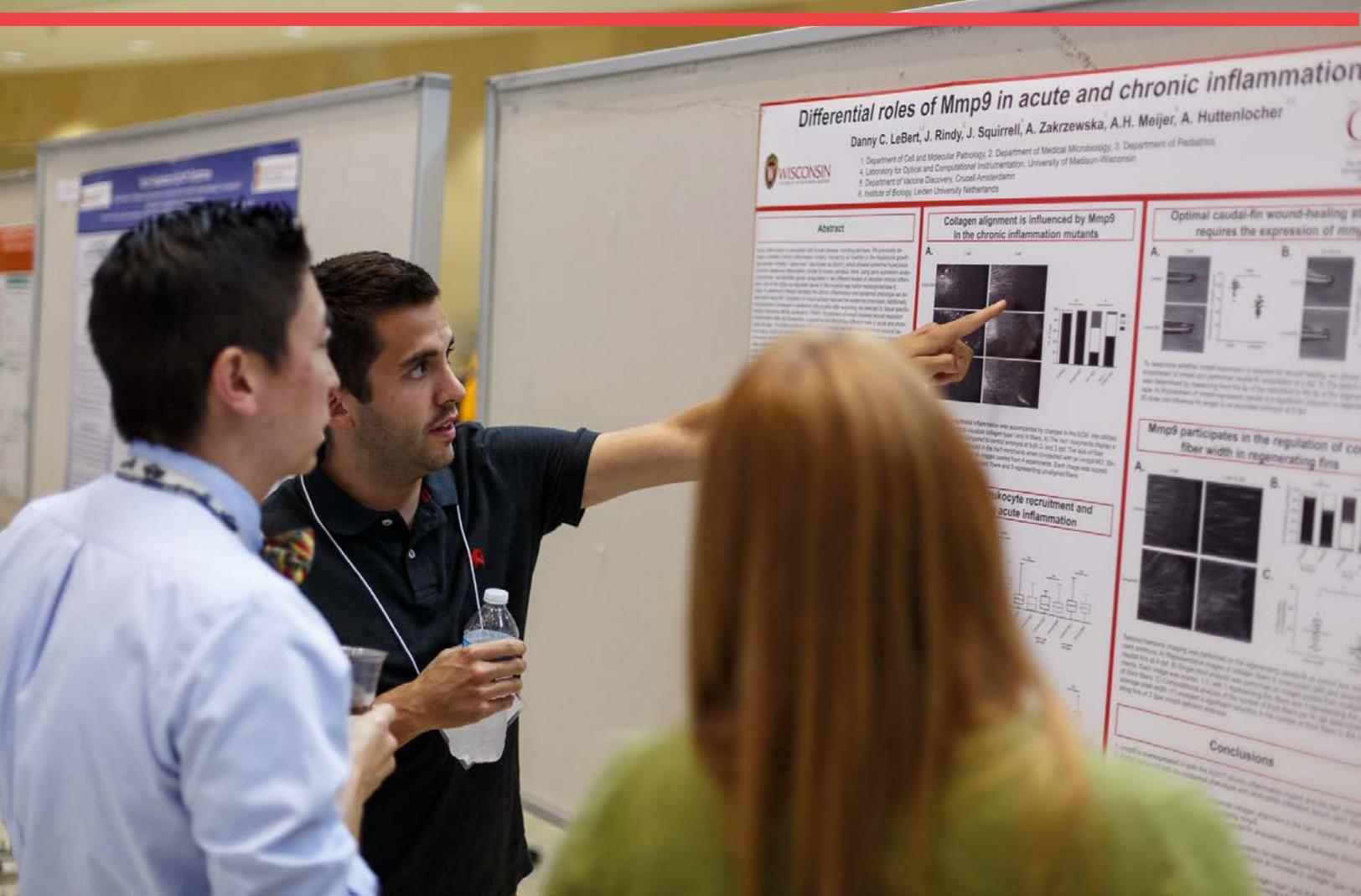


CMP Newsletter



Fall 2014

Wisconsin scientists find genetic recipe to turn stem cells to blood

In the journal *Nature Communications*, a group led by University of Wisconsin-Madison stem cell researcher **Igor Slukvin** reports the discovery of two genetic programs responsible for taking blank-slate stem cells and turning them into both red and the array of white cells that make up human blood.

