UW Summer Undergraduate
Research Poster Session

August 17, 2011
9 am – Noon
Mary Gates Hall Commons
Welcome

This poster session is a collaboration among several summer programs hosting UW and visiting undergraduates from around the country, including the Amgen Scholars Program, Building Bridges to Bioengineering, Center for Enabling New Technologies through Catalysis (CENTC), Engineering Undergraduate Research Program, Environmental Health Research Experience Program, Genome Sciences Summer Research Program, Hooked on Photonics – Center on Materials & Devices for Information Technology Research (CMDITR), Howard Hughes Medical Institute Exceptional Research Opportunities Program (EXROP), Initiative for Maximizing Student Diversity (IMSD) Program, National Nanotechnology Infrastructure Network (NNIN), Pharmacological Sciences Summer Diversity Program (PSSDP), Stipends for Training Aspiring Researchers (STAR) Program, and UW GenOM Undergraduate Summer Research Program.

We celebrate the accomplishments of this year’s summer undergraduate researchers and mentors!

This event is created and organized by the UW Undergraduate Research Program (URP) in collaboration with summer program partners. URP staff assist students in planning for an undergraduate research experience, identifying faculty mentors and resources, defining research goals, presenting and publishing research findings, and seeking funding for their research. Students interested in getting involved in research may contact the URP and utilize our website for opportunity listings and other resources.

Undergraduate Research Program
171 Mary Gates Hall, Center for Experiential Learning & Diversity
exp.washington.edu/urp
urp@uw.edu  206.543.4282
Schedule of Events

Poster Session 1  (A – L)*  9:00 am – 10:30 am
Poster Session 2  (M – Z)*  10:30 am – 12:00 pm

*Presenters are assigned to Poster Session 1 or 2 by first presenter’s last name.

Poster Session Presenters

Please note: Presenters are listed alphabetically by last name.

Refreshments available in Mary Gates Hall Commons
Rotavirus Vaccination
Cameron Adams, Sophomore, Biochemistry, University of Washington
Mentor: Jim Mullins, Microbiology
Mentor: Moon Kim, Microbiology
Initiative for Maximizing Student Diversity (IMSD) Program

Amino Acid Transporter Expression in the Native and post-ECMO Treated Heart of Piglets
Moujidin Adebayo, Senior, Biochemistry, University of Washington
Mentor: Michael Portman, Seattle Children’s Research Institute
UW Stipends for Training Aspiring Researchers (STAR) Program

Conformation of Phosphorylated Kinase Jnk2
LeeAnn Allen, Senior, Biochemistry, Scripps College
Mentor: Dustin Maly, Chemistry
Mentor: Sanjay Hari, Chemistry
Amgen Scholars Program

Algae, Avian Feces, Sand, Marine Water, and Freshwater of Recreational Marine Beaches as Potential Reservoirs for Salmonella spp. and Vancomycin-resistant Enterococcus species
Desiree Ancar, Junior, Anthropology and Pre-Medicine, University of Tennessee Knoxville
Mentor: Marilyn Roberts, Environmental and Occupational Health Sciences
Mentor: Olusegun Soge, Environmental and Occupational Health Sciences
Mentor: David No, Environmental and Occupational Health Science Environmental Health Research Experience Program

Silencing Prokaryotic Antibiotic Resistance: The Significance of Antisense RNA
Misghana Andemichael, Sophomore, Biochemistry, University of Washington
Andrew Bathan, Sophomore, Pre-Science, University of Washington
Erica Chavez, Sophomore, Pre-Health Science, University of Washington
Tessa Concepcion, Sophomore, Pre-Science, University of Washington
*Adonay Gebrehiwot, Junior, Washington State University
Anthony Hall, Sophomore, Pre-Bioengineering, University of Washington
Amir Hassan, Sophomore, Pre-Science, University of Washington
Bethlehem Kebret, Sophomore, Pre-Health Science, University of Washington
Mentor: Richard To, Bioengineering
Mentor: Carlos Estrada Alamos, Bioengineering
Mentor: Renee Plummer, Biology
Initiative for Maximizing Student Diversity (IMSD) Program
*UW Stipends for Training Aspiring Researchers (STAR) Program

Signaling Patterns in the Saccharomyces cerevisiae Proteome under Oxidative Stress
Marissa Anderson, Senior, Chemical Engineering, University of New Mexico
Mentor: Judit Villen, Genome Sciences
Genome Sciences Summer Research Program

Characterization of the Binding Modes of de novo Designed Proteins and Optimization of Protein Binding via Directed Evolution
David Angeles Albores, Sophomore, Computational Biology, Cornell University
Mentor: David Baker, Biochemistry
Howard Hughes Medical Institute Exceptional Research Opportunities Program (EXROP)

Internalization Pathways of Non-Viral Vectors for Gene Therapy
Ersilia Anghel, Senior, Biochemistry and Art History, University of Arizona
Mentor: Suzie Pun, Bioengineering
Amgen Scholars Program

An Integrated Directional Coupler for on Chip VSWR Monitoring
Lushon Banks, Senior, Electrical Engineering, University of Washington
Mentor: Jacques C. Rudell, Electrical Engineering
Engineering Undergraduate Research Program

Effects of Social Cheating on Burkholderia
Jacob Bayless da Costa, Junior, Microbiology, University of Washington
Mentor: John Mittler, Microbiology
Initiative for Maximizing Student Diversity (IMSD) Program

