

# CMB Newsletter



Summer 2017 | Issue 7

## Congratulations to CMB Spring/Summer Graduates:



**Dr Aimee Jalkanen** D.V.M. Ph.D . (Advisors: Jeff & Carol Wilusz)

Repeated Sequences encoding Cys2His2 Zinc Finger Motifs influence mRNA Polyadenylation and Localization

Aimee is now more qualified than both her advisors, having previously obtained her DVM at the Ohio State University.



**Dr Mike Caballero** Ph.D. (Advisor: Graham Peers)

Investigating the Biochemistry and Genetics of Chrysolaminarin Metabolism in a Model Marine Diatom

Mike and Aimee have another reason to celebrate as they recently announced their engagement. They met when they joined the CMB program in Fall 2011! We wish them all the best!



**Dr Paige Charlins** Ph.D. (Advisor: Ramesh Akkina)

HIV and Zika: Modeling Pathogenesis and Therapies in Humanized Mice

Paige had the unenviable task of writing her thesis, while being unable to type due to surgery on her wrist!



**Mirna Ayshoa** M.S. (Advisor: Kenneth Reardon)

The inhibitory effect of *Bacillus pumilus* on *Nannochloropsis salina*

Mirna is currently a Product Development Intern at eScience Labs where she is developing online courses and lab kits for STEM students.

*When it's your turn to defend, make sure that you inform Charlene of the date, location and thesis title at least two weeks ahead of time!*



The SciPhD Workshop in April was a great success with 37 students attending, 12 of whom were CMB students. Dr Randall Ribaldo discussed pros and cons of industry careers and highlighted the many ways that a PhD prepares you for working in industry. The section on resume development was particularly helpful for many students. After the presentations, students chatted with Dr Ribaldo over lunch. Thanks to the Graduate School for sponsoring this event!

SciPhD.com



Preparing Scientists for Professional Careers

# Awards and Fellowships

**CMB/MCIN/BMB Poster Symposium Winners:** This year, 80 students and postdocs participated in the CMB/MCIN/BMB poster session in February. CMB brought home 5 of the 7 student awards despite stiff competition from other departments. Great job to everyone who participated and congratulations to those who won honors for their work! We appreciate the efforts of the many judges who volunteered their time, and congratulations to Charlene Spencer for organizing this event—no one would have known it was her first time doing it!

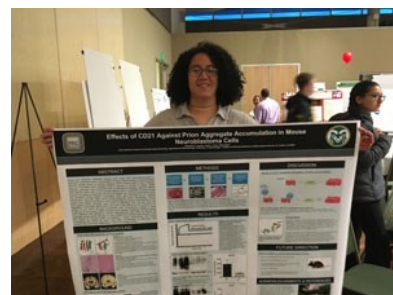
| Student                 | Award          | Abstract  | Advisor             | Dept.          |
|-------------------------|----------------|---|---------------------|----------------|
| Francesco Scavone       | Highest honors | Regulation of Autophagosome Biogenesis by K63-Polyubiquitin   | Robert Cohen        | BMB            |
| Allison Cleymaet        | Highest honors | Illuminating the Opioid Epidemic: Opioids Inhibit Retinal Cells Responsible for the Photoentrainment of Circadian Rhythm                        | Cynthia Powell      | MCIN, Clin Sci |
| James Curlin            | Highest honors | The Use of Humanized Mice to Study the Evolution of the SIV Sooty Mangabey Virus into HIV-2   | Ramesh Akkina       | MIP, CMB       |
| Annie Zhang Bargsten    | Highest honors | Degradation of a Toxic RNA involved in Type I Myotonic Dystrophy  | Carol Wilusz        | MIP, CMB       |
| Ashley Turnidge         | High honors    | Corticotropin-releasing hormone (CRH) regulation by acute glucocorticoid receptor activation and restraint stress                               | Bob Handa           | BMS            |
| Dawn Hajdu              | High honors    | The Role Of Chromatin Modifications on Molecular Priming of The Plant Immune System   | Cris Argueso        | BSPM, CMB      |
| Paige Charlins          | High Honors    | A Humanized Mouse Viral Outgrowth Assay with Increased Sensitivity in Detecting Latent HIV-1 from HIV-1 Positive Donors with Undetectable Virus | Ramesh Akkina       | MIP, CMB       |
| Stephanie Morphet       | High honors    | Mycobacterium Bovis Phenolic Glycolipid as a Biomarker of Bovine Tuberculosis   | John Belisle        | MIP, CMB       |
| Joseph Russo (Post Doc) | Highest honors | Poly(C) Binding Protein 2 Regulates mRNA Stability to Fine-tune Gene Expression During Stem Cell Differentiation                                | Jeff & Carol Wilusz | MIP            |



## CMB Students Mentor CURC Winners:

CMB students mentored several award winners at the annual Celebrate Undergraduate Research & Creativity Day in April. This event was co-organized by 2016 CMB Graduate, **Melissa Edwards** who is now Associate Director of the Office for Undergraduate Research and Artistry!