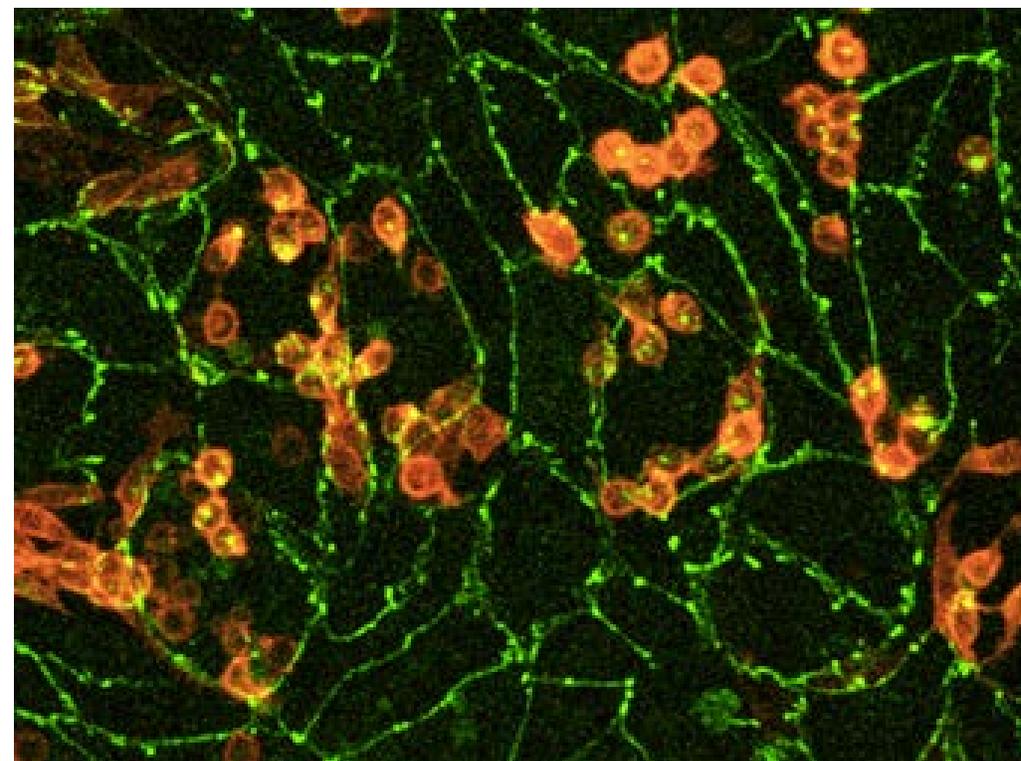
The research is important because it identifies how nature itself makes blood products at the earliest stages of development. The discovery gives scientists the tools to make the cells themselves, investigate how blood cells develop and produce clinically relevant blood products.

Professor of Chemistry receives Romnes Faculty Fellowship

Eight promising young members of the UW-Madison faculty have been honored with Romnes Faculty Fellowships. Romnes awards recognize exceptional faculty members who have earned tenure within the last six years. Selected by a Graduate School committee, winners receive an unrestricted \$50,000 award for research, supported by the Wisconsin Alumni Research Foundation. Of this year's awardees is **Joshua Coon**, professor of chemistry. Professor Coon leads a research group that develops chemical instrumentation for the analysis of biological systems. Since Coon arrived at UW-Madison in 2005, his group has published roughly 100 peer-reviewed research articles and produced nearly a dozen patents.

Evans and Romero Receive NIAID Diversity Supplement Award

Congratulations to Professor **David Evans** and CMP Graduate Student **James Romero** on the receipt of a diversity supplement from the National Institute of Allergy and Infectious Diseases (NIAID). This award is used to promote diversity in health-related research and is applied for by the PI of a current NIAID-funded grant. Dr. Evans' grant, "Lentiviral resistance to tetherin", focuses on the molecular mechanisms by which human and simian immunodeficiency viruses overcome restriction by tetherin, a cellular protein that inhibits virus release from infected cells. James Romero's project is directed towards understanding the mechanism by which the Nef proteins of simian immunodeficiency viruses counteract tetherin.



Kuo named to two posts in professional association

John S. Kuo, MD, PhD, an associate professor in the Department of Neurological Surgery, was recently appointed as the vice chair of the American Association for Neurological Surgeons (AANS) Memberships Committee. The AANS is one of the oldest and largest international neurosurgery organizations in the world, with more than 8,000 board-certified and eligible members.

He also was selected to serve on the executive committee for the Joint Tumor Section of the AANS and Congress of Neurological Surgeons (CNS). He is organizing the tumor program for the annual CNS meeting to be held in October in Boston. The AANS/CNS Joint Tumor Section's mission is to provide a forum for education and research on tumors of the nervous system.

