



MEDICAL SCHOOL
UNIVERSITY OF MICHIGAN

CELL & DEVELOPMENTAL BIOLOGY

DEPARTMENT NEWSLETTER

Fall 2017

The hippocampus (which translates to “sea horse” in Greek) is the brain’s center of learning and memory. New research suggests that defects in hippocampal development can lead to psychiatric illness. The Giger laboratory is studying hippocampal development to gain insights into how developmental defects could cause psychiatric disease. This is a mirrored image of the developing mouse brain. Purple labels the nuclei of the brain cells, green labels a subset of neurons, and magenta labels migrating neurons. The small group of neurons labeled in magenta located in the “swans’ beaks” mark the future hippocampus. This image is part of the 2017 BioArtography collection.



Interview With the Chair

Coulombe starts his tenure as the chair of the department

On August 1, 2017, Pierre A. Coulombe, Ph.D., took the helm of one of the oldest departments at the University of Michigan.

Coulombe comes to Michigan from Johns Hopkins University, where he chaired the Department of Biochemistry and Molecular Biology in the Bloomberg School of Public Health for nine years, and held the E.V. McCollum professorship, as well as several joint appointments in the School of Medicine. At Hopkins, Coulombe was noted for recruiting and nurturing junior faculty members, developing robust training programs for graduate students and post-doctoral fellows. He was also instrumental in addressing the department's infrastructure needs.

We thought we would ask him a few questions about his recent appointment, about his first month and a half in Ann Arbor, and about his future plans for the department.

What attracted you to CDB?

It involved joining an already strong department in an equally strong institutional setting, and receiving generous resources and a clear mandate to help the department be a model of its kind on a national scale. I was impressed with how much the recent departmental leadership had accomplished, and with the group of junior faculty on board in CDB. Last but not least, and at a more personal level, this move was an opportunity for my family to have a thriving life in the small but rich footprint of Ann Ar-

bor, and to work close to my wife, Carole Parent, whom is a very talented scientist.

How have you been spending your time since arriving?

Meeting with people within and outside of CDB, and learning about the inner workings of the department and institution. Also, I am doing all I can to help my lab resume full strength and capabilities. I am very fortunate that a seasoned lab manager, two PhD graduate students and three postdoctoral fellows have agreed to follow me to U-M. I have to live up to the trust they are extending me.

Where is the department going?

To Disneyland! Seriously, I think the opportunities abound and I have begun to work closely with the faculty to chart our journey going forward. Other than defining thematic priorities for research activities in the department, I am particularly interested in reviewing and enhancing the doctoral and especially the postdoctoral training experience.

What are the core values in which you believe?

Too many to list! Some of the key ones are the relentless pursuit of excellence, integrity, equity, creativity, inclusiveness, and fun. If I live up to those values myself, I should do well by CDB!

New Faculty

The Department of Cell & Developmental Biology would like to extend a warm welcome to our newest faculty members!

Melanie Ohi, Ph.D.

Associate Professor

Dr. Melanie Ohi is interested in understanding how large molecular machines are structurally organized and how this organization translates into function within the cell. She uses single particle cryo-electron microscopy, as well as a combination of biological and biochemical techniques to pursue this goal.



Ryoma (Puck) Ohi, Ph.D.

Associate Professor

A major objective of the Puck Ohi laboratory is to understand how cells leverage the properties of the microtubule cytoskeleton to accomplish complex cellular processes such as cell division. His work focuses predominantly on non-canonical kinesin-like motors that use chemical energy to shape the microtubule cytoskeleton in three dimensional space. The lab strives to use this information to shed light on medically relevant problems, and to identify protein factors that are ideal targets for novel anti-cancer agents.



Above: Amanda Erwin (left) and Melanie Ohi
Bottom Left: Melanie Ohi, Bottom Right: Puck Ohi

Faculty Honors & Awards



Kate Barald

Professor Kate F. Barald, with joint appointments in the Medical School and College of Engineering is the only University of Michigan Faculty member to receive two Lifetime Awards: a Lifetime Achievement Award in Medical Education for outstanding contributions to teaching, course design and mentoring from the Medical School, where she has been a faculty member for 38 years, and a Bicentennial Lifetime Distinguished Faculty governance award from the University for her distinguished service to the University of Michigan.



