CMB Newsletter

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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 in future editions!

New CMB Director

Dr Carol Wilusz, Professor in the Department of Microbiology, Immunology and Pathology, has been elected to succeed Dr Howard Liber as Director of the CMB Program. She will take the helm on May 14, 2018 as the first female Director since the CMB program began offering PhD and MS degrees in 1995. Dr Wilusz has served as Associate Director of CMB since 2012 and has mentored 10 CMB students since joining the CSU faculty in 2003. She has also coordinated CM502, CM700 and chaired the CMB Academic Committee. She looks forward to working with Charlene Spencer and with CMB faculty and students to provide a rigorous and supportive training experience for CMB students.

Celebration of CMB Success

The first "Celebration of CMB Success" occurred in December of 2017. Many current students and recent graduates attended the celebration. Graduates were recognized for their hard work and accomplishments. Additional accomplishments such as published papers, fellowships, poster winners, and finishing another semester were celebrated! The CMB Photo Contest winners were announced during the celebration; the winning photos can be seen later in this newsletter. **A very special thank you to Charlene Spencer for her essential role in the creation of the CMB Success Celebration!**

"Research is what I'm doing when I don't know what I'm doing." -Wernher von Braun

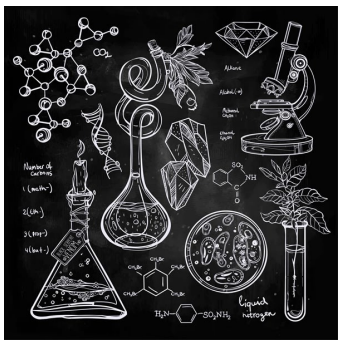
CMB Awards

Dr. **Debbie Crans** (on far right of photo) was awarded the Partners for Progress and Prosperity award for Colorado ACS on Oct. 26, 2017.

Annie Zhang Bargsten won the Young Investigators Award for Best Platform Presentation at the International Myotonic Dystrophy Conference in September 2017. It came with $1000 cash and a trophy!

Kelly N. Hassell and **Jim Carsella** were awarded travel grants of $200 for the ACS Rocky Mountain Regional Meeting 2017.

Kelly Hassell gives an oral presentation at the RMRM17 meeting



GRADUATE STUDENT SHOWCASE: Hailey Sedam won $250 as a top scholar for University-Wide Grad Programs and **Taghreed Al Turkhi** won the $250 Founder's Award at the Grad Student Showcase in November. Fourteen CMB students participated: **Neha Ahuja, Tom Bickett, James Curlin, Heather Deel, Jessie Filer, Kelly Hassell, Adam Heck, Jared Luxton, Katy McIntyre, Shea Moore-Farrell, Cary Mundell, Nora Jean Nealon, Nadia Sampaio,** and **Josh Svendsen**.

The CVMBS Research Day took place on Saturday January 20th, and, for what is believed to be the first time in the history of the event, a husband and wife duo took 1st and 2nd place for Oral Presentations in the Basic Sciences category. CMB's own **Adam Heck** was awarded 2nd place while his wife Ashley Heck (Turnidge) from Biomedical Sciences Department took home the gold. "It was really cool situation," Adam said. "I was pumped to have received an award, and was even more excited when I was walking back to my seat and heard Ashley's name called as the 1st place winner."

Adam and Ashley Heck with their awards at CVMBS research day

In addition to Adam and his wife, fellow CMBers **Tom Bickett** and **Jared Luxton** gave oral presentations while **Dayton Pierce, Cary Mundell** and **Platon Selemenakis** presented posters on their work. Adam and Cary's work helped to give the Microbiology, Immunology and Pathology another Golden Pipette Award for top department at the conference. Special thanks to **Hailey Sedam** for being on the planning committee for the conference.

CMB awarded two $1000 grants by the Graduate School

CMB was awarded $1000 by the Graduate School as part of the "Exploring Career Opportunities Initiative". The funds will be used to host a Networking Event this spring. The proposed event will include a presentation on how to network effectively and a panel of Colorado-based professionals with graduate degrees who can share their experiences and advice. There will also be food!

Please contact Jared Luxton if you would like to help organize this event and/or if you have suggestions for panelists and/or careers that you would like to see represented.

A second $1000 award will provide funds for the CMB Peer Mentoring Club. K.A. Leddy, Stephen Cohen and Kelly Hassell will be scheduling events this spring to provide guidance and support to CMB students at different stages. Contact Leddy if you are interested in being a mentor or mentee!

