

*The UWPA would like to thank the following members  
for their extraordinary efforts in the planning and  
execution of this event:*

*Catherine Konopka, Lara Shamieh, Maja Zavaljevski,  
Amy Groth, Susan Cassels, Valerie Duliere,  
Eric Larson, Jose Mercado, Graciela Matrajt,  
Phuong-Cac Nguyen, Rabaab Zahra*

*Thanks also to Marilyn Gray and Tom Gething at the  
Office of Postdoctoral Affairs for assistance with  
publicity*

*We thank all postdoctoral scholars who submitted  
abstracts for consideration in this symposium and/or  
nominated faculty members for this year's Mentorship  
Award*

*Finally, thanks very much to our symposium  
sponsors:*



**Authorized  
Campus Store**



**University  
Book Store**

Tech Center • 4326 University Way NE  
206.634.3400 • ubookstore.com • 1.800.335.READ

**OFFICE OF  
POSTDOCTORAL  
AFFAIRS**

**The College of Arts & Sciences, University of Washington**

**Office of Research, University of Washington**

**Sigma Xi**

**University of Washington Postdoctoral Association**

<http://depts.washington.edu/uwpa/>

## **Welcome to the 4<sup>th</sup> Annual UWPA Postdoctoral Research Symposium**

**Friday November 14, 2008**

**2:00 – 5:00 PM**

**HUB Room 108**

**University of Washington, Seattle**

# Program

- 2:00 Maja Zavaljevski, UWPA**  
*General Welcome*
- 2:05 Associate Dean Thomas W. Gething**  
*Opening Remarks*
- 2:15 Sara Curran,**  
*Keynote Address*
- 2:50 Lara Shamieh, UWPA**  
*2008 Mentorship Award Presentation*
- 2:55 Ruimao Zheng, Pharmacology**  
*Prevention of Obesity*
- 3:10 Angela C. Garinis, Speech and Hearing Sciences**  
*Effect of Controlling Response Bias on the Detection Performance of Infants and Adults*
- 3:25 Coffee Break**
- 3:45 Baba Kofi A. Weusijana, LIFE Sciences of Learning Center**  
*MultiTalker: An Artificially Intelligent Tutoring System for Helping Student Groups in a 3D Virtual Environment*
- 4:00 Karine A. Gibbs, Microbiology**  
*Genetic determinants of self-recognition in the bacterium Proteus mirabilis*
- 4:15 Brent A. VanDevender, Physics - CENPA**  
*Weighing the Neutrino*
- 4:30 Tony Perez, Sociology**  
*Ethnic Invisibility: A Comparison of First and Third-person Measures of Race and Ethnic Identities in Washington State*
- 5:00 Poster Session and Refreshments**

**Sarah Cabbage, Pathology**  
*Cardiovascular disease and bacterial Infection: Chlamydia pneumoniae in atherosclerosis*

**Allison Coffin, Otolaryngology**  
*Calcium protects sensory hair cells from drug damage*

**Phuong-Cac Nguyen, Chemical Engineering**  
*Principle Component Analysis of ToF-SIMS Data from DNA Microarrays*

## About the UWPA

The UW Postdoctoral Association (UWPA) was formed in October 2004. Its creation was inspired by an HHMI-sponsored Future Faculty Fellows workshop on teaching and mentoring (<http://depts.washington.edu/biology/hhmi/postdocs/fff.html>). Strikingly, this workshop offered the first opportunity for many postdocs working within the same department to meet each other.

Following its formation, the UWPA established a website and a listserv for all UW postdocs to join and advocated vigorously for an Office of Postdoctoral Affairs, which was established in January 2006. UWPA social events have included an annual summer barbecue, happy hours, and group trips to Town Hall lectures. Our biggest scientific event is the annual UWPA Postdoctoral Research Symposium, which is intended to highlight the extraordinary diversity of work being done by postdocs at UW.

