

What's New with BB
(January 1, 2024 – March 31, 2024)

Dear BB Community,

I hope you all had a relaxing spring break enjoying the sun and the beautiful weather, which is especially appreciated after our extremely busy Winter term. We hosted visits for four candidates for the neuroscience position, and three candidates for the instructor position. We hosted successful graduate recruiting events, ten applicants in person and five on zoom, which are promising to bring the largest incoming class in recent memory. We had strong presence at the Biophysical Society annual conference in Philadelphia where the GCE4All was on Biophysics TV. We were also well represented at the American Society of Biochemistry and Molecular Biology in San Antonio, with several undergraduates presenting posters, along with a strong presence in genetics conferences: The Allied Genetics Conference in DC, and the Fungal Genetics Conference in Asilomar, the latter co-organized by Michael Freitag.

BB had a great showing at the College of Science Awards Ceremony, picture below. Thanks to all who have worked on nominations, received nominations, and attended to celebrate with us.



We're excited to officially welcome Dr. Dan Liefwalker as the newest member of BB faculty! Dan is a BB alum who most recently has been working as a research assistant professor in the Department of Molecular and Medical Genetics at the Knight Cancer Institute at OHSU.

We will be celebrating Dam Proud Day and inviting several of our alumni on zoom. Spring term is a bittersweet time for our seniors (and us) as they wrap up their career at OSU. We will be looking forward to attending their Honor's theses and research presentations at the Spring Poster Symposium and to cheering for them in graduation ceremonies.

Below I list some of our activities and successes this past term compiled by Kimberly. Enjoy reading and have a great Spring.

Grant Proposals Submitted

Jessica Siegel as lead PI along with Devon Quick from IB submitted an NSF proposal titled *LAs in Online Learning* in the amount of \$399,918.

Alysia Vrailas-Mortimer submitted an NIH R01 renewal proposal titled *Neuronal Mechanisms of Copper Transport and Toxicity*

Alysia Vrailas-Mortimer submitted a proposal titled *Understanding how mutations in Lamin lead to tissue specific diseases* to the Muscular Dystrophy Association in the amount of 300K.

Patrick Reardon with Jennifer Fields as lead PI submitted a proposal titled *Measurement and Modeling: Filling the Gaps on PFAS Phys-Chem Properties* to the Dept of defense for \$1,585,722.

Elisar Barbar submitted an equipment supplement for the proposal *Multiscale Characterization of a Unique Class of Duplex, Multivalent IDP Systems* in the amount of \$162,387.

Dan Leifwalker submitted to the NIH a proposal titled *Reinstating Cell Death in MYC-Dependent Hematopoietic Malignancies* in the amount of \$2,409,951.00.

Elisar Barbar, Juan Vanegas, along with Chong Feng from Chemistry submitted a proposal to NIH titled *Training Program in Molecular Biophysics of Complex Systems* in the amount of \$2,595,263.

Professional Service

Patrick Reardon served as an NSF reviewer for the MRI proposals panel.

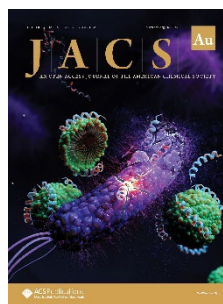
Publications

From the *Cooley* Group

Kapitonova AA, Perfilova KV, **Cooley RB**, Sluchanko NN. Phosphorylation code of human nucleophosmin includes four cryptic sites for hierarchical binding of 14-3-3 proteins. bioRxiv [Preprint]. 2024 Feb 13:2024.02.13.580064. doi: 10.1101/2024.02.13.580064. PMID: 38405961; PMCID: PMC10888825.

From the *Cotten* Group

Liu F, Greenwood AI, Xiong Y, Miceli RT, Fu R, Anderson KW, McCallum SA, Mihailescu M, Gross R*, and **Cotten ML***. Host Defense Peptide Piscidin and Yeast-Derived Glycolipid Exhibit Synergistic Antimicrobial Action through Concerted Interactions with Membranes. JACS Au 2023, 3, 12, 3345–3365 <https://doi.org/10.1021/jacsau.3c00506>



Congratulations on the cover article, Myriam!!

