajan, Electrical Engineering

Computational Gene-Finding in Trypanosoma Utilizing Multiple Identification Algorithms with Consideration of Gene Organization

Eithon Cadag, Senior, Informatics, Business Administration

Mentor: Peter Myler, Pathobiology

Calculating Capacitance for LISA

Rogan Carr, Senior, Physics

Mary Gates Scholar

Mentor: Jens Gundlach, Physics

HiVE - A Honeywall Data Analysis System

Linda Casey, Senior, Informatics

Jeremy Hyland, Senior, Informatics

Ashley Lam, Senior, Informatics

Mentor: David Dittrich, Information School

Mentor: David McDonald, Information School

Effects of Nutrient Enrichment on Open and Closed Ecological Systems

Aaron Chan, Senior, Psychology

Mentor: Frieda Taub, College of Ocean and Fishery Sciences

Recombinant Erythropoietin (Epo) Decreases the Severity of Necrotizing Enterocolitis (NEC) In A Neonatal Rat Model

Michelle Chan, Junior, Biology

Mentor: Sandra Juul, Pediatrics

Oxygen Detection using Luminescent Microspheres

Charles Chang, Junior, Biochemistry

Mentor: Gamal Khalil, Chemistry

The Evolution of Left-Right Asymmetry in the Chordates

Helen Chea, Senior, Biology, Biochemistry

Howard Hughes Scholar, Mary Gates Scholar

Mentor: Billie Swalla, Biology

Color Progressive Image Compression using JPEG2000

Andrew Chekerylla, Junior, Electrical Engineering

Mentor: Agnieszka Miguel, Electrical Engineering

Gene Transfer of Factor VIIa for Treating Hemophilia A Mice

Steven Chen, Senior, Biochemistry, Biology, Music

Mentor: Carol Miao, Pediatrics

Math In Engineering

Peter Cheng, Senior, Mathematics, Physics

Zesbaugh Scholar

Mentor: Reed Stevens, College of Education

The Gas Leak Detection Project: A Simulation of Remote Sensing of Pressure Sensitive Paint in Gas Pipelines

Alice Chin, Senior, Chemistry

Mentor: Gamal Khalil, Chemistry

Effectiveness of Data Visualization versus Text Presentation for Pattern Recognition and Data Retrieval in Large Data Sets

Irene Chin, Senior, Informatics, Electrical Engineering

Mary Gates Scholar, Space Grant Scholar

Lisabeth Cron, Freshman, Informatics

Trevor Iwaszuk, Senior, Informatics, Drama

Meredith Skeels, Senior, Informatics

Mary Gates Scholar

Mentor: David Hendry, Information School

Saddam, Iraq and the American News Media

Maria Crossman, Junior, Communication, Sociology

Mentor: David Domke, Communication

What Should the Court Decide: An Analysis of the Legal Debate over Same-Sex Marriage

Sarah Crowder, Senior, Women Studies, Sociology

Mentor: Angela Ginorio, Women Studies

Mentor: Pat Novotny, Women Studies

**Brain Cholinesterase Inhibition in Juvenile Rainbow Trout Exposed to Carbaryl –
Benchmark Concentrations for Active Ingredient vs. Formulated Products**

Toby Black, Senior, Fisheries, Biology

Catherine Curran, Freshman, Fisheries

Mary Gates Scholar

Bram Granger, Senior, Wildlife Science

Zach Guerrette, Senior, Biochemistry, Zoology, Biology

Kathy Ireland, Senior, Fisheries

Emily Marchesini, Senior, Environmental Studies

Robert Schneider, Senior, Biology

Carrie Spradlin, Senior, Wildlife Science

Morgan Sternberg, Senior, Fisheries

Mentor: Chris Grue, College of Ocean and Fishery Sciences

Speech and Music Applications of Modulation Spectral Filtering

Jonathan Cutter, Senior, Electrical Engineering

Mary Gates Scholar

Mentor: Les Atlas, Electrical Engineering

**A Hypothesis on the Role of Modern Sedimentation and Particulate Transport in the
Formation of the Submarine Central Rises in the Bathymetry of Puget Sound, Washington**

Maureen Davies, Senior, Oceanography, Earth and Space Sciences

Mentor: Mark Holmes, School of Oceanography

Mentor: Charles Nittrouer, School of Oceanography

Understanding Racial Biases In Pre-Adoptive Parents

Madalene Day, Senior, Psychology

McNair Scholar

Mentor: Anthony Greenwald, Psychology

**Variation in DNA Polymerase Beta in Pediatric Brain Tumors; Implications to Tumor
Resistance**

Jill Dearing, Junior, Chemistry, Pre-Pharmacy

Mary Gates Scholar

Mentor: Michael Bobola, Neurological Surgery

Flexible Micromachined Optical Sensor for Measurement of Pressure and Shear Force Distribution

Jeffrey Dee, Senior, Chemical Engineering

Mary Gates Scholar

Mentor: Wei-Chih Wang, Mechanical Engineering

Non-invasive DC EEG: Development of a Bedside Method for Clinical Practice

Asanka Dewaraja, Senior, Bioengineering

Mary Gates Scholar

Mentor: John Miller, Neurology

Synthesis of a Novel Anti-Malarial Drug Based upon the Conjugation of a Siderophore to a Derivative of Artemisinin

Jean Dinh, Freshman, Biochemistry, Chemistry

Jason Kam, Senior, Biochemistry

Mary Gates Scholar

Mentor: Tomikazu Sasaki, Chemistry

Extraction and Quantification of Phosphorus in the Form of Aluminophosphate Minerals in Sediment Taken from the Gulf of Mexico

