

CMB Newsletter



Issue 6 | Winter | 2017



The CMB Newsletter is written and published by graduate students of the CMB program. Our mission is to create a more closely-knit CMB community by providing students, faculty, friends, family and alumni with current information about the Cell and Molecular Biology Program at Colorado State University. This newsletter looks to emphasize accomplishments and activities of the CMB community as well as highlight future events. Please email Adam Heck (Adam.Heck@colostate.edu) or Kaitlin Doucette (Kaitlin.Doucette@colostate.edu) with news or if you want to become involved

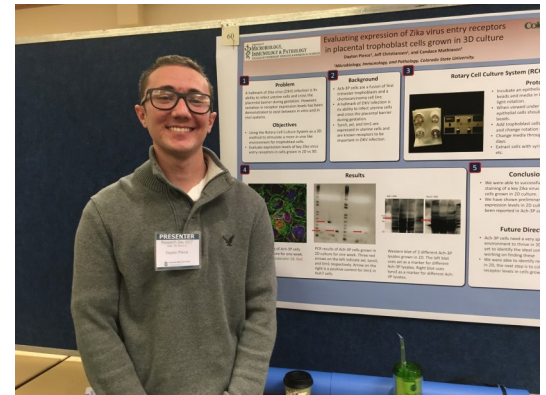
CVMBS Research Day



Katie Cronise(right) presents her research to KA Leddy for the second straight year thanks, in part, to contributions from several CMBers including Sarah Kane, Tom Bickett, Dayton Pierce, Annie Zhang Bargsten, Adam Heck, Kelly Cunningham and Lyndah Chow.

Several other CMBers, Katie Cronise and Nouf Alyami provided strong contributions to their respective departments as well. Good job and congratulations to all the CMBers who participated! By: Adam Heck

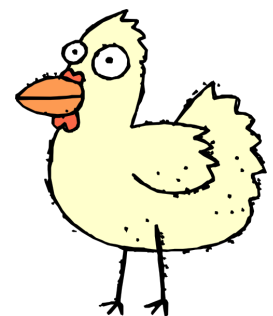
Several CMBers participated in the CVMBS Research Day by giving oral and poster presentations during the conference. The Microbiology, Immunology and Pathology department received the Golden Pi-pette Award for the



Dayton Pierce stands in front of his poster presentation

CMBSA Music City Chicken Fundraiser

Numerous members of the CMB community attended a fundraiser January 17th at Music City Chicken hosted by the CMBSA. Among the drinks and conversation, there was a raffle in which CMBers Alli Zimont, Charlene Spencer and Vanessa Selwyn all won Music City Chicken themed prizes, as well as MariaElena Selwyn. A thanks to all who attended as the CMBSA was able to raise almost \$250 during the event. Be sure to be on the lookout for future CMBSA sponsored events due to the funds raised on this occasion. By: Adam Heck



“For me, I am driven by two main philosophies: know more today about the world than I knew yesterday and lessen the suffering of others. You'd be surprised how far that gets you.”

- Neil Degrasse Tyson

Q&A with Charlene Spencer, CMB's New Coordinator

By: Alissa Williams

Where are you from?

I'm originally from Nebraska, but I've lived in Colorado longer than I lived in Nebraska. I lived in Greeley and Nunn before moving to Fort Collins; I've now lived here for over 20 years.

How long have you been working at CSU?

I've worked at CSU for 10 years. First I was with the VTH, then with mail services, then with the Statistics department, and then (most recently) with the History department.

What was your first ever job?

I was a waitress at a Pizza Hut in Sidney, Nebraska. I am a customer service person.

How did you get into higher education administration?

I think that goes back to my need to help people. I looked for a job that would allow me to be of service, and what better industry to be of service than helping students achieve their goals and assisting faculty in that process as well?

What made you decide to make the transition from a different department to CMB?

I love to learn, and the opportunity to learn another department on campus is great. Interacting with all of the departments and colleges involved in CMB is another part of the challenge that I enjoy. In my previous two positions, respectively, I worked with statistics graduate students in the distance degree program and with undergraduates studying history, and I like that this job is a combination of those two things. I'm really excited to be on board, and I look forward to functions where I can meet more people.