The Role of Secondary Structure in miRNA Biogenesis: A Novel Mechanism for Global Regulation of miRNA Profiles
Alan M.H. Beem, Senior, Neurobiology and Economics, University of Washington
Mentor: Hannele Ruohola-Baker, Biochemistry and Institute for Stem Cell and Regenerative Medicine
Mentor: Henrik Sperber, Chemistry
Amgen Scholars Program
Novel Mutation Found in CHRNG Gene in Individual with Multiple Pterygium Syndrome
Whitney S. Best, Freshman, Pre-Science, Master’s College
Mentor: Michael J. Bamshad, Genome Sciences, Pediatrics, Seattle Children’s Hospital
Mentor: Kathryn M. Bofferding, Pediatrics
Mentor: Anita E. Beck, Pediatrics, Seattle Children’s Hospital
Mentor: Margaret J. McMillin, Pediatrics and Seattle Children’s Hospital
UW Stipends for Training Aspiring Researchers (STAR) Program

Subjectivity and its Effects: The Relationship Between Self-Reported Chemical Sensitivity and the Ability to Perceive Diesel Exhaust Exposure
Kristina Blank, Senior, Environmental Studies, University at Buffalo
Mentor: Joel Kaufman, Environmental and Occupational Health Sciences
Mentor: Julie Richman, Environmental and Occupational Health Sciences
Environmental Health Research Experience Program

Using Plasmids as a Model for Gene Amplification in Yeast Competition Assays
Michael Bocek, Junior, Biochemistry, University of Washington
Mentor: Maitreya Dunham, Genome Sciences
Mentor: Celia Payen, Genome Sciences
Amgen Scholars Program

Nanoparticles for Use in Hybrid Solar Cells
Sarah Bonebright, Junior, Chemical Engineering, University of Washington
Mentor: Qiuming Yu, Chemical Engineering
Mentor: John Bae, Chemical Engineering
Engineering Undergraduate Research Program

Iridium Carbene Complex for the Catalysis of Alkane Oxidation
Joshua A. Buss, Junior, Chemistry and Mathematics, Claremont McKenna College
Mentor: Michael Heinekey, Chemistry
Mentor: Robert Robinson Jr., Chemistry
Center for Enabling New Technologies through Catalysis (CENTC)

The Role of IGF in Neutrophil Apoptosis
Candice Cameron, Senior, Physiology, University of Washington
Mentor: Lynn Schnapp, Center for Lung Biology
Mentor: Yu Hua Chow, Center for Lung Biology
UW Stipends for Training Aspiring Researchers (STAR) Program

The Effect of pH on the Octanol/Water Partition Coefficient of Pentachlorophenol
M. Medina Castellanos, Senior, Civil Engineering, California Polytechnic State University
Mentor: John C. Kissel, Environmental and Occupational Health Sciences
Mentor: Jeffrey H. Shirai, Environmental and Occupational Health Sciences
Mentor: Elizabeth L. Cooper, Environmental and Occupational Health Sciences
Environmental Health Research Experience Program

Examination of Candidate Gene Suspected to be Responsible for Zebrafish Pigment Mutant Phenotype
Paige Castro, Junior, Biology, International Studies: Comparative Religion, University of Washington
Mentor: David M. Parichy Biology
Mentor: Larissa Patterson, Biology
Initiative for Maximizing Student Diversity (IMSD) Program

Characterizing the Inhibitory Effect of Human Milk Glycans against Norovirus-Host Cell Receptor Interactions
Dan Cheung, Junior, Bioengineering, Oregon State University
Mentor: Daniel M. Ratner; Bioengineering
Mentor: Jing Shang, Bioengineering
Amgen Scholars Program

The Effect of Microtubule Structure and Mps1 Phosphorylation on Dam1-Microtubule Tip Interactions
Vivian T. Chou, Junior, Molecular Biology, Pomona College
Mentor: Trisha N. Davis, Biochemistry
Mentor: Neil T. Umbreit, Biochemistry
Amgen Scholars Program

Screening for Mutations in the DHODH Gene that Cause Miller Syndrome
Jeffrey Chukwuneke, Sophomore, Biological Sciences, Rutgers University
Mentor: Michael Bamshad, Pediatrics
Mentor: Kati Buckingham, Pediatrics
UW GenOM Project

Scanning Fiber Endoscope Image Data Transfer
Ricardo R. Cousins, Senior, Electrical Engineering, University of Washington
Mentor: Eric J. Seibel, Mechanical Engineering
Mentor: Richard S. Johnston, Mechanical Engineering
Engineering Undergraduate Research Program
Engineering Multifunctional Nanoparticles with Dual Modality Imaging Capabilities
Courtney Crouch, Senior, Biology, Emory University
Mentor: Xiaohu Gao, Bioengineering
Mentor: Xiaoge Hu, Bioengineering
National Nanotechnology Infrastructure Network REU

Philips and UWMC Workflow Project
Danny Culp, Senior, Industrial Engineering, University of Washington
Ashley Neville, Junior, Industrial Engineering, University of Washington
Mentor: Richard L. Storch, Industrial Engineering
Mentor: Tolu Abe, Industrial Engineering
Engineering Undergraduate Research Program