New CMB Students

Gustavo Ontiveros

My family and I moved from Virginia to northern Colorado when I was 4, and I grew up in Brighton. I first joined the Wilusz[2] lab in August of 2016 as an undergraduate research assistant and have been working there since I graduated with my BS in Microbiology in May 2017. My MS thesis project is focused on determining whether flaviviruses use cellular exosomes to deliver RNA messages to uninfected cells, as well as elucidating their RNA-protein interactions. When I'm not working in the lab I enjoy playing guitar alongside composing music, and working on cars. In the future, I hope to secure a job working for NASA (and/or build a race car).

Malik Zohaib Ali

As-salaamu Alaykum! I was born and raised in Sargodha, Pakistan and obtained my DVM and MPhil (Anatomy) from University of Agriculture, Faisalabad (UAF), Pakistan. As a field Veterinarian, I worked in the Livestock Department in my country. Before joining Colorado State University, I was serving as a Lecturer in UAF. I have joined the CMB Program to obtain my PhD under a Fulbright Scholarship. Being here in Colorado around the mountains is very exciting to me. I love to visit new places and explore different cultures. I also enjoy cooking, communication with international folks and talking to my family and friends.

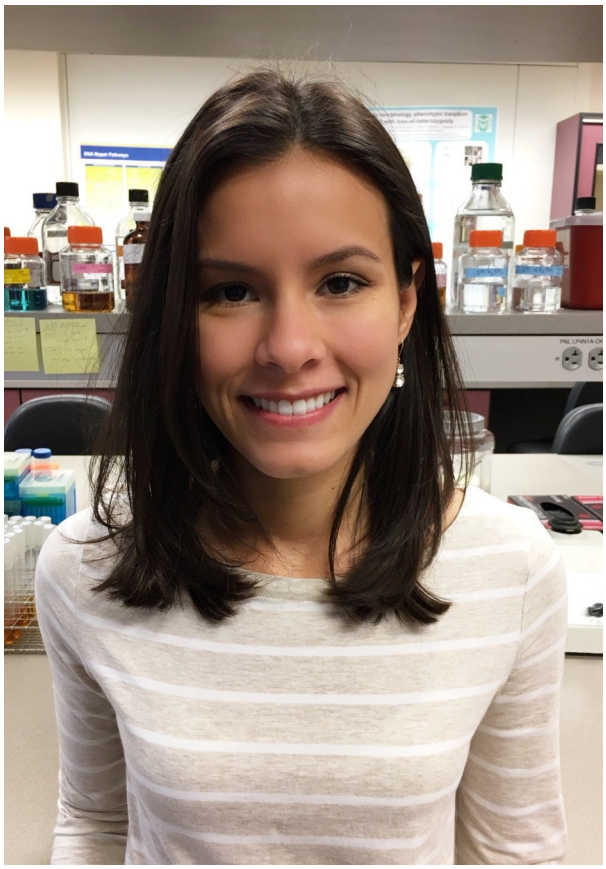
Sara Oehmke

I'm originally from Colorado. I obtained my Bachelors degree in Biological Sciences from Colorado State University just over a year ago. My current work focuses on applied synthetic biology and developing novel biological systems. I enjoy spending time with my dog Sam, playing cello and guitar, and gardening.

CMB Op-Ed: My experience with BioRxiv

By: Nadia Sampaio

The peer review process is vital to maintain the quality and integrity of science. After a manuscript is submitted to a peer-reviewed journal, it gets scrutinized by highly qualified peers who devote their time to ensure that the results being published are of substantial quality and actually move their respective fields forward. Considering the essential role of this process in the academic setting, posting scientific papers in preprint servers before peer review may sound like a bad idea. What if I made an embarrassing mistake? What if someone scoops me? Will people still be excited about my new work when it eventually gets formally published? All of these concerns came to my mind when my advisor, Dr. Lucas Argueso, suggested that we post my first lead-author manuscript on BioRxiv immediately before we submitted it for publication in a peer-reviewed journal. Fortunately, my concerns didn't last too long. I was very excited to follow the outcome of the preprint, which was tweeted several times shortly after it became available online and by now has been downloaded hundreds of times. Most importantly, we all know that the peer-review turnaround can sometimes be much longer than we'd like. When you are getting ready to graduate and need to start searching for a job, every month counts. Having my manuscript in preprint format was incredibly helpful to showcase my PhD work to prospective post-doctoral mentors, and allowed them to quickly evaluate the quality of my work on their own to assess my skillset and fit for their labs. Even though BioRxiv makes it abundantly clear that the material has not been peer-reviewed, posting your work gives a prospective employer a pretty convincing indication that your PhD research project was successfully completed and is well on its way to publication. I feel there is a huge difference between listing a publication item on your CV as "*in preparation*" versus listing a citable open access BioRxiv post. One may simply be an applicant's wishful thinking, while the other is definitely real and can be scrutinized for its value. From a graduate student's perspective, I think this is very beneficial, with little to no downside.



