



# Cellular & Molecular Biology



## CMB Retreat 2016: Science and Fun at MacMullen

On October 21-23, 2016 CMB students, staff, and faculty gathered at the Ralph A. MacMullen Conference Center in Roscommon MI. The weekend included many engaging student and faculty research presentations, and Alyssa Miller, Scott Sholz, and Yashar Niknafs won awards for their research talks. Carla Ramos was recognized for her outstanding service with SACNAS, with Scott Scholz receiving an honorable mention. Keynote speaker Dr. Zoltan Takacs inspired with his amazing work integrating venomous snake wrangling and targeted drug design.

The retreat was hardly all work and no play, however. Afternoons were spent hiking, biking, and canoeing in the beautiful fall weather. The incoming CMB students performed a hilarious skit spoofing current political events. And the fun continued late into the night with campfires, board games, and team-building activities, including the ever popular BS talks competition!

A special thanks to the retreat committee, which included students Carla Ramos, Brittany Flores, Megan Ludwig, Henry Kuang, Yashar Niknafs, Shelby Peterson, and faculty advisors Drs. Kathy Collins and Bob Fuller.

The 2017 retreat will be October 6-7 on the UM campus.



### Letter from the Director: We Live in Interesting Times

Dear Colleagues,

While it is tempting to complain about the current political and social turmoil and threats to the future of the scientific enterprise and to the nature of truth itself (full disclosure: I have resorted to all of the

above recently), here I would like to pursue a non-ironic interpretation of this overused aphorism.

These are indeed interesting times if you are engaged in scientific research. In the physical sciences, we see remarkable advances in the understanding the underlying structure and composition of subatomic particles. At the other end of the scale, modern astronomy and astrophysics is providing amazing details about structure and variation of the universe. Planetary science is providing unexpected evidence of liquid water in the moons of Jupiter and Saturn, suggesting the possibility of extraterrestrial life within the solar system. Closer to home, biology and chemistry continue to uncover novel features of life on earth that at once inform us of the diversity and commonality of pathways in living organisms. Those of us engaged in the application of basic science to biomedicine can pride ourselves in the knowledge that what we learn will shape the future of medicine.

It is important for us all to make the case both for the intrinsic worth of scientific discovery as well as for its practical implications. Make this argument with friends, with family, and when given the opportunity, with the greater public. Also, please appreciate the importance of your own contributions and also appreciate the fact that you, because of your training and hard work, are in a position to understand – at a deep level – a substantial fraction of the New Biology we collectively continue to discover.

Science and the arts are the two great creative endeavors of humankind. The progress of human civilization can be measured in large part by the vitality and progress in these areas. Keep fighting the good fight. It matters. What you do matters. You will outlast the current assault on reason.

Spring 2017



# Awards and Recognition

Recipients of the 2017 National Science Foundation Graduate Student Fellowship:  
**Shahana Chumki**  
**Lindsay Moritz**

