

The CMP Newsletter

Fall 2013



Second Annual Michael N. Hart, MD Pathology Research Day

Enormous THANKS to all the faculty, staff, residents, fellows, and graduate students who supported the 2nd Annual Michael N. Hart Pathology Research Day. This all-day Translational Research Event was held on Wednesday, August 21, 2013. The day opened with Faculty and Resident Research Presentations and culminated in the CMP Poster Session and Reception. Congratulations to the day's award winners!

Presentation, Poster, and Teaching Awards presented at 2013 Research Day

Reza Hafez Teaching Award: Erik Ranheim, MD, PhD

Presentation Award: Matthew Oberley, MD, PhD

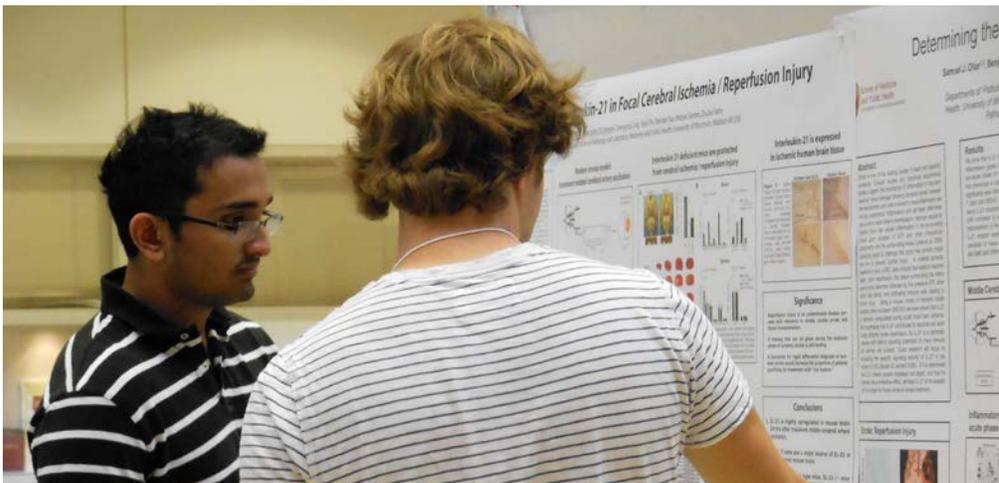
Poster Session Awards: Joseph Ma (Svaren Lab)
Ben Clarkson (Fabry Lab)
Heather Schmitt (Nickells Lab)

CMP Trainers on the Best Doctors in America List

Eleven CMP Trainers appeared on the Best Doctors in America List for 2013. They were among about 200 selected from the UW-Madison. Only 5 percent of doctors in the United States earn this honor.

- David Andes, MD
- Wade Bushman, MD, PhD
- Herbert Chen, MD
- Arjang Djamali, MD
- John Fleming, MD
- James Gern, MD
- Nizar Jarjour, MD
- K. Craig Kent, MD
- Bruce Klein, MD
- Christine Seroogy, MD
- Paul Sondel, MD, PhD

Congratulations to our trainers who received this great honor.



CMP Meets Undergrads at Summer Graduate Fair

On June 28, 2013, the CMP Program participated in the Summer Graduate Fair on the UW Campus. This annual fair highlights graduate education opportunities for approximately 200 undergraduates, many from underrepresented groups, who were conducting summer research at UW–Madison or were visiting with the McNair Scholars Program. With the help of CMP trainers and graduate students, the CMP Program was very well represented!



Interested undergrads came to check us out!

CMP Welcomes Incoming Students at Events



CMP Students gather at the Terrace.

Incoming Students Enjoy Orientation and Memorial Union Terrace Outing

On August 22, 2013

After a full day of New CMP Student Orientation, which included program specifics as well as numerous CMP Trainer Presentations, new students relaxed at the Memorial Union Terrace with their current student “buddies” for conversation and relaxation. The Terrace is one of the best spots in Madison to build new friendships!