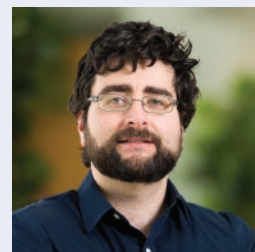
Lei Lei

Beattie Award in
Stem Cell Biology



Ajit Joglekar

2016 EBS
Teaching
Award in Cell &
Developmental
Biology



Daniel Lucas- Alcaraz

Beattie Award
in Stem Cell
Biology



Yukiko Yamashita

2016 Tsuneko
& Reiji Okazaki
Award



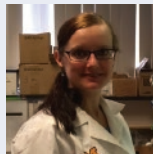
Yukiko Yamashita & Shiyong Jin

Alpern Award in
Stem Cell Biology

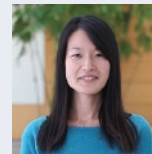
Post Doctoral Awards



Lei Yu
Engel Lab
Cooley's Anemia Foundation
Fellowship



Diana Shah
Lowenstein Lab
Cancer Biology T32 Training
Grant



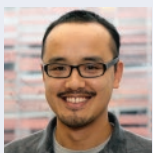
Kanako Ikam
Lei Lab
Uehara Memorial Foundation
Research Fellowship
2018 Japan Society for the
Promotion of Science (JSPS)
Research Fellowship



Yan Yan
Cai Lab
Starting this fall as Assistant
Professor of Computer Science
at Texas State University



Leilani Marty Santos
Wellik Lab
PTSP fellowship



Kenichiro Taniguchi
Gumucio Lab
Bradley M. Patten Award for
Excellence in Postdoctoral
Research



Madhav Jagannathan
Yamashita Lab
AHA Postdoctoral Fellowship

Graduate Student Awards



Emily Bowers
Lucas-Alcaraz Lab
Bradley M. Patten Award for
Excellence in Graduate
Research



Alex Holtz
Allen Lab
Received M.D. (MSTP
student), George R. DeMuth
Award



Anna Shirazyan
Allen Lab
Bradley M. Patten Fellowship



Breane Budaitis
Verhey Lab
Sarah Winans Newman
Graduate Student Teaching
Award



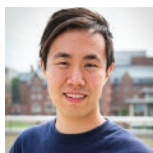
Tongyu Liu
Lin Lab
Bradley M. Patten Fellowship



Jane Song
Wellik Lab
TEAM Training Grant



Stephen Carney
Castro Lab
Cancer Biology T32 Training
Grant



Kevin Lu
Yamashita Lab
Defended his Ph.D. Thesis



Bridget Waas
Allen Lab
Bradley M. Patten Fellowship



Corey Cunningham
Tsai Lab
NIH Predoctoral NRSA
Fellowship



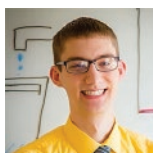
Flor Mendez
Castro Lab
NIH National Institute of
Neurological Disorders and
Stroke Predoctoral Fellowship



Fengrong Wang
Coulombe Lab
Defended her Ph.D. Thesis



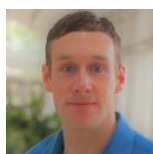
Alana Chin
Spence Lab
Defended her Ph.D. Thesis



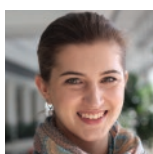
Nigel Michki
Cai Lab
MBSTP Training Grant



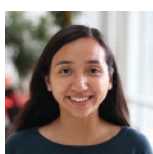
Macy Zhang
Ye Lab
NIH Predoctoral NRSA
Fellowship



Colin Delaney
Hu Lab
Defended his Ph.D. Thesis



Kyriel Pineault
Wellik Lab
Best Poster, MI Musculoskeletal
Research Symposium



Amanda Erwin
M. Ohi Lab
Bradley M. Patten Fellowship



Michael Scales
*Allen and Pasca
di Magliano Labs*
Shelley J. Almburg Graduate
Student Service Award