Sound Localization in Chick Auditory Brain Stem
Alex Curtis, Freshman, Neuroscience and Behavior, Columbia University
Mentor: William Spain, Physiology and Biophysics
Mentor: Sriharsha Vemana, Physiology and Biophysics
UW Stipends for Training Aspiring Researchers (STAR) Program

Freeze-drying Method for Long Term Storage of Polymer Coated Nanoparticles
Christopher James Dayringer, Junior, Chemistry, Seattle Central Community College
Mentor: Miqin Zhang, Materials Science and Engineering
Mentor: Zachary Stephen, Materials Science and Engineering
Mentor: Omid Veiseh, Materials Science and Engineering
Building Bridges to Bioengineering

The Discovery and Validation of Copy Number Variations in Autism
Daryl Dhanraj, Sophomore, Chemistry, Morehouse College
Mentor: Evan Eichler, Genome Sciences
Mentor: Santhosh Girirajan, Genome Sciences
Genome Sciences Summer Research Program

The Role Membrane Lipids Play in GLUT1 Function
Sabrina Dumas, Senior, Nutritional Science and Molecular and Cellular Biology, University of Arizona
Mentor: Tamir Gonen, Biochemistry
Mentor: Breanna Vollmar, Biochemistry
Howard Hughes Medical Institute Exceptional Research Opportunities Program (EXROP)

Analysis of Mitochondria in Human Skeletal Muscle Using 31P NMR
Brandon Flores, Senior, Cellular, Molecular, and Developmental Biology, University of Washington
Mentor: Kevin Conley, Radiology
Mentor: Eric Shankland, Radiology
Initiative for Maximizing Student Diversity (IMSD) Program

Validation of Small-Angle Scattering Techniques for Evaluating Structure in Protein-Surfactant Complexes
J. Matthew Franklin, Senior, Chemical Engineering, Michigan State University
Mentor: Danilo Pozzo, Chemical Engineering
Mentor: Monica Osplain, Chemical Engineering
Amgen Scholars Program

A High-Resolution Genome Wide Map of Structural Variation in the Modern Domesticated Dog
Cassandra Garner, Senior, Biology, University of New Mexico
Mentor: Joshua Akey, Genome Sciences
Genome Sciences Summer Research Program

Novel Nano- and Micro-Scaled ECM Inspired Co-culture System for Tissue Engineering
Krystal Gauthier-Bell, Sophomore, Biology, Seattle Central Community College
Mentor: Deok-Ho Kim, Bioengineering
Mentor: Alex Jiao, Bioengineering
Building Bridges to Bioengineering

Molecular Engineering of Heteroaryl-pyrylium Containing Cyanines for All-Optical Switching
Tianzhu Ge, Senior, Chemistry, University of Washington
Mentor: Alex Jen, Materials Science and Engineering
Mentor: Joshua Davies, Materials Science and Engineering
Hooked on Photonics

A Study on Cation-Carboxybetaine Polymer Interaction and its Biofouling Implication
Michelle Giarmarco, Postbaccalaureate, Seattle Central Community College
Mentor: Shaoyi Jiang, Chemical Engineering
Mentor: Luo Mi, Chemical Engineering
Mentor: Qing Shao, Chemical Engineering
Building Bridges to Bioengineering
REU Synthesis of Self-Assembling Silver Nanoparticles for Surface Enhanced Raman Spectroscopy
Jennifer Gilbertson, Senior, Chemistry and French, Beloit College
Mentor: Danilo Pozzo, Chemical Engineering
Mentor: Kjersta Larson-Smith, Chemical Engineering
National Nanotechnology Infrastructure Network REU

Spectral- and Time-Dependent Photooxidative Degradation of Bulk Heterojunction Organic Thin Films
Sarah Griesse-Nascimento, Senior, Electrical Engineering, Boston University
Mentor: David Ginger, Chemistry
Mentor: Glennis Rayermann, Chemistry
Hooked on Photonics

On the Shark Quest: Role of Shark Tyrosine Kinase in Tube Formation
Maritza Gomez-Bravo, Senior, Biology, University of Chicago
Mentor: Celeste Berg, Genome Sciences
Mentor: Sandra Zimmerman, Genome Sciences
Mentor: Ariel Altaras, Genome Sciences
Genome Sciences Summer Research Program

A Step towards the Iron-Catalyzed Decomposition Of Lignin
Michael Gonzales, Senior, Biochemistry and Molecular Biology, Reed College
Mentor: Karen Goldberg, Chemistry
Mentor: Alex Miller, Chemistry
Center for Enabling New Technologies through Catalysis (CENTC)

Investigating the Role of Mediator Protein MDT-15 in Lifespan Extension by Dietary Restriction
Emma Grygotis, Junior, Biochemistry,Earlham College
Mentor: Matt Kaeberlein, Pathology
Mentor: Lara Shamieh, Pathology
Amgen Scholars Program

Syndecan-1 Role in Pulmonary Arterial Hypertension and Right Ventricle Remodeling
Christina Hahn, Senior, Applied Mathematics-Biology, Brown University
Mentor: Anne Manicone, Medicine, Center for Lung Biology
Mentor: Laura Johnston, Medicine, Center for Lung Biology
UW Stipends for Training Aspiring Researchers (STAR) Program

Characterization of Runx1-Overexpressing Mouse Embryonic Stem Cell and its Potential Role as an in vitro Embryonic Diapause Model
Robert Hall, Junior, Biology, University of Washington
Mentor: C. Anthony, Hematology
Mentor: Lilyana Margaretha, Hematology
Initiative for Maximizing Student Diversity (IMSD) Program