Recipient of NINDS National Research Service Award Fellowship:  
**Macy Zhang**

Recipient of the Rackham Predoctoral Fellowship:  
**Sara Wong**

Recipient of the Shapiro/Malik/Forrest Fellowship:  
**Sammi Devenport**

Recipient of the HHMI Gilliam Fellowship:  
**Anabel Flores**

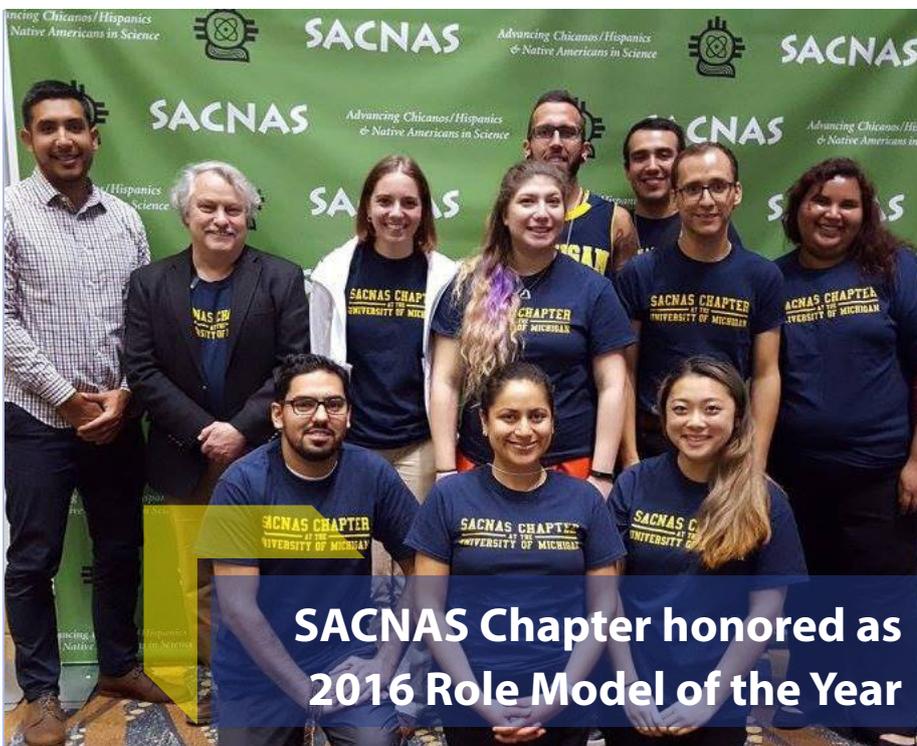
# Program Milestones

**Congratulations to the 2<sup>nd</sup> year students for passing their preliminary exams!**

Adam Banda  
Sammi Devenport  
Ameya Jalihal  
Elaine Lu  
Brian McGrath  
Hillary Miller  
Lindsay Moritz

**Congratulations to the CMB Graduates 2015-2017!**

Steven Allen  
Nadia Bozadjieva  
Elaina Breznau  
Jennifer Chase  
Joocho Chung  
Tamar Feinberg  
Nicole Gabreski  
Laurie Griffin  
Mangala Iyengar  
Derek Janssens  
Ray Joe  
David Lorberbaum  
Yevgeniya Mironova  
Shelby Peterson  
Ciara Reyes  
Jenny Ro  
Nadia Sebastian  
Daniel Treisman  
Natasha Weiser



Congratulations to the University of Michigan SACNAS (Society for Advancement of Hispanics/Chicanos and Native Americans in Science) Chapter for their 2016 Role Model of the Year Award for Outstanding Recruitment and Membership!

Pictured above are group members at the 2016 National SACNAS conference in Long Beach, CA. CMB students, Carla Ramos (chapter founder and former president) and Adam Banda, are pictured along with CMB director Bob Fuller.



Elaina Breznau graduated from Ann Miller's lab in 2016. Elaina is currently a manager at GeneMarkers: a Kalamazoo MI based contract research organization that provides both clinical genetic testing and research and development services focusing on epithelial biology.

**Q: Can you describe your current position?**

I work for a company called GeneMarkers, which is in downtown Kalamazoo, right next to Western Michigan University. It's a small company; we currently have seven employees, including a CEO, a COO whose background is business, me managing the lab, a lab supervisor, and technicians.

GeneMarkers has two businesses. One side of the company is a CLIA certified clinical genetic testing

lab which provides patient genetic testing to support clinical trials.

The other side is a contract research organization, which does identification and validation of biomarkers in skin. Our clients are large personal care companies; they send us test material, we apply it to 3d tissue cultured skin samples, and use quantitative PCR or microarray analysis to look for differentially regulated genes. We provide the client with a report that tells them what we think it does based on the gene expression profile. They use the data to validate leads or for claim substantiation for marketing.