Logan Ditto, Senior, Earth and Space Sciences

Mary Gates Scholar

Mentor: Roger Buick, Earth and Space Sciences

Tuning of Genetic Algorithm Fitness Function Parameters for Robots with Evolving Communication

Todd Drullinger, Junior, Electrical Engineering

Mentor: Linda Bushnell, Electrical Engineering

Cosmic Ray Muon Rates for WALTA Detectors

Paul Edmon, Senior, Physics

Mentor: Jeffrey Wilkes, Physics

Rapid, Low-cost Prototyping of Microstructures by Microscope Projection Photolithography and High Resolution Printed Masks

Jeffrey Edwards, Junior, Bioengineering

Mary Gates Scholar

Mentor: Henry Hess, Bioengineering

The Book of Fusion: The Lesbian Coming-to-Identity Fictional Narrative

Zaedryn Ensor-Estes, Senior, Women Studies, English

Mentor: Shirley Yee, Women Studies

Thermal Actuation of Microfluidic Devices using a Silicone Elastomer Bimorph

Aziel Epilepsia, Junior, Electrical Engineering
Mentor: Steven Quake, Applied Physics Laboratory

Coalescent Analyses of Population Genetic Data Concerning African Elephants

Celia Fairbourn, Senior, Zoology, Botany
Mentor: Benjamin Hall, Biology

Is There a Burden of “Acting White” Keeping African American Students from Academic Success?

Oluwatope Fashola, Senior, Sociology, American Ethnic Studies
Mentor: Charles Hirschman, Sociology

Molecular Mobility Study of Non-Linear Optical Polymers using Nano-Tribological Technique

Karl Fincken, Sophomore, Chemical Engineering
Mentor: Rene Overney, Chemical Engineering

Why Special Education Teachers Leave Teaching Jobs

Audrey Flemming, Junior, History
Zesbaugh Scholar
Mentor: Gene Edgar, College of Education

An Investigation of WW Domain-Mediated Protein-Protein Interactions in Yeast

Anna Fortin, Senior, Biology
Mentor: Stanley Fields, Genome Sciences

Coupling Agents for the Clinical Application of High Intensity Focused Ultrasound

Carie Frantz, Junior, Pre-Engineering
Mary Gates Scholar, Space Grant Scholar
Mentor: Shahram Vaezy, Bioengineering

Mission Design for the Mars Gravity Biosatellite

Michael Frostad, Senior, Aeronautical and Astronautical Engineering
Mentor: Charlie Vaughan, Aeronautics and Astronautics

Microprinting On-Chip Culture: An Investigation of Concanavalin A Adhesion for Yeast

Tracy Fung, Junior, Electrical Engineering
Mentor: Joseph Chao, Electrical Engineering
Mentor: Sarah McQuaide, Electrical Engineering
Mentor: Deirdre Meldrum, Electrical Engineering

Using Entropy and Graph Theory to Determine Disorder in Stochastic Structures

Noah Giansiracusa, Sophomore, Mathematics
Mary Gates Scholar, Space Grant Scholar
Mentor: Gerald Seidler, Physics

A Novel Method of Combatting the Foreign Body Reaction through Tissue Engineering

Stephen Gingrich, Senior, Bioengineering

Mary Gates Scholar

Mentor: Stephanie Bryant, Bioengineering

Mentor: Buddy Ratner, Bioengineering

Lichenometric Dating of Little Ice Age Features at Emmons Glacier, Mount Rainier, WA

Brent Goehring, Senior, Geology

Mentor: Michael O'Neal, Earth and Space Sciences

Bricolage: A Literary and Arts Journal

Laura Bylenok, Senior, English

Czarín Chan, Senior, Communication, Japanese

Neil Golke, Freshman, Mechanical Engineering, Materials Science and Engineering

Veronica Lujan, Senior, English, Communication

Mary Gates Scholar

Rita Safariants, Senior, English

Mentor: Robert McNamara, English

Mentor: Kimberly Swayze, English

Design and Installation of an Engine Torque Sensor for Power-Required Flight Testing of an Unmanned Aerial Vehicle

Richard Golob, Senior, Aeronautical and Astronautical Engineering

Mary Gates Scholar

Mentor: Scott Eberhardt, Aeronautics and Astronautics

Using High Intensity Focused Ultrasound to Fragment Kidney Stones

Erin Graf, Junior, Psychology

Space Grant Scholar

Mentor: Michael Bailey, Applied Physics Laboratory

Leadership for Learning

Anne Grant, Senior, Political Science

Mary Gates Scholar

Mentor: Brad Portin, College of Education

A Novel Secretion Pathway for Virulence Proteins in *Agrobacterium tumefaciens*

Rula Green Gladden, Sophomore, Biochemistry

Mary Gates Scholar

Mentor: Derek Wood, Microbiology

Structure Based Drug Design Targeting Cholera Toxin

Nathaniel Greene, Senior, Biochemistry

Howard Hughes Scholar, Mary Gates Scholar

Mentor: Wim Hol, Biochemistry

Corticosterone May Influence Chick Feather Growth

Meridith Grogan, Junior, Biology

Mentor: John Wingfield, Biology

Interpreting Serial Magnetic Resonance Imaging (MRI) of a Treated Glioblastoma: A Quantitative Modeling Perspective