Staff Awards



Kristen Hug
Admin Staff
Inaugural recipient of
the Camille
Mrozowski Award

DIVERSITY, EQUITY AND INCLUSION

CDB is highly committed to the effort to improve Diversity, Equity, and Inclusion (DEI) launched by University of Michigan's President Mark Schlissel. We held on-site training in Unconscious Bias and Bystander Intervention training. We initiated an informal Tea @ 3:00 on Thursdays (please stop by!). We conducted a department-wide/all constituencies DEI survey, which forms the basis to evaluate future efforts. We also established a DEI site on the CDB website: <https://medicine.umich.edu/dept/cdb/diversity-inclusion-cdb>. On this site you can view the DEI Guiding Principles for CDB, that was created this year and signed by the faculty.

CDB is also sponsoring students/mentors to attend the Annual Biomedical Research Conference for Minority Students and Society for the Advancement of Chicanos/Hispanics and Native Americans in Science conferences. CDB was awarded a \$5,000 Minigrant from the Office of Health Equity and Inclusion (OHEI) for "A student run seminar series with URM faculty speakers". This series will enable Underrepresented Minority (URM) faculty to visit CDB and give a formal seminar about their research, speak with faculty one to one, and spend informal time with students discussing both scientific and career issues. A student committee was formed to select and invite the speakers for the coming academic year.

For FY2018, the department plans to continue its DEI initiatives. CDB will host two lunch and learn sessions to build upon the training that we offered in 2017. We are very excited to establish the URM seminar series, using the Minigrant CDB was awarded. CDB is also the proud home for the Post-baccalaureate Research and Education Program (PREP), directed by Kate Barald with the Associate Director Ben Allen. CDB faculty and students are also actively involved with the Developing Future Biologists program. Please see the next section for an update on DFB!



2017 DFB Team - Alana Chin, Laura Buttitta, Eden Dulka, Samhitha Raj, Emily Holloway, Jorge Martinez, Breanne Buddittis, Leilani Marty Santos, Ryan Insolera, Scott Barolo, Ben Allen

DEVELOPING FUTURE BIOLOGISTS

Developing Future Biologists (DFB) is a student-led organization of graduate students, postdocs and faculty at the University of Michigan interested in teaching and mentoring undergraduate students in order to increase diversity in the biological sciences. They aim to ensure that the next generation of biologists — regardless of race, gender or socioeconomic status — can learn the core concepts of developmental biology and are made aware of the opportunities that exist to pursue a career in the sciences.

In 2015 and 2016, DFB has introduced undergraduate students who are enrolled at the 11 University of Puerto Rico campuses to the core themes of developmental biology, networking opportunities, and professional development skills. Many DFB participants have since applied to conferences, graduate schools, and summer internship programs related to the course.

Earlier this year, DFB held a local version of the course here at U-M. They hosted students from institutions across the state of Michigan that don't offer developmental biology courses and have limited research opportunities.

Donations from Giving Bluesday, last November, allowed DFB to purchase dissection tools that were used in the laboratory section of the course. In addition to the hands-on lab experiments, these tools gave students the opportunity to work side-by-side with the exceptional research scientists here at U-M. This supports our fundamental goal that students leave with the passion and mentorship to succeed in a career in biological research.

“Your advice during and after the DFB program has really helped and encouraged me to take new challenges and to be more confident.”
—Student Participant

BIOARTOGRAPHY

CDB continues to be the home of the BioArtography Program. This initiative, now in its 12th year, supports the training of students and postdoctoral fellows while simultaneously providing a mechanism to offer the public a deeper understanding of state-of-the-art biomedical research at the University of Michigan. BioArtography captures the beauty of cells in their environment by highlighting microscopic images — all from ongoing U-M research projects —

that celebrate and showcase a wide range of scientific disciplines, including developmental and cell biology, genetics, chemistry, engineering, nanotechnology and more. Over 100 images, from scientists all over U-M, are collected each year; a jury including judges from the School of Art and Design helps select the most compelling. These are sold at the Ann Arbor Art Fair and offered via web sales at www.bioartography.com.