A. Oludrian; A. Malik, A.C Zourou, Y. Wu, S.P. Gross, A. Siryapon, A. Poudel, K. Alleyne, S. Adams, Courson DS, **Cotten ML**, Purcell EB. Host-defense piscidin peptides as antibiotic adjuvants against *Clostridioides difficile*. PlosOne, 2024 22:e0295627.

From the *Gombart* Group

Nakamura Y, Kulkarni NN, Takahashi T, Alimohamadi H, Dokoshi T, Liu E, Shia M, Numata T, Luo EW, **Gombart AF**, Yang X, Secrest P, Gordts PL, Tsimikas S, Wong GC, Gallo RL. Increased LL37 in psoriasis and other inflammatory disorders promotes LDL uptake and atherosclerosis. *J Clin Invest*. 2024 Mar 1;134(5):e172578. doi: 10.1172/JCI172578. PMID: 38194294; PMCID: PMC10904043.

Berger MM, Amrein K, Barazzoni R, Bindels L, Bretón I, Calder PC, Cappa S, Cuerda C, D'Amelio P, de Man A, Delzenne NM, Forbes A, Genton L, **Gombart AF**, Joly F, Laviano A, Matthys C, Phyo PP, Ravasco P, Serlie MJ, Shenkin A, Stoffel NU, Talwar D, van Zanten ARH. The science of micronutrients in clinical practice - Report on the ESPEN symposium. *Clin Nutr*. 2024 Jan;43(1):268-283. doi: 10.1016/j.clnu.2023.12.006. Epub 2023 Dec 9. PMID: 38104489.

From the *Mortimer* Group

Waring-Sparks A, Waring-Sparks R, Darner R, **Mortimer N**. Effects of a biomedically relevant course-based research experience on advanced biology students. In press at the Journal of Microbiology and Biology Education

Faculty Talks

Juan Vanegas gave an invited talk at the Bioengineering Subgroup Symposium titled “Tension mediated activation of transmembrane protein receptors and ion channels”

Alysia Vrailas-Mortimer gave an invited talk at the Comparative Aging Workshop, as part of The Allied Genetics Conference in Washington, DC, titled “Comparative Genomics Reveals DNA Elements that Regulate p38Kb in Aging and Stress”.

Alysia Vrailas-Mortimer gave an invited talk at the Muscular Dystrophy Association Clinical and Scientific Conference, Orlando, FL titled “Aggregation of Lamin Protein in Aging and Disease”.

Elisar Barbar was an invited speaker at the Annual Meeting of the Association of Medical and Graduate Departments of Biochemistry Chairs, in Puerto Vallarta, Mexico, titled “Protein disorder in regulation of large molecular machines: From dynein motor to coronavirus”.

Research in the News

Colin Johnson was quoted in a **Financial Press article** showcasing a new gene therapy trial in China that aims to help deafness. Johnson has extensive experience working with mutations in otoferlin that causes severe congenital hearing loss.

Teaching and Learning News

Lauren Dalton’s Open-Source Cell Biology textbook was published and made available January 1, 2024. The link to check out the book is [HERE](#).

Phil McFadden has a new Honors College course scheduled for the next academic year, HC 407 Protein Portraits.

Conferences and Poster Presentations

Nathan Mortimer was selected for a presentation in the Disease Models and Aging section at The Allied Genetics Conference in Washington, D.C. His talk was titled “Extracellular vesicles mediate venom protein function in the parasitoid wasp *Ganaspis hookeri*”.

Najeeb Marun (undergraduate student, **Mortimer lab**) presented a poster titled “The therapeutic potential of sulforaphane on the cognitive and behavioral impacts of Alzheimer’s disease in *Drosophila melanogaster*” at The Allied Genetics Conference. Najeeb was supported by travel awards from the Linus Pauling Institute and the Honors College to attend the meeting and present his work.

Ryan Mehl presented a poster, “The GCE4All Research Center: Promoting Your Ability to use Genetic Code Expansion in Your Research”.

BPS Conference Philadelphia, Feb 10-14

The **GCE4All Research Center** was highlighted in a [BPS video](#)– which will be shown again at next year’s conference!