Biosensing Using Surface-Enhanced Raman Spectroscopy
Stephanie Hare, Senior, Chemical Engineering, University of Washington
Mentor: Qiuming Yu, Chemical Engineering
Mentor: Jiajie Xu, Chemical Engineering
Engineering Undergraduate Research Program

Absence of Bone Marrow Contribution to Regenerated Skeletal Muscle Vasculature
Aislynn Hays, Senior, Biology, University of Washington
Mentor: Morayma Reyes, Pathology
UW Stipends for Training Aspiring Researchers (STAR) Program

Multiplexed Silicon Nanophotonic Biosensing via Immobilized Protein Glycoconjugates
Kevin Huang, Senior, Engineering, Trinity College
Mentor: Daniel Ratner, Bioengineering
Mentor: James T. Kirk, Bioengineering
National Nanotechnology Infrastructure Network REU

XPS Analysis of Self-Assembled Monolayers for Combinatorial Chemistry Applications
Timothy Hunt, Junior, Chemistry, Seattle Central Community College
Mentor: David Castner, Chemical Engineering
Mentor: Joe Baio, Chemical Engineering
Building Bridges to Bioengineering

The Emergence of Class C AmpC Enzyme CMY-2 Gene in Multi-Drug Resistant Escherichia coli
Mohammed A. Ibrahim, Recent Graduate, Biology, Wake Forest University
Mentor: Scott Weissman, Pediatric Infectious Disease, Seattle Children's Hospital
UW Stipends for Training Aspiring Researchers (STAR) Program
An Alternatively Spliced Isoform of Tumor Suppressor Lkb1 Kinase is Induced in Mouse Embryonic Diapause
Annika Juhlin, Senior, Bioengineering and Swedish, University of Washington
Mentor: Anthony C. Blau, Hematology
Initiative for Maximizing Student Diversity (IMSD) Program

Optical Characterization of Newly Synthesized Chiral Compounds
Max Kaganyuk, Junior, Chemical Engineering, University of Washington
Mentor: Werner Kaminsky, Chemistry
Mentor: Meghana Rawal, Chemistry
Hooked on Photonics

A Novel Method for Detection and Quantification of Genome-Wide Methylation
Bhavatharini Kasinathan, Junior, Biochemistry, University of Iowa
Mentor: John Stamatoyannopoulos, Genome Sciences
Mentor: Jeff Vierstra, Genome Sciences
Genome Sciences Summer Research Program

Improving Food Safety Using Image Processing and Surface Plasmon Resonance
Ryan Kelly, Junior, Physics, Green River Community College, University of Washington
Mentor: Denise Wilson, Electrical Engineering
Mentor: Xingyi Shi, Electrical Engineering
Hooked on Photonics

Syndecan-1 Modulates the EGFR Pathway in Lung Cancer
Lavern Keitt Jr, Senior, Wake Forest University
Mentor: Peter Chen, Center for Lung Biology
Mentor: Saundra Dohrenwend, Center for Lung Biology
Mentor: Laura Abacherli, Center for Lung Biology
UW Stipends for Training Aspiring Researchers (STAR) Program

Investigating the Catalysis of an E3 Ubiquitin Ligase by a High-Throughput Method
Helen Kim, Senior, Molecular Biology, Claremont McKenna College
Mentor: Stan Fields, Genome Sciences and Medicine
Mentor: Lea Starita, Genome Sciences
Amgen Scholars Program

Beneficial Effects of Pregabalin on Postoperative Pain and Long Term Pain Sensitization
Raymond Koopmans, Senior, Mathematics and Biochemistry, University of Washington
Mentor: Philippe Richebe, Anesthesiology and Pain Medicine
Mentor: Cyril Rivat, Anesthesiology and Pain Medicine
Mentor: Mei Xu, Anesthesiology and Pain Medicine
Initiative for Maximizing Student Diversity (IMSD) Program

Exploring the Mechanism of the C. elegans Vid Phenotype as a Model for Human Ribosomopathies
Joseph Kruempel, Senior, Biology, University of Iowa
Mentor: Matt Kaeberlein, Pathology
Mentor: George Sutphin, Pathology
Amgen Scholars Program

Apparent Diffusion Coefficient as an Indicator of Hypoxia in Gliomas
Theresa Kurtz, Senior, Neuroscience & Mathematics, University of Rochester
Mentor: Kristin Swanson, Pathology
Mentor: Andrea Hawkins-Daarud, Pathology
Amgen Scholars Program

Modeling the Effects of Low Frequency Stimulation in a Conductance-Based Model of the Parkinsonian Basal Ganglia
Megan Lacy, Senior, Neurobiology, University of Washington
Mentor: Eric Shea-Brown, Applied Mathematics
Mentor: Guillaume Lajoie, Applied Mathematics
Amgen Scholars Program

Characterization of the Reductive Properties of Cytochrome P450 BM3
Kyle Lakatos, Senior, Neurobiology, University of California Santa Cruz
Mentor: Rheem Totah, Medicinal Chemistry
Mentor: Rüdiger Kaspera, Medicinal Chemistry
Amgen Scholars Program

