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To: biochem_universe@lists.colorado.edu
Subject: February Biochemistry Newsletter
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University of Colorado Boulder Department of Biochemistry

Biochemistry Graduate Newsletter

FRIDAY February 10, 2023



Join our [Slack Workspace](#) for more frequent updates.



Got suggestions? Drop them into the [FLC suggestion box](#).



Consult our [Google Calendar](#) to see what's happening.

This newsletter is unofficial and run by graduate students. We hope it comes in handy!

Since we're only able to include the publications, achievements, and new departmental colleagues we know about, these lists may be incomplete. Please [send us a tip](#) if you have an event, opportunity, or piece of news you'd like to see featured in our next newsletter.

We are looking for new additions to the newsletter team. If you have any interest in science communication or want experience writing HTML, reach out to Rosie Garris (rosanna.garris@colorado.edu)

News & Announcements

Feel free to use the newsletter as a virtual version of the JSCBB bulletin boards. If you have any information you'd like to share with the department, please [let us know](#).

Upcoming Events

Research Discussions

[Biophysics Supergroup](#)

4 - 5:30 pm, JSCBB A115

February 13: Clair Huffine (Cameron Lab) & Arnulf Taylor (Perkins Lab)

Followed by Pizza and Refreshments

[Zoom Link](#) (Meeting ID: 999 6965 7587, Password: BIOPHYSICS)

Signaling & Cellular Regulation

Mondays 4 - 5:30 pm, JSCBB B115

February 20: Nate Hamel (Luger Lab) & Julia Roberts (Alex Whiteley Lab)

[Zoom Link](#) (Meeting ID: 995 4820 8323, Password: SCR2022)

Electron Microscopy Users Supergroup

The EM Users meeting is open to all who are interested. Presentation topics include methods and current EM research going on in the CU Boulder EM community.

Usually takes place the last Wednesday of the month at noon.

Email Alli Schier (Allison.Schier@colorado.edu) to be added to the email list.

Biochemistry Seminars

Information regarding Biochem seminars can be found on the department [events page](#)!

Dr. Linda Forero-Quintero | Colorado State University

- February 15 | 3:30pm-4:45pm | In-person/A115 Butcher Auditorium
- **Title:** Gene expression quantification of single-copy genes in space and time by employing single-molecule techniques in fixed and live cells
- **Synopsis:** Recent advances in single-molecule imaging technologies have made it possible to study gene expression dynamics at unprecedented resolution. In this talk, I will describe two projects that use this technology to visualize, quantify, and model gene expression at different levels. The first project involves the study of RNAP2 phosphorylation at a single-copy gene. Here, I combined three-color fluorescent microscopy with antibody-based probes that bind the different phosphorylated forms of endogenous RNAP2. Applying this methodology together with computational modeling, I found evidence that genes contain a heterogeneous distribution of RNAP2 along their length, with a large cluster of RNAP2 phosphorylated in Serine 5 predominantly forming near the promoter. Additionally, RNAP2 fluctuations are temporally correlated from those of the nascent mRNA, with RNAP2 being phosphorylated in the Serine 5 within 6 seconds, escaping the promoter within ~ 1.5 minutes, and completing transcription in 5 minutes. The second project uses single-molecule inexpensive fluorescence in situ hybridization (smiFISH) with automated image processing to visualize and quantify the transcription dynamics of the endogenous pro- and counter-inflammatory genes (DUSP1, Ikb α , and COX-2) in hundreds of cells. Here I determined the temporal gene expression in the nuclear and cytoplasmic compartments, the number of active transcription sites, and their spatial localization. Finally, I will discuss how new single-molecule imaging technologies are opening new avenues for dissecting the signaling sequence of events from gene activation to mRNA synthesis and its

chromatin landscape, and their potential implications in health and disease.