In the academic world, BioRxiv is still not fully accepted by biologists, but the number of posted preprints is rising quickly each year. The possibility of getting public feedback before submission to peer-review, being able to get citations ahead of time, and having a time stamp on your completed work are just some of the many advantages of preprints. Other fields have been doing this for years, and it's exciting that this change is reaching our field with the endorsement of top-tier journals like Science, Nature, Cell, PNAS and many others. Importantly, funding agencies like the NIH encourage grant applicants to post preprints and list them on their proposals, while "*in preparation*" and even "*submitted*" manuscripts are not allowed. Will that diminish the importance of peer-review? Certainly not. But, from now on, I won't think twice before posting my work at a reputable preprint server as soon as my co-authors and I feel it is ready for peer-review. Just remember that preprint post has your name on it, so never post premature or incomplete work. You will be judged on it, and we all know the internet has no mercy, so always put your best effort forward.

You can see Nadia's BioRxiv manuscript here.

Spring 2018 CMB Seminar Series:

All seminars are on Thursdays 11am-12pm in MRB 312. There is a pre-seminar discussion the week before at the same time and place. Contact Claudia Wiese if you have speaker suggestions for next semester.

March 1: Dr. Manisha Patel, CU Denver
Host: Jared Luxton

March 22: Dr. Henry Thompson, CSU
Host: Tymofiy Lutsiv

April 5: Dr. Tem Morrison, CU Anschutz Medical Campus
Host: Jessie Filer

April 19: Dr. Adam Heuberger, CSU
Host: Shea Moore Farrell

May 3: Dr. Mary Beth Mudget, Stanford
Host: Dr. Cris Argueso

Upcoming Events:

The **CMB Poster Symposium** will be taking place on February 23, 2018. For more information go to http://www.cmb.colostate.edu/initial-call-for-abstracts-for-2018-bmbcmbmcin-poster-symposium/

BioTech Connect this year will feature "TedX-style" presentations highlighting innovations in technology as well as an employer/student mixer on March 1, 2018. More information can be found at https://career.colostate.edu/events?trumbaEmbed=view%3Devent%26eventid%3D123847161

Professional Development for Graduate Students:

The Graduate School offers a series of free professional development events each fall and spring semester. For more information check out http://graduateschool.colostate.edu/professionaldevelopment/professional-development-workshops-and-events/

Science On Tap: Who pooped on my lawn?? DNA Sequences in Science, Evolution and Real Life. Dr Mark Stenglein. Monday February 26th at 6:30pm at the Wolverine Letter Press and Publick House.

Vic Myer, Chief Technology Officer at Editas Medicine is visiting CSU on February 21st. He will give a seminar on Harnessing the Power and Potential of CRISPR to Transform Medicine as well as hosting a luncheon for graduate students where he will talk about transitioning to industry. Click on the links to register.

The Rocky Mountain ASM Meeting will be occurring from April 6-7 in Durango, Colorado. Visit https://tribranchasm.byu.edu/Home.aspx for more information and to register. There are travel awards and cash prizes available

Brews and Biotech Happy Hour occurs every 3rd Thursday at Ursula Brewery in Denver. Information can be found at https://www.meetup.com/aia-bbhh/

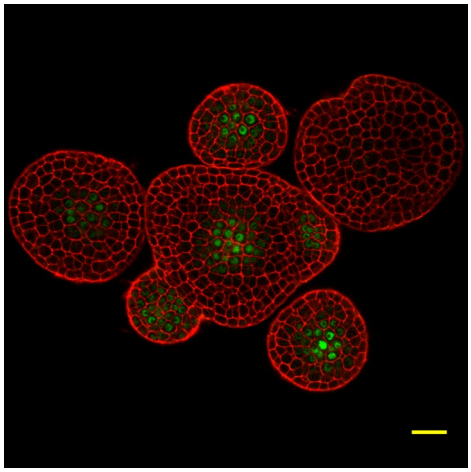
3rd Annual Life Science Industry Showcase—Connecting Academia and Industry will be on Thursday, February 15 from 3-6PM in the Krugman Conference Hall in Research Building 2 at the University of Colorado Denver, Anschutz Medical Campus. Register at http://cobioscience.site-ym.com/?page=LSciIndustryShowcase

The **Rocky Mountain RNA Club** meets several times a semester at the CU-Anschutz Campus or at CU-Boulder. The next meeting will be March 20, 2018 at CU-Boulder . Pizza is provided! https://rockyrna.org/

CMB Photo Contest Winners!