Ethnic Distribution of Clinically Significant Blood Groups – Functional Relevance
Zachary Lamebull, Junior, Biology, University of Washington
Mentor: Lakshmi Gaur, Puget Sound Blood Center
UW Stipends for Training Aspiring Researchers (STAR) Program
Targeting of Lipid-Nanoparticles to Cancer Cells Overexpressing the Epidermal Growth Factor (EGF) Receptor: The Role of Polyethylene Glycol (PEG) Spacers on EGF Peptides Conjugated to Lipid
Marsha Lampi, Senior, Bioengineering, Oregon State University
Mentor: Rodney J.Y. Ho, Pharmaceutics
Amgen Scholars Program

Identifying Mutations in the TBX3 Gene that Cause Ulnar Mammary Syndrome
Weiyi Li, Junior, Biochemistry, University of Washington
Mentor: Michael Bamshad, Pediatrics
Mentor: Heidi Gildersleeve, Pediatrics
NASA Space Grant Summer Undergraduate Research Program

Anti-Fouling and Fouling Release Surfaces Utilizing Zwitterionic Molecules
Gabriel Licina, Sophomore, Biology, Seattle Central Community College
Mentor: Shaoyi Jiang, Chemical Engineering
Mentor: Xuewei Xu, Chemical Engineering
Building Bridges to Bioengineering Program

Ultra-Low Fouling Peptide Self-Assembled Monolayers as Biomedical Surface Coatings
Brynn Livesay, Junior, Chemical Engineering, Oregon State University
Mentor: Shaoyi Jiang, Chemical Engineering
Mentor: Ann (Kasia) Nowinski, Chemical Engineering
Amgen Scholars Program

Expression of Cyanovirin-N and Encapsulation in Polymeric Nanoparticles for Antiviral Drug Delivery
Alexandra Long, Junior, Biology and Biochemistry, Carleton College
Mentor: Kim Woodrow, Bioengineering
Mentor: Joe Phan, Bioengineering
Mentor: Cameron Ball, Bioengineering
Amgen Scholars Program

Modification of Prokaryotic Gene Expression: The Application of Anti-Sense RNA
Alan Lopez, Sophomore, Pre-Health Sciences, University of Washington
Brandon Mansfield, Sophomore, Biology, Heritage College
Allion Salvador, Junior, Applied Music, University of Washington
Michelle Santoyo, Sophomore, Pre-Science, University of Washington
Nyka Tucker, Sophomore, Pre-Science, University of Washington
Stephanie Valdez, Sophomore, Pre-Science, University of Washington
Mentor: Richard To, Bioengineering
Mentor: Carlos Estrada Alamo, Bioengineering
Mentor: Renee Plummer, Biology
Initiative for Maximizing Student Diversity (IMSD) Program
*UW Stipends for Training Aspiring Researchers (STAR) Program

Work towards Iridium Complexes for C-H Activation
Alex MacRae, Senior, Chemistry, University of Washington
Mentor: Karen Goldberg, Chemistry
Mentor: Kate Allen, Chemistry
Center for Enabling New Technologies through Catalysis (CENTC)

Earth Abundant Materials for Photovoltaic Device Fabrication
Ashley Marshall, Senior, Chemistry, Pacific Lutheran University
Mentor: David S. Ginger, Chemistry
Mentor: Adam Colbert, Chemistry
Hooked on Photonics

The Effect of sTnC Variants on Contraction in Rabbit Psoas Muscle Fibers
Joshua Matlock, Senior, Psychology and Biology, University of Washington
Mentor: Michael Regnier, Bioengineering
UW Stipends for Training Aspiring Researchers (STAR) Program

Controlled Inhibition of Antibiotic Resistance: The Role of Antisense RNA in Phenotypic Manipulation
Nathan McCurtain, Sophomore, Pre-Science, University of Washington
Jasmine Munoz, Sophomore, Pre-Bioengineering, University of Washington
Pearl Nguyen, Sophomore, Pre-Science, University of Washington
Kofi Nunes, Junior, Pre-Science, University of Washington
*Abigail Payne, Sophomore, Seattle Central Community College
Yesenia Rosales, Sophomore, Pre-Science, University of Washington
Mentor: Richard To, Bioengineering
Mentor: Carlos Estrada Alamo, Bioengineering
Mentor: Renee Plummer, Biology
Initiative for Maximizing Student Diversity (IMSD) Program
*UW Stipends for Training Aspiring Researchers (STAR) Program
Oct4 Regulation of Wnt Signaling in Human Embryonic Stem Cells
Circe McDonald, Junior, Biology, Dominican University of California
Mentor: Randall Moon, Pharmacology
Mentor: Kathryn Davidson, Pharmacology
Mentor: Nick Robin, Pharmacology
Amgen Scholars Program

Measuring Height Mismatch of Phase-Separated Lipids in Model Cell Membranes
Morgan McGuinness, Sophomore, Physics, Lafayette College
Mentor: Sarah Keller, Chemistry
Mentor: Joan Bleecker, Chemistry
National Nanotechnology Infrastructure Network REU

Characterization of Type IV Secretion System Protein-Protein Interactions in Burkholderia cenocepacia
Molly McQuilken, Senior, Genetic Engineering, Cedar Crest College
Mentor: Beth Traxler, Microbiology
Amgen Scholars Program

