

## CMB Events Calendar

**June 28, Thesis Defense, Kenneth Krill** (mentor: G Hammer)  
2:00pm, 5915 Buhl

**July 27 Abstract deadline** for CMB Fall Poster Session

**July 16, Thesis Defense, Grace Lin** (mentor J Schwartz), 1:00pm

**Aug 9 Thesis Defense, Derek Simon** (mentor: G Hammer),  
2:00pm, BSRB Rm ABC

**Aug 27 Thesis Defense, Kristine Ito-Smith** (mentor: M  
Burmeister), 11:30am

**Sept 3** Last day to process student registration without late fee

**Sept 4** First day of classes for Fall 2012 semester

**Sept 7 CMB Fall Symposium and Poster Session:**

1:00pm Levine Lecture: Joan Brugge, Harvard Med Schl, at  
Rackham Amphitheatre; 2:15pm Poster Session at Michigan  
League

**Sept 10** First session of **CMB 850 Student Seminar**

**Sept 14 Thesis Defense, Paul Moore** (mentor: B. Tsai), 9:00am

**Sept-Nov** Fall Short Course, CMB 630:

**Wiring the Nervous System in Health and Disease**

**Sept 25** Introduction, Brian Pierchala, U Michigan

**Sept 27** Florian Engert, Harvard University

**Nov 13** John Flanagan, Harvard Medical School

**Nov 20** Martine Roussel, St Jude Children's Research Hosp

**Nov 27** Zhigang He, Children's Hospital, Boston

**PIBS Recruitment Weekends:** Jan 24-26, 2013/Jan 31-Feb 2,  
2013

**May 17, 2013, 4<sup>th</sup> CMB Retreat:** Eagle Crest Conf Ctr, Ypsilanti.

## Joan Brugge to deliver the Myron Levine Lecture at the Fall 2012 CMB Symposium on Fri Sept 7th

Dr. Joan Brugge, Professor and Chair of The Dept of Cell Biology at Harvard Medical School, will be headlining the Myron Levine Lecture at the 32<sup>nd</sup> annual CMB Symposium on Fri Sept 7, 2012. Dr. Brugge is a leader in cancer biology research where she has contributed to a deeper understanding of mechanisms and cellular events in the development of epithelial cancers such as breast cancer. Her lab uses cells grown in a 3-dimensional matrix to study cellular processes such as proliferation, survival, and migration - events for which misregulation often leads to tumorigenesis. Apoptosis and cell death also play crucial roles in tumor development. Dr. Brugge's lab has identified a novel cell death mechanism that may play a role in controlling tumorigenic cell growth. Dr. Brugge's seminar at 1pm at Rackham Amphitheatre will be immediately followed by the Annual CMB Poster Session at the Michigan League.



Joan Brugge

### Features Inside:

Meet the New CMB Faculty  
CMB Retreat 2012

*AWIS continued*

Health System; a panel discussion on balancing family and career; and a workshop on conflict resolution skills, with Carrie Landrum of the Office of Student Conflict Resolution. Because of the range of experiences and backgrounds in each circle, all participants in the mentoring circles both received and provided mentoring depending on the topics being discussed. Participants in the mentoring circles considered "getting a chance to talk to other individuals who are going through similar circumstances, and getting honest responses from faculty" as the most beneficial part of the program. Overall, the Mentoring Circles Program provided a forum for establishing dialogue between mentors and protégés that supplemented the mentoring already provided to trainees by their research advisors. UM-AWIS will again host the Mentoring Circles Program in Fall semester. Women and men are encouraged to participate in UM-AWIS events and programming. Contact Katie Dumas, [kjdumas@umich.edu](mailto:kjdumas@umich.edu) for more information. The UM-AWIS chapter is affiliated with the National AWIS organization ([www.awis.org](http://www.awis.org)), which advocates on behalf of women in science. Visit online at [www.umich.edu/~awisum](http://www.umich.edu/~awisum) or Facebook: UM-AWIS.

## AWIS Mentoring Circles provide Professional Development Skills



The Michigan chapter of the Association for Women in Science (UM-AWIS) hosted the inaugural semester of its Mentoring Circles Program winter term 2012. The goal of the Mentoring Circle is to foster professional success for women in science and related fields by providing mentoring and assistance in setting important and relevant professional development goals, and helping to build confidence, teach skills, and identify resources to reach those goals.