Hana Harpold, Junior, Bioengineering

Mentor: Ellsworth Alvord Jr, Pathology

Mentor: Kristin Swanson, Pathology

Tactilization of Graphical Images

Eileen Hash, Senior, Computer Science

Mary Gates Scholar, Space Grant Scholar

Mentor: Richard Ladner, Computer Science and Engineering

Vortex Breakdown on Aircraft Wings

Justin Hatcher, Senior, Aeronautical and Astronautical Engineering

Mary Gates Scholar

Mentor: Dana Dabiri, Aeronautics and Astronautics

Control System for Image-Guided Treatment of Uterine Fibroids using Phased Array High Intensity Focused Ultrasound

Robert Held, Senior, Bioengineering

Mary Gates Scholar

Mentor: Shahram Vaezy, Bioengineering

A Social History of Childhood Depression

Jenna Henderson, Senior, Sociology

Mentor: Jerald Herting, Sociology

Human Factor IX Plasmids Containing Replication Sequences Show Increased Levels of Gene Expression in Mice with Hemophilia B

Alicia Herem, Senior, Biology

Mary Gates Scholar

Mentor: Carol Miao, Pediatrics

Search for Hydrogen Regulatory Systems in the Methanogenic Archeon Methanococcus Maripaludis

Andrew Hill, Senior, Microbiology, Biochemistry

Mary Gates Scholar

Mentor: John Leigh, Microbiology

Analyzing Data Sets using Spectral Clustering

David Hiller, Senior, Mathematics, Statistics

Space Grant Scholar

Mentor: Marina Meila, Statistics

Putative Identification of Rubisco Actvase in Stramenopiles and Alveolates

Amanda Hoyt, Junior, Biochemistry

Mentor: Rose Ann Cattolico, Biology

Mentor: Lauren Choi, Biology

Phenotypic Analysis of SNPs in Human DNA Polymerase Epsilon

Jessica Hsu, Senior, Biochemistry

Mary Gates Scholar

Mentor: Lawrence Loeb, Pathology

Mentor: Ranga Venkatesan, Pathology

Single Nucleotide Polymorphisms in Human Olfactory Receptor Genes

Jessie Hsu, Senior, Biology

Hughes Scholar

Mentor: Barbara Trask, Genome Sciences

Spreading of Embryological Distinct Urothelial Cells is Inhibited by SPARC

Amber Hudson, Junior, Bioengineering

Mary Gates Scholar

Mentor: James Bassuk, Urology

Fringing Field Sensor Array Interface

Marc Eric Hungerford, Freshman, Electrical Engineering

Mary Gates Scholar, Space Grant Scholar

Alexei Zyuzin, Senior, Electrical Engineering

Mentor: Alexander Mamishev, Electrical Engineering

The Characterization of Inherent Amino Acid Conformational Propensities

Daigo Inoyama, Senior, Biochemistry

Mentor: Valerie Daggett, Medicinal Chemistry

Regeneration and Tissue Engineering of Human Fetal Digits

Jennifer James, Junior, Bioengineering

Mary Gates Scholar

Mentor: Chris Allan, Orthopaedics and Sports Medicine

Water Movement Across the Sill at Dabob Bay, Puget Sound, Washington

Kathryn Jenks, Senior, Oceanography, Mathematics

Mentor: Eric D'Asaro, College of Ocean and Fishery Sciences

LiquidBrowse: Using Interface Continuity to Improve Web Browsing

Ethan John, Senior, Computer Science

Mentor: David Hendry, Information School

Use of Phagemids for Pol I Random Mutagenesis in E. coli

Benjamin Johnson, Senior, Oceanography

Mentor: Manuel Camps, Pathology

Mentor: Lawrence Loeb, Pathology

The BEACONS Project: Positive Behavioral Supports in Washington's Public Schools

Charlyn Johnson, Senior, Communication, Spanish

Zesbaugh Scholar

Mentor: Douglas Cheney, College of Education

3-Dimensional Organization of Telomeres: A Recombination Based Genetic Assay

Elizabeth Johnson, Senior, Biochemistry

Mary Gates Scholar

Mentor: Daniel Gottschling, Genome Sciences

Expression of Human Nucleoside Transporters in Xenopus laevis

Lisa Johnson, Senior, Biology, Philosophy

Mentor: Aimee Hayes Bakken, Biology

Culture Codes in the Christian Ritual of "Holy Communion"

Ingrid Johnston, Senior, Communication

Mentor: Lisa Coutu, Communication

Prenatal Syphilis Screenings In Mozambique Africa

Andrea Jones, Junior, Biology

Mary Gates Scholar, Space Grant Scholar

Mentor: Stephen Gloyd, School of Public Health and Community Medicine

Mentor: Tom Martin, School of Public Health and Community Medicine

Is Temporomandibular Disorder Genetic?: A Twin Study Using the University of Washington Twin Registry

Merri Jones, Senior, Dental Hygiene

Mentor: Jack Goldberg, Epidemiology

The Expression of Six3-Cre and Its Degree of Colocalization with Tyrosine Hydroxylase in the Developing and Adult Mouse Brain

Matt Hoertkorn, Senior, Biology

Jenny Kam, Senior, Biology, Zoology

Mentor: Claire Cannon, Biochemistry

Chromosome Segregation in the Nematode C. elegans

Alexia J. Katzaroff, Senior, Biology, Spanish

Mary Gates Scholar

Mentor: Mark Roth, Biochemistry

Effects of Erythropoietin on Neonatal Hypoxic Ischemic Brain Injury

Brian Kellert, Junior, Biology, Biochemistry

Mary Gates Scholar

Mentor: Sandra Juul, Pediatrics

Trauma Narratives, Emotional Processing, and PTSD

Zena J. Kim, Senior, Psychology

Mary Gates Scholar

Mentor: Lori A. Zoellner, Psychology

Responses of Hippocampal Interneurons to Changing Visual Environments

Michael King, Senior, Psychology

Mentor: Sheri Mizumori, Psychology

HIV/AIDS and the Contagion of Liberal Interiority: Rethinking the Politics of Intimacy