- ◆ Eric Pohlen (Chem) mentored by **Kelly Hassell**—Best in Show
- ◆ Delaney Thompson (MIP) mentored by **Sean Hammond** - Best in Show
- ◆ Erica Reith (MIP) mentored by **Adam Heck** - Highest Honors
- ◆ Elizabeth Gordon (MIP) mentored by **Sarah Kane** - High Honors
- ◆ Molly Price (MIP) mentored by **Paige Charlins** - High Honors



Liddy Gordon displays her award winning poster.



## American Chemical Society Salute to Excellence Award

**Kelly Hassell** and **Debbie Crans**, along with James Blakemore & Carlos Olivo-Delgado, were awarded the Team 2016 Salute to Excellence Award from the Colorado branch of the American Chemical Society for their efforts in organizing the “Young Talent in Colorado and Beyond” symposium in Aug 2016. The symposium had untenured professors, post-docs, graduate and undergraduate student presenters and was attended by approximately 110 people. Kelly and Dr Crans received their awards at a dinner sponsored by the ACS on Feb 16, 2017.



## **Awesome CMB Representation, and Two Winners at CSU Demo Day!**

Demo Day celebrated innovation and entrepreneurship at CSU in April. Two CMB students took home prizes and some cash for their posters. **Kelly Hassell** (Crans Lab, pictured center left) won 1st Place People’s Choice Award (\$750!) and **Jared Luxton** (Bailey Lab) won the Grad Student Council Award (\$150). **Annie Bargsten**, **Lyndah Chow**, **Jessie Filer**, **Nadia Sampaio** were also among the over 40 presenters. In addition, **Scott Fullbright** a former CMB student who completed his PhD in 2015 was an invited speaker at this event. He talked about Living Ink, the company he started while working on his PhD. An impressive showing by CMB!

## **Katy McKintyre awarded NSF-GFRP Fellowship**



Katy McKintyre joined the CMB Ph.D. Program last fall after completing her BS in Biochemistry here at CSU. She is studying the mechanistic role of plant hormones in the plant defense against necrotrophic and biotrophic pathogens in the lab of Dr Cris Argueso in Bioagricultural Sciences and Pest Management. The NSF fellowship will provide Katy with tuition and stipend for three years. Congratulations!

Although the GFRP is extremely competitive we strongly recommend all 1st and 2nd year students consider applying, as CMB has an impressive success rate. Three current students are now supported through this program! The deadline is in October. Contact Carol Wilusz (cwilusz@colostate.edu) if you need advice on the application process. Learn more here: <https://www.nsfgrfp.org/>

## **Jessie Filer awarded GAUSSI NSF Fellowship**



Jessie Filer joined the CMB PhD program in 2015 after completing her MS in Microbiology here at CSU. She is working as part of an interdisciplinary team to develop biosensors for virus infections. Her advisor is Brian Geiss in the Microbiology, Immunology and Pathology Department.

The one year GAUSSI NSF fellowship supports students interested in computational biology and/or biosensing as they develop skills outside of their major area of expertise. Jessie has been honing her engineering and math skills. She is the third CMB student to receive a GAUSSI award. Congratulations Jessie!

If you are interested in joining the GAUSSI Program you can learn more here: <http://gaussi.colostate.edu>, or email Carol Wilusz (cwilusz@colostate.edu)

## **Stephen Cohen becomes a 2017-18 SOGES Fellow**



Stephen is a 4th year CMB PhD student in the Jan Leach lab in BSPM. Over the next year as a SoGES Sustainability Leadership Fellow, Stephen will receive state-of-the-art training in environmental communication and professional development skills. Congratulations Stephen!

Learn more about this Fellowship here: <http://sustainability.colostate.edu>. New applications will be accepted next spring

## Welcome New CMB Faculty

The program would like to welcome new faculty Seonil Kim (Biomedical Sciences), Jess Metcalf (Animal Science) and Stephen Coleman (Animal Science). Dr Coleman and Dr Metcalf are the first faculty from Animal Sciences to join the program!



Dr. Stephen Coleman was born and raised in Edmonton, Alberta, Canada and completed his training in equine genetics and genomics at the University of Kentucky in Lexington, KY. Stephen's main research interests center on understanding more of the relationship between an animal's genotype and the phenotype ultimately expressed. His lab, the Equine Breeding and Genetics Laboratory, is currently focused on developing a genetic evaluation program for horses, investigating the molecular basis of genetics selection and improvement, and exploring the development and dynamics of the equine microbiome.