CMP students and trainers enjoy a picnic at American Players Theatre.

Beautiful Evening for a Picnic at the American Players Theatre

On August 23, 2013

For the last Welcome Week event, trainers and graduate students met in Spring Green to enjoy a picnic and play at the American Players Theatre. This year’s play was W. Somerset Maugham’s comedy, “Too Many Husbands”. The weather was perfect for an evening performance under the stars.



Welcome our New Trainer!

Miriam Shelef, MD, PhD

Assistant Professor
Department of Medicine
Division of Rheumatology

Dr. Shelef recently began her research at the UW. She studies the interaction between synovial fibroblasts, the cells which line the joint, and the extracellular matrix in rheumatoid arthritis. Synovial fibroblasts are migratory and highly invasive in rheumatoid arthritis and mediate much of the permanent joint damage seen in this disease. However little is known about how these cells migrate and invade. Using 3D imaging, microfluidics, genetically manipulated mice, mouse models of arthritis, and human arthritic synovial fibroblasts, she is able to investigate the structures cells use to invade, as well as, the roles of proteins involved. Furthermore, she is studying the role of citrullination the poorly understood post-translational modification of proteins that occurs with increased frequency in inflammatory states. She receives research funding through the American College of Rheumatology.

David Evans, MD, PhD

Visiting Professor
Department of Pathology & Laboratory Medicine

Dr. Evans research program is directed towards understanding host-pathogen interactions for human and simian immunodeficiency viruses. Current areas of investigation include (1) mechanisms of lentiviral resistance to tetherin/BST-2, (2) the role of KIR and MHC class I polymorphisms in regulating NK cell responses, (3) ADCC as a mechanism of protection, and (4) single-cycle SIV as an experimental AIDS vaccine approach.

Join Us in Welcoming the Incoming Class of 2013

AMANDA CONTRERAS



BS, Animal Science, 2011
University of Minnesota–Twin Cities

Amanda began her fascination with health and disease and fondness for animals by pursuing veterinary medicine and worked as a veterinary technician assistant. As her schooling evolved she became more interested in pathophysiology, and began volunteering in Dr. Mauro's Lab which is focused on cell-signaling. Amanda presented her work, "The skeleton and insulin work together to regulate energy metabolism" at the University of MN Annual Undergraduate Research Symposium. Since graduation Amanda has worked as a Junior Scientist in Dr. Mauro's lab and currently is involved with two manuscripts that are in preparation, as a first author of "Role of the putative skeletal hormone, osteocalcin, in adipocyte differentiation and function" and second author in "Paracrine interactions between osteoblasts and breast carcinoma cells regulate Monocyte Chemoattractant Protein-1 (MCP-1/CCL2) expression and secretion." In addition, she also works in Dr. Vulchanova-Hart's lab, isolating primary canine keratinocytes and culturing these cells.

GIANNA HERNANDEZ



BS, Geology, 2007
University of Puerto Rico–Mayaguez

MS, Geology, 2009
California Institute of Technology

Gianna admits to being a late comer to the field of neuroscience, but with a mother who was a scientist and growing up in a world of academia and research she knew that she also would pursue the sciences. Gianna's undergraduate research was with Dr. Schellekens in the study of igneous petrology of local basalts and involved analyzing the geochemistry of pyroxenes using a CAMECA electron microprobe. Gianna graduated Magna Cum Laude and received the Harry Hammond Hess Valedictorian Medal for her class. Gianna continued working in geology/geophysics and received her Master's from CalTech. She returned to Puerto Rico, where she was an Instructor at Universidad del Este and taught at the college level: Evolution, Biology, Physics, and Mathematics classes. It was during her time teaching, Gianna had the opportunity to work with Dr. Ana Mendez and lab, and used mouse models to study how the brain learns to stop fearing after a traumatic event. Gianna was an author in their presentations, "Genetic bases of differences related to emotional preservation in mouse substrains", and presented at several conferences in the U.S. Gianna's research interests are based in neuroscience, and neurodegenerative diseases as well as the areas of learning and memory mechanisms.