Thank you all for submitting to the first annual CMB photography contest! We had some great submissions and gave out a few prizes. We will continue to collect photos for a bi-annual CMB photography contest and awards will be given out at our end-of-semester celebrations. The winning photos each semester will be displayed on the CMB website banner. Please submit photos to Hailey at hailey.conover@colostate.edu or on our CMB Facebook page "Colorado State University Cell and Molecular Biology" .

Winner of the "Science Nerds" photo category: Stephanie Morphet-



Winner of the "What is That" photo category: Hannah Berry- Shoot apical meristem in *Arabidopsis thaliana*

Winner of "Life Outside the Lab" photo category: Adam and Ashley Heck enjoying the Colorado winter

"Awesome Achievement" submission: Allison Werner's wedding

"Awesome achievement" photo submission: Ashley and Adam Heck's Germany honeymoon

Winner of the "Awesome Achievement" photo category: Hailey Sedam's Wedding

Winner of the "Life Outside the Lab" photo category: Leddy skiing in Canada

CMB 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!

-Evaluation of parameters affecting switchgrass tissue culture: toward a consolidated procedure for Agrobacterium -mediated transformation of switchgrass (Panicum virgatum). Lin CY, Donohoe BS, **Ahuja N**, **Garrity DM**, Qu R, Tucker MP, Himmel ME, Wei H. Plant Methods. 2017 Dec 19;13:113. doi: 10.1186/s13007-017-0263-6. eCollection 2017.

-Zika viral infection and neutralizing human antibody response in a BLT humanized mouse model. Schmitt K, **Charlins P**, Veselinovic M, Kinner-Bibeau L, Hu S, **Curlin J**, Remling-Mulder L, Olson KE, Aboellail T, **Akkina R**. Virology. 2018 Jan 5;515:235-242. doi: 10.1016/j.virol.2017.12.026.

-Cellular selectivity of AAV serotypes for gene delivery in neurons and astrocytes by neonatal intracerebroventricular injection. **Hammond SL**, Leek AN, Richman EH, **Tjalkens RB**. PLoS One. 2017 Dec 15;12 (12):e0188830. doi: 10.1371/journal.pone.0188830. eCollection 2017.

-Detection and Characterization of Xanthomonas vasicola pv. vasculorum (Cobb 1894) comb. nov. Causing Bacterial Leaf Streak of Corn in the United States. **Lang JM**, DuCharme E, Ibarra Caballero J, Luna E, Hartman T, Ortiz-Castro M, Korus K, Rascoe J, Jackson-Ziems TA, Broders K, **Leach JE**. Phytopathology. 2017 Nov;107(11):1312-1321. doi: 10.1094/PHYTO-05-17-0168-R.

-ALG-5 is a miRNA-associated Argonaute required for proper developmental timing in the Caenorhabditis elegans germline. **Brown KC**, **Svendsen JM**, Tucci RM, Montgomery BE, **Montgomery TA**. Nucleic Acids Res. 2017 Sep 6;45 (15):9093-9107. doi: 10.1093/nar/gkx536.

-Safety and immune regulatory properties of canine induced pluripotent stem cell-derived mesenchymal stem cells. **Chow L**, Johnson V, Regan D, Wheat W, Webb S, Koch P, **Dow S**. Stem Cell Res. 2017 Dec;25:221-232. doi: 10.1016/j.scr.2017.11.010. Epub 2017 Nov 14.

-Relative Impact of Complement Receptors CD21/35 (Cr2/1) on Scrapie Pathogenesis in Mice. **Kane SJ**, Swanson E, Gordon EO, Rocha S, Bender HR, Donius LR, Aguzzi A, Hannan JP, Zabel MD. mSphere. 2017 Nov 22;2(6). pii: e00493-17. doi: 10.1128/mSphereDirect.00493-17.

-Complement Regulatory Protein Factor H Is a Soluble Prion Receptor That Potentiates Peripheral Prion Pathogenesis. **Kane SJ**, Farley TK, Gordon EO, Estep J, Bender HR, Moreno JA, Bartz J, **Telling GC**, Pickering MC, **Zabel MD**. J Immunol. 2017 Dec 1;199(11):3821-3827. doi: 10.4049/jimmunol.1701100.

-RNA-Seq analysis reveals insight into enhanced rice Xa7-mediated bacterial blight resistance at high temperature. **Cohen SP**, Liu H, Argueso CT, Pereira A, Vera Cruz C, Verdier V, Leach JE. PLoS One. 2017 Nov 6;12(11):e0187625. doi: 10.1371/journal.pone.0187625.