What do you like to do in your spare time?

I enjoy spending time with my children and grandchildren. I have four children; three are married, and the fourth is getting married this June—in an outdoor Texas wedding! I also have five grandchildren. The youngest was born last month.

Tell me something interesting about yourself.

I have an associate degree in electronic technology and an IT certificate, which helps explain my love of fixing things. I am currently working on my bachelor's degree in interdisciplinary liberal arts with a business minor through CSU Online.

If time travel were possible, who would you meet with and why?

I would go back and talk to my grandparents. My grandfather had the most beautiful singing voice. He would sing Silent Night in German and I never got a recording of it.

How can students get hold of you, and what can you help them with?

Once I have an idea of my regular time commitments, I plan to have pretty regular office hours, but I encourage anyone to email me and let me know when they can come, and I'll do my best to be accommodating to their schedule. I can assist with deadlines for grad school forms, and completion of the same. I can assist with questions about pay and continuous registration—when it's needed and when it's not. Everyone should always feel welcome to ask me a question, and if I don't know the answer, I can find out who they should contact to get the answer. Please stop by, I'll have candy on my desk!



Charlene can be contacted by email (Charlene.Spencer@colostate.edu) or phone (970-491-0241). You can also stop by her office, Student Services Room 220.

CMB in the News

By: Jesse Filer

Cancer is one of the leading causes of death in the world and one of the major focuses of Cell and Molecular Biology is cancer biology. This past year, a research group in Germany¹ has made significant progress in cancer treatment. They have designed what media outlets are calling a “universal cancer vaccine”. The group was engineering nanoparticles for RNA delivery to dendritic cells and found that negatively charged nanoparticles selectively targeted to the spleen. They confirmed with a reporter gene that the delivered RNA was being expressed in splenic cells such as dendritic cells and macrophages and then used RNA encoding hemagglutinin from influenza virus to test the immune response from the RNA delivery. Encouraging results led the researchers to examine the prophylactic and therapeutic abilities of the RNA-lipoplex against tumors in mice. Immunization with RNA encoding tumor antigens provided protection against a tumor challenge and induced clearance of established tumors in mice. A phase I clinical trial was done with several melanoma patients to determine the safety and tolerance of the nanoparticulate RNA immunotherapy in humans. All patients tolerated the immunization well with mild influenza-like symptoms. Although this immunotherapy has been denoted as the “universal cancer vaccine”, this new treatment option may not be that simple. Every cancer is different and responds differently to the available cancer treatments out there. There is no singular tumor antigen that could be used in the therapy as a cure-all for cancer. However, this new research could open up doors for personalized medicine and offers promising prospects for cancer treatment in the future.

Cancer research is not the only area of Cell and Molecular Biology to see breakthroughs recently. Researchers have recently designed a vaccine that has demonstrated a neutralizing antibody response against the common cold virus.² Human rhinovirus (HRV) is the main cause of the common cold and is also responsible for a large proportion of pneumonia cases. However, because there are three species and over 150 different serotypes of the virus, an effective vaccine has been elusive. This research group showed that by using high titers of inactivated virus, they could induce neutralizing antibodies to nearly all of the immunized serotypes in the polyvalent vaccine. In rhesus macaques, they showed that increasing the valency to accommodate more serotypes did not significantly inhibit the vaccine’s ability to stimulate production of neutralizing antibodies. Following a boost vaccination, the macaques possessed neutralizing antibodies to 100% of the viruses in the 25-valent vaccine and 98% of the viruses in a 50-valent vaccine. Although the researchers have not yet demonstrated the vaccine’s efficacy against a challenge, the data is promising and puts humanity one step closer towards eradicating disease.

1. L. M. Kranz, et al, *Nature*, 2016, 534, 396–401.

2. S. Lee et al, *Nat. Commun.*, 2016, 7, 12838.

CMB Travels for Recruitment:

CMB graduate student Vanessa Selwyn visited Northern New Mexico College in Espanola, NM. There she spoke with undergraduate students about the opportunities available to them through the REU (Research Experience for Undergraduates) program and graduate school at CSU.

