UW Summer Undergraduate Research Poster Session

August 15, 2012
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), Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program, Environmental Health Research Experience Program (EHREP), 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 Science Foundation-Research Experience & Mentoring (NSF-REM), 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 – J)*  9:00 am – 10:30 am
Poster Session 2 (K – Z)*  10:30 am – 12:00 pm

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

Refreshments available in Mary Gates Hall Commons
Poster Session Presenters

Please note: Presenters are listed alphabetically by last name.
Non-Instrumented Nucleic Acid Extraction Technology for Enabling Point-of-Care Assays to Assess HIV Resistance
Merna Abdelsayed, Junior, Bioengineering and Electrical Engineering, University of Washington
Mentor: Patrick Stayton, Bioengineering
Mentor: James Lai, Bioengineering
Mentor: Max Chen, Bioengineering
UW GenOM Project

Investigations into Thermal Triggering of Self-Immolative Polymers
Dorothy Ackerman, Senior, Chemistry, Northwest Nazarene University
Mentor: Andrew Boydston, Chemistry
Mentor: Michael Larsen, Chemistry
Amgen Scholars Program

Effects of Various Dyes on Dye-Sensitized Solar Cells (DSSC) for High Percent Conversion Efficiency (PCE)
Kasey Acob, Freshman, Mechanical Engineering, University of Washington
Mentor: Christine Luscombe, Materials Science & Engineering
Mentor: Minoru Taya, Mechanical Engineering
Mentor: Soo Yeun Kim, Center for Intelligent Materials and Systems
Mentor: Bryan Ferguson, Mechanical Engineering
National Science Foundation-Research Experience & Mentoring (NSF-REM)

An Atlas of HIV-1 Reservoirs, Compartments and Drug Resistant Sanctuaries
Cameron Adams, Senior, Biochemistry, University of Washington
Mentor: James Mullins, Microbiology
UW Stipends for Training Aspiring Researchers (STAR) Program

Reagent Storage and Control for Paper Diagnostics
Luke Allpress, Senior, Bioengineering, University of Washington
Mentor: Paul Yager, Bioengineering
UW Stipends for Training Aspiring Researchers (STAR) Program

Controlled Inhibition of Antibiotic Resistance: The Role of Antisense RNA in Phenotypic Manipulation
Samantha Amezquita, Sophomore, Pre-Science, University of Washington
Katrina Carter, Junior, Pre-Science, University of Washington
Brooks Gribble, Sophomore, Pre-Science, University of Washington
Larry Hamilton III, Junior, Pre-Science, University of Washington
Maria Hamilton, Sophomore, Pre-Science, University of Washington
Jennifer Tran, Sophomore, Pre-Science, University of Washington
Mentor: Richard To, Bioengineering
Mentor: Brittany Lund, Bioengineering
Mentor: Farzaneh Shafighi, Bioengineering
Mentor: Renee Plummer, Biology
Initiative for Maximizing Student Diversity (IMSD) Program
Silencing Prokaryotic Antibiotic Resistance: The Significance of Antisense RNA
Jessica Armand, Junior, Pre-Science, University of Washington
Peter Iglesias, Sophomore, Pre-Science, University of Washington
Kelly Kennewick, Sophomore, Pre-Science, University of Washington
Emily Schneider, Sophomore, Pre-Science, University of Washington
Kourtney Sharpe, Sophomore, Pre-Science, University of Washington
Kara Wages, Sophomore, Pre-Science, University of Washington
Mentor: Richard To, Bioengineering
Mentor: Brittany Lund, Bioengineering
Mentor: Farzaneh Shafighi, Bioengineering
Mentor: Renee Plummer, Biology
Initiative for Maximizing Student Diversity (IMSD) Program

Magneto Second Harmonic Generation
Joel Bahena, Junior, Nanoengineering, University of California, San Diego
Mentor: Peter Pauzauskie, Materials Science & Engineering
Mentor: Paden Roder, Materials Science & Engineering
Hooked on Photonics

Working Towards Anti-Markovnikov Hydroamination with Rhodium Pincer Complexes
Brittany Barfield, Senior, Chemistry, San Diego State University
Mentor: Karen Goldberg, Chemistry
Mentor: Tyler Stevens, Chemistry
Center for Enabling New Technologies through Catalysis (CENTC)

Genome-Wide RNAi Screen in C. elegans to Identify Components of the Unfolded Protein Response in Mitochondria
Sarah Barfield, Junior, Genetics and Biochemistry, Clemson University
Mentor: Matt Kaeberlein, Pathology
Mentor: Chris Bennett, Pathology
Amgen Scholars Program

Bacterial Warfare: Modeling the Effect of Environmental Disturbance on Antibiotic-Mediated r and K Selection
Jacob Bayless da Costa, Senior, Biochemistry, University of Washington
Mentor: John Mittler, Microbiology
UW Stipends for Training Aspiring Researchers (STAR) Program

Sequencing of Distal Arthrogryposis (DA) Candidate Genes in Patients with Freeman-Sheldon, Sheldon-Hall, and Unclassified DA Syndromes
Whitney Best, Sophomore, The Master’s College
Mentor: Michael Bamshad, Pediatrics
UW Stipends for Training Aspiring Researchers (STAR) Program

