**May Events Calendar**

**May 20-22** CMB Retreat, Maumee Bay Lodge and Conference Center, Maumee, OH

**June 9** Thesis Defense: **Devin Rosenthal** (mentor: Sofia Merajver) 2:00pm, Room 2901 Taubman Med Library

**June 27** Thesis Defense: **Matthew Molusky** (mentor: Jiandie Lin) 2:00pm, BSRB Rooms ABC

**July 18** Thesis Defense: **Heather Ames** (mentor: Theodora Ross) 2:00pm, Rm 2903 Taubman Med Library

**August 1** Thesis Defense: **Phillip Delekta** (mentor: Peter Lucas) 9:00am.

**August 1** Thesis Defense: **Jolie Leonard** (mentor: Kathleen Collins) 1:00pm.

**July 29** Abstract deadline for CMB Fall Poster Session

**Sept 9** CMB Fall Symposium and Poster Session;
Levine Lecturer: Dr. Richard Losick, Harvard Univ.
Rackham Amphitheatre. Poster Session-Michigan League

**Sept 12** First session of CMB 850 Student Seminar

**Oct-Dec** Fall Short Course, CMB 630
From Messenger to Master Regulator: The Many Hats of RNA

- Oct 12 Alexei Aravin, California Institute Of Tech
- Oct 18 Nahum Sonenberg, McGill Univ.
- Oct 15 Ramin Sheikattar, Wistar Institute
- Dec 2 Gisela Storz, NIH

**Letter from the Directors**

We have just returned from the second annual CMB Retreat which featured an exciting keynote address by Mario Capecchi PhD and a lively workshop on publication ethics by John Nilson PhD (see articles). We were pleased that both speakers commented on the high quality and professionalism of CMB student posters and oral presentations. We appreciate the dedicated efforts of the organizing committee composed of students Morgan Jones, Nicholas Niemuth, Marijo Roiko and Beth Starnes, faculty JoAnn Sekiguchi and Billy Tsai, and CMB Administrator Cathy Mitchell.

The CMB Program Committee has embarked on a comprehensive review of Candidate Student Training Progress, which includes CMB guidelines for thesis committee meetings and career advising. As a result of our review several years ago of Pre-Candidate Student Training, CMB revised student curriculum and preliminary exams; we expect the current review to lead to programmatic updates for senior students. We welcome suggestions from CMB students and faculty for this review, and will inform everyone as guidelines are updated.

All CMB faculty and students are encouraged to link their own websites to the CMB website. Contact the CMB Office for information or to arrange for technical assistance (www.med.umich.edu/cmb).

Have a productive summer. Jessica, Kathy, Anj and Ursula

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**Dr. Mario R. Capecchi Delivers Keynote Address at CMB Retreat**

The CMB Program hosted world-renowned molecular geneticist and Nobel Laureate Mario Capecchi, Ph.D. as the keynote speaker for this year’s Annual Retreat. Professor Capecchi is a Distinguished Professor of Human Genetics at the University of Utah School of Medicine, where he is a member of the Howard Hughes Medical Institute. Much of the work in his laboratory makes use of homologous recombination to generate knock-out mice, a technique pioneered by Professor Capecchi, Oliver Smithies, and Martin Evans, for which they shared the 2007 Nobel Prize in Physiology and Medicine. He has received numerous additional recognitions. In 2001 he was elected a Fellow of the AAAS, and received the National Medal of Science.

His laboratory focuses on aspects of embryonic development governed by the Hox genes, which regulate the body plan. Work in his lab has contributed much in the fields of embryonic development, including the role Hox genes play in the patterning and formation of skeletal elements that comprise the limbs and vertebral column, as well as the organogenesis of the thymus, thyroid, and components of the central nervous system. Additionally, the Capecchi lab has generated mouse models of cancer and neurological disorders. He presented a model of synovial sarcoma to demonstrate consequences of somatic translocations that coincide in mouse and human tumors. He also presented how studying hox gene mutants led to generation of a mouse model of a neuropsychiatric disorder manifest through grooming behavior. Students appreciated hearing about both the targeted approach and how exploring an unexpected phenotype led to novel discoveries.

