CMB Retreat: Bringing Scientists Together

By Alli Zimont

The first annual Cell and Molecular Biology Retreat took place on April 29th at the Lodge at Mackenzie Place in Fort Collins. Over sixty CMB students and faculty gathered together to share their research, gain valuable insight from professionals in the field, converse with each other outside of the laboratory.

Talking Science

The retreat provided many platforms to share research and talk science. To begin the day, 18 students presented research posters in a student-only session. In addition, students Christopher Van Horn, Laylaa Ramos, Aimee Jalkanen, Sarah Kane, Stephanie Morphet, and Michael Caballero gave oral presentations of their graduate work. Stephanie Morphet comments, “The CMB retreat was a great new way to bring CMB students together and to share our diverse research interests with each other.” Dr. Stephen Keysar, Assistant Research Professor in the Division of Medical Oncology at the University of Colorado, joined the retreat for a keynote talk. As a graduate of the CMB PhD Program in 2009, Dr. Keysar captured the attention of both students and faculty in the audience.

Advice from the Professionals

A panel of Colorado State University graduates holding non-academic positions in the Colorado area joined the students to share insight into their current position, their career path, and general advice for getting the most out of graduate school. The three guests included: Angela Morrison, a Patent Attorney at Dorsey & Whitney, LLP in Denver and CSU alumna from the Wilusz laboratory; Stevan Albers, Co-Founder of Living Ink and CMB PhD alumni from the Peebles laboratory; and Vanessa Enriquez, Project Manager at Invidor and CMB PhD alumna from the Bouma laboratory. Each guest had a very different story and shared valuable information for both students starting out, and those about to graduate. An overarching theme of the discussion was crafting a vision for your time in graduate school, and then sculpting your experience to fit that vision. In addition, they provided insight into the most valuable skills they gained from graduate school, tips on how to navigate tricky situations at work, and answered many student’s questions during an open Q&A session.

Sharing Conversation

Students, faculty, and families enjoyed a catered dinner together following the keynote talk. This time was conducive to sharing interests and experiences outside the research and academic world. The Lodge at Mackenzie Place was a well-equipped and lovely venue to host this event. Mike Caballero notes that the “social event at the end of the day was relaxed and was a good opportunity to catch up with the CMB students and faculty.”

Thank you to all who helped orchestrate the event, and thank you to all who attended! We hope you enjoyed it, and look forward to seeing you next year!
**Kathy Cosenza, Ph.D., Mykels Lab**—The role of ecdysteroids on myostatin and mTOR signaling gene expression in molt-dependent growth and atrophy of skeletal muscle in *Gecarcinus lateralis* and *Carcinus maenas*.

**Kristen Farrell, Ph.D., Di Pietro Lab**—Investigating new components of the endocytic machinery in *Saccharomyces cerevisiae*.

**Stevan Albers, Ph.D., Peebles Lab**—Metabolic engineering of the Cyanobacterium *Synechocystis* sp. PCC 6803 for the production of Astaxanthin.

**Shuang Hu, Ph.D., Akkina Lab**—Pseudotyping of lentiviral vector with novel vesiculovirus envelop glycoproteins derived from Chandipura and Piry viruses.

**Eric Tauchman, Ph.D., DeLuca Lab**—Stable kinetochore-microtubule attachment satisfies the spindle assembly checkpoint.

**Srinivasa Rao, M.S., Akkina Lab**—Modeling the evolution of SIV into HIV using humanized mice.

**Nada Elhabush, M.S., Garrity Lab**—Applications of inorganic nanoparticles in diabetes.

**Laylaa Ramos, M.S., Gonzalez-Juarrero Lab**—Minipigs as a neonatal animal model for TB vaccine efficacy.

**Nesrein Layas, M.S., Feng Lab**
Odyssey of the Mind

By: Jessie Filer

Odyssey of the Mind is an educational program that promotes creativity and problem-solving skills in children worldwide from kindergarten to the collegiate level. The non-profit organization is completely run by volunteers. Students are given a mechanical or literary problem and they must devise a solution as a team without any outside assistance. They spend months working on their presentation, learning independence, teamwork, and communication skills. On tournament day, there is a sense of accomplishment in the air and as a judge, it is a great experience to see all the hard work these children have put in and the things they can achieve on their own. This year, several CMB students volunteered as judges for the tournament including K.A. Leddy and Neha Ahuja. About the tournament, Neha said, “Odyssey of the Mind was a fantastic educational experience not only for the children involved, but for myself as a judge. These children are doing some really advanced science experiments, and also work to present it in a fun and entertaining way. I was very thankful to be part of the process that enabled these children to have that experience.” Odyssey of the Mind is a great opportunity to help foster the next generation of academics and gain outreach experience. The Poudre River regional tournament takes place in Fort Collins every spring and judges and other volunteers are always needed. For more information, you can visit the website or send an email to poudreriver@coloradoodyssy.org.