<http://equinescience.agsci.colostate.edu/coleman-stephen-phd/>



Dr Jess Metcalf's research joins together the fields of vertebrate evolution, microbial ecology, human health, and forensic science with innovative research tools to study the interactions between microbes and vertebrates during life and after death. I use high-throughput sequencing of bacterial and microbial eukaryotic communities to study how microbial communities change in response to disturbance events in both short time scales (decomposition of mammalian taxa) and long time scales (human population shifts to a western diet).

<http://www.jessicalmetcalf.com/>



Dr Kim's lab researches synapse biology and neuron function and how synapse contributes to cognition in brain disorders. We study the changes in synapse structure and function in neurons. We focus on the signaling pathways and receptor trafficking mechanisms that control synaptic transmission and synapse strength. Many of our studies are conducted in cultured neurons, a highly versatile system for analyzing synapse function. We also employ genetically modified mice to study cognitive function and diseases. We extensively employ techniques of cell biology, calcium imaging, biochemistry, and behavioral analysis, as well as electrophysiology to deduce molecular mechanisms that control synapses.

<https://sites.google.com/a/rams.colostate.edu/kim-lab/home>



# SAVE THE DATE!!

This year's picnic will be held on **Thursday, August 17th**. This is a great way to welcome and get to know incoming students and enjoy the company of current students and faculty outside of the confines of the lab. More details will follow closer to the date.

Hope to see you there!

# 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! Almost half of the papers listed here forgot to acknowledge CMB!

1. Transgenerational Inheritance: Perpetuating RNAi. **Brown KC, Montgomery TA.** *Curr Biol.* 2017 May 22;27(10):R383-R385. doi: 10.1016/j.cub.2017.03.061.
2. Selenium Speciation in the Fountain Creek Watershed (Colorado, USA) Correlates with Water Hardness, Ca and Mg Levels. **Carsella JS, Sánchez-Lombardo I, Bonetti SJ, Crans DC.** *Molecules.* 2017 Apr 30;22(5). pii: E708. doi:10.3390/molecules22050708.
3. Selenium speciation in the Fountain Creek Watershed and its effects on fish diversity **Carsella J, Melnykov I, Bonetti S, Sánchez-Lombardo I, Crans DC.** *J Biol Inorg Chem.* 2017 Apr 26. doi: 10.1007/s00775-017-1457-0.
4. ARID3A is required for mammalian placenta development. Rhee C, **Edwards M, Dang C, Harris J, Brown M, Kim J, Tucker HO.** *Dev Biol.* 2017 Feb 15;422(2):83-91. doi: 10.1016/j.ydbio.2016.12.003.
5. Both R-loop removal and ribonucleotide excision repair activities of RNase H2 contribute substantially to chromosome stability. Cornelio DA, **Sedam HN, Ferrarezi JA, Sampaio NM, Argueso JL.** *DNA Repair (Amst).* 2017 Apr;52:110-114. doi: 10.1016/j.dnarep.2017.02.012.
6. Metabolic Labeling and Recovery of Nascent RNA to Accurately Quantify mRNA Stability. Russo J, **Heck AM, Wilusz J, Wilusz CJ.** *Methods.* 2017 Feb 17. pii: S1046-2023(16)30364-4. doi: 10.1016/j.ymeth.2017.02.003.
7. Selective speciation improves efficacy and lowers toxicity of platinum anticancer and vanadium antidiabetic drugs. **Doucette KA, Hassell KN, Crans DC.** *J Inorg Biochem.* 2016 Dec;165:56-70. doi: 10.1016/j.jinorgbio.2016.09.013.
8. A humanized mouse-based HIV-1 viral outgrowth assay with higher sensitivity than in vitro qVOA in detecting latently infected cells from individuals on ART with undetectable viral loads. **Charlins P, Schmitt K, Remling-Mulder L, Hogan LE, Hanhauser E, Hobbs KS, Hecht F, Deeks SG, Henrich TJ, Akkina R.** *Virology.* 2017 Apr 19;507:135-139. doi: 10.1016/j.virol.2017.04.011.
9. MORC-1 Integrates Nuclear RNAi and Transgenerational Chromatin Architecture to Promote Germline Immortality. Weiser NE, Yang DX, Feng S, Kalinava N, **Brown KC, Khanikar J, Freeberg MA, Snyder MJ, Csankovszki G, Chan RC, Gu SG, Montgomery TA, Jacobsen SE, Kim JK.** *Dev Cell.* 2017 May 22;41(4):408-423.e7. doi: 10.1016/j.devcel.2017.04.023
10. Rice Bran Metabolome Contains Amino Acids, Vitamins & Cofactors, and Phytochemicals with Medicinal and Nutritional Properties. Zarei I, Brown DG, **Nealon NJ, Ryan EP.** *Rice (N Y).* 2017 Dec;10(1):24. doi: 10.1186/s12284-017-0157-2.
11. Genome Sequence of a Marine Spirillum, Oceanospirillum multiglobuliferum ATCC 33336(T), Isolated from Japan. Carney JG, Trachtenberg AM, Rheaume BA, Linnane JD, **Pitts NL, Mykles DL, MacLea KS.** *Genome Announc.* 2017 May 25;5(21). pii: e00396-17. doi: 10.1128/genomeA.00396-17.
12. Draft Genome Sequence of the Salt Water Bacterium Oceanospirillum linum ATCC 11336(T). Trachtenberg AM, Carney JG, Linnane JD, Rheaume BA, **Pitts NL, Mykles DL, MacLea KS.** *Genome Announc.* 2017 May 25;5(21). pii: e00395-17. doi:10.1128/genomeA.00395-17
13. Rice Bran and Probiotics Alter the Porcine Large Intestine and Serum Metabolomes for Protection against Human Rotavirus Diarrhea. **Nealon NJ, Yuan L, Yang X, Ryan EP.** *Front Microbiol.* 2017 Apr 21;8:653. doi: 10.3389/fmicb.2017.00653. eCollection 2017.
14. Microglia amplify inflammatory activation of astrocytes in manganese neurotoxicity Kirkley KS, **Popichak KA, Afzali MF, Legare ME, Tjalkens RB.** *J Neuroinflammation.* 2017 May 5;14(1):99. doi: 10.1186/s12974-017-0871-0.
15. Telomeres and NextGen CO-FISH: Directional Genomic Hybridization (Telo-dGH™). **McKenna MJ, Robinson E, Goodwin EH, Cornforth MN, Bailey SM.** *Methods Mol Biol.* 2017;1587:103-112. doi: 10.1007/978-1-4939-6892-3\_10.
16. The CELF1 RNA-Binding Protein Regulates Decay of Signal Recognition Particle mRNAs and Limits Secretion in Mouse Myoblasts. Russo J, **Lee JE, López CM, Anderson J, Nguyen TP, Heck AM, Wilusz J, Wilusz CJ.** *PLoS One.* 2017 Jan 27;12(1):e0170680. doi: 10.1371/journal.pone.0170680.