Mentoring Circle participants networked with women at a variety of career stages, including faculty members, post-docs, and graduate students, which facilitated learning from multiple sources of expertise. Each meeting of the mentoring circles was preceded by a workshop, which included a discussion of mentoring basics presented by Sonya Jacobs, Director of Faculty Development at UM



**Sivaraj Sivaramakrishnan, Ph.D.** Asst Prof, Cell & Devel Biology. Our lab focuses on the development of protein bio-sensors for cell signaling based on the new

technique of Systematic Protein Affinity Strength Modulation. Current applications include G-protein coupled receptors (GPCR), protein kinase C (PKC) and focal adhesion kinase (FAK). We also study the cooperative behavior of the myosin family of molecular motors using single molecule biophysics approaches.



**Ernesto Bernal-Mizrachi, M.D.** Assoc Prof, of Medicine. Division of Metabolism, Endocrinology & Diabetes. Regulation of pancreatic  $\beta$ -cell mass, differentiation and programming by growth factor and nutrient signaling.

My laboratory delineates signaling pathways including Akt and mTOR for regulation of  $\beta$ -cell mass in normal conditions or with adaptation to insulin resistance using genetically modified animal models and in vitro approaches. Studies on nutrient signaling explore susceptibility to diabetes in models of intrauterine malnutrition or over-nutrition with particular focus on how  $\beta$ -cells are permanently modified by adverse extracellular milieu.



**Ann Miller, Ph.D.** Asst Prof, Molecular, Cellular & Developmental Biology. The Miller Lab studies the roles that the small GTPase Rho and its associated GEFs (Rho activators), GAPs (Rho inactivators), and other regulatory

proteins play in orchestrating cytokinesis. We also study how the Rho signaling pathway and cytokinesis may become misregulated in cancers. Our model for the intact vertebrate epithelium uses *Xenopus laevis* (African clawed frog) embryos.



**Alon Kahana, Ph.D., M.D.** Asst Prof Ophthalmology & Visual Sciences. The Kahana Lab studies the roles of neural crest-derived and muscle-derived progenitor stem cells in disease and tissue regeneration, and is

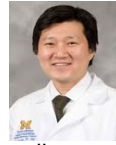
primarily interested in the intersecting biological processes that underlie embryogenesis, oncogenesis and adult tissue regeneration. The lab uses zebrafish, and has developed novel models of human disorders, including congenital eye disease and extraocular muscle injury. These models are being used to gain a mechanistic understanding of fundamental biological processes such as stem cell dedifferentiation and tissue morphogenesis, to answer clinically-driven questions and hypotheses.



**Santiago Schnell, Ph.D.** Asst Prof Molecular & In

physiology, Bioinformatics. The Schnell lab investigates physiology systems comprising many interacting components, where modeling and

theory may aid in the identification of the key mechanisms underlying the behavior of the system as a whole. We investigate the mechanisms of protein folding and trafficking, the mechanisms triggering cellular stress responses, and the mechanisms regulating cellular metabolism and turnover in pancreatic beta and cancer cells.



**Tae-Hwa Chun, Ph.D., M.D.** Assoc Prof of Medicine. Division of Metabolism, Endocrinology & Diabetes. Our research focuses on the role of adipose tissue ECM remodeling in the pathogenesis of obesity-linked diabetes and

cardiovascular diseases (CVD). We hypothesize that a genetic dysregulation of ECM remodeling leads to adipose tissue fibrosis and inflammation, which together increase the risk of diabetes and CVD. By using genetically modified mice and 3-D adipocyte cultures, we aim to define a molecular mechanism that links obesity to diabetes and CVD.



**Brian Pierchala, Ph.D.** Asst Prof, Biologic & Materials Science. During development of the nervous system, neurons make synaptic contacts that are supported by target-derived neuronal growth factors. During this target innervation,

neurons often make excessive projections into their targets that are later pruned back. Development of the neuromuscular junction (NMJ) undergoes a process in which NMJs are initially innervated by 2 or more axons; then weaker synaptic connections are eliminated for 1:1 pairing between the presynaptic motor neuron and the postsynaptic receptor clusters in the muscle. This competitive "pushing out" of weaker axonal connections occurs by the release of inhibitory factors by the successful axons. The delicate balance between growth and survival-promoting neuronal growth factors, and inhibitory competitive factors sculpt the architecture of mature circuits. We are interested in the ligand and receptor mechanisms for growth and survival promotion, as well as growth inhibition and synaptic elimination.