Juan Vanegas presented 4 posters:

- “Mapping the tension-gated transition of the bacterial MscS with MD simulations” along with grad student **Monica Vidal-Franco** (Vanegas Lab), Andriy Anishkin and Sergei Sukharev.
- “Molecular dynamics simulations of binding of ropinirole analogs to the D2 and D3 G-protein coupled receptors” along with **Kai Zwink** (BB master’s student), and Chris Beaudry.
- “Unique molecular features in the activation of the AT1 receptor by chemical and mechanical stimuli” along with Bharat Poudel.
- “Modeling the elastic properties of soft materials from molecular dynamics simulations” along with Andrew Lewis and Ben Himberg.

ASBMB Conference, San Antonio, March 21-24

Lauren Dalton presented a poster titled “Building an Open Access Textbook for Cell Biology” and attended the conference with Francisco Hernandez (Vrailas-Mortimer Lab), Chaz Kayser (Vrailas-Mortimer Lab) and Colton Ramsey (lab unknown).



GCE News

The **International GCE Webinar** series continues, see our upcoming schedule and register for future webinars [here](#).

INTERNATIONAL GCE WEBINAR: WINTER 2024 SPEAKERS

	<p><i>"Engineering post-translationally modified selenoproteins in E. coli"</i></p>  <p>Natalie Krahn, PhD University of Georgia</p>	<p><i>"Chemically expanded antibody engineering on the yeast surface: covalent antibodies & more"</i></p>  <p>Jim van Deventer, PhD Tufts University</p>	JANUARY 18TH		
FEBRUARY 15TH	<p><i>"Novel molecular insights into the Orai1 channel dynamics using photocrosslinking"</i></p>  <p>Isabella Derler, PhD University Linz</p>	<p><i>"Applications of Genetic Code Expansion and Bioorthogonal Chemistry to Study Membrane Proteins"</i></p>  <p>Tom Sakmar, M.D The Rockefeller University</p>	<p><i>"Genetically Encoded Bioorthogonal Chemistry in Living Systems"</i></p>  <p>Peng Chen, PhD Peking University, China</p>	<p><i>"Engineering Enzymes with Non-Canonical Active Site Functionality"</i></p>  <p>Sarah Lovelock, PhD The University of Manchester, UK</p>	MARCH 21ST



Oregon State University

Supported by:
OSU College of Science,
OSU Dept Biochemistry & Biophysics
NIH GCE4All Research Center



Upcoming GCE Workshop & Conference

Selecting your Synthetase – Expanding GCE Chemistries: Aug 2-8th 2024

This 7-day intensive lecture and laboratory course will focus on the theory and practice of engineering amino-acyl tRNA synthetase (RS)/tRNA pairs for encoding non-canonical amino acids (ncAAs). All attendees can perform selections with an ncAA of their choice and model ncAAs provided by the Center.

Apply & Register at: <https://gceworkshops.org/>

GCE Conference: Aug 8-10th 2024

The GCE4All Research Center, along with conference chairs, Abhishek Chatterjee and Kathrin Lang, are excited to announce the 3rd GCE Conference. The GCE Conference is meant to bring together GCE users and, more importantly, interested parties who have not yet adopted the technology, to catalyze a more rapid expansion of the use of noncanonical amino acids in biomedical research. Attendees from industry, academia and other research institutions will convene to discuss the latest techniques and approaches that are applicable to a broad variety of fields.

Keynote speakers: Peter Schultz, Scripps; Alanna Schepartz, UC Berkeley; Michael Jewett, Stanford

Industry Speakers: Marcello Marelli, AstraZeneca; Feng Tian, Luxvitae Therapeutics (Former AmbrX CEO); Christine Koehler, Veraxa; Floyd Romesberg, Sanofi; Tina Boville, Aralez Bio; Chris Gregg, GRO Bio

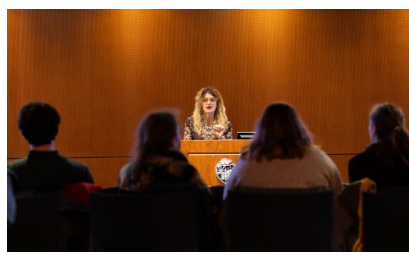
Apply & Register at: <https://gceconferences.org/>

The Mehl/Cooley labs met with commercialization experts on February 19th to further work supported by NSF/Noble Reach Emerge funding to speed biotechnology development and translation.