Preetma Kooner, Junior, Microbiology, Comparative History of Ideas

Mentor: Chandan Reddy, English

An Extensive Study of the Rapid Trap Movements of *Dionaea muscipula*

Shane Krolkowski, Senior, Botany

Mentor: Rainer Stahlberg, Biology

Mentor: Elizabeth Volkenburgh, Biology

Molecular Phylogenetic Studies of Section Pentathera and Subgenus Hymenanthes in Genus *Rhododendron* Using the RNA Polymerase II Subunit Genes

Junyuan Hu, Junior, Biology

Jiro Kusunose, Senior, Bioengineering

Mentor: Benjamin Hall, Genome Sciences

Epithelial Interactions with a Cell Extracted Matrix

Tess Lang, Junior, Neurobiology

Howard Hughes Scholar, McNair Scholar

Mentor: Ceci Giachelli, Bioengineering

Cooling Micro Electronics using Corona Propulsion

Sam Larson, Senior, Electrical Engineering

Mary Gates Scholar

Mentor: Nels Jewell-Larsen, Electrical Engineering

Mentor: Alexander Mamishev, Electrical Engineering

The Effects of Light of Various Wavelengths and the Presence of Oxygen on Lactone Synthesis

Christal Lee, Senior, Chemistry

Mary Gates Scholar

Mentor: Martin Gouterman, Chemistry

Mentor: Gamal Khalil, Chemistry

Rebooting Youth Political Engagement: The Potential of the Internet

Christine Lee, Senior, Political Science, Communication

Mentor: W Lance Bennett, Political Science

Supporting Floating Point Signal Processing Applications on FPGAs

Henry Lee, Senior, Electrical Engineering

Mary Gates Scholar

Aaron Wood, Junior, Electrical Engineering, Computer Engineering

Mentor: Scott Hauck, Electrical Engineering

Cellular Mechanisms of Ascidian Endoderm Invagination

James Lee, Senior, Cellular and Molecular Biology

Mary Gates Scholar

Maria-Jose Bravo, Junior, Cellular and Molecular Biology

Howard Hughes Scholar

Tammie Robinson, Senior, Cellular and Molecular Biology

Howard Hughes Scholar, Mary Gates Scholar

Ryan Gile, Post-Baccalaureate, Center for Cell Dynamics

Howard Hughes Scholar

Mentor: Garrett Odell, Biology

Mentor: Edwin Munro, Biology

Mentor: George von Dassow, Biology

Mentor: Kristin Sherrard, Biology

Study of SirT1 Function in Regulating Senescence and Longevity in Mice

Jennifer M. Lee, Sophomore, Neurobiology

Mary Gates Scholar

Mentor: Yansong Gu, Radiation Oncology

Spirituality, Mindfulness and Substance Abuse

Janis Leigh, Senior, Psychology

Mentor: Sarah Bowen, Psychology

Mentor: G. Alan Marlatt, Psychology

Listening to Another's Distress: Responses and Consequences

Tiffany Lewis, Freshman, Communication

Mentor: Valerie Manusov, Communication

Electronic Placemat: A Sketching Application for Pen-and-Paper Games

Ian Li, Senior, Computer Science, Art

Mary Gates Scholar

Mentor: Richard Anderson, Computer Science and Engineering

Using DNA Polymorphisms to Ascertain Species Boundaries in Rhododendron Subsection Moupinensia

Xi Li, Junior, Biology

Shermi Liang, Senior, Biology
Mentor: Benjamin Hall, Genome Sciences

Transcriptional Expression of Putative Iron Transport Genes in Group B Streptococcus

Robert Linville, Senior, Microbiology
Mentor: Craig Rubens, Pediatrics

Telomere Length Measurement and Analysis by Quantitative PCR

Kenneth Liu, Senior, Bioengineering, Applied and Computational Mathematical Sciences
Hughes Scholar
Mentor: Peter Rabinovitch, Pathology

Evaluation of Impact Potential of Wind Energy Conversion in the U.S.

Ben Long, Junior, Electrical Engineering
Mentor: Kai Strunz, Electrical Engineering

Design and Construction of a Langmuir Trough

Matthew Loo, Senior, Physics
Mentor: Sarah Keller, Chemistry

Identification and Characterization of Wavelength-Shifted Variants of Photinus Pyralis Luciferase

Yi-Ching Lu, Senior, Bioengineering, Biochemistry
Mentor: Francois Baneyx, Chemical Engineering
Mentor: Elyse Shapiro, Chemical Engineering

Chagas Disease and Leishmaniasis: Targeting Sterol Biosynthesis for New Drugs

Ashley Lundgren, Senior, Neurobiology, German
Mary Gates Scholar
Mentor: Frederick Buckner, Allergy and Infectious Diseases
Mentor: Eleanor Hankins, Allergy and Infectious Diseases

Effects of Salinity and Reproduction of Phytoplankton and Copepods in Marine Closed Ecological Systems

Megan Mach, Senior, Biology
Mentor: Frieda Taub, School of Aquatic and Fishery Sciences

Double-to-Single Photoionization Ratio of Li at Medium Energies

Marleen Martinez, Junior, Pre-Engineering
Space Grant Scholar
Mentor: Ralf Wehlitz, Physics

Encouraging Children's Ecological Literacy through Informal Education: Developing Understanding and Care for Nature Outside of School Through Community-Based Programs and Places