**Xing Fan, M.D., Ph.D.** Asst Prof Neurosurgery, Cell & Developmental Biology. Our goal is to develop novel therapies for malignant brain tumors, including glioblastoma and

medulloblastoma, based on targeting cancer stem cells (CSCs). Current projects identify signaling pathways that regulate CSC self-renewal, examining the mechanism by which Notch and Hedgehog signaling pathways regulate brain CSCs, and explore the translational therapeutic application of Notch pathway blockade into clinic.



**Ajit Joglekar, Ph.D.** Asst Prof Cell & Developmental Biology. We study the mechanochemistry of genome Inheritance: how forces at the kinetochore are generated and sensed for accurate segregation of

chromosomes during mitosis and meiosis. Chromosome missegregation leads to developmental defects, a hallmark of a majority of tumors. In explaining why missegregation occurs, our research will also lay down the conceptual foundation for building artificial kinetochores for segregating synthetic chromosomes.



**Allen Liu, Ph.D.** Asst Prof Mechanical Engineering, Biomedical Engineering. We study the spatiotemporal dynamics of cellular processes using total internal reflection fluorescence microscopy and

computational analysis to explore signal processing at the cell membrane, with an emphasis on clathrin-mediated endocytosis and cell migration. We are also interested in developing artificial platelets based on synthetic biology approaches.



## CMB 2012 Retreat

The third CMB Retreat was held at Kellogg Biological Station in Battle Creek on May 18-20, 2012. Dr. Arul Chinnaiyan, American Cancer Society Research Professor and S.P. Hicks Endowed Professor of Pathology and Professor of Urology at UM, presented the keynote address 'The Application of Integrative Sequencing for the Personalization of Cancer Therapy' on oncogenic gene fusions and the path to better diagnostics and therapies for prostate cancer. The program also featured student and faculty speakers, and an evening poster session. Nathan Blewett, Jeremy Linsley, and Mario Blanco received awards for their outstanding oral presentations, and Gabriel Martinez-Santibañez, Derek Janssens, and Meredith Collins were recognized for their posters. The scientific portion of the Retreat wrapped up with an interactive career panel (see below). We appreciate the excellent organizational efforts of the Retreat Committee which included students Shauna Bennett, Jennifer Lai, Ajay Prakash and Heiko Yang, and faculty Ben Allen and JoAnn Sekiguchi. Plans are underway for the next CMB Retreat in May 2013, which will take place locally to accommodate more faculty.



Good Times at the CMB Retreat 2012

Representatives of various careers in the biological sciences shared their experiences and perspectives during the Retreat: Angela K. Eggleston, PhD is a Senior Editor and Biology Team Leader for *Nature* Publishing Group. She began her career in scientific publication with *Nature Cell Biology* as an Associate Editor. She later worked with *Cell* Press before returning to *Nature*. Dr. Eggleston explained that while scientific publication and editing are difficult fields to get into at first, once one is established one can move from journal to journal and stay within the field. When asked how she chose to pursue this career, Dr. Eggleston opined that she was always the person in the lab marking up articles with a red pen.

Leslie Baier is a CMB alumna who first worked in the lab of James V. Neel in Dept of Human Genetics then did her thesis work with Gary Nabel. She began her career at the Phoenix AZ Epidemiology and Research Branch of NIDDK as a postdoctoral fellow and is now Head of their Diabetes Molecular Genetics Section. She also holds appointments as an adjunct professor at Arizona State Univ and Arizona College of Medicine. Dr. Baier provided helpful information on intramural programs of NIH, and emphasized their collaborative nature.

After Christal Sheppard received her PhD from CMB, she received a law degree from Cornell Univ Law School. Focusing first on patent law in a law firm, she later became Chief Counsel on Patents and Trademarks for the US House of Representatives Committee on the Judiciary. She recently joined the Univ Nebraska Law School as an Assistant Professor. Dr. Sheppard describes her career as blending two

2012 Retreat continued

of her interests, and advised students to remain flexible.

Paul Bain is a Librarian with the Countway Library at Harvard Medical School. In addition to his PhD from CMB, he also obtained an MS in Information and Library Science. He conducts seminars on using bioinformatics and biological searching tools, generates bibliographies and catalogues case atlases. His position takes advantage of his organizational and searching skills.