Every company is interested in a different biological question. I get to work with people from all different areas, coach them, and design experiments. One day I'll be working with someone whose interested in hair growth.

The next day, someone is making a cream for psoriasis. I still get to work in the lab every day.

**Q: How did you find your job?**

I actually found my job through LinkedIn. My Ph.D. work in Anne Miller's lab was on cell division in epithelial tissue, and I wanted to do something related to epithelium, so I looked for companies in the area that did something related to skin or epithelia and found GeneMarkers. There wasn't any job posting, they weren't actively hiring. I sent the CEO an e-mail through LinkedIn (the key is short and sweet - five sentences is all you get). I didn't ask for a job, just to take her out to coffee and chat. We had an hour-long talk. At the end, she said we could use someone like you, and asked me to meet with the Chief Operating Officer. A couple days after that I got an offer letter.



# Where are they now?

## An interview with recent graduate Elaina Breznau

**Q: What are the biggest differences between grad school and working in industry?**

The biggest difference is the pace. Everything is driven by profit; time is money and money is time. It can take 10 years to develop a product, but from time we get the test material, we have two weeks to find a mechanism, with a full report of gene expression and an interpretation.

Another thing that is very different is the paperwork. Every time I do anything in the lab I have to write down each step and initial the paper. All the paperwork goes in a folder and goes to the client.

Here's another awesome thing about my job: I only work 30 hours a week! On a typical day, I come in at 9 and leave at 3 or 3:30. They offered me a choice when I

was hired and I decided to work 30 hours instead of full time. In reality, that means I'm currently working about 33, we're busy right now.

**Q: Do you have any advice for current students considering going into industry?**

Get out of the lab and do something other than research, have a leadership roles, work with a group of other people. When I interviewed, they spent most of their time trying to get a sense of the things I had done besides research, and whether I had the soft skills to survive in business. Join committees and community organizations, be ready for questions like "What's your management style?"



Another question people always have is whether you need a post-doc. I got hired without one. In retrospect, a short (1 year or so) post-doc might be helpful. Some companies don't hire straight from graduate school, and you can come in at a higher salary if you are hired as a post-doc.

# Meet CMB's Newest Members!



**Haley Amemiya**

What fruit would you be?  
A banana since they are radioactive.



**Morgan Gingerich**

What is your dream vacation destination?  
The Nordic countries. Really happy people, awesome hiking, and really beautiful fjords --- does it get any better?



**Gabe Manske**

On a Saturday afternoon you can find me...  
Still in bed, watching Netflix.



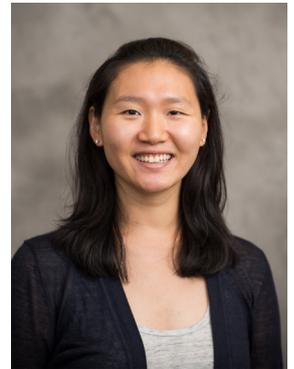
**Allyson Munneke**

On a Saturday afternoon you can find me...  
Biking (now that it's nice outside!), relaxing, or drinking a perfect cup of coffee.



**Shahana Chumki**

What fruit would you be?  
A pomegranate since I believe I am just as heavenly as the fruit!



**Sumin Kim**

What is your favorite food?  
Tacos...or fresh pasta? It's a tie.



**Rosa Menjivar**

What is your dream vacation destination?  
Greece. Seems like a beautiful place in pictures.



**Hanh Truong**

Fun Fact...  
The mascot of her undergraduate institution (UC Santa Cruz) is the banana slug.

# Faculty Profiles:

## Meet a few of our new CMB faculty

### Dr. Daniel Goldstein

#### Q: What is your primary research interest?

I study aging and the inflammatory response in two contexts: 1) inflammation in response to viral infection (influenza) and 2) chronic inflammation in cardiovascular disease in atherosclerosis and atrial fibrillation.