Trainer and Student NEWS

Djamali to represent organ-sharing network

Arjang Djamali, MD, associate professor and division head, Division of Nephrology, Department of Medicine, was recently appointed as the Region 7 representative to the U.S. Department of Health and Human Service's Organ Procurement and Transplantation Network/United Network for Organ Sharing Kidney Transplantation Committee. His term on the committee will run from July 1, 2014, to June 30, 2016.

Chen serving on program committee for national association

The American Surgical Association appointed **Herb Chen, MD**, to a five-year term on its Program Committee. Committee members score all abstracts received for the association's annual meeting. Chen is a professor, the Layton F. Rikkers Chair in Surgical Leadership and the chair of the Division of General Surgery in the Department of Surgery.

Brown, Burlingham receive pilot grant

Matt Brown, research assistant, and **Will Burlingham, PhD**, professor, Department of Surgery, were awarded an ICTR Novel Methods Pilot Grant for \$50,000 for development of a novel humanized mouse model using pediatric tissues. Brown is completing his PhD thesis work in the Burlingham lab.

Kent, Guo, Hoffman receive research funding

K. Craig Kent, MD, Chair, Department of Surgery, will serve as principal investigator, along with co-investigators **Lian Guo, PhD**, Department of Surgery, and Michael Hoffmann, PhD, Department of Oncology, on an American Heart Association Grant-in-Aid award for the study "Screening for Selective Inhibitors of Restenosis." The team will receive \$143,000 over two years.

Andrew DeVilbiss Receives Herbert Tabor Young Investigator Award

Andrew DeVilbiss, a student in the CMP graduate program, earned the prestigious Herb Tabor Young Investigator Award for his work on the role of histone methyltransferase in establishing the development of red blood cells. The award recognizes progressive innovators in research who embody Tabor's core values of ingenuity and scientific merit. DeVilbiss was selected as a promising young researcher at the Midwest Chromatin and Epigenetics Meeting by the associate editors of the *Journal of Cell Biology*. The *JCB* editorial panel reviewed the presentations and curricula vitae of eligible students, postdoctoral researchers, and faculty members who've not yet received tenure. DeVilbiss received a plaque and prize money.

In addition, DeVilbiss' review article "Hematopoietic Transcriptional Mechanisms: From Locus-Specific to Genome-Wide Vantage Points"* was accepted for publication last month in *Experimental Hematology*, which features critical research in hematology, stem cell biology and transplantation.



Cellular and Molecular Pathology

GRADUATE STUDENTS

2014 INCOMING CLASS



Sarmila Basnet

Bachelors: Winona State University, Cell and Molecular Biology

Masters: University of Wisconsin-Madison, Bacteriology

Growing up in a rural community in Nepal, Sarmila's family has been supportive of her studying in the USA. Sarmila has been working with Dr. Yoshihiro Kawaoka at the University of Wisconsin-Madison's Influenza Research Institute (IRI) since 2009. Sarmila has been on multiple projects alongside Dr. Kawaoka; however she explains that two are of great importance to her. Sarah was able to study the pathogenicity of influenza A pandemic (H1N1)2009. She also studied the highly pathogenic avian H5N1 influenza virus (HPAIV). Through her research, she was able to co-author a manuscript for the pandemic (H1N1)2009 project, which was published in the Journal of Virology in 2011. Sarmila is currently finalizing a manuscript for submission to a renowned journal on her work with the HPAIV project.



Ryan Donahue

Bachelors: Rensselaer Polytechnic Institute, Bioinformatics and Molecular Biology

Ryan Spent his summer before junior year of undergraduate school performing ecological field work. This work tested the effect of pesticide pollution along the Hudson River. His two years of research allowed him to construct a model for how the river reacted to changes in variables such as rainfall, temperature, high and low tides and changes in seasons. The study also looked at understanding how different geographic regions of the river differed as a result of their structure and the civilization around them. Ryan also participated in computational Parkinson's research at the Wadsworth Center in Albany New York. Here, he helped in using case-control analysis to perform genome wide association studies on a dataset that included 4,000 people. The main goal of the research was to identify genetic elements that were implicated in a higher risk or lower risk for Parkinson's disease in an individual.