Identification of Erythrocyte Membrane Abnormalities with Duchenne Muscular Dystrophy using Time of Flight Secondary Ion Mass Spectroscopy
Blake Bluestein, Recent Graduate, Bioengineering, University of Washington
Mentor: Albert Folch, Bioengineering
UW Stipends for Training Aspiring Researchers (STAR) Program
The Utilization of Passive Design Strategies in the Built Environment
Bailey Bonaci, Freshman, Aeronautics and Astronautics, University of Washington
Mentor: Christine Luscombe, Materials Science & Engineering
Mentor: Christopher Meek, College of Built Environments
Mentor: Amanda Bruot, College of Built Environments
Mentor: Adam Stoeckle, College of Built Environments
National Science Foundation-Research Experience and Mentoring (NSF-REM)

Associations Between Sleep and the Immune System
John Paul Bonadonna, Senior, Biopsychology, Cognition and Neuroscience, University of Michigan
Mentor: Horacio de la Iglesia, Biology
Mentor: Angela Katsuyama, Biology
Amgen Scholars Program

Assessment of Gender Differences in Psychological Functioning of Soldiers Volunteering for a Brief Substance Abuse Intervention
Camilla Brewer, Sophomore, Psychology and Women’s Studies, University of North Carolina-Chapel Hill
Mentor: Denise Walker, Social Work
Mentor: Lyungai F. Mbilinyi, Social Work
UW Stipends for Training Aspiring Researchers (STAR) Program

Synthesis and Optical Characterization of Small Tricyanopyrroline Chromophores Based on 2-hydroxybenzaldehyde
Hannah Buehler, Senior, Chemistry, Luther College
Mentor: Larry Dalton, Chemistry
Mentor: Nathan Phillips-Sylvain, Chemistry
Hooked on Photonics

Finger Tracking with the Kinect
Francisco Candido, Junior, Aerospace Engineering, San Diego State University
Mentor: Howard Jay Chizeck, Electrical Engineering
Mentor: Fredrik Rydén, Electrical Engineering
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

De Novo Design and Directed Evolution of Serine Hydrolases
Diego Castro, Senior, Biochemistry and Molecular Biology, Trinity University
Mentor: David Baker, Biochemistry
Mentor: Sridharan Rajagopalan, Biochemistry
Howard Hughes Medical Institute Exceptional Research Opportunities Program (EXROP)

Assessment of Children’s Non-Dietary Exposure to Chlorpyrifos in Indoor Environments
Chi-Hsuan Chang, Undergraduate, Public Health & Economics, National Taiwan University
Mentor: John C. Kissel, Environmental and Occupational Health Sciences
Mentor: Jeffry H. Shirai, Environmental and Occupational Health Sciences
Environmental Health Research Experience Program (EHREP)
EMG Driven Proprioceptive Feedback
Alex Chavez, Junior, Biochemistry and Cell and Molecular Biology, UCSD
Southwestern College
Mentor: Blake Hannaford, Electrical Engineering
Mentor: Iris Jiang, Bioengineering
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Synthesis and Characterization of Externally Initiated Poly(3-hexylthiophene)
Hoi (Christy) Cheung, Junior, Chemistry, Edmonds Community College
Mentor: Christine Luscombe, Materials Science & Engineering
Mentor: Prakash Sista, Materials Science & Engineering
Hooked on Photonics

Comparison of Movements Evoked by Intra-Spinal Microstimulation in the Cervical Spinal Cord in Injured and Uninjured Rats
Frances Cho, Sophomore, Undeclared, Columbia University
Danielle Lockwood, Senior, Biomedical Engineering, University of Arizona
Mentor: Chet Moritz, Rehabilitation Medicine
Mentor: Michael Kasten, Rehabilitation Medicine
Mentor: Michael Sunshine, Rehabilitation Medicine
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Hyperoxia Induces Senescent Phenotype in M.L.F.
Linda Cho, Junior, Biochemistry, Bryn Mawr College
Mentor: Lynn M. Schnapp, Center for Lung Biology
Mentor: Yu-Hua Chow, Center for Lung Biology

Autonomous Flight of the AscTec Hummingbird Research Pilot
Fallon Clark, Sophomore, Computer Science, Spelman College
Marina Dimitrov, Senior, Catlin Gabel High School
Francesca Liburdy, Sophomore, Pre-Engineering, University of Washington
Mentor: Kristi Morgansen, Aeronautics and Astronautics
Mentor: Brian Hinson, Aeronautics and Astronautics
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Males and Females Require Different Levels of Kisspeptin for Reproduction
Tessa Concepcion, Junior, Environmental Health, University of Washington
Mentor: Robert Steiner, Obstetrics and Gynecology
Mentor: Simina Popa, Obstetrics and Gynecology
Initiative for Maximizing Student Diversity (IMSD) Program

Microwaves Passing through Electrochromic Windows
Daniel C. Corona, Freshman, Pre-Engineering, University of Washington
Mentor: Christine Luscombe, Materials Science & Engineering
Mentor: Yasuo Kuga, Electrical Engineering
Mentor: Matthew Stoneback, Electrical Engineering
National Science Foundation-Research Experience and Mentoring (NSF-REM)
Examining HHARI RING Domain and E2 Interactions
Ernesto Coronado, Senior, Biochemistry & Chemistry, University of California, San Diego
Mentor: Rachel E. Klevit, Biomolecular Structure Center
UW Stipends for Training Aspiring Researchers (STAR) Program