Erika Matthias, Senior, Landscape Architecture

Mary Gates Scholar

Mentor: Julie Johnson, Landscape Architecture

Maintaining Vision: An Investigation of Caspases and their Role in Lens Cells

Julia Mattson, Sophomore, Pre-Sciences

Mary Gates Scholar

Mentor: John I. Clark, Biological Structure

Women's Rights as Human Rights Realized?: Implications of the International Criminal Tribunal for Former Yugoslavia's Conviction of Rape as a Crime Against Humanity

Meghan Maurus, Recent Graduate, Political Science, Philosophy

Mary Gates Scholar

Mentor: Gillian Harkins, English

The Near-Bottom Current Regime and the Influence of the Benthic Nepheloid Layer on Transport and Accumulation of Particulate Matter in Puget Sound, WA

Shannon Maynor, Senior, Oceanography

Mentor: Eric D'Asaro, Applied Physics Laboratory

Mentor: Dr. Mark L. Holmes, School of Oceanography

Cellular Basis of Excitability in Embryonic Mouse Hindbrain Motor Neurons

Shannon McArdel, Senior, Neurobiology

Mary Gates Scholar

Mentor: Martha Bosma, Biology

Relational Maintenance Strategies Versus Avoidance of Negative Behaviors in Intimate Relationships

Lindsey McCallum, Junior, Communication

Mentor: Valerie Manusov, Communication

Educational Use of Cooperatively-Controlled Drawing Games

Kyle McClellan, Senior, Computer Science

Mentor: Steven Tanimoto, Computer Science and Engineering

The Cost of Quorum Sensing Signals

Megan L. McCloskey, Senior, Zoology

Mary Gates Scholar

Mentor: Carl T. Bergstrom, Biology

Effects of a Diatom Diet on Egg Production and Hatching Success of *Pseudocalanus newmani*

Melissa McKay, Senior, Oceanography

Mentor: Claudia Halsband-Lenk, School of Oceanography

Competition Between *Brachionus calyciflorus* and *Daphnia magna* in a Closed Ecological System

Amy McMahon, Senior, Biology
Howard Hughes Scholar, Mary Gates Scholar
Mentor: Frieda Taub, School of Aquatic and Fishery Sciences

A Revolution in Salinity Measurement

Alexander Mendez, Freshman, Physics, Mathematics
Gates Millennium Scholar, Space Grant Scholar
Mentor: Matthew Alford, Applied Physics Laboratory

Olfactory Preferences in Infant Pigtailed Macaques (*M. nemestrina*)

Caroline Kenney, Recent Graduate, Psychology, Anthropology
Claudette Meyer, Senior, Psychology
Mary Gates Scholar
Mentor: Gene Sackett, Psychology

Ion Trapping and Why It's Cool

Edmund Meyer, Senior, Physics, Astronomy
Mary Gates Scholar
Mentor: Norval Fortson, Physics

An Automated Device for the Dissociation of Barrett's Esophagus Biopsies for Flow Cytometry

Andrew Miller, Senior, Mechanical Engineering
Mentor: Mark Holl, Electrical Engineering

Engagement in Scientific Discourse Among Underachieving Girls

Solmaz Mohadjer, Senior, Earth and Space Sciences
Mary Gates Scholar, Zesbaugh Scholar
Mentor: Jessica Thompson, College of Education
Mentor: Mark Windschitl, College of Education

Special Interest Politics: Boeing as a Case Study

Evan Morrissey, Senior, International Studies, Political Science
Mentor: Bryan Jones, Political Science
Mentor: John Wilkerson, Political Science

Toxicity Effects of *Heterosigma akashiwo* on the Development of the Sheepshead Minnow (*Cyprinodon variegatus*)

Claire Muerdter, Freshman, Biology
Howard Hughes Scholar, Mary Gates Scholar, Space Grant Scholar
Mentor: Rose Ann Cattolico, Biology

The Role of Retinoic Acid Degradation in the Patterning of the Zebrafish Hindbrain

Jonathan Myers, Senior, Biochemistry, Neurobiology
Mary Gates Scholar
Mentor: Cecilia Moens, Biology

Species Inventory and Conservation Implications for the Near-Shore Coral Reefs of Gandoca-Manzanillo Wildlife Refuge, Costa Rica

Sarah Myhre, Senior, Biology

Space Grant Scholar

Mentor: Alejandro Acevedo, Biology

Till-Fabric Analyses of NE-SW Trending Flutes on Northern Whidbey Island: Evidence of Readvance of the Cordilleran Ice Sheet During the Latest Vashon Stade of the Fraser Glaciation

Ryan Mano, Senior, Geology

Michelle Mullen, Senior, Geology

Justin Nelson, Recent Graduate, Anthropology, Political Science

Mentor: Terry Swanson, Earth and Space Sciences

Active Dendritic Conductances and Persistent Inward Currents in Rat Hypoglossal Motoneurons

Greg Newkirk, Senior, Neurobiology, Zoology

Mary Gates Scholar

Mentor: Marc Binder, Physiology and Biophysics

Pseudomonas Quinolone Signal-Quorum Sensing

Hai Nguyen, Senior, Microbiology

Gates Millennium Scholar

Mentor: Tina Guina, Microbiology

Understanding the Dynamics of Tumor Growth through Imaging and Mathematical Modeling

Stephanie Nissen, Junior, Bioengineering

Mary Gates Scholar

Mentor: Kristin Swanson, Pathology

IceVis – Icecast Streaming Media Log Analysis Tool

John Oleinik, Senior, Atmospheric Science, Informatics

Mentor: David Hendry, Information School

Therapist Interpretations in Behavior Activation and Cognitive-Behavioral Therapy for Depression