Nicole Lane

Bachelors: University of Iowa, Microbiology

Nicole became intrigued with the field of Microbiology during her studies at the University of Iowa. Joining Dr. George Stauffer's lab in the Microbiology Department, Nicole worked with gene regulation in E. coli. Her project focused on identifying a new chaperone protein for the sRNA GevB. Wanting to gain more experience, Nicole started working at the University of Iowa Hospitals and Clinics Molecular Pathology Lab this past summer. Nicole is currently working on validating a new Iron Torrent PGM panel for the lab. After final validations, she is now involved in trying to establish several panels to screen for various mutations which has the potential to allow them to replace ten assays that are currently done by Sanger sequencing and will greatly expedite the process of returning results to patients.

Cellular and Molecular Pathology GRADUATE STUDENTS

2014 INCOMING CLASS



Aisha Mergaert

Bachelors: Knox College, Biochemistry

Aisha became intrigued by studies in Cellular and Molecular Pathology during her time at Seattle BioMed's BioQuest Academy, where she took courses that addressed health and development in less-developed nations. Aisha served two terms of independent study with Dr. Janet Kirkley where she studied the effects of ethanol on LPS stimulated macrophages. Her first term included her conducting a literature review for the study. The second term consisted of conducting a series of experiments using J774A.1 cells to further elucidate the pathways activated by LPS. After graduation, Aisha obtained a position as a research technologist at ReachBio LLC, a contract research organization specializing in hematopoietic stem cell biology and toxicity assays. She has submitted two publications to the Society of Toxicology. The abstract was on her work which was examining the effect of standard and new treatment on AML and normal bone marrow progenitors using the colony forming cell assay.



Matthew Sutton

Bachelors: University of Virginia, Biology

During undergrad, Matthew was selected to work for Dr. Patrick Gilbert through the George Mason University's Aspiring Scientists Summer Internship Program. Here, he assisted in the development of methodology to assess the active components of a microbial community and correlates of infectious disease. Matthew then transferred to the University of Virginia and joined Dr. Adrian Halme's lab in the Cell Biology department of the School of Medicine, where he worked on a project elucidating regenerative pathways in the model organism *Drosophila melanogaster*, from which he received first place in the 2012 Richard D. Katz Undergraduate Research Symposium Competition. Matthew was offered a position at the Vaccine Research Center at the National Institutes of Health Bethesda with Dr. John Mascola, where he helped evaluate the potency of monoclonal antibodies in antibody-mediated virus neutralization assays. His contribution with Dr. Mascola has guaranteed him recognition in at two peer reviewed manuscripts.



**Nicholas
Van Sciver**

Bachelors: Worcester Polytechnic Institute, Biology/Biotechnology

Nicholas's first lab experience was in 2009 in high school, when he interned with Dr. Raouf Khalil at Brigham and Women's Hospital. Nicks was an assistant in Dr. Khalil's lab, working with microscopes, dissecting rats, and performing other necessary tasks. In January 2012 thru May 2012, Nick worked under Joseph Duffy in a *Drosophila* lab. Here, he worked with mutants in a gene related to lethargy. In the summer of 2012, Nick interned at Arqule, a cancer research company where he was responsible for the creation of a tissue microarray. For this project, Nick was able to create 51 unique tumor types for his employers to utilize. During the summer of 2013, Nick worked with Professor Sam Politz, a *C. elegans* researcher. Nick devised experiments such as survival curves to demonstrate innate yeast resistance differences between the wild type and the mutant strain. Nick is currently working on a group project to investigate the surface protein on *C. elegans* known as SRF-6.

Cellular and Molecular Pathology GRADUATE STUDENTS

2014 INCOMING CLASS



Eli Wallace

Bachelors: Luther College, 2010, Biology/German Lit

Eli started working in Dr Maganti's lab when at Barrow Neurological Institute starting in 2011. Prior to that, he worked in other labs of Drs Jong Rho, Youngchang Chang and Ron Lukas at the Barrow. When Dr. Maganti moved his lab to the Department of Neurology, Eli came to Madison. Currently he is interested in studying the link between sleep deprivation and epilepsy. He began mastering patch-clamp electrophysiological techniques in Dr. Mathew Jones' lab and continues to explore pathogenic mechanisms for sleep deprivation.



Bryce Wolfe

Bachelors: College of DuPage, Liberal Arts

Masters: Columbia College, Journalism for Health, Science and the Environment

Bryce's interest in science began with his participation in a biology lab at Columbia College. Through his work at Columbia, he was published in "The Chemical Educator" for investigative research and writing. After graduation, Bryce entered the Peace Corps. He served in Kyrgyzstan where he became intrigued with how a host-microbe relationship becomes pathogenic. He became infected with Giardia Lamblia during his service in the Peace Corps, and researched the microbe to see its effects, ways to rid it, etc. It was after these experiences that he realized he wanted to go into public service through a road in science.