Leslie Baier makes a point to students during Career Panel at the CMB Retreat as (LR) P Bain, A Eggleston and C Sheppard look on.

## Updates on Short Courses in 2012

### Fall 2012: Wiring the Nervous System in Health and Disease

Normal nervous system function largely depends on the proper assembly and maintenance of neural circuits. Defects in neural connectivity underlie a multitude of human neurological disorders including mental retardation, autism, schizophrenia, and Alzheimer's disease. Additionally, the inability of the central nervous system to repair itself following injury can result in permanent brain damage and/or paralysis. Four leaders in the field of cellular and molecular neuroscience will participate in the Fall 2012 Short Course that explores the development and regulation of neural circuits in health and disease. Dr. Florian Engert of Harvard Univ studies neural circuits which control visually induced behaviors. Dr. John Flanagan of Harvard Medical School investigates how cell-cell signaling molecules regulate the formation of neuronal circuits. Dr. Martine Roussel of St. Jude's Children's Research Hospital explores signaling pathways which regulate brain development and brain cancer. Dr. Zhigang He of Children's Hospital Boston examines signaling pathways which restrict central nervous system regeneration. CMB faculty coordinator, Dr. Brian Pierchala, will present an introductory lecture. CMB student coordinators are Seçkin Akgül, Katie Baldwin, Jeremy Linsley, and Yevgeniya Mironova.

We recently concluded the Winter 2012 short course, High Throughput Genetics: Exomes, Transcriptomes, and Microbiomes, organized by the Genetics Training Program and co-sponsored by CMB. The course was kicked off with an overview lecture by the faculty coordinator Jun Li. Dr. Rob Knight from the Univ Colorado Boulder presented his work on the human microbiome and how it varies among different locations in the body as well as in humans over time. Dr. Michael Eisen from Univ California Berkeley, and co-founder of PLoS, discussed changes in transcription during *Drosophila* development; he also led a riveting discussion with CMB students about the politics of publishing. Finally, Dr. David Goldstein presented his work focusing on the rapidly emerging idea of personal genomics. The CMB student coordinators for the discussion sessions were Derek Janssens and Seçkin Akgül.

**Newsletter Editors:** Meredith Collins, Krista Geister, Andrea Morris-Spencer. **Additional Contributors:** Jessica Schwartz, Cathy Mitchell, Kyle Mitchell

## Letter from the Director

Dear Colleagues,

We were delighted to learn from NIGMS that the CMB Training Grant was recommended for funding for the next five years. CMB is initiating a new two-year funding format, in which half of the training grant positions will be awarded to students entering CMB from PIBS for the second year, and half will be awarded to continuing students. For information on applying for funding from CMB, contact the CMB Office (cmbgrad@umich.edu). The renewal of the Training Program also includes refresher training in Responsible Conduct of Research, which we will present at the 2013 Retreat.

As I wrote recently, I will be stepping down this summer after having served as CMB Director for 14 years. I am sure that CMB will continue as a strong and vibrant graduate training program, building on the excellence of our students and their achievements, and the mentorship of a dedicated training faculty. The Medical School is in process of identifying new leadership for CMB, and we will work together to facilitate a smooth transition. I have been delighted to have had the opportunity to work with all of you and to contribute to the success of CMB, and I thank you for all of your kind comments and the remarkable book of 'Thank You's' and outstanding BioArtography artwork which were presented to me at the Retreat.

Looking forward to the coming successful year for CMB.

Jessica

## Recent Student Publications

Xue X, Taylor M, **Anderson E**, Hao C, Qu A, Greenson JK, Zimmermann EM, Gonzalez FJ, Shah YM. HIF-2 $\alpha$  activation promotes colorectal cancer progression by dysregulating iron homeostasis. *Cancer Res* 72:2285-93, 2012

Parrow NL, Gardenghi S, Ramos P, Casu C, Grady RW, **Anderson ER**, Shah YM, Li H, Ginzburg YZ, Fleming RE, Rivella S. Decreased hepcidin expression in murine  $\beta$ -thalassemia is associated with suppression of Bmp/Smad signaling. *Blood*. 119:3187-9, 2012 .