Additionally, Alissa Williams and Kelly Hassell drove down to CSU Pueblo last semester to chat with Jordan Steel’s (Former CMB Student) students about graduate school at CSU (not pictured).



Vanessa Selwyn (second from the right) at Northern New Mexico College

Recent CMB Graduations:

Alex Pyuen and John Fitts both recently graduated from the CMB program with Masters degrees, along with Kate Rockenbach, who also graduated with a Masters for her work entitled ‘Phylogenetic and population genetic evidence for positive selection in rapidly evolving plastid-nuclear enzyme complexes’. Congratulations to our recent graduates!! By : Vanessa Selwyn



Kate Rockenbach, recent graduate



CMB Pets!

By: Allison Zimont

Each of the CMB scientists pictured below have pets which are pictured on the next page. Try to figure out which scientists correspond to which pets and email your guesses to ajimont@gmail.com!!

The Scientists:



Hannah Berry



Dan Sloan



Jessie Filer



Kelly Hassell



Jim Bamburg



Stephanie Morphet



Jillian Leach



Ledly Leds



Adam Heck

Their Pets:



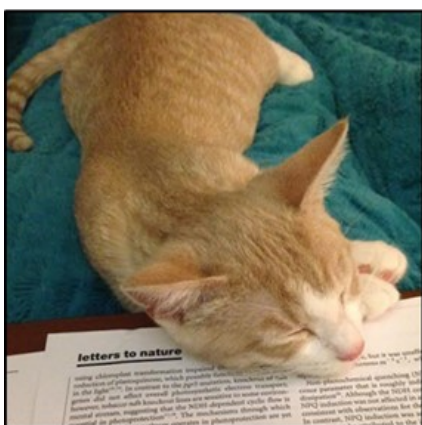
Arlo



Maple



Toshi



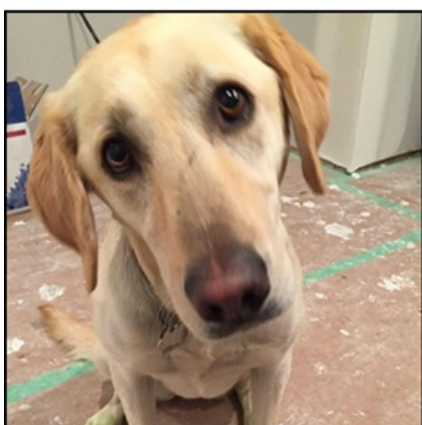
Cam



Kip and Katya



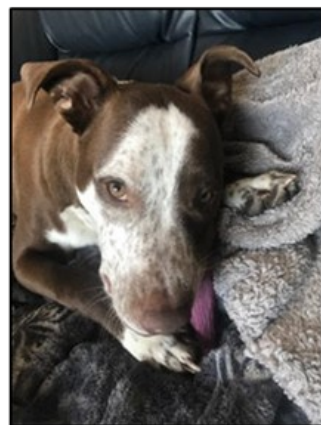
Boogie



Sophie



Clifford



Angus Bleu

“The important thing is not to stop questioning. Curiosity has its own reason for existence. One cannot help but be in awe when he contemplates the mysteries of eternity, of life, of the marvelous structure of reality. It is enough if one tries merely to comprehend a little of this mystery each day.”

-Albert Einstein

CMB Grants and Publications

CONGRATULATIONS to those pushing science forward! And don't forget to list the

Graduate Program in Cell and Molecular Biology as your affiliation when you publish!

Publications:

Derivation of chicken induced pluripotent stem cells tolerant to Newcastle disease virus-induced lysis through multiple rounds of infection L Susta, Y He, JM Hutcheson, Y Lu, FD West, SL Stice, P Yu, **Z Abdo**, CL Afonso *Virology Journal* 13 (1), 205

Hu, Shuang, et al. "A humanized mouse model for HIV-2 infection and efficacy testing of a single-pill triple-drug combination anti-retroviral therapy." *Virology* 501 (2017): 115-118.