Dr. Amy Andreotti | Iowa State

- February 22 | 3:30pm-4:45pm | In-person/A115 Butcher Auditorium
- **Synopsis:** Andreotti has worked to understand hematopoietic cell signaling to understand cell signaling pathways such as T cell receptors by working on substrate binding and catalytic activity of families of protein tyrosine kinases (IL2-inducible tyrosine kinase (Itk)). The lab uses NMR spectroscopy to determine 3D structures of various protein domains and examine interactions between domains.

Dr. Julie Forman-Kay | University of Toronto

- February 15 | 3:30pm-4:45pm | In-person/A115 Butcher Auditorium
- **Synopsis:** The Forman-Kay lab works to understand how dynamic properties of proteins are related to biological function and develop tools to enable better understanding of dynamic and disordered states specifically in CFTR, cancer, and neurobiology. The lab has focused largely on the cytoplasmic domains of CFTR specifically the disordered regulatory R region.

Publications and Achievements

Publications

Thomas Martin, Miranda Juarros, Leslie Leinwand

[*"Regression of cardiac hypertrophy in health and disease: mechanisms and therapeutic potential"*](#) Nature Reviews Cardiology.

The Leinwand Lab has published a review article on regression of cardiac hypertrophy, which discusses potential mechanisms of regression and highlights open questions in the field.

Hannah Ledvina, Ashley Sullivan, Aaron Whiteley

[*"An E1–E2 fusion protein primes antiviral immune signaling in bacteria"*](#) Nature.

The Aaron Whiteley lab has published their first paper detailing Cap2, an all-in-one ubiquitin transferase that primes a bacterial immune signaling enzyme for defense against bacteriophage infection.

Science Buffs

From space missions to minuscule microbes, Science Buffs is a graduate student-run STEM blog covering research at the University of Colorado Boulder and beyond. We are committed to making science more accessible to the general public and helping students and postdocs grow as writers.

Learn more about us and getting involved at <https://sciencebuffs.org/>.

Updates from the Faculty Liason Council

Thanks to all who attended our January New Year's event! Be sure to check out our department goals and accomplishments DNA chain hanging outside of second floor A wing. Our next meeting is scheduled for March 10 and our next social hour is tentatively planned for early April. And finally, congrats to our new cohort representatives, Max Keller representing the first years and Bri Fernandez for the third years.

As always, the department anonymous suggestion box can be found [here](#).

Updates from P2P

P2P is hosting a Specific Aims Help Night on Tuesday, February 28th from 5:30 – 7:30 pm at Etai's. This event is to help the mentees in Core incorporate feedback from their peers and further vet their aims before they submit the first draft of the full proposal. Try to incorporate the peer reviews into your draft, send your draft to your mentor or reader ahead of time, and meet us for free dinner and some (hopefully) helpful suggestions!

Updates from DEI

The Difficult Conversations Workshop will be on Tuesday February 28th from 3pm-4pm in A104. Snacks and drinks will be provided. The workshop will feature some useful tips and strategies when engaging with your lab mates, colleagues and PI (Especially for 2nd years taking Orals and 1st years getting ready to pick a lab)!

Post-Doc Association Events and Announcements

Monthly PAC Boulder Coffee Hour

[February 13 from 10:00-11:00 am](#)

Norlin Library- outside in the front

Come along and meet other postdocs over coffee, tea, and cookies at a coffee hour hosted by the Postdoctoral Association of Colorado Boulder (PAC Boulder). This week's coffee hour will be on CU East Campus.

Click "I'm interested" in this [calendar link](#) to have updates emailed to you.

PAC Monthly Boulder Social

[February 23, from 5:30-7:30 pm](#)

The Rayback Collective

Join your fellow postdocs for food and fun at our monthly social at the Rayback Collective. The family-friendly event will be sponsored by the Postdoctoral Association of Colorado Boulder (PAC Boulder).