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**Features Inside:**
Meet the New CMB Faculty Resources from Rackham Agony & Ecstasy of Publishing
Meet the New CMB faculty

David Antonetti, Ph.D. (Professor of Ophthalmology and Visual Sciences, Molecular & Integrative Physiology)
Research in the Antonetti lab is focused on understanding the cellular and molecular basis of the blood-brain and blood-retinal barrier and how these barriers are compromised in diseases such as diabetic retinopathy or brain tumors. The long-term goal of this research is to develop novel therapies to restore normal barrier function.

Marilia Cascalho, M.D., Ph.D. (Associate Professor of Surgery, Microbiology & Immunology)
The Cascalho lab researches mutation and generation of diversity in health and disease. We investigate the molecular properties of cells undergoing somatic hypermutation of immunoglobulin genes to determine whether these mechanisms contribute to pathogen diversity and/or to tumorigenesis.

Roman Giger, Ph.D. (Associate Professor of Cell & Developmental Biology)
A long standing goal of our research is to understand how neuronal growth and sprouting is regulated in the mammalian nervous system during development, adult neuronal plasticity, and following injury (i.e. spinal cord injury, traumatic brain injury, stroke or multiple sclerosis). We pursue a mouse genetic approach to study the function of different classes of proteins that are known to regulate neuronal growth, including members of the Semaphorin family and their cognate receptors (Neuropilins and Plexins), myelin-associated inhibitors and their receptors. Ongoing studies are aimed at understanding the mechanisms of how enhanced neuronal plasticity leads to improved functional outcomes following nervous system injury.

Carey Lumeng, M.D., Ph.D. (Assistant Professor of Pediatrics, Molecular & Integrative Physiology)
Inflammation induced by obesity is a major contributor to the development of obesity-associated diseases such as cardiovascular disease and Type 2 diabetes. Adipose tissue is a major source of inflammatory factors in obese humans and, interestingly, adipose tissue macrophages have been shown to be both necessary and sufficient to generate insulin resistance in obesity models.

Suzanne Moenter, Ph.D. (Professor of Molecular & Integrative Physiology)
The Moenter lab studies how the brain regulates fertility. We use electrophysiological approaches to study gonadotropin-releasing hormone (GnRH) neurons, which form the final common pathway for the central regulation of reproduction, and their afferents. Our experiments range from studies of basic biophysical properties and neuronal networks, to animal models of infertility.

Yatrik Shah, Ph.D. (Assistant Professor of Molecular & Integrative Physiology)
The major goal of our research program is to determine the molecular mechanisms by which oxygen sensing transcription factors regulate gastrointestinal homeostasis, inflammation and cancer. Cellular oxygen level is an important systemic signal that modulates metabolic activities and disease in the liver and intestine. Low cellular oxygen also referred to as hypoxia is observed in several gastrointestinal diseases such as non-alcoholic and alcoholic fatty liver disease, inflammatory bowel disease and liver and colon cancers.

Jordan Shavit, M.D., Ph.D. (Assistant Professor of Pediatrics and Communicable Diseases)
The Shavit laboratory studies the genetics of human blood clotting disorders using zebrafish and mouse models. We are developing large-scale genomewide zebrafish mutagenesis screens to discover genetic modifiers of these disorders, as well as small molecule screens to identify novel therapeutic agents. This will be followed by investigation of these chemical and genetic modifiers in mouse models and human populations.

Lei Yin, Ph.D. (Assistant Professor of Molecular & Integrative Physiology)
The Yin lab is interested in the regulation and function of mammalian circadian rhythm system that serves to synchronize many important biological processes with environmental cues. My laboratory is specifically interested in the dynamic regulation of circadian rhythms by the ubiquitination-proteasome system, the molecular basis underlying circadian-controlled glucose and lipid metabolism, and mouse models to address the causative role of impaired circadian clock in the onset and progression of metabolic diseases.
CMB Updates

Losik to speak at 2011 Symposium.
The 31st CMB Symposium will take place on Fri, Sept 9, 2011. The Myron Levine Lecture will be presented by Dr. Richard Losick from Harvard University. Studying the sporulating bacterium Bacillus subtilis, Dr. Losick has made major contributions to understanding cellular differentiation, gene regulation and protein localization. Among many significant achievements, his group identified and characterized the temporally and spatially regulated cascade of transcription regulation required for spore formation by B. subtilis. They also discovered a mechanism of cell fate determination during sporulation that involves cannibalism within B. subtilis populations. Further the Losick group recently demonstrated how a geometric cue, membrane curvature, regulates protein localization in B. subtilis. Throughout his career, Dr. Losick has trained over 100 graduate students and postdoctoral fellows, many of whom have gone on to become leaders as well in their fields of study. Dr. Losick’s lecture will take place in Rackham Amphitheatre, and will be followed by the Annual Poster Session at the Michigan League.