Alumni Update

We recently had an opportunity to catch up with two of our alumni, Danielle Rux & Blair Madison

What is your current job and title?

Danielle: I am a postdoctoral fellow at the Children's Hospital of Philadelphia (CHOP). I work with Maurizio Pacifici, the director of orthopaedic research.

Blair: Assistant Professor of Medicine, Washington University in St. Louis, Tenure-Track.

What do you do on a typical day?

Danielle: As a postdoc, my workdays at CHOP are structured similarly to my workdays as a graduate student. I spend the bulk of my day tending mouse colonies (a major component of my current work), performing experiments, and attending meetings/seminars. I spend most evenings reading, writing, and planning when the lab is quieter. I am just under a year into my postdoc, and I am juggling more projects and responsibilities than I was as a graduate student, so I have really had to hone my multi-tasking skills to maintain productivity.

Blair: In a typical day, I work on grants, respond/write emails, meet with people in my lab, and do benchwork! There is a variety of things to do as a new PI. Too many things!

What do you like most/least about your job?

Danielle: Most: I like solving problems, taking on challenges, and discovering new things. Basic science certainly is all of those things. I like that my 'job' doesn't always feel like one because it's something that I'm invested in. Least: I am committed to mouse genetic studies as they are critical to the work I am interested in pursuing, but I definitely don't 'enjoy' spending every morning among hundreds of



Danielle Rux



Blair Madison

caged rodents.

Blair: I love being able to investigate essentially anything I want. The freedom to pursue projects of my design is great. I don't really enjoy managing a lab or stressing out about funding!

What do you wish you had known when you were a CDB grad student?

Danielle: Two things I would have told myself at the beginning of grad school:

- 1- Prioritize spending time outside of lab doing other things that you like. No one is going to tell you to take time away from your experiments, but it really is an important part of the training process to learn when you need it. I realize, looking back, that I could have spent more time doing other things that I enjoy, recharged my energy, and have been just as (or more) productive in the lab.
- 2- Take more time to enjoy working with fellow young people and colleagues of CDB. The department is truly rare in the academic world, so get to as many seminars as possible, ask as many questions as you can, and, of course, take advantage of those happy hours!

Blair: I wish I had known that being a successful scientist is a LOT more than just smarts and hard work. You need to be a good leader and manager. These things are not formerly taught in graduate school. You need to

be savvy, emotionally intelligent, and realistic. Overestimating productivity and overprojecting performance has also been an issue. You gotta have realistic expectations. I wish I had known the full suite of skills needed to do this job. And this likely applies to any position of leadership in science, whether in academia or industry.

We asked Deneen Wellik, what would we be surprised to learn about Danielle?

Danielle was a college swimmer and remains a very active athlete as well as a fan of many sports. In addition to a busy post doc, she has diversified to run triathlons.

We asked Deb Gumucio, what would we be surprised to learn about Blair?

Blair has always been, and continues to this day, to be very environmentally conscious. That, in itself, is not surprising. However, probably it was surprising to his roommates (and landlord) when, during grad school, he built a compost pile in his kitchen pantry closet. The worms loved it, but not everyone else was happy. I haven't asked him whether his home in St. Louis has a compost closet, but I wouldn't be surprised!

We want to hear from you!

Send us an email at cdbalumni@umich.edu



Always seeking answers to life's important questions, our graduate students wondered,

If you were the host of "Carpool Karaoke" who would you invite for a ride?

Ben Allen "Mark Schlissel. I wanna know if he can carry a tune!"

Emily B.: "Trixie Mattel and Katya Zamolodchikova!!! They have a hilarious show on YouTube called UNHhhh."

Deontae Hooks: "Kanye West for sure. I feel his personality would make the ride fun and outrageously fun. I aint say she a goldigger."