Genetic Modification of Prokaryotic Gene Expression: The Application of Anti-Sense RNA
Fredy Cortez, Sophomore, Pre-Science, University of Washington
Christina Frost, Junior, Biology, University of Washington
Lucero Gutierrez, Sophomore, Pre-Science, University of Washington
Dorathy-Ann Harris, Sophomore, Pre-Science, University of Washington
Laura Hernandez, Sophomore, Pre-Science, University of Washington
Nathanael Mengist, Sophomore, Pre-Science, University of Washington
Mariah Oakes, Junior, Public Health, University of Washington
Mentor: Richard To, Bioengineering
Mentor: Brittany Lund, Bioengineering
Mentor: Farzaneh Shafighi, Bioengineering
Mentor: Renee Plummer, Biology
Initiative for Maximizing Student Diversity (IMSD) Program

Active Design Strategies
David Coven, Freshman, Mechanical Engineering, University of Washington
Mentor: Christine Luscombe, Materials Science & Engineering
Mentor: Christopher Meek, Architecture
Mentor: Adam Sloeckle, Architecture
Mentor: Amanda Bruot, Architecture
National Science Foundation-Research Experience and Mentoring (NSF-REM)

Characterization of Artifact Caused by Virbotactile Stimuli in EEG
Eric Crespo, Junior, Mechanical Engineering, Massachusetts Institute of Technology
Mentor: Rajesh Rao, Computer Science
Mentor: Jeremiah Wander, Bioengineering
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Immunohistochemical Characterization of Vasculature Damage Caused By Planar, Singleshank Neural Implants in the Rat Motor Cortex
D. Cale Crowder, Junior, Biomedical Engineering, University of Akron
Mentor: Bill Shain, Center for Integrative Brain Research
Mentor: Carolyn Harris, Center for Integrative Brain Research
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Isolation of Pathogens and Drugs Resistance Genes from Crows and their Environment
Sheila Cubero-Rodríguez, Senior, Microbiology, Universidad del Este
Mentor: Marilyn C. Roberts, Environmental and Occupational Health Sciences
Mentor: David No, Environmental and Occupational Health Sciences
Mentor: Jack DeLap, Environmental and Forest Sciences
Mentor: John M. Marzluff, Environmental and Forest Sciences
Environmental Health Research Experience Program (EHREP)
Investigating Stability of Ozone Samples: Ogawa Holding Time Experiment in Seattle, WA
Andrea d’Aquino, Senior, Math and Chemistry, Western Washington University
Mentor: Christopher Simpson, Environmental and Occupational Health Sciences
Mentor: Miyoko Sasakura, Environmental and Occupational Health Sciences
Environmental Health Research Experience Program (EHREP)

Metabolic Differences in Long Chain Fatty Acid Metabolism of the Right and Left Ventricle After Extracorporeal Membrane Oxygenation in the Immature Pig
Alec Davila, Sophomore, Biology, Barry University
Mentor: Michael Portman, Seattle Children’s Hospital
UW Stipends for Training Aspiring Researchers (STAR) Program

Amplification of SUL1 in Diploid Yeast Cells Grown in Sulfate-Limited Conditions
Ashley DeAguero, Postbac, Biology, University of New Mexico
Mentor: Bonita Brewer, Genome Sciences
Genome Sciences Summer Research Program

Whole Genome Analysis of Siblings by Comparing SNPs with Identity by Descent
Joseph DeAguero, Senior, Applied Mathematics, University of New Mexico
Mentor: Joshua Akey, Genome Sciences
Mentor: Timothy O’Connor, Genome Sciences
Genome Sciences Summer Research Program

A Brain-Computer Interface Using an Emotiv Neuroheadset and a PR2 Robot
Juan De Dios Morales, Senior, Computer Science, University of Washington
Amanda Nguyen, Senior, Bioengineering, Clemson University
Mentor: Joshua Smith, Computer Science
Mentor: Liang-Ting Jiang, Computer Science
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Computational Analysis of Mutations in Zinc Finger Transcription Factors Across Multiple Tumor Types
Phongsathon Denwongken, Junior, Applied and Computational Mathematical Sciences, University of Washington
Mentor: Ilya Schmulevich, Computational Systems Biology
UW Stipends for Training Aspiring Researchers (STAR) Program

Identification of Copy Number Variants Contributing to Neurological Disorders of Human Specific Neuronal SRGAP2
Daryl Dhanraj, Junior, Chemistry, Morehouse College
Mentor: Evan Eichler, Genome Sciences
Mentor: Megan Dennis, Genome Sciences
Genome Sciences Summer Research Program
Creating a Self-Sufficient Autonomous Quadrotor Helicopter
Marina Dimitrov, Senior, Catlin Gabel High School
Francesca Liburdy, Sophomore, Pre-Engineering, University of Washington
Fallon Clark, Sophomore, Computer Science, Spelman College
Mentor: Kristi Morgansen, Aeronautics and Astronautics
   Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Expanding our Genetic Toolbox: Creating a Deletion of the Fly Gene Tiggrin to Facilitate the Study of Tubular Organ Formation
Tanya Dodgen, Senior, Biology and Latin American Studies, University of Washington
Mentor: Celeste Berg, Genome Sciences
   UW GenOM Project

Developing Silicon Photonic Microdisk Resonator Biosensors
Matthew Doerfler, Senior, Biomedical Engineering, Northwestern University
Mentor: Daniel M. Ratner, Bioengineering
Mentor: Shon Schmidt, Bioengineering
   Amgen Scholars Program

Optimizing Mutations of the Nanopore MspA for DNA Sequencing
Kenji Doering, Junior, Physics, University of Washington
Mentor: Jens Gundlach, Biophysics
Mentor: Ian Derrington, Biophysics
   Amgen Scholars Program