Using High-Throughput Sequencing to Try to Change the Binding Specificity of a WW Domain
Daniel C. Mendez, Senior, Biological Science, California State University, Fullerton
Mentor: Stanley Fields, Genome Sciences
Mentor: Douglas Fowler, Genome Sciences
Howard Hughes Medical Institute Exceptional Research Opportunities Program (EXROP)

A Novel Zwitterionic Coating to Resist Polysaccharide Facilitated Bacteria Adhesion
Jose Mendiola, Sophomore, Microbiology, Seattle Central Community College
Michelle Giarmarco, Postbaccalaureate, Chemical Engineering, Seattle Central Community College
Mentor: Shaoyi Jiang, Chemical Engineering
Mentor: Luo Mi, Chemical Engineering
Building Bridges to Bioengineering

Integration of an Anatomically Correct Testbed (ACT) Robotic Hand with a Standard Robotic Arm
Juan De Dios Morales, Junior, Pre-Engineering, University of Washington
Mentor: Yoky Matsuoka, Computer Science and Engineering
Mentor: Eric Rombokas, Electrical Engineering
Mentor: Mark Malhotra, Mechanical Engineering
Engineering Undergraduate Research Program

Cytochrome C Oxidase Assay - A Marker Enzyme of the Mitochondrial Inner Membrane
Arlyn Yire Moreno Luna, Senior, Bioresource Research, Oregon State University
Mentor: Hannele Ruohola Baker, Biochemistry
Mentor: Tim Dosey, Biochemistry
Mentor: Henrik Sperber, Biochemistry
UW Stipends for Training Aspiring Researchers (STAR) Program

Characterization and Control of Fullerene Crystallization in Polymer Solar Cells
Rainie Nelson, Sophomore, Chemical Engineering, University of Washington
Mentor: Danilo Pozzo, Chemical Engineering
Mentor: Jeffrey Richards, Chemical Engineering
Engineering Undergraduate Research Program

A Molecular Cloning Approach to Synthesizing Soluble Recombinant uPARAP
Megan A Neumann, Senior, Biology, The College of St. Scholastica
Mentors: Chi F Hung, Center for Lung Biology
Amgen Scholars Program

Effects of Salt Concentration on Nanopore/ DNA Interactions
Ian Nova, Senior, Bioengineering, Santa Clara University
Mentor: Jens Gundlach, Physics
Mentor: Ian Derrington, Physics
Amgen Scholars Program

Purification of Human Embryonic Stem Cell Derived Cardiomyocytes by Insulin Free Media
Willmark Obenza, Senior, Cellular, Molecular, and Developmental Biology, University of Washington
Mentor: Michael Laflamme, Pathology
Initiative for Maximizing Student Diversity (IMSD) Program

Electrochemical Response of Bipolar Micro- and Nanoelectrodes
Stephen Oja, Senior, Chemistry, University of Wisconsin-Madison
Mentor: Bo Zhang, Chemistry
Mentor: Joshua Guerrete, Chemistry
Amgen Scholars Program
Characterization of an Anti-Canine CD28 Monoclonal Antibody
Bianca Ortiz, Senior, Biology, University of Texas at San Antonio
Mentor: Rainer Storb, Fred Hutchinson Cancer Research Center
Mentor: Scott Graves, Fred Hutchinson Cancer Research Center
Mentor: Diane Stone, Fred Hutchinson Cancer Research Center
UW Stipends for Training Aspiring Researchers (STAR) Program

Population Sequencing of a Rapidly Evolving Sperm Protein, SP6
Aleena Ouaddi, Sophomore, Undeclared, University of Washington
Mentor: Willie Swanson, Genome Sciences
Mentor: Melody R. Palmer, Genome Sciences
Genome Sciences Summer Research Program

Single Molecule Measurements of Dielectric Domains in Polymers
Jorge Palos-Chávez, Senior, Physics, University of Texas at San Antonio
Mentor: Phillip J. Reid, Chemistry
Mentor: Erin A. Riley, Chemistry
Mentor: Chelsea Hess, Chemistry
Hooked on Photonics

Layer-by-Layer Self-Assembled Pyrroline-Based Donor-Acceptor Chromophores
Emanuel Parkman, Junior, Physics, Green River Community College, University of Washington
Mentor: Larry Dalton, Chemistry
Mentor: Nathan Phillips-Sylvain, Chemistry
Hooked on Photonics

The Evolution of an Incipient Cooperative System
Jose Mario Pineda, Junior, Neurobiology, University of Washington
Mentor: Wenying Shou, Fred Hutchinson Cancer Research Center
Mentor: Chi-Chun Chen, Fred Hutchinson Cancer Research Center
UW GenOM Project

Alzheimer’s Disease: Subcellular Localization of Presenilin 2 in Microglia and Implications for Mitochondrial Dynamics
Galen Pizzorno, Senior, Neurobiology and Biochemistry, University of Washington
Mentor: Gwenn Garden, Neurology
Amgen Scholars Program

Fabrication and Characterization of Field Effect Transistors with Phosphonic Acid Functionalized Oligothiophene Monolayers
D. Ploeger, Sophomore, Chemistry, University of Washington
Mentor: Christine Luscombe, Materials Science and Engineering
Mentor: Andrew Rice, Materials Science and Engineering
Hooked on Photonics

Stability of Zwitterionic-Modified Gold Nanoparticles in Complex Media:
Effect of Surface Packing Densities
Julia Podmayer, Sophomore, Biochemistry, Seattle Pacific University
Mentor: Shaoyi Jiang, Chemical Engineering
Mentor: Wei Yang, Chemical Engineering
National Nanotechnology Infrastructure Network REU