CMB Outreach Grants

By: Stephanie Morphet

Alli Zimont

In my outreach project, I have designed a hands-on learning tool for young students to explore photosynthesis and practice thinking like a scientist. Students begin by creating their own algae balls and formulating hypotheses on what affects the rate of photosynthesis. They then place algae balls at various distances from a light source in media which changes color based on pH. While these sit and photosynthesize, they'll learn about components of photosynthesis, and specifically the electron transport chain, on a ‘electric circuit board’ I designed with conductive paint. They’ll make their own connections with conductive paint to complete the electron transport chain. At the end, they return to their algae balls and observe which locations have the most color change and therefore the highest rate of photosynthesis. Students will use a scientific notebook to record everything throughout the process. The algae balls portion of this kit is based on one designed by Science and Plants for Schools and the National Centre for Biotechnology Education. My project is still in development and I plan to take it into schools this summer or fall.

Stephanie Morphet

With funding provided by the CMB outreach grant, sets of plant and animal cell models, as well as photographic science encyclopedias, were provided to the science department at Wyoming Indian High School (WIHS). WIHS is on the Wind River Reservation, a Native American reservation housing members of the Northern Arapaho Tribe and the Eastern Shoshone Tribe. Gripped by gang violence and high rates of unemployment, Wind River is the seventh largest reservation in the United States. Through a continued collaboration with the WIHS science department, Stephanie aspires to make an impact within the youth of this community towards education and away from gang and drug culture.

Biochemistry is Elementary

By: Hailey Conover

Each Spring Dr. Laurie Stargell and Dr. Eric Ross set up an outreach opportunity called “Biochemistry is Elementary” at Skyview Elementary in Windsor, CO. This year three CMB students participated, Mirna Ashoya, Hailey Conover, and Victoria Harcy. The students learned about genetics in four modules. They first identified some phenotypes visually, they then determined if they had the lactase enzyme, next they identified whether they had the amylase enzyme, and finally they extracted their own DNA. It was a positive and rewarding year and we are excited for increased CMB participation.

“Anybody who has been seriously engaged in scientific work of any kind realizes that over the entrance to the gates of the temple of science are written the words: ‘Ye must have faith.’“- Max Planck
**CMB Student Highlights**

**GAUSSI: Computational Biology Fellowship**
Shea Moore-Farrell, 2nd year Jahn and Peebles Labs

“I will be working on a collaborative project with my co-advisors Dr. Courtney Jahn of BSPM and Dr. Christie Peebles of CBE studying carbon flux through the food and energy crop Sorghum. Knowing how carbon is partitioned throughout the metabolic network will allow us to build a computational model of carbon flux, which we can use to predict bottlenecks in the flow of carbon to chemical end-products. Ultimately, we hope this model can be used to guide metabolic engineering efforts of commercially or environmentally favorable phenotypes.”

**GAANN: Teaching Fellowship**

**New Fellows:**
- K.A. Leddy, Stewart Lab
- Kaitlin Doucette, Crans Lab
- Alissa Williams, Incoming CMB Student

**Returning Fellows:**
- Stephanie Morphet, Belisle Lab
- Vanessa Selwyn, Telling Lab
- Kate Rockenbach, Sloan Lab
- Kelly Hassell, Crans Lab

**NSF Graduate Research Fellowships Awarded to CMB Students**

Of the [four NSF GRFP fellowships awarded to CSU graduate students](#), two were given to CMB students. We are honored to have such outstanding individuals in our program and to have our program recognized nationally. Congratulations to this year’s fellows and keep up the great work!

**Adam Heck, 3rd year Wilusz² Lab**
Alissa Williams, Incoming CMB Student

For future CMB GRFP candidates, there are multiple resources at your disposal. Dr. Stu Tobet teaches a grant writing class in the fall, Dr. Shane Kanatous (CMB/Biology) is listed as an experienced resource person for CSU, and previous winners including Adam Heck, Alissa Williams and Mike Caballero are all willing to provide their insight and experience.

**CSU Office of the Vice President for Research Fellowship Awarded to CMB Students**

Hailey Conover was selected to be a 2016 CSU VPR Fellow. Twelve VPR Fellows were selected from a pool of candidates after performing a 3 minute flash talk. Hailey's talk was titled: "The Missing 50%: Copy Number Variation in Human Diseases". Follow [this link](#) to see a video of her flash talk.

**American Society for Microbiology-Rocky Mountain Branch Meeting**

At the biannual ASM-RMB meeting, Stephanie Morphet was awarded second place in the graduate poster presentation division for her poster titled “Assessing the species-specific phenolic glycolipid of *Mycobacterium bovis* as a biomarker of bovine tuberculosis.”

“The best scientist is open to experience and begins with romance - the idea that anything is possible.” - Ray Bradbury
CMB 2nd year students: Where are they now?

By: Jessie Filer

Mirna Asyhoa – “I am a second year master degree student in Dr. Ken Reardon lab. My research is about algae biofuel production and specifically focuses on the inhibitory bacterial species that grows with elite algae species in biofuel systems.”

Hannah Berry – Dr. Cris Argueso’s lab

Katie Cronise – Co-mentored by Dr. Dan Gustafson and Dr. Dawn Duval

James Curlin – “I ended up joining Dr. Ramesh Akkina’s lab. His research is about HIV, and my project is about identifying how SIV evolved into HIV via serial passaging, and how these evolutionary changes influence virulence.”