Regulation of the Yeast Ubiquitin Ligase Uls1 by SUMO
Emily Engelhart, Senior, Microbiology, University of Wisconsin-Madison
Mentor: Richard Gardner, Pharmacology
Mentor: Michelle Oeser, Pharmacology
   Pharmacological Sciences Summer Diversity Program (PSSDP)

High-Resolution Fluorescence-Enabled Electrochemical Imaging using Nanowire Bipolar Electrode Arrays
David Galvan, Senior, Chemical Engineering, University of Arizona
Mentor: Bo Zhang, Chemistry
Mentor: Joshua P. Guerrette, Chemistry
   Amgen Scholars Program

Observing the Relationships Between Cells in the Primary Motor Cortex (M1) during Brain Control
Gwanygha’a Gana, Junior, Electrical Engineering, Georgia Institute of Technology
Mentor: Steve Perlmutter, Physiology and Biophysics
   UW Stipends for Training Aspiring Researchers (STAR) Program

Is Creatinine a Good Marker for Urine Concentration?
Cletus Gana-Fomban, Sophomore, Pre-Science, North Seattle Community College
Mentor: Yvonne Lin, Pharmaceutics
   UW Stipends for Training Aspiring Researchers (STAR) Program
Indentifying Phop Mutants Involved in Regulating Salmonella’s Outer membrane Permeability Barrier
Bianca Garcia, Senior, Biology, University of New Mexico
Mentor: Sam Miller, Medicine, Microbiology, Genome Sciences and Immunology
Mentor: Zachary Dalebroux
Genome Sciences Summer Research Program

Diazanon and Diazoxon Impair Astrocyte Production of Fibronectin and Laminin
Mitra Geier, Junior, Environmental Science, Western Washington University
Mentor: Lucio G. Costa, Environmental & Occupational Health Sciences
Mentor: Daniella Pizzurro, Environmental & Occupational Health Sciences
Environmental Health Research Experience Program (EHREP)

Circadian Modulation of Neuromotor Control
Jennifer Gile, Sophomore, Biology, University of Washington
Mentor: Horacio de la Iglesia, Biology
Mentor: Howard Chizeck, Electrical Engineering
Mentor: Benjamin Smarr, Biology
Mentor: Oliver Johnson, Electrical Engineering
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Characterizing Yeast and Breast Cancer Cell Line Phosphoproteomes via Mass Spectrometry
Kelsey Haas, Senior, Molecular, Cellular and Developmental Biology, University of Washington
Mentor: Judit Villen, Genome Sciences
Mentor: Danielle Swaney, Genome Sciences
Amgen Scholars Program

Fabrication of Multi-Well Nanopatterned Cell Culture Platform
Elsa Hagos, Sophomore, Biology, Seattle Central Community College
Mentor: Deok-Ho Kim, Bioengineering
Mentor: Jesse Macadangdang, Bioengineering
Mentor: Justin Lee, Biology
Building Bridges to Bioengineering Program

Phosphorus NMR Analysis of the Rattlesnake Tailshaker Muscle
Amir Hassen, Junior, Biochemistry, University of Washington
Mentor: Kevin Conley, Radiology
Mentor: Eric Shankland, Radiology
Initiative for Maximizing Student Diversity (IMSD) Program

Mechano-Regulation of the T Cell Activation
Erika Hayes, Senior, Molecular and Cellular Biology, University of Puget Sound
Mentor: Hong Shen, Chemical Engineering
Mentor: Christina Yacoob, Chemical Engineering
Mentor: Thanapon Sangvanich, Chemical Engineering
Amgen Scholars Program
Are Research Laboratories Prepared for Disruptions due to Disasters?
Ashley Henry, Recent Graduate, Epidemiology, University of Washington
Mentor: Andy Stergachis, Epidemiology
UW Stipends for Training Aspiring Researchers (STAR) Program

Dendritic Excitability in Hippocampus
Vicky Herrera, Senior, Biochemistry, University of Washington
Mentor: Nicholas Poolos, Neurology & Regional Epilepsy Center
Initiative for Maximizing Student Diversity (IMSD) Program

A Novel Method for the Detection And Quantitation of Intact Quantum Dots in Tissue Slices
Josi Herron, Senior, Biology, University of Great Falls
Mentor: Terrance Kavanagh, Environmental and Occupational Health Sciences
Mentor: Lisa McConnachie, Environmental and Occupational Health Sciences
Environmental Health Research Experience Program (EHREP)

Encoding Properties of Sensor Covered Actuators
Darren Howell, Senior, Neurobiology, University of Washington
Mentor: Tom Daniel, Biology
Mentor: Brad Dickerson, Biology
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Silver Nanoparticles Alter Mrna Expression of Cytokines in Mouse Macrophage and Hepatoma Cells
Madelyn Huang, Senior, Biochemistry, University of Notre Dame
Mentor: David L. Eaton, Environmental & Occupational Health Sciences
Mentor: Terry R. Ward, Environmental & Occupational Health Sciences
Mentor: Wesley E. Smith, Environmental & Occupational Health Sciences
Environmental Health Research Experience Program (EHREP)

Modeling of Drinking Water Treatment and Analysis of Disinfection Byproduct Formation
Siddarta Jairam, Senior, Chemical Engineering, University of California, Santa Barbara
Mentor: Gretchen Onstad, Environmental & Occupational Health Sciences
Mentor: Gregory Korshin, Civil & Environmental Engineering
Mentor: Sixuan He, Civil & Environmental Engineering
Environmental Health Research Experience Program (EHREP)