Gareth Holman, Senior, Psychology, Comparative History of Ideas

Mary Gates Scholar

Tammy McKaskle, Senior, Psychology

Cindra Ouellette, Freshman, Psychology

Mentor: Robert Kohlenberg, Psychology

The Design of the Command and Data Handling System on the Mars Gravity Biosatellite

Steven Cowell, Senior, Mathematics, Philosophy

Jeremy Hanni, Senior, Computer Science

Eric Hultman, Senior, Electrical Engineering
John Pang, Senior, Applied and Computational Mathematical Sciences
Andrew Redmond, Junior, Electrical Engineering
Mentor: Adam Bruckner, Aeronautics & Astronautics

Evolutionary Analysis of the Caribbean Group of Bignoniaceae *Tabebuia* Species

Chelsie Papiez, Senior, Botany
Mentor: Dr. Richard Olmstead, Biology

Mapping A Multicultural History of Education in the Puget Sound Region: Catholic Schooling

Erin Peinado, Senior, History
Zesbaugh Scholar
Mentor: Nancy Beadie, College of Education

Information Seeking Behavior in Recreational Planning

Benjamin Brigham, Senior, Informatics, Wildlife Science
Justin Perron, Senior, Informatics
Mentor: Melody Ivory-Ndiaye, Information School
Mentor: Matthew Saxton, Information School

Downslope Flow Over a Mountain

David Peterson, Senior, Aeronautical and Astronautical Engineering
Mary Gates Scholar, Space Grant Scholar
Mentor: Peter Rhines, School of Oceanography

Basal Respiratory Exchange Ratio Is Altered With Statin Use in Normals

Colin Phillips, Junior, Biochemistry
Mentor: B. Gregory Brown, Cardiology

Probabilistic Weather Forecasting Using Bayesian Model Averaging

Michael Polakowski, Senior, Statistics, Applied and Computational Mathematical Sciences
Mentor: Adrian Raftery, Statistics

Developing a 3-D Model for Douglas fir Stem and Branch Growth

Victoria Poling, Freshman, Forest Resource Management
Mary Gates Scholar
Xin Wang, Junior, Forest Resource Management
Mentor: Thomas Hinckley, College of Forest Resources

The Role of KiSS-1 and GPR54 in the Reproductive Axis

Simina Popa, Senior, Neurobiology, French
Mary Gates Scholar
Mentor: Robert Steiner, Obstetrics and Gynecology

Historical Black Carbon Deposition in Near Shore Sediments in the Main Basin of Puget Sound, Washington

Andrea Pratt, Senior, Oceanography
Mentor: Mark Holmes, School of Oceanography

Union Democracy

Nowell Bamberger, Junior, Political Science
Adam Goodwin, Junior, Comparative History of Ideas, Microbiology
Mary Gates Scholar
Devin Kelly, Senior, Sociology
Natalie Quist, Junior, Political Science
Mentor: Margaret Levi, Political Science
Mentor: David Olson, Political Science

Using Joint Application Development to Model Information Behavior in Gastrointestinal Research Lab

Ahror Rahmedov, Senior, Computer Science, Applied Mathematics
Mary Gates Scholar
Mentor: William Lober, Medical Education and Biomedical Informatics

Small City Police Territoriality: A Comparative Case Study

Suzanna Ramirez, Senior, Law, Society and Justice, Psychology
Mentor: Steven Herbert, Geography

Sloths of the Pleistocene in Washington

Andrea Repetto, Junior, Zoology, Earth and Space Sciences
Mary Gates Scholar
Mentor: Elizabeth Nesbitt, Earth and Space Sciences

Optimization of Ionic Wind for use as a Lifting Mechanism

Mark Baron, Senior, Aeronautical and Astronautical Engineering
Josh Rickey, Freshman, Aeronautical and Astronautical Engineering
Mentor: Dana Debiri, Aeronautics and Astronautics

Three-Dimensional Defocused Digital Particle Image Thermometry and Velocimetry

Paul Riddle, Senior, Aeronautical and Astronautical Engineering
Mentor: Dana Dabiri, Aeronautics and Astronautics

Functional Roles of Innate Immunity and the MBL-complement Pathway During Ascidian Metamorphosis

Brock Roberts, Senior, Biology
Howard Hughes Scholar, Mary Gates Scholar
Mentor: Billie Swalla, Biology

Lack of Feminist Discourse and Emerging Non Governmental Organizations as it Pertains to the Women of Juarez

M Virginia Rodriguez, Senior, Comparative History of Ideas

Mary Gates Scholar

Mentor: Gillian Harkins, English

Predicting Type 1 Diabetes using a GAD65 Antibody Assay

Chad Rogers, Junior, Sociology

Mary Gates Scholar

Mentor: Ake Lernmark, Metabolism, Endocrinology and Nutrition

Mentor: Dong Luo, Metabolism, Endocrinology and Nutrition

Quantifying Metabolism with Nuclear Magnetic Resonance Spectroscopy

Lauren Palmer, Freshman, Biology

Joshua Rusk, Sophomore, Bioengineering

Mary Gates Scholar

Mentor: Martin Kushmerick, Radiology

PIV Data Outlier Identification

Adi Salehuddin, Senior, Aeronautical and Astronautical Engineering

Mentor: Dana Dabiri, Aeronautics and Astronautics

Adaptation: Interface Modification on Dynamic Web Pages Through User Access Data-Mining