**Mengxue
Zhang**

Bachelors: China Medical University, Clinical Medicine

Masters: Peking University Health Sciences Center, Pathology

Mengxue's interest is in Identifying novel ALK fusion genes in ALK positive non-small cell lung cancer (NSCLC) patients Using intercalated antibody-enhanced polymer (iAEP) immunohistochemistry staining and FISH to identify abnormal ALK positive cases Combining rapid amplification of cDNA 5' ends (5' RACE) assay, touchdown PCR and nested PCR to identify unknown fusion genes in formalin-fixed paraffin embedded (FFPE) clinical specimen. She completed a summer research fellowship in Dr. Fabry's laboratory in 2013.

Cellular and Molecular Pathology

GRADUATE STUDENTS

2014 INCOMING CLASS



Fen Zhu

Bachelors: Wuhan University, Laboratory Medicine

Fen earned her bachelor's degree in laboratory medicine in Wuhan University in China. Since then, she got interested in how disease could be diagnosed based on the presence of specific biomarkers and decided to explore the world of biological science. Now she is studying the non- canonical JAK-STAT signaling pathway in lymphoma, trying to deepen our understanding about the mechanism of lymphomagenesis and find more molecular targets for clinical application.

SEMINAR SERIES

Wednesday, Sept. 10	12:00pm	G5/113	<i>Dustin A. Deming</i> , MD, Dept. of Medicine, UW-Madison
Wednesday, Sept. 17	12:00pm	G5/113	<i>Karl Broman</i> , PhD, Dept. of Biostatistics and Medical Informatics, UW-Madison
Wednesday, Sept. 24	12:00pm	G5/113	<i>Corinna Burger</i> , PhD, Department of Neurology, UW-Madison
Wednesday, Oct. 1	12:00pm	G5/113	<i>Christian Capitini</i> , MD, Department of Pediatrics, Unit of Hematology/Oncology, UW-Madison
Wednesday, Oct. 8	12:00pm	G5/113	<i>Peter Lewis</i> , PhD, Department of Biomolecular Chemistry, UW-Madison
Wednesday, Oct. 15	12:00pm	G5/113	<i>Holly Hung</i> , Graduate Student, Cellular & Molecular Biology, Svaren Lab, UW-Madison
Wednesday, Oct. 22	12:00pm	G5/113	<i>Ted Golos</i> , PhD, Department of Comparative Biosciences, UW-Madison
Wednesday, Oct. 29	12:00pm	G5/113	<i>Ernesto Bernal-Mizrachi</i> , MD, Department of Medicine, Division of Metabolism, Endocrinology & Diabetes, University of Michigan
Wednesday, Nov. 5	12:00pm	G5/113	<i>Clifford Cho</i> , MD, FACS, Department of Surgery, UW-Madison
Wednesday, Nov. 13	3:00pm	1325 HSLC	ZuRhein Lecture, Robin Franklin, PhD, Department of Clinical Neurosciences, University of Cambridge, England
Wednesday, Dec. 3	12:00pm	G5/113	<i>Paula North</i> , MD, PhD, Children's Hospital of Wisconsin, Medical College of Wisconsin
Wednesday, Dec. 10	12:00pm	G5/113	<i>Grant Gallagher</i> , PhD, The Institute for Genetic Immunology, Hamilton, New Jersey

WELCOME our New Trainers

Mathew Jones



Associate Professor | *Neuroscience*

My lab is currently involved in three areas of research, all of which focus on GABAergic inhibition and are related to understanding mechanisms of epilepsy and disorders with overlapping symptoms (e.g., Alzheimer's disease, autism spectrum disorder), and developing possible treatments.

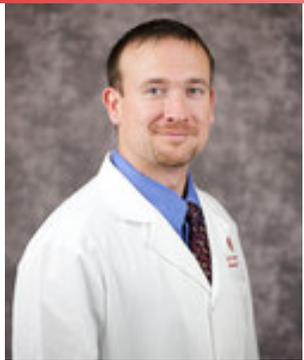
Federico Rey



Assistant Professor | *Bacteriology*

The overall goal of our research is to dissect diet by microbiota interactions that impact human health, so that therapeutic/preventive dietary recommendations can be made based on the metabolic potential of a subject's microbiome. Projects in my lab aim at identifying human gut bacterial species that transform some of these compounds, the genes involved in these processes, their regulation and their impact in the development of cardiovascular disease.