Converting Water to Oxygen Using a Copper Catalyst
Bobby Portis, Sophomore, Chemistry, Jackson State University
Mentor: James Mayer, Chemistry
Mentor: Shoshana Barnett, Chemistry
Center for Enabling New Technologies through Catalysis (CENTC) Undergraduate Summer Research Program

Genetic Determinants of Longevity in C. elegans Nematodes
Amina Ramadan, Senior, Biology and Biochemistry, University of Washington
Mentor: Weiqing Li, Biological Structure
Mentor: Mindy Farris, Biological Structure
Initiative for Maximizing Student Diversity (IMSD) Program

Hepatitis B Virus: Purification and Capsid Assembly
Michelle Redhair, Senior, Chemistry and Biochemistry, University of Arizona
Koeun Choi, Recent Graduate, Chemistry and Biochemistry, University of Washington
Mentor: Kelly Lee, Medicinal Chemistry
Mentor: Natalie Garcia, Medicinal Chemistry
Pharmacological Sciences Summer Diversity Program

Protein Homeostasis in Aging and Long-Lived Mice
Jason Reynolds, Senior, Microbiology, Idaho State University
Mentor: Peter S. Rabinovitch, Pathology
Mentor: Natan Basisty, Pathology
Amgen Scholars Program
Measuring Lesion Depth in Enamel
Jeremy Ridge, Senior, Mechanical and Electrical Engineering, University of Washington
Mentor: Eric J. Seibel, Mechanical Engineering
Mentor: Liang Zhang, Bioengineering
Engineering Undergraduate Research Program

Analyzing 3D Camera Data to Create an Object Detection System for Blind People
Miguel Rivera, Senior, Computer Science, University of Puerto Rico-Bayamon
Mentor: Richard E. Ladner, Computer Science & Engineering
Mentor: Peter Henry, Computer Science & Engineering
Engineering Undergraduate Research Program

Biosensing Based on Surface-Enhanced Raman Scattering (SERS)
Laurel Rognstad, Senior, Chemical Engineering, Tennessee Technological University
Mentor: Qiuming Yu, Chemical Engineering
Mentor: Jiajie Xu, Chemical Engineering
National Nanotechnology Infrastructure Network REU

Identification of Regulatory Relationships of hnd-1 in Muscle Differentiation and of elt-1 in Hypodermal Differentiation in the Caenorhabditis elegans Embryo
Bryan Santos, Senior, Biology, Azusa Pacific University
Mentor: Robert Waterston, Genome Sciences
Mentor: Max Boeck, Genome Sciences
Genome Sciences Summer Research Program

Wave Supported Gravity Currents
Nathan Secrett, Senior, Electrical Engineering, University of Washington
Mentor: Alex Horner-Devine, Civil Engineering
Mentor: Abhas Hooshmand, Civil Engineering
Initiative for Maximizing Student Diversity (IMSD) Program

Selection of Pore Forming Agents that Increase Drug Release from Poly(2-hydroxyethyl methacrylate) in Order to Prevent Post Surgical Infection at Medical Implant/Tissue Interface
Daniel Severin, Junior, Cellular and Molecular Biology, Seattle Central Community College
Mentor: James D. Bryers, Bioengineering
Mentor: Kristy Katzenmeyer, Bioengineering
Mentor: Hongyan Ma, Bioengineering
Building Bridges to Bioengineering

Maturation of gp160 by Cellular Endoprotease Furin in vitro
Caroline Bwari Simmons, Sophomore, College of the Sequoias
Mentor: Shiu-Lok Hu, Pharmaceutics
Mentor: Carlos Enrique Catalano, Medicinal Chemistry
Mentor: Eri Nakatani, Medicinal Chemistry
Pharmacological Sciences Summer Diversity Program

Method Development of Headspace Solid-Phase Microextraction for the Analysis of Volatile Organohalogen Compounds in Artificial Seawater
Karena Smoll, Junior, Chemistry, University of California, Irvine
Mentor: Christopher Simpson, Environmental and Occupational Health Sciences
Mentor: Gretchen Onstad, Environmental and Occupational Health Sciences
Environmental Health Research Experience Program

The Effect of Wind Incentives on U.S. Power Markets
Sarah Szewczyk, Senior, Electrical Engineering, University of Washington
Mentor: Professor Richard Christie, Electrical Engineering
Engineering Undergraduate Research Program

The Effects of Reducing WNT5a on Melanoma Cell Behavior
Tigist Y. Tamir, Senior, Biology and Biomathematics, The College of William and Mary
Mentor: Randall Moon, Pharmacology
Mentor: Jamie Anastas, Pharmacology
Howard Hughes Medical Institute Exceptional Research Opportunities Program (EXROP)