Means of Communication:

Twitter: [@PACBoulder](#)

Email: pac_universe@colorado.edu

Outreach and Teaching Opportunities

Updates from the Center for Teaching and Learning

If you are TAing a class this semester, would like to earn a teaching certificate, or are simply interested in improving your teaching skills, the Center for Teaching and Learning (CTL) is here to help! Please don't hesitate to reach out to the departmental CTL Lead, Briana Aboulache (Briana.Aboulache@colorado.edu) for resources and information to help you achieve your teaching goals.

If you are interested in receiving teaching announcements throughout the year, please fill out this [form](#) to receive periodic teaching-related emails. You can check out the CTL certificates [here](#), track your certificate [progress](#), and find all upcoming CTL workshops/events [here](#).

Updates from SCOPE

S.C.O.P.E. is gearing up for another great semester full of outreach opportunities and fun science experiments! If you are interested in volunteering for the Spring semester and/or assisting the board members with curriculum development, visit our website sign-up [form /a> to indicate your interests. If you have any other comments or questions do not hesitate to contact us at \[scope@colorado.edu\]\(mailto:scope@colorado.edu\) \(\[scope@colorado.edu\]\(mailto:scope@colorado.edu\)\).](#)

Spring event info: May 1st, 8th, 15th and 22nd at Timberline PK-8 (30 min drive from CU - carpooling will be set up).

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As always, check out our [website](#) to learn more and sign up to stay in the loop about all things S.C.O.P.E.! Also, take a look at our 'how to think like a scientist' cards in case you need help with your research projects.

How to think like a scientist:

1. Make an observation
2. Ask a question
3. Predict the answer
4. Test your prediction
5. Think about your results
6. Ask a new question!



Brought to you by S.C.O.P.E. at CU Boulder



If you have an outreach opportunity you're excited about, please [let us know](#) so we can share it in the next newsletter.

Department Spotlight

This is the section where we brag about something cool one of our fellow biochemists is doing outside of their research. Each month, we draw the name of one of our departmental colleagues at random to feature.



This month we're featuring Rico Carale!

My name is Rico Carale, and I am a senior undergraduate student in the Aaron Whiteley Lab! I study a predatory bacteria called *Bdellovibrio bacteriovorus*, and I work on characterizing the host-pathogen dynamics between *Bdellovibrio* and its prey bacteria. I am from a small, rural town in Southeastern Colorado, where I only had 20 people in my high school graduating class! Whenever I'm not in the lab, I enjoy playing basketball, watching bad reality shows with my friends, creating digital media projects, and experimenting in the kitchen!

Resources and Involvement Opportunities

Consolidated list of resources from the Office of Financial Aid

This comprehensive [list of crisis resources](#) provides free tools for dealing with wellness, health, financial hardship, and other challenges.

Incident Reporting Resources

Follow this [link for resources and support](#) in reporting concerns or incidents that you are aware of.

Center for Teaching and Learning (formally GTP)

To learn about CTL, visit their [website](#) or contact the department CTL lead [Chelsea Toner](#).

Counseling & Psychiatric Services (CAPS)

[CAPS](#) offers confidential, on-campus mental health and psychiatric services for a variety of concerns such as academics, anxiety, body image, depression, relationships, substance use and more. CAPS is available for in person and telehealth (virtual) appointments from 9 a.m. to 5 p.m. Monday through Friday. All services will be held virtually through telehealth.

Services offered include counseling, psychiatry, workshops, process therapy groups, skill-based therapy groups, informal consultations, suicide prevention, eating concerns, ADHD treatment, addressing substance use, canine-assisted therapy, and virtual reality therapy.

oSTEM (Out in Science, Technology, Engineering, and Math)

To learn more about oSTEM, visit their [website](#) or attend their [weekly meetings](#) on Mondays at 6:00 pm.

Buff Pantry

CU Boulder students can pick up food from Buff Pantry on a weekly basis. Visit their [website](#) for details.



United Campus Workers

To join or get more involved in UCW, visit their [website](#).



CU Café

To learn more or get involved in CU Café, visit their [website](#).



Women in Science and Engineering (WiSE)

To join or get more involved with WiSE, visit their [website](#) or contact [Katelyn Long](#).