Fall 2011 Short Course: From Messenger to Master Regulator: The Many Hats of RNA.
The roles played by Ribonucleic Acid (RNA) molecules in biology continue to expand, as the density and diversity of RNAs has grown larger. The 2011 CMB short course explores newly discovered functions of RNAs including the control of gene expression, fertility, stem cells and responses to stress. Four leaders in this field have been cast to tell their compelling tales of RNA: A. Aravin of Caltech, N Sonenberg of McGill Univ, R Sheikattar of Wistar Inst and G Storz of NIH.

Winter 2011 Short Course on Epigenetics
The Winter 2011 short course, Mechanisms of Epigenetic Regulation, organized by the Genetics Training Program and co-sponsored by CMB, gathered students and faculty from many disciplines. The faculty coordinator, Sundeep Kalantry, presented an introductory lecture on epigenetic phenomena. The other speakers covered several areas of how epigenetic changes occur and the biological outcomes of these events. Dr. Alexander Meissner from Harvard Univ presented his work characterizing the similarities and differences in histone modification, DNA methylation, and gene expression between human induced pluripotent stem cells (iPSCs) and embryonic stem cells (ESCs). Dr. Craig Pikaard from Indiana Univ discussed small noncoding RNAs produced by RNA polymerase Pol V that mediate transcriptional silencing in Arabidopsis plants. Dr. Anjana Rao from Harvard Medical School focused her talk on the identification of the TET enzymes, which convert 5-methylcytosine to 5-hydroxymethylcytosine, and the importance of this DNA modification in cancer and embryonic development. The lunch/discussion sessions covered topics from novel sequencing techniques to career advice to genetically modified plants. The CMB student coordinators for the discussions were Elisabeth Starnes and Christian Shively.

CMB Student Awardees
James Peyer (rt) was awarded a National Science Foundation Graduate Research Fellowship.
Katherine Baldwin & Erika Cline received Honorable Mentions for the NSF Fellowship.
Erika Cline was a finalist for the 2010 Department of Energy Office of Science Graduate Fellowship.
Grace Wang has been awarded a Predoctoral fellowship from the American Heart Association.
J. Chad Brenner was awarded a Keystone Therapeutics meeting scholarship; ORAU Nobel laureate meeting scholarship nomination; 2011 Lindau Nobel Conference Graduate Student Award; and the 2011 AACR Scholar-in-Training Award.
Krista Geister received a 2010 Student/Postdoc Travel Award, Developmental Biology; the 2010 Trainee Research Award in Predoctoral Translational Research, American Soc Human Genetics; a Bioartography Travel Grant, Center for Organogenesis, Univ Michigan; and Larry Ewing Memorial Trainee Travel Award, Soc for Study of Reproduction.
Gwyneth Halstead-Nussloch was awarded a Cancer Biology Fellowship, 2010-2011 and a DOD Prostate Cancer Training Award, 2011-2014.
Dara Leto was awarded a 2010 American Soc for Cell Biology Predoctoral Travel Award.
Mindy Waite (rt) was awarded a Rackham Predoctoral Fellowship.
Shauna Bennett was a recipient of the Mary Sue and Kenneth Coleman Fellowship.
Jolie Leonard, Grace Lin, Elisabeth Starnes & Lauren Van Wassenhove were recipients of Rackham Graduate Student Research Grants.
Grace Lin, William Lu, Nicholas Niemuth & Gautam Rajpal received Rackham Travel Grants.