#### Q: What's a fun fact about you?

I grew up in London and am a life-long fan of the Tottenham Hotspur football club.

#### Q: What advice do you have for incoming graduate students?

Keep an open mind and love the science that you do! And sometimes a smaller lab is the right fit for a graduate student.

### Dr. Scott Leiser

#### Q: What is your primary research interest?

My lab studies the biology of aging, focusing on the central genetic and signaling networks, particularly stress response systems, that control long-term health. We use nematodes, cells, and mice to study the conservation of these factors. Ongoing projects in the lab include dissecting neural circuits that use serotonin to extend lifespan, investigating the metabolic effects of longevity inducing proteins, and discovery of new stress pathways that also improve longevity.

#### Q: Why did you join CMB?

As a former CMB graduate who returned to U of M after a lengthy hiatus, joining CMB as a faculty member was a no-brainer. CMB is the most diverse and flexible program under the PIBS umbrella and I am happy to be a part of it.

#### Q: What advice do you have for incoming graduate students?

My general advice for incoming graduate students is to enjoy yourself and enjoy science. Graduate school is a lot of work but is also the best time of your life, where you get to learn and grow as a scientist.

### Dr. Lei Lei

#### Q: What is your primary research interest?

The research in my lab focuses on germ cell development. We are particularly interested in two mysteries of mammalian oogenesis:

- 1) What determines only less than 1% of the germ cells can develop into mature eggs during entire female reproductive lifespan.
- 2) How do mammalian oocytes acquire the unique ability to program/reprogram early embryogenesis.

Active research projects:

- 1) Role of intercellular transport in germ cell fate determination.
- 2) Translational regulation during developmental-quiescent phase transition.
- 3) Germ-somatic cell interaction and somatic cell trans-differentiation.

#### Q: Why did you join CMB?

The interdisciplinarity of CMB attracted me the most. I also really appreciate the effort from CMB in getting new faculty started and involved in the program.

#### Q: What advice do you have for incoming graduate students?

Are you sure this is the right experiment?

### Dr. Ling Qi

#### Q: What is your primary research interest?

Physiology and cell biology. Investigating the role of ER homeostasis and inflammation in the pathogenesis of various human diseases. Investigating the crosstalk between ER and other organelle in the context of physiology and disease.

#### Q: Why did you join CMB?

Our research fits the scope of CMB and CMB students are the best on campus.

#### Q: What advice do you have for incoming graduate students?

Find a good lab, work hard and enjoy life in AA



**Daniel Goldstein, MD**

Eliza Marie Mosher Collegiate Professor  
in Internal Medicine  
Research Professor, Institute of  
Gerontology  
Director, Michigan Biology of  
Cardiovascular Aging



**Scott Leiser, PhD**

Assistant Professor, Molecular &  
Integrative Physiology  
Assistant Professor, Internal Medicine