Dustin Deming



Assistant Professor | *Hematology/Oncology*

Dr. Deming's research is focusing on colorectal cancer pathogenesis mechanisms. Improved treatment options and biologic markers predictive of response are clearly needed. Several key mutations are important in tumor initiation, progression, metastasis and the response to some therapeutic agents. Dr. Deming utilizes multiple novel murine models and CRC spheroid cultures to explore how the mutation profile alters the biology of these cancers, including the response to targeted therapies directed at the PI3K signaling pathway in PIK3CA mutant colon cancer.





September 12, 2014
A chilly evening picnic at the
American Players Theatre watching
"The Doctor's Dilemma" by George
Bernard Shaw

Dr. Bianca R. Mothé

Dr. Bianca R. Mothé received her Bachelors in Science from Beloit College and her Ph.D. from the University of Wisconsin-Madison in the Department of Cellular and Molecular Pathology in 2002. She then accepted a scientist position in industry in San Diego after which she started her academic tenure-track position at California State University-San Marcos. She is interested in host-pathogen interactions, especially the role of immunogenetics (MHC) in developing the repertoire of cellular immune responses after infection. She actively trains undergraduate and graduate (Masters) students and has a joint position at the La Jolla Institute for Allergy and Immunology.

Congratulations to our Summer 2014 Thesis Defenders!

Ben Clarkson
April 2

Migration and Function of
Dendritic Cells in CNS
Autoimmunity

Joe Ollar
May 12
Masters

Minimal Residual Disease
in Multiple Myeloma:
Cell-Autonomous and
Non-Autonomous
Mechanisms

Toni Brand
March 21

Investigations of Nuclear
HER family receptors in
cancer and resistance to
cetuximab therapy

Jeffrey Harding
August 27

Granuloma Dynamics
during mycobacterial
infection

Melba Marie Tejera
July 24

Regulation of Effector and
Memory T cell Differentiation
by Transcription Factor FoxO1
and I κ B α nuclear export
of NF- κ B

Michael N. Hart Research Day

Thank you to everyone who took part in the 2014 Michael N. Hart Research Day. For the third consecutive year, members of the Department of Pathology and Laboratory Medicine and the CMP graduate program gathered to share their discoveries and engage in scholarly discussion. The event included short talks and a poster session featuring the work of our CMP graduate students and pathology residents.

A new feature this year was the inclusion of a professional development panel discussion to draw attention to PhD career options which lie outside of the typical postdoc to faculty path. We were fortunate to have six excellent panelists who provided wide-ranging career perspectives.



2014 Award Winners

Reza Teaching Award

Robert Corliss, MD

Poster Session Awards

Andrew DeVilbiss (*Bresnick lab*)

Joseph Ma (*Svaren lab*)

Erin Theisen (*Sauer lab*)

Resident Talk Award

Jason Rosenbaum, MD



PROFESSIONAL DEVELOPMENT PANEL

Bianca Mothé, PhD

*Professor
CSU-San Marcos*

Dr. Mothé described finding a professional balance as a professor at an intuition that emphasizes faculty teaching while still affording research opportunities.

Beth Werner, PhD

*Intellectual Property Manager
WARF*

Dr. Warner described her path through industry and back to the academic setting where her role in intellectual property management allows her to work at the cutting edge of a wide variety of scientific areas.

Brad Swanson, PhD

*Senior Director R&D: Cell Biology
Cellular Dynamics International*

Dr. Swanson recounted his experiences in transitioning to industry after starting his career in academia as well as noting the effects of outside influences on choosing a career.

Marjeta Uhr, PhD

*Director of Research
Promega*

Dr. Uhr provided her perspective on working in industry while maintaining academic ties such as serving on the Board of Visitors for the College of Agriculture and Life Science (CALs) at the UW-Madison and contributing to peer-reviewed journals.

Imogen Hurley, PhD

Assistant Director: Office of Postdoctoral Studies, UW-Madison SMPH

Dr. Hurley highlighted the importance of her extracurricular involvement in the postdoc association at The University of Chicago in leading her toward a career in research and education administration.

Vanessa Horner, PhD

*Assistant Director
Clinical Genetics Laboratories
WI State Laboratory of Hygiene*

Dr. Horner shared her thoughts on combining her interests in genetics and research with a strong desire to be directly involved in patient care into a career as a clinical laboratory director.