Quantification of Methicillin-Resistant Staphylococcus aureus and Escherichia coli from Algal Wracks, Marine Water, Fresh Water, and Avian Feces from Recreational Marine Beaches in Washington State
Andy Tang, Senior, Environmental Health, University of Washington
Mentor: Marilyn Roberts, Environmental and Occupational Health Sciences
Mentor: Olusegun Soge, Environmental and Occupational Health Sciences
Mentor: David No, Environmental and Occupational Health Sciences
Environmental Health Research Experience Program
Comparison of Remote Pressure and Vibrotactile Feedback for Prosthetic Hand Control
Camilo Tejeiro, Senior, Electrical Engineering, University of Washington.
Mentor: Yoky Matsuoka, Computer Science and Engineering
Mentor: Cara E. Stepp, Speech, Language & Hearing Sciences and Biomedical Engineering
Mentor: Mark Malhotra, Computer Science
Mentor: Eric Rombokas, Computer Science
Engineering Undergraduate Research Program

The Effect of Anesthetics on the Exclusion Zone
Chuong Tran, Sophomore, Materials Science and Chemical Engineering, University of Washington
Mentor: Gerald Pollack, Bioengineering
Engineering Undergraduate Research Program

Oligonucleotide Ligation Assay for the Detection of Mutations in Human Immunodeficiency Virus Type 1 Associated with Peripartum Nevirapine in Infants from Pretoria, South Africa
Tram Tran, Senior, Biology, Seattle University
Mentor: Lisa Frenkel, Infectious Diseases and Laboratory Medicine
UW Stipends for Training Aspiring Researchers (STAR) Program

Bio-Inspired Wet Reversible Adhesives
Nichole Tyler, Junior, Bioengineering, University of Washington
Mentor: Wendy Thomas, Bioengineering
Initiative for Maximizing Student Diversity (IMSD) Program

Raven II: A Surgical Robot System for Open and Minimally Invasive Surgery
Pedro Ulises Pacheco, Junior, Material Science Engineering, University of Washington
Mentor: Blake Hannaford, Electrical Engineering
Mentor: Levi Cheng, Electrical Engineering
UW Stipends for Training Aspiring Researchers (STAR) Program

Computer Vision in Endoscopy
Leandra Wehner, Senior, Electrical Engineering, University of Washington
Mentor: Eric J. Seibel, Mechanical Engineering
Mentor: Tim Soper, Mechanical Engineering
Engineering Undergraduate Research Program

Hydrothermal Synthesis of Magnetite Nanowires
Samantha Wheeler, Junior, Materials Science and Engineering, University of Washington
Mentor: Peter Pauzauskie, Materials Science and Engineering
Hooked on Photonics

An Evaluation of Indicator Bacteria Levels at Green Lake Park Swimming Beaches
T'Shane C. Williams, Senior, Biology/Public Health, Clark Atlanta University
Mentor: J. Scott Meschke, Environmental and Occupational Health Sciences
Mentor: Nicola K. Beck, Environmental and Occupational Health Sciences
Environmental Health Research Experience Program

Gel Electrophoresis Assay for Evaluating PEG Coating on Nanoparticles
Angela Wilson, Postbaccalaureate, Seattle Central Community College
Mentor: Miqin Zhang, Materials Science and Engineering
Mentor: Zach Stephen, Materials Science and Engineering
Mentor: Omid Veiseh, Materials Science and Engineering
Building Bridges to Bioengineering Program

Maturation of Stem Cell-Derived Cardiomyocytes for Future Cardiac Cell Therapy Applications
Robin Wilson, Senior, Biomedical Engineering, Case Western Reserve University
Mentor: Michael Regnier, Bioengineering
Mentor: Scott Lundy, Bioengineering
Angen Scholars Program

Modification of Nanofibers with Zwitterionic Polymer via ATRP for Applications in Complex Media
Collin Wimbish, Junior, Biochemistry, Seattle Central Community College
Mentor: Shaoyi Jiang, Chemical Engineering
Mentor: Harihara Subramanian Sundaram, Chemical Engineering
Building Bridges to Bioengineering

Synthetic Analogues of Rieske Clusters
Cory J. Windorff, Senior, ACS Chemistry and German, University of Wisconsin-River Falls
Mentor: James Mayer, Chemistry
Mentor: Caroline Saouma, Chemistry
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Undergraduate Summer Research Program
Characterization of Chromophores for Non-Linear Optical Devices
Weston Winn, Sophomore, Biochemistry, Green River Community College
Mentor: Bruce Robinson, Chemistry
Mentor: Andreas Tillack, Chemistry
Hooked on Photonics

PON2 as an Antioxidant Enzyme in the Central Nervous System: Gender Differences
Lisa Xiao, Senior, Toxicology, St. John’s University
Mentor: Lucio Costa, Environmental and Occupational Health Sciences
Mentor: Gennaro Giordano, Environmental and Occupational Health Sciences
Environmental Health Research Experience Program

Mechanochemical Activation of Small Ring Cycopolymers
Gedion Yitref, Senior, Chemistry, University of Washington
Mentor: Andrew J. Boydston, Chemistry
Amgen Scholars Program

Extensive Remyelination with No Chronic Demyelination in the Lesion Core of Injured Rat Spinal Cord
Nikolai Zapertov, Junior, Psychology and Biochemistry, University of Washington
Mentor: Philip Horner, Neurological Surgery
Mentor: Berit Jacobson, Neurological Surgery
Initiative for Maximizing Student Diversity (IMSD) Program

House Dust: A Pesticide Exposure Pathway
Angele Zamarron, Senior, Environmental Studies, Chemistry, The Evergreen State College
Mentor: Michael Yost, Environmental and Occupational Health Sciences
Mentor: Jenna Armstrong, Environmental and Occupational Health Sciences
Environmental Health Research Experience Program

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