An Immune Suppressant Osteoinductive Biomaterial
Annika Juhlin, Senior, Bioengineering & Swedish, University of Washington
Mentor: James D. Bryers, Bioengineering
Mentor: Ruying Chen, Bioengineering
UW Stipends for Training Aspiring Researchers (STAR) Program

A Multi-scale Approach to Investigate Diffusion Characteristics of Heterogeneous Glial Cells and its Implications on the Overall Growth Kinetics of Glioma Progression
Joseph Juliano, Senior, Biochemistry, Arizona State University
Mentor: Kristin Swanson, Pathology
Mentor: Andrea Hawkins-Daarud, Pathology
Amgen Scholars Program
Exploring the Role of Putative Tramtrack69 Targets in Drosophila Tube Morphogenesis
Kelsey Kaeding, Sophomore, Molecular Biology, Claremont McKenna College
Mentor: Celeste Berg, Genome Sciences
Mentor: Nathaniel Peters, Molecular & Cellular Biology
Genome Sciences Summer Research Program

Effect of Fluoxetine on the Metabolism of Cortisol and Cortisone, Endogenous Probes of CYP3A4
Ngendo Kiambuthi, Freshman, Pre-Science, Seattle Pacific University
Mentor: Nina Isoherranen, Pharmaceutics
UW Stipends for Training Aspiring Researchers (STAR) Program

Local Farmers Market Fresh Produce Sampling for the Presence of E. Coli and Salmonella
Alexandra Kossik, Senior, Molecular, Cellular & Developmental Biology and Public Health, University of Washington
Mentor: John Scott Meschke, Environmental & Occupational Health Sciences
Mentor: Nicola Beck, Environmental & Occupational Health Sciences
Mentor: Amy Leang, Environmental & Occupational Health Sciences
Environmental Health Research Experience Program (EHREP)

Oxygen Consumption in Rats Before and After Administration of Morphine
Timothy Kruse, Senior, Biochemistry, University of Washington
Mentor: Gregory W. Terman, Anesthesiology and Pain Medicine
Mentor: Michael J. Emery, Anesthesiology and Pain Medicine
Initiative for Maximizing Student Diversity (IMSD) Program

Zwitterionic Polymers for Ultra-Low Fouling Surfaces
Daniel Leon, Sophomore, Chemical Engineering, Seattle Central Community College
Mentor: Shaoyi Jiang, Chemical Engineering
Mentor: Yuting Li, Chemical Engineering
Building Bridges to Bioengineering

Optical Measurement of Order Parameters in Organic Electrooptic Materials
David Levonian, Senior, Physics, Massachusetts Institute of Technology
Mentor: Larry Dalton, Chemistry
Mentor: Delwin Elder, Chemistry
Hooked on Photonics

Characterization of Emotiv Headset for use in BCI Systems
Bailey Life, Senior, Forest Ridge School of Sacred Heart High School
Amanda Nguyen, Senior, Biomedical Engineering, Clemson University
Juan Morales, Senior, Computer Science, University of Washington
Mentor: Joshua Smith, Computer Science and Engineering
Mentor: Aaron Parks, Computer Science and Engineering
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program
The Effect of Zoledronic Acid on CYP2C8 and HMEC-1 Endothelial Cell Viability
Mara Livezey, Senior, Chemistry, Kalamazoo College
Mentor: Rheem Totah, Medicinal Chemistry
Mentor: Brianne Raccor, Medicinal Chemistry
Amgen Scholars Program

Forelimb Cervical Intra-Spinal Micro Stimulation Evoked EMG in Rats with Spinal Cord Injury
Danielle Lockwood, Senior, Biomedical Engineering, University of Arizona
Frances Cho, Sophomore, Neuroscience and Behavior, Columbia University
Mentor: Chet Moritz, Rehabilitation Medicine
Mentor: Michael Sunshine, Rehabilitation Medicine
Mentor: Michael Kasten, Rehabilitation Medicine
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Bismuth Sulfide Nanoparticles: A Non-Toxic Material for Solar Cells
Brittani Love, Senior, Chemistry, Shepherd University
Mentor: David Ginger, Chemistry
Mentor: Adam Colbert, Chemistry
Hooked on Photonics

The Effects of Cannabinoid Receptor Blockers on Synchronous Spontaneous Activity in the Developing Mouse Cerebral Cortex
Angela G. Maccarrone, Freshman, Undeclared, Gonzaga University
Mentor: William J. Moody, Biology
Mentor: Nicole M. Luche, Biology
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

How Useful are Genetic Ancestry Tests?
Kevin Magnaye, Junior, Molecular, Cellular, & Developmental Biology, University of Washington
Mentor: Michael Bamshad, Pediatrics
Mentor: Leslie Emery, Genome Sciences
UW GenOM Project

Isolation and Characterization of Ethanol-Tolerant Yeast Strains
Elijah H. Martin, Senior, Biology & French Majors, Morehouse College
Mentor: Stanley Fields, Genome Sciences
Mentor: Matt Rich, Genome Sciences
Genome Sciences Summer Research Program

Advanced Algorithms for Effective Brain-Communication
Stefan Martin, Junior, Electrical Engineering, University of Washington
Mentor: Rajesh Rao, Computer Science and Engineering
Mentor: Willy Cheung, Computer Science and Engineering
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program
Extraction of Vitamin D Metabolites from Sterile By-Products of Subjects Treated with Rifampin
Jose L. Martinez, Senior, Biochemistry and Molecular Biology, University of California, Santa Cruz
Mentor: Kenneth Thummel, Pharmaceutics
Mentor: Zhicai Wang, Pharmaceutics
Pharmacological Sciences Summer Diversity Program (PSSDP)