Rafi Kohen: "Beyoncé. She's amazing, has a great voice and a wide caliber, and because I know her songs."

Pierre Coulombe: "Céline Dion"

Einor: "Acclaimed inventor and archetypical mad scientist Nikola Tesla and in the back seat, entrepenuer, risk taker and modern day mad scientist Elon Musk! I bet the conversation would be electrifying."

Kristen Verhey: "Melinda Gates"

Doug Engel: "Mick Jagger. He'd be my first choice. It would be fun to sing along to Gimme Shelter."

Karen Lang: "Michelle Obama, because it would be so fun and interesting to hang out with her!"



Save money, gas and parking headaches by riding in a University sponsored vanpool. No karaoke required! More info at: <https://tp.umich.edu/alt-trans/vanpools.php>



Above Left: Resident Corydon Ford impersonator Scott Barolo. Below: Having fun at the first CDB department picnic.



Giving

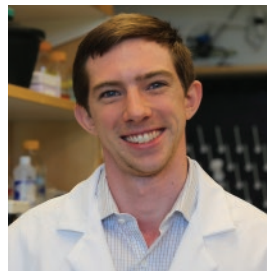
Philanthropic support for research and students continues to play an important role in CDB.

Philanthropic support for research is important because it allows investigators to obtain preliminary data for funding agencies, and to develop novel, high risk pilot data. This year's competition for the Beattie Awards in Stem Cell Biology resulted in the funding of three applications at \$25,000 each. The Beattie gift supported two applications. Daniel Lucas-Alcaraz was funded for his proposal "TNF α regulates hematopoietic stem cell function by targeting stromal niches". The process of blood cell production occurs inside the marrow of the bone, where hematopoietic stem cells generate immature blood cells within specialized regions called "niches". The goal of this work is to determine the role of the cytokine Tumor Necrosis Factor α in maintaining these critical hematopoietic niches within the bone marrow.

Lei Lei was funded for her proposal "A novel 3-D hydrogel co-culture system for differentiating embryonic stem cells into functional ovarian organoids". Lei is developing a tissue culture system that promotes the formation of a three-dimensional ovary-like aggregate of cells, an "organoid", to study oocyte development and ovarian function.

Funds from the Alpern Stem Cell Research account were used to fund a third award to Yukiyo Yamashita and Shiyong Jin for their proposal "Identification and characterization of epithelial stem cells in mouse uterus". These investigators have identified a source of stem cells that are responsible for the cyclic growth and regression of the uterine lining. Characterizing these stem cells should lead to a better understanding and therefore treatment of women's health issues such as endometriosis or endometrial insufficiency.

In honor of long time MIL employee Shelley Almburg, her family initiated an award to recognize a graduate student who expresses Shelley's natural good humor, supportive and patient personality. While academic awards are frequent, the ability to recognize a student for their kindness and humanity is especially meaningful. This year's award winner was Michael Scales. Michael not



Above: Sun-Kee Kim
Bottom left: Shelley Almburg
Bottom right: Michael Scales

only shares Shelley's love of microscopy, but also is dedicated to helping students around him, serving as both CDB 801 coordinator, and a teaching assistant for the world-renowned Cold Spring Harbor Laboratory course on "Mouse Development, Stem Cells and Cancer."

On October 25, 2017, the Department will host a special lecture in honor of Dr. Sun-Kee Kim, a long-term histology course director who developed numerous teaching materials, and trained generations of medical students. Consistent with Dr. Kim's research on secretory pathways, Dr. Tom Rapoport of Harvard Medical School will present the inaugural lecture, titled, "Mechanism of ER – associated protein degradation (ERAD)" 3:30 pm in the BSRB Kahn Auditorium.

The department is also pleased to announce a new competitive pilot grant program to facilitate the transition of postdoctoral scientists to independence. As part of the initiative, the department will match donations up to \$5000!

Gifts of any size help us initiate high risk research projects and to support our students.

To donate to any of our initiatives use the online giving site:
<https://leadersandbest.umich.edu/find/#/med/med/cdb>



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