2011 CMB Retreat Maumee Bay Lodge

Resources from the Rackham Graduate School

The Rackham Graduate School provides many services to graduate students that complement the support available directly through the CMB Program. Rackham provides key resources to aid graduate students academically, professionally, and personally:

Rackham has developed a web-based set of tools in the CTools environment, called GradTools, exclusively for students to monitor and facilitate progress toward completion of their graduate degree. Within GradTools, the Dissertation Checklist offers a personalized view of all the required and recommended steps in the pursuit of the Ph.D. as well as links to official forms and resources needed to complete these milestones. GradTools also contains several features common to CTools including a schedule, discussion feature, a place to store forms and documents, and more, which assist in students’ academic progress.

The Office of Academic Records and Dissertations (OARD) provides information and services to students from their first registration through degree conferral. OARD staff work with students and with departmental faculty and staff to ensure an accurate record of each student's academic experience. Students work especially closely with OARD in the final stages of their degree process as they complete their written dissertation and oral defense.

Rackham offers financial support to graduate students directly through fellowships, travel grants, research grants, and emergency funds. They also provide information about other available funding for prospective and current graduate students. Additionally, Rackham provides funding to support various activities within graduate programs, such as sponsoring the awards during the annual CMB Poster Session.

PLAN (Profession, Academics, Life, Networks) is a resource to help graduate students manage their professional, academic, career and personal development. PLAN draws on the knowledge and experience of the Rackham Graduate School staff and partners across campus. Students can use the PLAN website (http://www.rackham.umich.edu/plan/) to stay informed about workshops, training sessions, and other events across campus, and to learn about resources to help them succeed.

These and many other Rackham resources support students’ academic work, personal well-being, the administrative business of being a graduate student, opportunities for intellectual enrichment, and ways to connect with other students and activities.

The Agony and Ecstasy of Publishing: Retreat Workshop by John Nilson

The CMB Retreat this year had the honor of hosting Professor John H. Nilson, Edward Meyer Distinguished Professor and Director of the School of Molecular Biosciences at Washington State University. He was recently elected fellow of the AAAS, served as President of the Society for the Study of Reproduction 2009-2010, and was Vice-President of Basic Science for the Endocrine Society 2003-2005. His research is focused on understanding the expression of genes that encode the gonadotropic hormones, luteinizing hormone and follicle stimulating hormone, which are directly regulated by gonadotropin releasing hormone (GnRH) from the hypothalamus. His current findings show how other signaling pathways, such as Wnt, synergistically regulate the downstream effects of GnRH stimulation of pituitary, gonadotropes.

In addition to his impressive research career, Dr. Nilson has served on many editorial boards, including those for the Journal of Biological Chemistry, and Endocrine Reviews. Currently, he is on the editorial board of Molecular Endocrinology, the same journal he served as Editor-In-Chief 1998-2003. This year, the Endocrine Society has awarded him the SH Ingbar Distinguished Service Award for his exemplary service while Editor-In-Chief of Molecular Endocrinology and for being a champion for basic science and education. His collective experiences in the world of publishing have inspired him to give a workshop on scientific writing and publication, which he presented this year at the CMB Retreat. The workshop, entitled “Publication Ethics—The Agony and Ecstasy of Publishing!,” covered a broad range of topics, including: conditions of authorship; the obligations of being an author, a reviewer, or an editor; scientific misconduct; and due process. Dr. Nilson encouraged individual responsibility in ethical conduct and presented two case studies of authorship gone wrong to provide students with concrete examples of what to look for when writing, reviewing, or editing an article.

Recent CMB Graduates

Joseph Dosch (mentors: Charles Burant, Diane Simeone), Examining the role of the hedgehog signaling in pancreatic tumor microenvironment. Joe has accepted a post-doctoral position in the lab of Dr. A. Rehemtulla at Univ Michigan.


Dara E. Leto (mentor: Alan Saltiel), Regulation of G Proteins in Insulin Action: The Role of the RalGAP Complex in RalA Activation. Dara will continue to work in the Saltiel lab while pursuing post-doctoral opportunities.

Gisselle Vélez Ruiz (mentor: Roger Sunahara), Allosteric regulation of GS on agonist, antagonist and inverse agonist binding to the β2AR. Gisselle has accepted a post-doctoral position in the laboratory of Dr. Asim Beg in the Pharmacology Department at Unives Michigan.

2011 CMB T-shirt Design

Submitted by CMB student
Derek Janssens