One of the main goals of the UWPA is to establish an active social and scientific peer network of postdocs at the University of Washington and affiliated institutions. For more information, please see <http://depts.washington.edu/uwpa/>

## Poster Presentations

**Lifeng Qi**, Bioengineering

*Amphipol coated magnetic nanoparticles for siRNA delivery*

**Lorenzo Giacani**, Division of Allergy and Infectious Diseases

*Length of guanosine homopolymeric repeats modulates promoter activity of Subfamily II tpr genes of Treponema pallidum subspecies pallidum*

**Kareen L. Kreutziger**, Pathology

*Electrical and mechanical properties of an embryonic stem cell-derived human cardiac tissue patch*

**Jennifer Lee Hoffman**, Intercollegiate Athletics Leadership

Graduate Program

*Title IX & higher education: "Are we treating everyone equitably?"*

**Catherine Yeung**, Pharmaceuticals

*Expression and functional characterization of cytochrome P450 26A1, A retinoic acid hydroxylase*

**Andrea M. Landis**, Biobehavioral Nursing and Health Systems

*Sleep, hunger, satiety, food cravings, and caloric intake in adolescents*

**Maria H Festing**, Bioengineering

*Elucidating the role of the sodium dependent phosphate co-transporter PiT-1 in development and vascular calcification in vivo*

**Wei-Zhong Zhu**, Pathology

*Induction of human embryonic stem cell derived cardiac pacemaker cells by neuregulin blockade*

**Robert Immormino**, Immunology

*A method for the rapid generation of antibodies*

**Elizabeth Sacho**, Immunology

*Using separation of function mutants to define the enzymatic roles of MRE11*

## Thomas W. Gething

*Associate Dean; Director of the Office of Postdoctoral Affairs*

The Office of the Postdoctoral Affairs serves the three UW campuses, facilitating the mentoring and training of postdoctoral fellows. OPA programs include presentations and workshops on matters relevant to the professional development of postdocs, including teaching, grant writing, publishing, oral communication skills, time management, directing a laboratory and individual development plans. For further information, please visit <http://depts.washington.edu/pdafrs>.

## Opening Remarks

## **Presentation of 2008 Mentorship Award**

The UWPA Mentor Award recognizes University of Washington faculty who provide extraordinary postdoctoral mentorship by consistently demonstrating leadership, understanding, concern for professional development, encouragement, integrity, and dedication.

### **Kate Comtois, PhD**

#### *Psychiatry and Behavioral Sciences*

Dr. Kate Comtois is an exceptional scientist, outstanding educator, and well-respected faculty member within the Department of Psychiatry and Behavioral Sciences. She encourages participation in a variety of activities beyond the scope of the stated postdoctoral duties in order to create an enhanced training experience based on an individual's career goals. In addition to promoting academic development, she models and encourages a balance between work and personal life. She creates a congenial work environment that makes it easy for her staff to thrive and be productive. She is consistently aware of achievements in research projects and seeks to celebrate or reward hard work and milestones. We thank Dr. Comtois for her positive contributions to the postdoctoral experience.

## **Tony Perez**

**Center for Studies in Demography and  
Ecology; Sociology**

### **Ethnic Invisibility: A Comparison of First and Third-person Measures of Race and Ethnic Identities in Washington State**

Race is often conceptualized as an ascribed characteristic that defines populations based on shared physical appearance, but in social and demographic research, race is usually measured by self-responses to surveys, censuses, and administrative records. These responses, in turn, are shaped by a number of political and cultural forces, socialization, personal preference, and measurement characteristics. Since external measures of race are rarely included in large observational datasets, the consequences of relying on self-reported data to determine the size and character of race/ethnic sub-populations remain largely unknown. In collaborative research with Charles Hirschman, I seek to address this limitation by presenting results from a recently collected, first-of-its-kind data set that contains independent, third-person measures of "observed race" for nearly 10,000 high school seniors in Washington state. In the initial phase of this project, I examine the overlap and divergence between expressed and observed race for every major race/ethnic group (as well as detailed Asian/PI and Hispanic sub-populations), and discuss how these findings reveal heterogeneity in the "visibility" of race/ethnicity, both within and between major population groups.

## **Karine A. Gibbs**

**Department of Microbiology**

**Genetic determinants of self-recognition in the bacterium  
*Proteus mirabilis***

The bacterium *Proteus mirabilis* is capable of a coordinated social behavior for population migration across a surface called “swarming”. Boundaries form between swarming colonies of different *P. mirabilis* strains but not between colonies of a single strain. A fundamental requirement for boundary formation is the ability for *P. mirabilis* colonies to discriminate between self and non-self. We have isolated mutants that form boundaries with the parent strain. The mutations map within a six-gene locus that we term *ids* for *id*entification of *s*elf. We performed genetic analysis to determine the functions of the *ids* locus in self-recognition. Five of the genes in the *ids* operon are required for recognition of the parent strain as self. Three of the *ids* genes are conserved bacterial proteins and are interchangeable between strains. Two of the *ids* genes encode specific molecular identifiers.