JOSH KNACKERT



BS, Microbiology, 2010
University of Wisconsin–Madison

Joshua's primary research interests revolve around regenerative medicine, cell therapies, and stem cell research. His past research experiences have focused primarily around neuroscience. As an undergraduate he had the opportunity to work with Anita Bhattacharyya on projects involving the role of astrocytes in Fragile X syndrome. Later, Joshua worked with Dr. Bhattacharyya with investigating astrocytes and the role they play in Down syndrome, and is the contributing author on a paper submitted to PNAS on "Cellular and molecular deficits in human trisomy 21 iPSCs and neurons: a model for Down syndrome intellectual disability." Currently, Joshua works as a Research Specialist (Neuron Group) for Cellular Dynamics International, Inc. where he works with human cell cultures (neuron differentiation from human iPSC, iPSC cells). In addition, Joshua is very involved with Habitat for Humanity, and worked full time as a Logistics Coordinator for Habitat while studying under Dr. Bhattacharyya.

JULIA KREZNAR



***BS, Biology, 2013
Grinnell College***

Julia is interested in pursuing infectious disease research that allows her to conduct biomedical research through multiple approaches, and would like to further her understanding of the mechanism of disease transmission and how it functions within both the environment and within human populations. Julia has gained valuable lab experience through summer research positions at Carver College of Medicine at University of Iowa and the Medical College of WI. Julia is still working with Dr. Kirsten Beyer from the Medical College of WI and is in the process of publishing results related to environmental data collection on neighborhood safety and green space. At Carver her research with Dr. Anderson's Lab focused on analyzing the effects and role of potassium channels in mitochondria on mice that had undergone myocardial stress using DAPI, TUNEL and H&E staining to determine the changes in myocardial fibrosis and apoptosis. One of Julia's most influential experiences was the opportunity to be a student researcher with Duke University's Organization of Tropical Studies Program which involved living in rural Costa Rica and conducting a case-control field study between the prevalence of upper respiratory infections and type of fuel used for cooking.

JAMES ROMERO



***BS, Biomedical Engineering, 2013
University of Houston***

James's interests in graduate education are in molecular virology and microbiology, and making a difference in people's lives. Most recently James has had the opportunity to work with Dr. Irina Larina as a Project Intern with research in bioimaging. Prior, James worked as a research intern under the HHMI Summer Internship program at Rice University under Dr. Yizhi Jane Tao with research on the Influenza B Virus Nucleoprotein, and learned recombinant DNA technology methods. This past summer he worked with Dr. Andrew Rice at Baylor College of Medicine as a participant of the Summer Medical and Research Training Program (SMART) regarding research that was focused on HIV Host Cofactors, and his project involved siRNA depletions of a protein (WDR37) that is thought to be involved in HIV gene expression. In addition to James' lab experience, he has also worked as a certified pharmacy technician, and has been an active participant in the Program for Mastery in Engineering Studies (PROMES) where he engages in community outreach and engineering recruitment activities geared to middle and high school students from local ISD schools.

JEANETTE SHULTZ



***BS, Biology–Neurobiology option, 2013
University of Wisconsin–Madison***

Jeanette's primary career goal is to research diseases of the nervous system, and has a strong interest in immunology and neuroscience. She has a passion for research and lab work, and is especially interested in work on Multiple Sclerosis. Jeanette is currently working as a lab assistant with Dr. Kern's lab studying the "Detection of the turfgrass dollar spot pathogen in commercial creeping bentgrass seed". She is also working on a capstone course research project, "Investigation of the role of the neuronal migration gene LIS1 on neural crest cell migration in zebrafish embryos via morpholino knock down". She has presented her work with the plant pathology lab at the Madison Undergraduate Research Symposium, and is second author for two manuscripts currently in preparation. Jeanette was also a National Merit Commended Scholar and National AP Scholar and is currently a member of the National Society of Collegiate Scholars, and is on the Dean's List.