Veselinovic, Milena, Paige Charlins, and Ramesh Akkina. "Modeling HIV-1 mucosal transmission and prevention in humanized mice." *HIV Protocols* (2016): 203-220.

LV dos Santos, MF Carazzolle, ST Nagamatsu, **NMV Sampaio**. Unraveling the genetic basis of xylose consumption in engineered *Saccharomyces cerevisiae* strains

Gao, Xuefeng, et al. "Radiation-Induced Reprogramming of Pre-Senescent Mammary Epithelial Cells Enriches Putative CD44+/CD24-/low Stem Cell Phenotype." *Frontiers in Oncology* 6 (2016).

Smith, Lisa K., et al. "Lipid Raft Coalescence Links HIV-1 gp120 Induced Oxidative Stress to Neurodegeneration." *The FASEB Journal* 30.1 Supplement (2016): 1119-17.

O'Neil Wiggan, Bryce Schroder, et al. "Cofilin Regulates Nuclear Architecture through a Myosin-II Dependent Mechanotransduction Module." *Scientific Reports* 7 (2017).

Plewes, M. R., et al. "Effect of fish oil on lateral mobility of prostaglandin F₂α (FP) receptors and spatial distribution of lipid microdomains in bovine luteal cell plasma membrane in vitro." *Domestic Animal Endocrinology* 58 (2017): 39-52.

Fleming, Margaret Brigham, Stephen R. Decker, and Patricia A. Bedinger. "Investigating the role of extensin proteins in poplar biomass recalcitrance." *BioResources* 11.2 (2016): 4727-4744.

Baek, You Soon, et al. "Interspecific reproductive barriers between sympatric populations of wild tomato species (*Solanum* section *Lycopersicon*)." *American Journal of Botany* 103.11 (2016): 1964-1978.

Silva, Carlos AM, et al. "Type 1 reaction in leprosy patients corresponds with a decrease in pro-resolving and an increase in pro-inflammatory lipid mediators." *Journal of Infectious Diseases* (2016): jiw541.

Voge, Natalia V., et al. "Metabolomics-based discovery of small molecule biomarkers in serum associated with dengue virus infections and disease outcomes." *PLoS Negl Trop Dis* 10.2 (2016): e0004449.

Fuerst, Jason A., et al. "COMPUTED TOMOGRAPHIC FINDINGS IN 24 DOGS WITH LIPOSARCOMA." *Veterinary Radiology & Ultrasound* 58.1 (2017): 23-28.

Plumley, Brooke A., et al. "Thermoregulation of biofilm formation in *Burkholderia pseudomallei* is disrupted by mutation of a putative diguanylate cyclase." *Journal of Bacteriology* (2016): JB-00780.

Twenter, H. M., et al. "MicroRNA expression in regions of stallion epididymal spermatozoa." *Journal of Equine Veterinary Science* 43 (2016): S62-S63.

Brown, Mark A., et al. "Flipping the STEM Classroom: Pilot Study Findings." *Social Science Learning Education Journal* 1.12 (2017).

Lee J, Malmberg JL, Wood BA, Hladky S, Troyer R, Roelke M, Cunningham M, McBride R, Vickers W, Boyce W, Boydston E, Series L, Riley S, Crooks K, VandeWoude S. Feline immunodeficiency virus cross-species transmission: Implications for emergence of new lentiviral infections. *J Virol*. 2016 Dec 21. pii: JVI.02134-16. doi: 10.1128/JVI.02134-16.

Wyckoff AC, **Kane S**, Lockwood K, Seligman J, Michel B, Hill D, Ortega A, Mangalea MR, **Telling GC**, Miller MW, Vercauteren K, **Zabel MD**. Clay Components in Soil Dictate Environmental Stability and Bioavailability of Cervid Prions in Mice. *Front Microbiol*. 2016 Nov 23;7:1885.

Waqas M, Lee HM, Kim J, **Telling G**, Kim JK, Kim DH, Ryou C. Effect of poly-L-arginine in inhibiting scrapie prion protein of cultured cells. *Mol Cell Biochem*. 2017 Jan 7. doi: 10.1007/s11010-016-2916-6.