Lee Sam, Senior, Informatics

Mentor: David McDonald, Information School

The Modern Girl around the World Project: India

Gazelle Samizay, Senior, International Studies, Interdisciplinary Visual Arts

Mary Gates Scholar

Mentor: Priti Ramamurthy, Women Studies

Object Oriented Finite (OOF) Element Analysis Computational Modeling of Real Microstructures

Ravi Mikkelsen, Junior, Materials Science and Engineering

Mary Gates Scholar

Joseph Schmeller, Freshman, Materials Science and Engineering

Kaishi Wang, Junior, Materials Science and Engineering

Mentor: Rajendra Bordia, Materials Science and Engineering

Oxidative Stress Elevates the DNA Repair Activity of Apurinic/Apyrimidinic Endonuclease in Human Gliomas

Allison Schmitt, Senior, Biochemistry, Chemistry

Hughes Scholar

Mentor: John Silber, Neurological Surgery

High Powered Helicon

Thomas Schnackenberg, Senior, Physics, Earth and Space Sciences

Mentor: Robert Winglee, Earth and Space Sciences

Regulation of Salmonella Virulence by the PhoPQ System

Anna Schneider, Sophomore, Biochemistry

Mary Gates Scholar

Mentor: Sam Miller, Microbiology

The President, Volunteerism, and Social Services

Lindsay Scola, Junior, Political Science

Mentor: Bryan Jones, Political Science

Mentor: John Wilkerson, Political Science

Measurement of Moisture Distribution in Organic Materials

David Seater, Junior, Electrical Engineering

Mary Gates Scholar, Space Grant Scholar

Mentor: Alexander Mamishev, Electrical Engineering

Using Sensor Fusion to create a Real-Time Action Tracking System

Matt Nevitt, Senior, Informatics

Kabir Shahani, Freshman, Informatics

Brandon Tengan, Junior, Informatics

Geoff Velasco, Senior, Informatics

Mentor: David McDonald, Information School

Temporal Change in Barrett's Esophagus Segment Length (BESL) During Prospective Surveillance

Leilani Sharpe, Senior, Biochemistry, Biology

Mary Gates Scholar

Mentor: Brian J. Reid, Gastroenterology

Human Toll-like Receptor 4 Polymorphisms in Caucasian Periodontal Patients

Yang-Luen Shih, Senior, Biochemistry, Chemistry

Mentor: Beth Hacker, School of Dentistry

Mentor: Frank Roberts, School of Dentistry

Measurement Improvements of a Two-Chord Interferometer

Ted Shreve, Junior, Aeronautical and Astronautical Engineering

Mary Gates Scholar

Mentor: Uri Shumlak, Aeronautics and Astronautics

Investigation of the Hearing Mechanism via Absolute Pitch

Samuel Skinner, Senior, Physics, Astronomy

Mary Gates Scholar, Space Grant Scholar

Mentor: Vladimir Chaloupka, Physics

Local Political Information Recommender

Diane Slota, Senior, Informatics
Mentor: David McDonald, Information School

Piloting a Fast-Response Survey System for Washington's Teachers

Cable Smith, Senior, English
Mentor: Margaret Plecki, College of Education

Office Window of the Future? Two Case Studies of an Augmented Window

Robin Sodeman, Senior, Informatics
Mentor: Batya Friedman, Information School

Metallothionein Concentrations in Commencement Bay Mussels as Bioindicators of Metal Stress

Shannon Soto, Senior, Interdisciplinary Arts and Sciences
Mentor: James Gawel, Civil and Environmental Engineering

Washington Kids Count

Diana Spence, Senior, Geography
Mary Gates Scholar
Mentor: Sheri Hill, School of Social Work

Characterizing and Mitigating Protein Adsorption Under Pressure-Driven Flow in a Microfluidic Device

Mark Steedman, Senior, Bioengineering
Space Grant Scholar
Mentor: Paul Yager, Bioengineering

Effects of Gene Regulation on the Ability of Embryonic Chicken Pigment Epithelium to Develop into Retina

Christina Stratis, Senior, Neurobiology
Mary Gates Scholar
Mentor: Tom Reh, Biological Structure

Using TabletPC Based Systems to Support Active Learning in the Classroom

Jonathan Su, Sophomore, Computer Engineering
Mentor: Richard Anderson, Computer Science and Engineering

Place Lab: A Prototype for Designing Ubiquitous Location-Aware Wireless Services

Eithon Cadag, Senior, Informatics, Business Administration
Jason Tabert, Senior, Informatics
Mentor: David McDonald, Information School

Sensitive Skin

Jason Tan, Junior, Computer Engineering
Mentor: Alexander Mamishev, Electrical Engineering

Cytotoxicity of 3-MAG in Human Glioma Cells

Bahareh Tavana, Senior, Biology

Mary Gates Scholar

Mentor: John Silber, Neurological Surgery

Detecting the Little Ice Age on the Kodiak Archipelago: An Isotopic Analysis of *Saxidomus giganteus*

James Taylor, Senior, Anthropology

Mary Gates Scholar

Mentor: Ben Fitzhugh, Anthropology

Characterization of Sensor Error for use in the Control of Formation Flying Satellites

Garrett Teahan, Senior, Aeronautical and Astronautical Engineering

Mary Gates Scholar, Space Grant Scholar

Mentor: Mehran Mesbahi, Aeronautics and Astronautics

Penguin Survival

Diana Thayer, Sophomore, Biology, Applied and Computational Mathematical Sciences

Space Grant Scholar

Mentor: P. Dee Boersma, Biology

Erosion Rates of Oregon and California Coast Ranges Measured by Cosmogenic Nuclides