Metabolic Regulation of Reproduction: The Effects of AgRP Neuronal Ablation on Kiss1 Expression in Leptin-Deficient Mice
Rakeb Million, Senior, Biology, University of Washington
Mentor: Robert Steiner, Physiology & Biophysics and Obstetrics & Gynecology
Mentor: Amy E. Oakley, Physiology & Biophysics
Initiative for Maximizing Student Diversity (IMSD) Program

Differential Expression of ACOT7 Variants Under Inflammatory Stimulus
Hamza Mir, Sophomore, Biology, Florida International University
Mentor: Karin Bornfeldt, Medicine and Pathology
UW Stipends for Training Aspiring Researchers (STAR) Program

Emergence and Accumulation of Mutations Associated with Protease Inhibitor Drug Resistance Among HIV-2-infected Senegalese Subjects Failing Antiretroviral Therapy
Alexandra Montano, Junior, Biology, University of Washington
Mentor: James Mullins, Microbiology
Mentor: Geoff Gottlieb, Allergy and Infectious Diseases
Mentor: Robert Smith, Pathology
Initiative for Maximizing Student Diversity (IMSD) Program

Alteration of Attentional State with Auditory Sirens: How Distracted are You?
Jonathan Mount, Sophomore, Bioengineering, University of Washington
Mentor: Adrian K. C. Lee, Speech and Hearing Sciences
Mentor: Ross Maddox, Speech and Hearing Sciences
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Can Partially Redundant Genes Compensate for the Loss of their Partner?: Examination of the Roles of the Tbx8 and Tbx9 Genes in Embryonic Nematode Development
Samuel Mullen, Sophomore, Biomedical Engineering, Johns Hopkins University
Mentor: Robert Waterston, Genome Sciences
Mentor: Chau Hunyh, Genome Sciences
Genome Sciences Summer Research Program

Electrocatalytic Water Oxidation by (bpy) Cu2+: Mechanistic Investigations
Jared Nesvet, Senior, Chemistry, University of Rochester
Mentor: James Mayer, Chemistry
Mentor: Shoshana Barnett, Chemistry
Center for Enabling New Technologies through Catalysis (CENTC)
EEG Measurements of Attention with the Emotiv Headset
Amanda Nguyen, Senior, Bioengineering, Clemson University
Bailey Life, Senior, Forest Ridge School of Sacred Heart High School
Juan De Dios Morales, Senior, Computer Science, University of Washington
Mentor: Joshua Smith, Computer Science
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Detecting Damaged Brain Vasculatures from a Neural-Prosthetic Device Ballistic Insertion
Susie Nguyen, Senior, Biochemistry, San Diego State University
Mentor: Bill Shain, Neurological Surgery
Mentor: Carolyn Harris, Neurological Surgery
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program

Quantification of Quantum Dots in Solution using Surface Plasmon Resonance and Analytical Ultracentrifugation
Chinonso Opara, Junior, Biochemistry, University of Washington
Mentor: William Atkins, Medicinal Chemistry
Mentor: Hyewon Kwon, Medicinal Chemistry
Mentor: John Sumida, Medicinal Chemistry
Amgen Scholars Program

Acid-Catalyzed Production of an Ir(III) Trans-Dihydride Pincer Complex for Glycerol Hydrogenolysis
Alisa Owens, Junior, Chemical Engineering, Brown University
Mentor: D. Michael Heinekey, Chemistry
Mentor: David Lao, Chemistry
Center for Enabling New Technologies through Catalysis (CENTC)

Raven II: Surgical Robot System
Pedro Pacheco, Senior, Materials Science and Engineering, University of Washington
Mentor: Blake Hannaford, Electrical Engineering
UW Stipends for Training Aspiring Researchers (STAR) Program

Amino Acids and Pesticides in the Synthesis of Crystalline Optic Materials
Viktoria Pakhnyuk, Junior, Chemistry, Highline Community College
Mentor: Werner Kaminsky, Chemistry
Hooked on Photonics

Examining HHARI RING Domain and E2 Interactions
Henna Park, Senior, Physiology, University of Washington
Mentor: Michael Portman, Seattle Children’s Hospital
UW Stipends for Training Aspiring Researchers (STAR) Program

Differences in the Size-Frequency Distributions of Juvenile Coho Salmon (Oncorhynchus Kisutch) in Streams of Varying Thermal Regimes in the Copper River Delta, Alaska
Keith Parker, Junior, Biology, Humboldt University
Mentor: Gordie Reeves, United States Forestry Services
UW Stipends for Training Aspiring Researchers (STAR) Program
Inhibition of Transcriptional Activation in HIV Using Peptide Chemistry
Abigail Payne, Sophomore, Pre-Science, Seattle Central Community College
Mentor: Alisha Jones, Chemistry
UW Stipends for Training Aspiring Researchers (STAR) Program

Optical and Electrochromic Properties of Electrochromic Windows (ECW) Based on PProDOT-Me2 and V2O5 Coating
Mikael Perla, Freshman, Pre-Engineering, University of Washington
Mentor: Christine Luscombe, Materials Science & Engineering
Mentor: Minoru Taya, Mechanical Engineering
Mentor: Sooyeon Kim, Mechanical Engineering
Mentor: Bryan Ferguson, Mechanical Engineering
National Science Foundation-Research Experience and Mentoring (NSF-REM)