-***Multi-Modal Potentiation of Oncolytic Virotherapy by Vanadium Compounds***. Mohammed Selman, Christopher Rousso, Anabel Bergeron, Hwan Hee Son, Ramya Krishnan, Nader A. El-Sayes, Oliver Varette, Andrew Chen, Fanny Tzelepis, John C. Bell, **Debbie Crans,** and Jean-Simon Diallo, Molecular Therapy 2017/2018, 26, 1, 1-14. ((2017),https://doi.org/10.1016/j.ymthe.2017.10.014)

-***A synthetic isoprenoid lipoquinone, menaquinone-2, adopts a folded conformation in solution and at a model membrane interface*.** Jordan T. Koehn, Estela S. Magallanes, Benjamin J. Peters, Cheryle N. Beuning, Allison A. Haase, Michelle J. Zhu, Christopher D. Rithner, **Dean C. Crick** and **Debbie C. Crans** J. Org. Chem. 2018, 83, 275–288

-***Selenium speciation in the Fountain Creek Watershed correlates with water hardness, Ca and Mg levels***. **James S. Carsella,** Irma Sánchez-Lombardo, Sandra J. Bonetti, and **Debbie C. Crans**, Molecules, Molecules 2017, 22, 708, pp 1-16; doi:10.3390/molecules22050708

- Checkpoint molecule expression by B and T cell lymphomas in dogs. **Hartley G**, Elmslie R, Dow S, Guth A. Vet Comp Oncol. 2018 Jan 30. doi: 10.1111/vco.12386

- Mesenchymal Stem Cells Recruit CCR2+ Monocytes To Suppress Allergic Airway Inflammation. Takeda K, Webb TL, Ning F, Shiraishi Y, Regan DP, **Chow L**, Smith MJ, Ashino S, Guth AM, Hopkins S, Gelfand EW, **Dow S.** J Immunol. 2018 Jan 19. pii: ji1700562. doi: 10.4049/jimmunol.1700562

-The Interplay between the RNA Decay and Translation Machinery in Eukaryotes. **Heck AM**, Wilusz J. Cold Spring Harb Perspect Biol. 2018 Jan 8. pii: a032839. doi: 10.1101/cshperspect.a032839.

CMB Faculty Grants

Dean Crick "MENAQUINONE BIOSYNTHESIS: A DRUG TARGET IN GRAM-POSITIVE BACTERIA" 5R01AI049151-11

Santiago Di Pietro "MOLECULAR MECHANISMS OF PIGMENTATION IN HEALTH AND DISEASE" 1R01GM125619-01

Brian Geiss "MECHANISM OF FLAVIVIRUS RNA CAPPING" 1R01AI132668-01A1

Olve Peersen "ASSEMBLY OF PICORNAVIRAL REPLICATION COMPLEXES" 2R01AI059130-11A1

Daniel Sloan "CAUSES OF EXTREME MITOCHONDRIAL MUTATION RATE VARIATION" 1R01GM118046-01A1

Daniel Sloan "Conflict and Coevolution in a Plastid- Nuclear Enzyme Complex " NSF 1713849

Check out this SOURCE story on Dan's research!

Claudia Wiese "NUCKS, A NOVEL DOUBLE-STRAND BREAK REPAIR GENE, IMPLICATED IN CANCER BIOLOGY" 5R01ES021454-06

Tingting Yao "REGULATION OF A DEUBIQUITINATING ENZYME IN PROTEOLYSIS AND CHROMATIN REMODELING" 2R01GM098401-06A1

Debbie Crans, Dean Crick "MENAQUINONE PHYSICOCHEMICAL PROPERTIES ALTER ENERGY METABOLISM IN ACTINOBACTERIA" CHE-1709564

Shane Kanatous "Collaborative Research: Foraging Ecology and Physiology of the Leopard Seal " NSF 1643575

Upcoming CMB Student Association Elections:

Do you want to add Leadership to your resume? Do you want to use your skills to improve CMB? If so, get your platform ready! There are four CMBSA positions: President, Vice President, Secretary, and Treasurer. While each position has its own responsibilities, the CMBSA works best as a team and in close collaboration with the director of CMB. Nominations for CMBSA will be held in mid-March with voting soon after. Consider nominating yourself, or your stellar colleagues by sending an e-mail with the name and desired position of the nominated party to any of your current CMBSA representatives: Hailey Sedam, Katy McIntyre, Dayton Pierce, and Jared Luxton.

"The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom." — Isaac Asimov