# Upcoming Symposia

## GAUSSI Symposium: Third Annual Front Range Computational and Systems Biology Symposium

When: June 12-13 2017

Where: CSU Campus, Scott Bioengineering building

What: A symposium focusing on computational and systems biology. Schedule includes a variety of workshops, traineeship programs as well as speakers from all over the country. There will also be a poster session for graduate students, post-docs, and undergraduates. More information can be found at <http://gaussi.colostate.edu/highlights/events/symposiumjune2017/june-12-2017/>,

## Colorado Learning and Teaching with Technology Conference

When: August 9-10, 2017

Where: University of Colorado Boulder, Wolf Law Building

What: An event that focuses on learning and teaching practices in technologies, COLTT consists of presentations and hands-on workshops to network and gather effective teaching practices. For more information, go to <http://www.cu.edu/coltt>.

## Rocky Mountain Virology Club

When: Sept 22-24 2017

Where: CSU Mountain Campus

What: 17th Annual Meeting with Keynote Speaker, Eva Harris from UC-Berkeley

<http://www.rockymountainvirologyclub.org/Welcome.html>

## Thank You to Our Faculty!!

The CMB Program would like to thank the following faculty for their efforts in teaching and administration this academic year. Our students truly appreciate the time you take to enhance and support their experiences at CSU!!

**Research Committee:** Tiffany Weir, Debbie Garrity, Chris Gentile, Josef Vigh

**Admissions Committee:** Lucas Argueso, Tai Montgomery, Zaid Abdo, Dawn Duval

**Seminar Committee:** Debbie Crans, Fred Hoerndli, Noreen Reist, Claudia Wiese

**Academic Committee:** Carol Wilusz, Doug Thamm, Deb Roess, Karyn Hamilton

**CM700 Instructors:** Spring 2017: Graham Peers, Marc Nishimura, Bill Black, Quinton Winger. Fall 2016: Noreen Reist, Tai Montgomery, Debbie Garrity, Eric Ross.

**CM502 Instructors:** Fall 2016: Stephen Coleman, Claudia Wiese, Tai Montgomery, Lucas Argueso, Mercedes Gonzalez-Juarerro, Dan Sloan, Jessica Prenni, Tim Stasevich

**CM510 Focus Group Leaders:** Fall 2016: Marinus Pilon, Mark Zabel, Carol Wilusz, Dan Gustafson, Tai Montgomery, Gerry Bouma, Tom Santangelo, Santiago di Pietro

If you are doing something fun or unusual over the summer, please send pictures/stories to the editor (Kaitlin.Doucette@colostate.edu) for inclusion in the August Edition