A Yeast Screen to Identify Components of the Degradation Pathway of a Mutant Form of Ubiquitin
Ryan Powles, Senior, Biology, Virginia Polytechnic Institute and State University
Mentor: Stanley Fields, Genome Sciences
Mentor: Griffin Kim, Genome Sciences
Amgen Scholars Program

Preliminary Assessment of Particulate Matter and Nitrogen Oxides Air Pollutants in the Duwamish Valley
Hamza Rabi, Senior, Neurobiology, Biochemistry, and Biology, University of Washington
Mentor: Joel Kaufman, Environmental and Occupational Health Sciences
Mentor: Jill Schulte, Environmental and Occupational Health Sciences
Mentor: Julie Fox, Environmental and Occupational Health Sciences
Environmental Health Research Experience Program (EHREP)

Examining HHARI RING Domain and E2 Interactions
Ekra Rai, Senior, Biochemistry, University of Washington
Mentor: Hannele Ruohola-Baker, Biochemistry
UW Stipends for Training Aspiring Researchers (STAR) Program

Aging Muscle and Vasculature in Mice
Amina Ramadan, Senior, Biochemistry, University of Washington
Mentor: Morayma Reyes, Pathology and Laboratory Medicine
UW Stipends for Training Aspiring Researchers (STAR) Program

Assessing the Micro-Anatomy Of Cytokine Signaling and Proliferation of Foxp3+ Regulatory T Cells by Confocal Microscopy
Elizabeth Richards, Sophomore, Biology, Earlham College
Mentor: Daniel Campbell, Benaroya Research Institute
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A Role for Syndecan-1 in Prevention of Negative Remodeling
Kourtnei Robinson, Senior, Psychology, University of Wisconsin, Madison
Mentor: Alexander W. Clowes, Center for Cardiovascular Biology
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UW Stipends for Training Aspiring Researchers (STAR) Program
RNA Purification for the Development of a Paper-Based Diagnostic Platform
Isaac Rockafellow, Senior, Microbiology and Biochemistry, University of Iowa
Mentor: Paul Yager, Bioengineering
Mentor: Samantha Byrnes, Bioengineering
Amgen Scholars Program

Covalent Modification of Graphene with Fluorescent Probes
Verlanie Rodillas, Freshman, Chemical Engineering, University of Washington
Mentor: Christine Luscombe, Material Science & Engineering
Mentor: David Zeigler, Materials Science & Engineering
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A Trifunctional Probe to Profile Protein Kinase Conformations
Guillermo S. Romano Ibarra, Senior, Biochemistry and Public Health, University of Washington
Mentor: Dustin Maly, Chemistry
Mentor: Jennifer Brigham, Chemistry
Mentor: Gayani Perera, Chemistry
Amgen Scholars Program

Characterizing In-vivo Virus-Host Interactions Using Chemical Cross-Linking and Mass Spectrometry
Pedro Ruiz, Senior, Biology, Northwest University
Mentor: David Goodlett, Medicinal Chemistry
Mentor: Carlos Catalano, Medicinal Chemistry
Mentor: Lucas Monkkonen, Medicinal Chemistry
Pharmacological Sciences Summer Diversity Program (PSSDP)

Dependence of Cerebrospinal Fluid Amyloid-β and Tau Levels on Alpha-Tocopherol and Deprenyl Treatment of Early Stage Parkinson’s Disease
Allion Salvador, Senior, Neurobiology, University of Washington
Mentor: Jing Zhang, Pathology
Mentor: Hayley Mattison, Pathology
Initiative for Maximizing Student Diversity (IMSD) Program

Redox Signaling in Cardiac Aging and Hypertrophy
Maya Sangesland, Senior, Molecular, Cellular and Developmental Biology, University of Washington
Mentor: Peter Rabinovitch, Pathology
Mentor: Simon Johnson, Pathology
Amgen Scholars Program

Cloning Full-Length Mouse uPARAP into a Mammalian Expression Vector
Christine Shieh, Senior, Molecular and Cell Biology, University of California, Berkeley
Mentor: Lynn M. Schnapp, Pulmonary and Critical Care Medicine
Mentor: Yu-Hua Chow, Pulmonary and Critical Care Medicine
Mentor: Chi F. Hung, Pulmonary and Critical Care Medicine
Amgen Scholars Program
Quantification of Myofilament and Sacroplasmic Reticulum Proteins in Transgenic Mice Overexpressing Ribonucleotide Reductase
Stephanie Simek, Senior, Exercise Physiology, The College of St. Scholastica
Mentor: Michael Regnier, Bioengineering
Mentor: Sarah Nowakowski, Bioengineering
Amgen Scholars Program

Investigating a Ubiquitin-Like Protein Degradation Pathway in Mycobacterium Tuberculosis
Denis Smirnov, Junior, Biochemistry, University of Washington
Mentor: Champak Chatterjee, Chemistry
Amgen Scholars Program

miRNA Sensitivity to Drosha Levels may be Determined by miRNA Secondary Structure
Louis Smith, Senior, Biological Sciences, Columbia University
Mentor: Hannele Ruohola-Baker, Biochemistry
Mentor: Henrik Sperber, Biochemistry
Amgen Scholars Program

Evolutionary Protein Phosphorylation in Yeast Species
Lindsay Stanford, Sophomore, Biology, Spelman College
Kelsey Haas, Senior, Molecular, Cellular & Developmental Biology, University of Washington
Joanne Hsu, Senior, Neurobiology, University of Washington
Mentor: Judit Villen, Genome Sciences
Mentor: Danielle Swaney, Genome Sciences
Genome Sciences Summer Research Program