Grants:

John Belisle, "BMAC CSU Core Facility Mass Spectrometry Services," HHS-CDC-Centers for Disease Control.

John Belisle "Biology and Biosignatures of Anti-Tuberculosis Treatment Response," HHS-NIH-NIAID-Allergy and Infect Diseases.

Jeff Wilusz, "FLAVIVIRUS NON-CODING RNAS AND THE HOST MRNA DECAY MACHINERY" NIAID R01 AI123136

Jeff Wilusz, "PATHOLOGICAL IMPLICATIONS OF REPRESSION OF CELLULAR RNA DECAY BY ZIKA VIRUS" NIAID R21 AI13049

Olve Peersen "ASSEMBLY OF PICORNAVIRAL REPLICATION COMPLEXES" NIAID R01 AI059130

Tai Montgomery "MECHANISM AND FUNCTION OF C. ELEGANS MICRORNAS IN DRUG RESISTANCE, PATHOGEN DEFENSE, AND DEVELOPMENT" NIGMS R35 GM119775

Lucas Argueso "MECHANISMS AND PHENOTYPIC CONSEQUENCES OF STRUCTURAL GEONOMIC VARIATION" NIGMS R35 GM119788

Upcoming Events/Opportunities

CMB SciPhD Professional Development Workshop:

CMB was recently awarded funding from the CSU Graduate School to put on a [SciPhD professional workshop](#). The 4-hour workshop will be held the morning of April 24th. . If you are interested in attending this events please contact [Howard Liber](#) or [Carol Wilusz](#).



GAUSSI Fellowship Applications are now being accepted for 2017-18 . GAUSSI aims to train students from different disciplines in the approaches used to generate and analyze large biological datasets. Eight \$32,000 fellowships are available. Visit gaussi.colostate.edu for more information. Deadline Mar 15,2017

Spring 2017 Seminars:

Cell and Molecular Biology Seminar Series:

- * Held Thursday's at 12:00 p.m. (noon) in the Molecular and Radiological Biosciences Building, Room 312. For more information, please contact Charlene Spencer

Cell and Molecular Biology Graduate Seminar Series:

- * Graduate Research Seminars are held Thursdays at 2pm in the Molecular and Radiological Biosciences Building, Room 123. For more information, please contact Dr. Howard Liber Howard.Liber@colostate.edu

Microbiology, Immunology, and Pathology Seminar Series:

For more information, visit the [MIP seminar series page](#)

Molecular Cellular and Integrative Neuroscience Seminar Series:

<http://mcin.colostate.edu/seminar.html>

Chemistry Department Seminar Series:

<http://www.chem.colostate.edu/seminars-current/>

Biology Department Seminar Series:

<http://www.biology.colostate.edu/seminars-current/>

The 14th Graybill Conference on Statistical Genetics and Genomics

Dates: June 5-7, 2017

Location: Colorado State University, Fort Collins, CO

Website: <http://graybill.wolpe2.natsci.colostate.edu/>

Statistical genomics and genetics have been growing remarkably fast and covering more and more topics in both fields. They are now essential parts of modern biological and medical research as well as important research topics within statistics. Exposure to and understanding of the motivating problems, newly-developed models and methods, and working protocols are extremely useful for researchers in the quantitative sciences, including bioinformatics, computer science and statistics. The goal of the conference is to provide an opportunity for quantitative scientists and practitioners in the biological sciences to generate and share ideas for new creative research in statistics and genomics or genetics; to exchange knowledge on frontier statistical methodologies for problems rising from genomics and genetics; to stimulate professional networking opportunities; and to provide young researchers with exposure for their work.

Spring Meeting of the Rocky Mountain Branch of the American Society for Microbiology

Date: April 15, 2017

Location: AlloSource, Centennial Colorado

Website: <https://sites.google.com/site/asmrmb/home>

There are travel fellowships and prizes for presenters!

Biomedical Engineering Seminar Series:

<http://www.engr.colostate.edu/bep/students/seminars.html>

Bioagricultural Science and Pest Management:

<http://bspm.agsci.colostate.edu/01-2/seminar-series/>



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