## **Brent A. VanDevender**

**Physics – CENPA**

**Weighing the Neutrino**

The Standard Model of particle physics is an extremely successful theory of matter and its interactions at the subatomic level. The theory includes three particles called neutrinos and the premise that these particles are strictly massless. Recent experiments have demonstrated that neutrinos actually have nonzero masses, suggesting that the Standard Model is incomplete. However, these experiments can not determine the actual values of neutrino masses. Cosmology tells us that the density of neutrinos in the universe is so great that even a tiny neutrino mass could have influenced the development of large-scale structures such as galaxies and clusters of galaxies. I will present the evidence for nonzero neutrino mass and describe an experiment to determine the absolute mass with enough precision to determine whether or not neutrinos participated in the development of large-scale structure.

## **Speakers**

### **Ruimao Zheng**

**Department of Pharmacology  
Prevention of Obesity**

Obesity is a clear and proven risk to overall health; many life-threatening diseases, most notably severe cardiovascular disease and diabetes, have been linked to the condition. The energy balance dysfunction of brain neuroregulation is a pivotal contributor to obesity. A protein molecule, “R11 $\beta$  of Protein Kinase A”, is expressed in brain and fat tissues: we theorized that it may be involved in obesity. We tested this theory by eliminating the R11 $\beta$  gene in mice. The exciting results: these animals became very lean. These mice have light body weight, less adipose tissue, normal food intake, high motor activity, and a low level of leptin (a molecule released by adipose cells, which is consistently at a high level in the serum of obese patients). More surprisingly, these animals can effectively protect against developing high-fat-food-induced obesity and fatty liver. We then reversed the experiment and expressed the R11 $\beta$  gene specifically to several different brain regions of the lean mice without R11 $\beta$ , so that we may ascertain which regions of the brain are effected by the R11 $\beta$  gene. Interestingly, the expression of R11 $\beta$  in striatum neurons can significantly reduce high motor activity; however, these initially lean animals just slightly gained weight. So, we suggest: (1) high motor activity (exercise and sports) maybe is not most effective method for protection against obesity; (2) R11 $\beta$  of PKA in striatum neurons in the brain have an effect on motor activity and body weight regulation. And it is possible new therapies for obesity, based on R11 $\beta$  of PKA (3) beside exercise or sport; we suggest people pay more attention on nutrition and genetics.

## **Angela C. Garinis**

**Speech and Hearing Sciences**

**Effect of Controlling Response Bias on the Detection  
Performance of Infants and Adults**

Human hearing involves a combination of peripheral (ear) and central (brain) processes. Aspects of these processes both change with age, but maturation of central processes postnatally is still largely unexplored. One way of understanding how an infant processes sound is by measuring their detection of specific tones in the presence of other sounds. Previous investigations report that infants do not detect a low amplitude tone in these listening conditions, even when the ear provides sufficient resolution to separate the tone from the other sounds. Prior studies of this phenomenon have not adequately controlled response bias, which is known to differ between infants and adults. The aim of the present study was to determine whether infants and adults differ in their ability to detect tones in the presence of other resolved sounds when response bias is controlled. Adults and 7-9-month-old infants detected a low-level mid-frequency tone in the presence of noise or of two other tones that are resolvable by the ear. An observer-based psychophysical method was employed to determine if the tone was detected. This method uses an observer, blind to whether the target tone is presented on each trial, which judges whether or not a tone was presented, based on the infants' response to the sound. Preliminary data analyses indicated, for adults, that the same amount of masking was produced even when response bias was controlled. These data are in line with previous investigations.

## **Baba Kofi A. Weusijana**

**LIFE Sciences of Learning Center,  
College of Education**

**MultiTalker: An Artificially Intelligent Tutoring System for  
Helping Student Groups in a 3D Virtual Environment**

Multi-User Virtual Environments (MUVes) such as Second Life can be great tools for educating people and researching how people learn. Utilizing conversational agents automated with artificial intelligence can further enhance MUVes. They can be used for tutoring students and they can be used to manage or consistently orchestrate environments for research purposes. However, most intelligent tutoring systems are designed for one-on-one conversations, whereas MUVes usually involve learners studying together in groups to leverage social aspects of learning. Colleagues at the Language Technologies Institute (LTI) of Carnegie Mellon University have been working on conversational agents that can talk to learning groups in effective ways. Those at LTI have built the Basilica system to facilitate rapid development of conversational agents that participate in collaborative environments. On top of Basilica, Dr. Weusijana of LIFE developed with LTI a Second Life conversational agent called MultiTalker. We consider our new technology an enabling tool for educators and learning researchers. Expected utility for educators and their learners, as well as future research directions, will be discussed.