Kelly Hassel—Dr. Debby Crans’ lab

Jessie Filer – “I am co-advised by Dr. Brian Geiss (Microbiology) and Dr. Tom Chen (Engineering). My research focuses on developing diagnostic platforms and biosensors for virus detection”

K.A. Leddy – “I’m in Dr. Jane Stewart's lab in BSPM (Bioagricultural Sciences and Pest Management). I use next gen sequencing and bioinformatics in collaboration with the US Forest Service to study the effects of white pine blister rust disease, a recently introduced and invasive pathogen devastating North American pine trees and overall forest health.”

Shea Moore-Farrell – “I will be co-advised by Dr. Courtney Jahn of BSPM and Dr. Christie Peebles of CBE. My project is utilizing metabolomics to study carbon flux through the food and energy crop Sorghum, as well as developing a computational model that can be used to predict flux and guide metabolic engineering efforts.”

Alex Pyuen – “I was in Dr. Doug Thamm’s lab over at the Animal Cancer Center, but I’m finishing up my Masters through the CMB and going back to my 4th year of vet school now.”

CMB Faculty Spotlights

Dr. Debbie Crans

Debbie Crans received one of the five 5x5x5 awards by the Royal Society of Chemistry to initiate an international collaboration. The team that Debbie will be working with is a British group (headed by Angela Casini, University of Cardiff) and a Canadian Group (headed by Timothy Storr, Simon Fraser University). The team presented their proposal at the Dalton Meeting March 28-29, 2016 (photos are available if you wish). Prof. Angela Casini from University of Cardiff will be visiting CSU in August as the 2016 international visiting professor. Additionally, Dr. Crans was recently recognized for her participation with the First Fellows of the Faculty Institute for Inclusive Excellence. A collaboration between the Office of the Vice President for Diversity and TILT, The Institute for Learning and Teaching. The purpose of the Institute is to transform teaching in ways that integrate awareness regarding diversity and inclusion into classroom practices, and in turn positively influence campus climate to promote equity and social justice.

Dr. Noreen Reist

This summer Noreen Reist will be traveling to Newcastle University for a visiting Professorship. During this venture, she will learn more about clinical research into human neuropathies and neuromuscular disorders while providing information on our molecular/genetic approaches toward elucidating synaptic mechanisms. In addition, she has also been invited to participate in an International Brain Research Organization Visiting Lecture Team Program (VLTP) at the University of Ibadan, Ibadan, Nigeria, from July 19-27, 2016. This course will serve ~65 participants from broad regions of Nigeria at all levels of education, including undergraduates through university faculty. Dr. Reist will be one of five international VLTP faculty members. Specific activities during the course include: lectures, question and answer sessions, mentoring any participants that wish to learn how to give a 15 min presentation typical of international scientific meetings, individual outreach and mentoring. In order to provide a truly integrated course with faculty from all different international institutions, VLTP faculty attended the lectures of all the other VLTP faculty. Dr. Reist will present 7 lectures. The goal of all lectures will be to emphasize the scientific method of hypothesis-driven research vs. teaching what is currently “known”.
CMB Upcoming Events/Opportunities

CMB Peer Mentor Club Welcome Back:

Date/Location: TBD
What: All CMB students are invited to a peer-mentoring group. Frozen yogurt, crepes, and non-dairy options available for purchase. Look for announcements in the fall edition and via email. For more information, please contact Stephanie Morphet smorphet@rams.colostate.edu.

New Cancer Biology and Comparative Oncology Program:

CMB will work with the Animal Cancer Center to create a Program of Research and Scholarly Excellence (PRSE) in Cancer Biology and Comparative Oncology starting July 1, 2016. The PRSE designation will provide fellowships to attract outstanding students interested in oncology to the CMB program. Additional funds will be requested to stimulate collaboration and interaction between faculty and students involved in cancer-related research. Congratulations to Director Rodney Page and Co-Directors Howard Liber and Susan Bailey who applied for the PRSE designation and will direct this exciting new program through 2020!

Upcoming Fellowships Deadline:
- National Science Foundation GRFP
  - Late October
- National Institute of Health F32
  - August 8th
- American Heart Association Predoctoral
  - July 27-28

New CMB Logo

Due to the ‘2000 Florida election’ like vote that occurred during the CMB Retreat for the logo, the CMBSA decided to combine the two logo submissions into one. Congrats and a job well done to the designers Hailey Conover and Victoria Harcy!

Upcoming Local Conferences/Meetings:

2nd Annual Front Range Computational & Systems Biology Symposium
- July 25-26, Fort Collins, CO

Colorado Mycobacteria Conference
- June 7-10, Fort Collins, CO

Rocky Mountain Virology
- September 23-25, CSU Mountain Conference

Colorado Learning and Teaching with Technology Conference
- August 3-4, CU-Boulder Campus

Call for CMBSA Elections

Get your stump speeches ready! Nominations for the CMBSA will be sent out in mid June, with voting soon after. For more information contact any of your current CMBSA officers, Laird Klippenstein, Adam Heck, Hailey Conover or Laylaa Ramos.

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