Nathaniel Thompson, Senior, Music, Music Applied

Mentor: John Stone, Earth and Space Sciences

X-Linked Spasticity and Parkinson's Disease

Lisa Tisch, Senior, Biology

Mentor: Wendy Raskind, Medical Genetics

F.I.R.S.T. Robotics

Anna Tonkonogui, Senior, Philosophy, Pre-Engineering

Mary Gates Scholar

Mentor: Alexander Mamishev, Electrical Engineering

Good Vibrations: The Physics of Music

Victor Tseng, Freshman, Bioengineering, Early Entrance Program

Mentor: Vladimir Chaloupka, Physics

Control of Molecular Shuttles by Localized Fuel Delivery

Robert Tucker, Junior, Chemical Engineering

Mary Gates Scholar

Mentor: Henry Hess, Bioengineering

Mentor: Viola Vogel, Bioengineering

A Possible Mechanism for Representing Contextual Information in the Brain

Timothy Turner, Senior, Psychology
Mentor: Sheri Mizumori, Psychology
Mentor: David Smith, Psychology

The Geographical Scope and Limits of the World Social Forum: A Network Analysis

Kirsten Varg, Sophomore, Geography
Mary Gates Scholar
Mentor: Matthew Sparke, Geography

Solute-Exclusion Dynamics of Polyacrylamide Gel

Chenyang Wang, Senior, Bioengineering
Mary Gates Scholar
Mentor: Gerald Pollack, Bioengineering

Development and Optimization of Protein Microarrays

Feiya Wang, Sophomore, Technical Communication
Space Grant Scholar
Mentor: Richard Zangar, Microbiology

A ForceMeter Array Assembled from Microtubules and the Motor Protein Kinesin

James Wang, Sophomore, Bioengineering
Mentor: Henry Hess, Bioengineering

The Opportunity Knocks Project: Using Computer Software and Hardware to Benefit the Cognitively Disabled

Kai Wang, Sophomore, Computer Science
Mentor: Henry Kautz, Computer Science and Engineering
Mentor: Donald Patterson, Computer Science and Engineering

Public v. Private: Addressing the Issue of Academic Disparities

Derek White, Senior, English, American Ethnic Studies
McNair Scholar
Mentor: Rick Bonus, American Ethnic Studies

Development of an Optimal Method for Exploring the Spatial Variability and Characterizing the Basic Microbial Ecology of Deep-Sea Hydrothermal Chimneys

Jacqueline White, Junior, Biology, Environmental Studies
Mentor: John Baross, School of Oceanography
Mentor: Matthew Schrenk, School of Oceanography

Genetic Selection in the Identification of Mitochondrial DNA Replication and Repair Proteins

Lisa White, Senior, Biochemistry, Political Science
Mentor: Eitan Glick, Pathology
Mentor: Lawrence Loeb, Pathology

Carbon Nanotube Reinforced Silicon Carbide: Effects of Size and Orientation of Nanotubes on Composite Properties

James D. Whitt, Senior, Materials Science and Engineering

Mentor: Rajendra K. Bordia, Materials Science and Engineering

Searching for the Genetic Cause of Hereditary Breast Cancer in a Large Irish American Family

Kirstin Wiederholt, Senior, Biology

Mary Gates Scholar

Mentor: Mary-Claire King, Genome Sciences

The Function of Clb6p in *Sacchomyces cervisiae* Chromosomal DNA Replication

Laura Danielson, Senior, Biology

Christina Wilson, Freshman, Biology

Mary Gates Scholar

Mentor: Bonita Brewer, Genome Sciences

Mentor: Heather McCune, Genome Sciences

Mentor: M. K. Raghuraman, Genome Sciences

Mobile Monitoring of Underground Power Cables

Alanson Sample, Senior, Electrical Engineering, Mechanical Engineering, Physics

Ryan Wistort, Freshman, Electrical Engineering, Mechanical Engineering, Art

Mary Gates Scholar, Space Grant Scholar

Mentor: Alexander Mamishev, Electrical Engineering

Failure in Retrieval Inhibition in Individuals with Chronic Posttraumatic Stress Disorder

Tiffany Woelfel, Senior, Psychology, Spanish

Mary Gates Scholar

Mentor: Lori Zoellner, Psychology

Using Weakly Supervised Learning to Improve Prosodic Event Detection

Darby Wong, Senior, Computer Science

Mary Gates Scholar

Mentor: Mari Ostendorf, Electrical Engineering

The Functions of the Seven Arabidopsis Homologs to the Mammalian p27kip1 Gene known as the Kip-Related Proteins (KRP Genes)

Jamie Wong, Junior, Biochemistry

Mentor: Keiko Torii, Biology

Physiological Basis for High Yield in Modern Corn Hybrids

Huining Xu, Junior, Biology

Mentor: Elizabeth Van Volkenburgh, Biology

Shared Reading in Early Childhood Settings

*Amanda Hannon, Senior, Speech and Hearing Sciences
Zesbaugh Scholar*

*Naomi Yi, Freshman, Speech and Hearing Sciences, Linguistics
Zesbaugh Scholar*

Mentor: Susan Sandall, College of Education

Content-Based Image Retrieval: Insect Recognition

Jenny Yuen, Sophomore, Computer Engineering

Mary Gates Scholar

Mentor: Lind Shapiro, Computer Science and Engineering

Coloniality has Evolved Once in Stolidobranch Ascidians

Liyun Zeng, Junior, Zoology, Biology

Mentor: Billie Swalla, Biology