Changes in the IGF-1 Pathway in the KIQ175 Mouse Model of Huntington’s Disease: Implications for the IGF-1R Signal Cascade
Rianne Stowell, Senior, Neuroscience and Spanish, Moravian College
Mentor: Gwenn Garden, Neurology
Mentor: Aurelio Silvestroni, Neurology
Amgen Scholars Program

Heterogeneous Firing Rates in Densely Connected Recurrent Neural Networks
Kendrick Tang, Junior, Comprehensive Mathematics, Electrical Engineering, University of Washington
Mentor: Eric Shea-Brown, Applied Mathematics
Mentor: Yu Hu, Applied Mathematics
Amgen Scholars Program

The Photophysics of DCM Dyed Potassium Hydrogen Phthalate Crystals
Tawnni Taylor, Junior, Biochemistry, Shepherd University
Mentor: Phil Reid, Chemistry
Mentor: Erin Riley, Chemistry
Hooked on Photonics
Synthesis of Gold Nanoparticle Surfactants and their Self-Assembly at Oil-Water Interfaces
Mitchell Truong, Senior, Chemical Engineering, Oregon State University
Mentor: Danilo Pozzo, Chemical Engineering
Mentor: Kjersta Larson-Smith, Chemical Engineering
Amgen Scholars Program

Identifying, Characterizing and Inducing Effective Anti-HIV T-Cell Responses
Nyka Tucker, Junior, Pre-Science, University of Washington
Mentor: Shokrollah Elahi, Seattle Biomedical Research Institute
Mentor: Ana Gervassi, Seattle Biomedical Research Institute
Mentor: Helen Horton, Seattle Biomedical Research Institute
Amgen Scholars Program

Total Dust, PM 2.5, and Ammonia and Residential Proximity to Confined Animal Feeding Operations (CAFOs) and Major Roadways
Lilian R. Turcios, Senior, Environmental Health, Texas Southern University
Mentor: Michael Yost, Environmental and Occupational Health Sciences
Mentor: Jenna Armstrong, Environmental and Occupational Health Sciences
Environmental Health Research Experience Program (EHREP)

Theoretical Exploration of Proton-Quantum Dot Interactions
Sara Tweedy, Junior, Chemistry, Harvey Mudd College
Mentor: Xiaosong Li, Chemistry
Mentor: Joseph May, Chemistry
Amgen Scholars Program

Synthesis of Biodegradable Polyester-Modified Reduction-Sensitive Block Copolymers as Efficient Gene Vectors
Lisa Volpatti, Senior, Chemical Engineering, University of Pittsburgh
Mentor: Suzie Pun, Bioengineering
Mentor: Hua Wei, Bioengineering
Amgen Scholars Program

Paints to Power the Planet: Organic Sensitizers for Solar Cells
Payton Ward, Junior, Chemical Engineering, University of Washington
Mentor: Larry Dalton, Chemistry
Mentor: Peter Johnston, Chemistry
Hooked on Photonics

Automatic Computer Vision Motion/Object Tracking Tool to Explore Flight Decision Making in the Manduca sexta Moth
Shawn Wilkinson, Junior, Computer Science, Morehouse College
Mentor: Tom Daniel, Biology
Mentor: Yonatan Munk, Biology
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program
A Novel Pathway for Protein Quality Control
Miriam Williamson, Sophomore, Seattle Central Community College
Mentor: Richard Gardner, Pharmacology
Mentor: Eric Fredrickson, Pharmacology
Mentor: Preet Brar, Pharmacology
Building Bridges to Bioengineering Program

Electrospinning Antiretroviral Nanofibers from Polymer Blends for the Topical Prevention of HIV
Jennifer Wilson, Sophomore, Nursing, Seattle Central Community College
Mentor: Kim Woodrow, Bioengineering
Mentor: Cameron Ball, Bioengineering
Building Bridges to Bioengineering Program

Reprogramming Human Fibroblast Cells using the miRNA-515 Family
Jennifer Wohlman, Junior, Biology, Pacific Lutheran University
Mentor: Hannele Ruohola-Baker, Biochemistry
Mentor: Salih Kozan, Medical Genetics
Amgen Summer Scholars Program

Comparison of Polio Virus Recovery Rates of Three Filters
Ming-Fong Yang, Senior, Public Health, National Taiwan University
Mentor: John Scott Meschke, Environmental & Occupational Health Sciences
Mentor: Nicola Beck, Environmental & Occupational Health Sciences
Mentor: Christa Fagnant, Environmental & Occupational Health Sciences
Environmental Health Research Experience Program (EHREP)

H Antigen Variability and its Relation to ABO Blood Group and Von Willebrand Factor Level
Ermias Yohannes, Junior, Biology, University of Washington
Mentor: Jill Johnsen, Puget Sound Blood Center
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Assessing Myelin Sheath Structural Changes via a Double Reporter System in the Injured Mouse Spinal Cord
Nikolai Zapertov, Senior, Psychology and Neurobiology, University of Pennsylvania
Mentor: Phil Horner, Neurological Surgery
UW Stipends for Training Aspiring Researchers (STAR) Program

Discerning Selective Auditory Attention for BCIs with Amplitude Modulation
Jessie Zhang, Freshman, Undeclared, University of Washington
Mentor: Adrian K. C. Lee, Speech and Hearing Sciences
Mentor: Eric Larson, Speech and Hearing Sciences
Center for Sensorimotor Neural Engineering (CSNE) Summer Research Program
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UW GenOM Project Undergraduate Summer Research Program