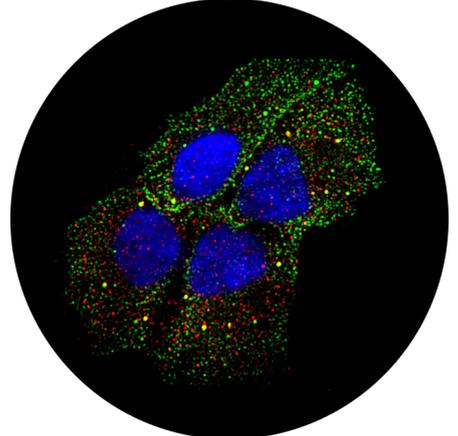
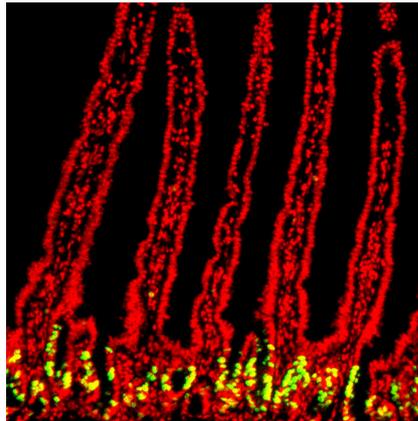
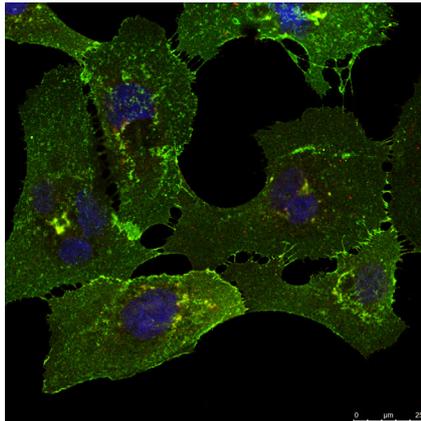
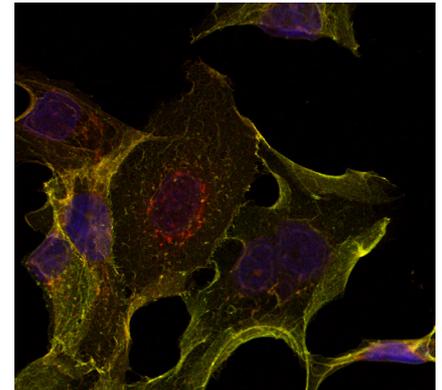
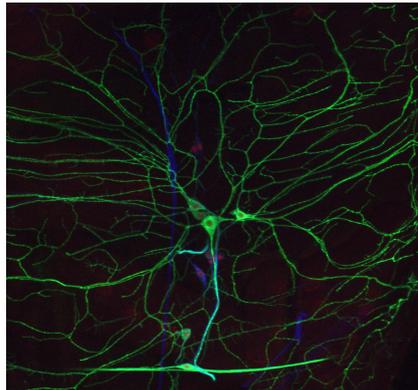
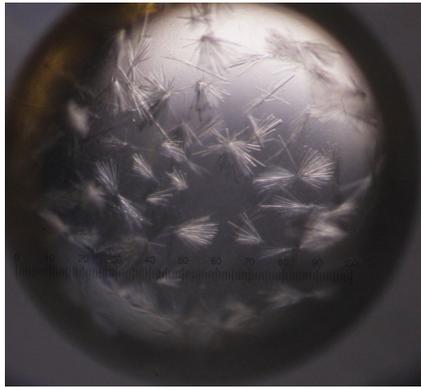
**Lei Lei, PhD**

Assistant Professor, Cell and  
Developmental Biology



**Ling Qi, PhD**

Professor, Molecular & Integrative  
Physiology  
Professor, Internal Medicine, Division of  
Metabolism, Endocrinology & Diabetes



## Through the Looking Glass: BioArt from CMB Students

Images, clockwise from upper left: 1) "Crystal Snowflakes" by Jennifer Chik, 2) "Multipolar Neuron in GFP" by Macy Zhang, 3) "Notch Knockout Cells with Drug Treatment 1" by Sammi Devenport, 4) "Osteosarcoma Cells Stained for mRNA Decapping Enzyme Dcp1a and Helicase Rck" by Ameya Jalihal, 5) "Fire Crypts" by Natacha Bohin, 6) "Notch Knockout Cells with Drug Treatment 2" by Sammi Devenport.

### Upcoming Events

**May 3rd** CMB Symposium, 1-5pm, Michigan League and Kahn Auditorium

Myron Levine Lecture, 1pm: Dr. Roger Cone, Mary Sue Coleman Director of the Life Science Institute, Professor of Molecular and Integrative Physiology,  
Talk title: "The Cellular and Molecular Basis of Energy Homeostasis"

**August 31st** CMB Welcome Picnic, location and time TBD

**Fall 2017** CMB short course, topic: "Single Cell Analysis"