ERIN THIESEN



BS, Genetics, Cell Biology, and Development, 2011
BA, Physiology, 2011
University of Minnesota-Twin Cities

Erin is an MD/PhD student who just finished her 2nd year of medical school at UW-Madison, and is returning to the lab! As an undergraduate she spent time volunteering at the Ronald McDonald House, working as a research assistant in a surfactant protein laboratory, as well as a research associate in the Emergency Department. It was with these experiences she realized it was her goal to understand both sides of medicine and bridge the informational gap occurring between the two fields to truly improve patient outcomes. In Minnesota, she had the opportunity to work with Dr. Colin Campbell and evaluated the effect of ligase III on DNA-protein cross-links by altering the protein expression levels of XRCC1 and Ref1, and with Dr. Caroline George investigating the role of SP-A on immunoglobulin A (IgA) in breast milk. Erin also completed a summer training program at the John Innes Centre in the United Kingdom exploring antibiotic synthesis and secondary control mechanisms in actinomycetes. Currently, she is part of Dr. Sauer's Lab studying *Listeria monocytogenes* and its interactions with the host immune system. She is interested in understanding the role of cell death in immunity, specifically with applications for vaccine development. Medically she is interested in infectious disease or hematology/oncology.

KIRSTI WALKER



BS, Biotechnology, 2012
MS, Biotechnology, 2013
University of Nevada-Reno

Kirsti has strong interests in immunology and virology, and feels her future interests lie in the new and emerging field of neuroimmunology. As a graduate and undergraduate research assistant, Kirsti has had the opportunity to work with Thomas Kidd, D.Phil. and will be an author on two publications currently under revision: "Blocking Cell Death Rescues Axon Guidance in Netrin Mutants" and "The Netrin-B nested hog gene is required for correct nurse cell position and eggshell formation in *Drosophila melanogaster*." Kirsti also recently presented and submitted an abstract at the Biotechnology Symposium. In addition to her research experience, Kirsti also has been a Discussion Group Leader for an Introduction to Cellular and Molecular Biology course. Kirsti completed the University of Nevada, Reno's Honor's Program, and has five years of formal Spanish Education.

Seminar Series

Fall 2013

Sept 25	12 PM	K6/I20..... Jeff Hardin, PhD, Professor and Chair, Zoology, UW-Madison
Oct 2	8 AM	G5/I13.....(Grand Rounds) Herb Chen, MD, Professor and Chairman, Surgery, UW-Madison
Oct 9	12 PM	K6/I20..... Benjamin Clarkson, UW-CMP Graduate Student, Z. Fabry, PhD, Adviser Lab
Oct 16	12 PM	K6/I20..... Holly Hung, UW-CMP Graduate Student, J. Svaren, PhD, Adviser Lab
Oct 23	12 PM	K6/I20..... Tamas Horvath, DVM, PhD, Professor and Director, ICSNM, Yale University
Oct 30	12 PM	K6/I20..... Jeff Harding, UW-CMP Graduate Student, M. Sandor, PhD, Adviser Lab
Nov 6	8 AM	G5/I13.....(Grand Rounds) Robert Moir, PhD, Assist. Professor, Neurology, Harvard Med
Nov 13	12 PM	K6/I20..... Vincent Racaniello, PhD, Professor, Microbiology & Immunology, Columbia Univ.
Nov 20	12 PM	K6/I20..... Dmitry Shayakhmetov, PhD, Assoc. Professor, Medicine, U.Washington-Seattle
Dec 5	3 PM	Waisman (Zu-Rhein Lec) Li-Huei Tsai, PhD, Professor, Brain & Cognitive Sciences, MIT



Suknuntha Receives T. Ray Bradley Award

Kran Suknuntha, a CMP student in the Slukvin Lab, received the T. Ray Bradley Award for his presentation at 2013 International Society of Experimental Hematology (ISEH) Meeting. The T. Ray Bradley Award is one of two New Investigator Awards given to student presenters, which highlights the work of young scientists who submit cutting-edge abstracts. Congratulations!