**Collins MA**, Bednar F, Zhang Y, Brisset JC, Galban S, Galban CJ, Rakshit S, Flannagan KS, Adsay NV, and Pasca di Magliano M. Oncogenic Kras is required for both the initiation and maintenance of pancreatic cancer in mice. *J Clinical Investigation*. 122:639-53, 2012.

**Haenfler JM**, **Kuang C**, Lee CY. Cortical aPKC kinase activity distinguishes neural stem cells from progenitor cells by ensuring asymmetric segregation of Numb. *Dev Biol* 365: 219-228, 2012 .

**Wholey WY**, Jakob U. Hsp33 confers bleach resistance by protecting elongation factor Tu against oxidative degradation in *Vibrio cholerae*. *Mol Microbiol* 83: 981-991, 2012 .

CELLULAR & MOLECULAR BIOLOGY

## 2012 CMB T-shirt Design

Submitted by CMB students:

Derek Janssens  
Elizabeth Adams  
Kathleen Dumas



## Congratulations to CMB Student Awardees

**Erik R. Anderson** and **Kathleen Dumas** were awarded Rackham Predoctoral Fellowships.



ER Anderson



K Dumas

**Krista Geister** received a Rackham Centennial Fellowship.

**Jennifer Lai** was awarded a Barbour Scholarship.

Incoming CMB students **Elaina Breznau** and **Ciara Reyes** are recipients of NSF Fellowships.

**Jennifer Ro** received a Travel Fellowship from The Journal of Experimental Biology.

**Jennifer Ro** and **Albert Chen** received fellowships from Biology of Aging Training Program.

**Jill Haenfler** received a Rackham Shapiro/Malik/Forrest Award.

Rackham Graduate Student Research Grants were awarded to: **Wei-Yun (Winnie) Chen Wholey**, **Ishita Das**, **Albert Chen**, **JooHo Chung**, **Alex Holtz**, **Esha Mathew**, **Jenny Ro**, **Nathan Blewett**, **Katie Dumas**, **Paul Moore**.

Rackham Travel Grants were awarded to **Steve Allen**, **Hilary Archbold**, **Mario Blanco**, **Nathan Blewett**, **Albert Chen**, **Erica Cline**, **Meredith Collins**, **Ishita Das**, **Katie Dumas**, **Jill Haenfler**, **Derek Janssens**, **Charlie Kuang**, **Matt Marek**, **Gabriel Martinez-Santibanez**, **Heather Moore**, **Paul Moore**, **Marijo Roiko**, **Becky Simon**, **Chris Walczak**, **Grace Wang**, **Hanxiao Wang**, **Mike Waterson**.

## Recent CMB PhD Graduates

**J. Chad Brenner** (mentor: A Chinnaiyan). Therapeutic targeting of ETS rearranged cancers. Chad will continue as postdoc and Prostate Cancer Foundation Young Investigator in the Chinnaiyan lab.

**P. Taylor Eves** (mentor: L Weisman). Overlap of cargo adaptor binding sites on myosin V coordinates the inheritance of diverse cargoes. Taylor will continue in the Weisman lab while pursuing post-doctoral opportunities.

**Jill Haenfler** (mentor: C-Y Lee). The role of Lgl, aPKC, and Numb in distinguishing neural stem cells from progenitor cells in *Drosophila*. Jill will be an adjunct lecturer at the Univ Michigan while pursuing post-doctoral opportunities.

**G. Nick Llewellyn** (mentor: A Ono). Viral and Cellular Determinants of HIV-1 Gag Localization to Uropods in Polarized T cells and the Role Uropods Play in Virus Spread. Nick is going to the lab of Dr. Paula Cannon at USC.

**Gautam Rajpal** (mentor: P Arvan). Proinsulin trafficking through the secretory pathway. Gautam will continue in the Arvan lab while pursuing post-doctoral opportunities.

**Michael Steinbaugh** (mentor: RA Miller). Xenobiotic-metabolizing enzymes elevated in multiple mouse models of slow aging. Mike will continue to work in the Miller lab while pursuing post-doctoral positions.

**Mindy Waite** (mentor: D Martin). Pleiotropic and isoform-specific functions of pitx2 in brain development. Mindy has a position in the Animal Research Issues Department at the Humane Society of the US in Washington, DC.

**Wei-Yun (Winnie Chen) Wholey** (mentor: U Jakob). Hypochlorous acid stress responses in bacteria. Winnie is pursuing postdoctoral positions.