Congratulations To Our Summer 2013 Thesis Defenders!

May 22	Paige Jany	Efficacy of GFAP as a biomarker for Alexander disease and estrogenic regulation of GFAP
June 24	Stephanie Morgan	Smooth muscle cell death, macrophage phenotypes, and inflammation in the progression of abdominal aortic aneurysm
July 15	Bahauddeen Alrfaei	The Role of miR-100 in Glioblastoma Tumor Initiating Cells and The related Tumor Lines
July 30	Ryan Raver	The Role of the B-cell Specific Transcription Factor, Pax5, in EBV Latency and Lytic Reactivation
Aug 12	Kirk Grubbs	Organization and Function of the Microbial Communities Associated with the European Honey Bee, <i>Apis mellifera</i> , and its Hive Structures
Sept 16	Kran Suknuntha	Induced Pluripotent Stem Cell Model of Chronic Myeloid Leukemia Revealed Olfactomedin 4 as a Novel Therapeutic Target in Primitive Leukemia Cells

Igor Slukvin receives NIH 5-year, \$3.2 million multiple PI R01 grant

Igor Slukvin, MD, PhD received a National Institute of Health multiple PI R01 grant to develop novel stem cell-based therapies for AIDS. Slukvin will serve as principal investigator of this 5 year, \$3.2 million study which includes collaboration with co-principal investigator, Bruce Torbett, PhD, at Scripps Research Institute, La Jolla CA.

From: <http://pathology.wisc.edu/news/2013-08-08-igor-slukvin-receives-nih-5-year-32-million-multiple-pi-r01-grant>

Lynn Allen-Hoffmann/Stratatech Awarded DHHS BARDA Contract Valued up to \$47.2 Million

Stratatech Corporation, founded in 2000 by **B. Lynn Allen-Hoffmann, PhD**, has been awarded a contract valued at up to \$47.2 million by the U.S. Department of Health and Human Services' Biomedical Advanced Research and Development Authority (BARDA). The 5-year contract supports preclinical, clinical, regulatory, and technology development activities for StrataGraft® skin tissue as a treatment for severe burns. StrataGraft skin tissue is a viable, full-thickness skin substitute designed to mimic natural human skin. StrataGraft skin tissue utilizes NIKS® human keratinocyte progenitors, which were initially isolated and characterized in the laboratory of Dr. Allen-Hoffmann. The BARDA contract advances this Department of Pathology discovery to late stage clinical trials, supporting activities required for FDA approval of StrataGraft skin tissue in the treatment of thermal burn injuries.

From: <http://pathology.wisc.edu/news/2013-08-01-professor-lynn-allen-hoffmannstratatech-awarded-dhhs-barda-contract-valued-472>

2013-14 CMP Program Committee Memberships

Steering Committee

Zsuzsa Fabry, PhD (Chair) (i), Anna Huttenlocher, MD (i), Donna Peters, PhD (st), Matyas Sandor, PhD (i), Erik Ranheim MD, PhD (c), Emery Bresnick, PhD (st), Bo Liu PhD, PhD (st), Adel Talaat, MVSc, PhD (i), Ex officio: Joanne Thornton, Graduate Program Coordinator, Student PhD Candidates: Holly Hung, Ben Clarkson

Admission & Recruit Committee

Caroline Alexander, PhD (c), Bo Liu, PhD (st), Shelby O'Connor, PhD(i), Matyas Sandor, PhD (i), David O'Connor, PhD (i), Dan Loeb, PhD (c), Student PhD Candidates: Utibe Bickham, Stephanie Lawry, Chelsea Hope, Mike Khan, Caitlin McNair, Zulmarie Perez, Maggie Maes, Joe Ollar

Pathology Seminar Series

Erik Ranheim, MD, PhD (Chair)(c), Zsuzsa Fabry, PhD(i), Matyas Sandor, PhD(i), Ex officio: Taiya Bach

1st Year Advising & Orientation

Donna Peters, PhD (Chair) (st), Chris Seroogy, MD (i)

Curriculum

Deric Wheeler, PhD (Chair) (c), Zsuzsa Fabry, PhD (i), Erik Ranheim, MD, PhD (c), Craig Atwood, PhD (n), Donna Peters, PhD(st), Student PhD Candidates: Melba Marie Tejera, Melissa Wilking, Ex officio: Joanne Thornton

Ethics

Zsuzsa Fabry, PhD (Chair) (i), Bo Liu, PhD (st), Student PhD Candidate: Melissa Wilking, Ex officio: Joanne Thornton

Diversity

Adel Talaat, MVSc, PhD (Chair) (i), Ricardo Lloyd, MD, PhD, Zsuzsa Fabry, PhD(i), Student PhD Candidate: Melba Marie Tejera, Ex officio: Joanne Thornton

CMP External Review Committee

Gail Robertson, PhD, Physiology (Chair); Ronald Kalil, PhD, Ophthalmology & Visual Sciences, Center for Neuroscience

Sridharan Awarded 2013 Shaw Scientist Award

Rupa Sridharan, PhD was one of two researchers from UW–Madison chosen by the Greater Milwaukee Foundation for the 2013 Shaw Scientist Awards, awarded to scientists conducting groundbreaking research in biochemistry, biological sciences or cancer research. Dr. Sridharan researches ways to reprogram cells for different functions, and plans to study barriers against reprogramming cells. Each Shaw Scientist receives \$200,000 in unrestricted research support.

Full story at: <http://www.news.wisc.edu/21824>

Carrithers Creates Enhanced Cells For MS-like Disease

A team led by **Michael Carrithers, MD, PhD** designed a macrophage which seemingly enhances immune response by expressing the sodium channel NaV1.5 within the cell. NaV1.5 macrophages sought out and promoted recovery of lesions in mice with experimental autoimmune encephalomyelitis—the mouse version of MS. Significant recovery was observed in almost all mice that were treated with the NaV1.5 after developing symptoms of the disease while the same was not observed in mice treated with placebos or regular mouse macrophages. NaV1.5 macrophages were found at the lesion sites in treated mice, and these lesions were found to be smaller and less damaged. These findings suggest that cells could be designed to develop a new type of treatment for MS.

Full story at: <http://www.med.wisc.edu/news-events/enhanced-white-blood-cells-heal-mice-with-ms-like-disease/41128>

Bendlin Research Confirms Alzheimer's & Diabetes Link

Using brain scans, blood tests, and cognitive ability tests, a study conducted by **Barb Bendlin, PhD** showed that brains of participants (all with a family history of Alzheimer's Disease) absorbed less sugar and had higher insulin resistance. "We saw that they had lower intake of sugar in specific regions of the brain that are important for memory," Bendlin said. "When we tested their cognition, we gave them words and asked them to repeat them. We could see in those people with higher levels of insulin resistance that they have lower glucose intake and poorer performance on their memory tests. Our study is unique because the participants are in midlife and they are mostly pre-diabetes. Also, this is definitely the largest study, involving 150 people." This connection is important, because insulin levels – important for memory function – are low in people suffering from Alzheimer's disease.

Full story at: <http://www.med.wisc.edu/news-events/research-confirms-link-between-alzheimers-disease-and-diabetes/41438>

Kent Named Director of American Board of Surgery

K. Craig Kent, MD was selected for a six-year term as the director for the American Board of Surgery (ABS). As ABS serves as the national certifying body for surgeons, the board is composed of America's most accomplished surgeons, which now deservedly includes Dr. Kent. Congratulations!

Full story at: <http://www.med.wisc.edu/news-events/dr-k-craig-kent-named-director-of-american-board-of-surgery/41325>