Grad Specific News

Tsoo King Memorial Lecture Series

Dr. Sara Walker, a professor from Arizona State University's School of Earth and Space Exploration & School of Complex Adaptive Systems was invited to be this year's Tsoo King Memorial Lecture Series Speaker. Dr. Walker gave an insightful and informative talk open to the public titled "Life as No One Know It". Huge thank you to graduate student Sanjay Ramprasad for all of his hard work in planning this exciting event!



Moriah Mathis (Mehl/Cooley Lab) passed her preliminary exam on January 19th and presented her 3rd year talk on February 21st.

Reginald Appiah-Kubi (Hendrix Lab) presented his 3rd year talk on March 6, having passed his preliminary exam in November 2023.

First year graduate students **Cameron Call** and **Ian Noonan** were each awarded the George Bailey Graduate Fellowship from the LPI (Vrailas-Mortimer Lab rotation).

Mahya Payazdan (Gombart Lab) was selected as the Marion T. Tsefalas/Caron & Donald Reed and Mark Sponenburgh/Simone & Balz Frei Graduate Fellow.

Nicholas Bretz (Mortimer Lab) was selected for the Harvey H. & Donna M. Morre Research Fellowship.

Kristen Snitchler (Mortimer Lab) was selected for the Audrey & George Varseveld Graduate Fellowship

Cat Vesely (Mehl/Cooley Lab) has begun a 3-month internship with Terremoto Biosciences.

Patrick Allen (Mehl/Cooley Lab) has begun a 3-month internship with Light Horse Therapeutics.

Recruitment News

The BB Department held an in-person graduate recruitment weekend in January, with 10 accepted applicants attending. Faculty held poster sessions that allowed the applicants to discuss science one-on-one, followed by a large group dinner at the home of Ryan Mehl and Sarah Clark, and then some fun with the graduate students. Eight of the applicants who attended have accepted our offer of admission! We also conducted a recruiting day on zoom for those who could not attend in person.

Undergrad News

Congratulations to our BB/BMB Winter term graduates!

- Aidan Fichter
- Tanner Mathews
- Raine Melby
- Michelle Wambui
- Ellery Shearman

Alejandro Bihun (Hagen Lab) was selected for the Healthy Aging Research Fellowship Award

Francisco Hernandez was awarded the OSU ASBMB Student Chapter award, COS Travel Award, and the LPI Travel Award Discover BMB conference in San Antonio, TX (Vrailas-Mortimer Lab)

Chaz Kayser was awarded the OSU ASBMB Student Chapter award to attend the Discover BMB conference in San Antonio, TX (Vrailas-Mortimer Lab)

Congratulations to Michelle Wambui (BMB Class of 2024) for receiving one of ten American Society for Biochemistry and Molecular Biology (ASBMB) 2023 Marion B. Sewer Distinguished Scholarship for Undergraduates!

Michelle Wambui, Oregon State University

After gaining experience in both undergraduate research and clinical work, Wambui's career goal is to become a clinician-scientist by pursuing an M.D./Ph.D. program. After graduating with a degree in biochemistry and molecular biology, she plans to apply to the National Institutes of Health Medical Research Scholars Program.



Wambui's experiences as a black female student and immigrant have shaped her core values and continue to be a source of inspiration. She values community service and is committed to diversifying science by advocating for the needs of and amplifying the voices of underrepresented students like herself.

Biochemistry is a Piece of Cake! Celebration



Tuesday, Feb 27th 5-6:30 pm LPSC atrium

Our Class of 2024 began their undergrad careers at OSU and partner community colleges/institutions during the height of the pandemic- fully remote learning. Some of our BMB seniors will be graduating Winter term and heading off on adventures.

Outreach

Nate Mortimer was an invited panelist for the Mid-Career professional development event: Incorporating Multiple Model Systems Panel Discussion at The Allied Genetics Conference.

Kristen Snitchler (PhD student, Mortimer lab) was selected to join the 2024 Community for the Advancement of Antiracist Instruction (CAAI) training cohort.

Welcome to the world

Congratulations to **Jessica Siegel** and her partner Derek, on the arrival of their baby boy! Ashriël William Batiste (Ash for short), born March 13th at 4:07 am, 7 lbs 9 oz.

Awards

The College of Science gathered on Feb. 29 to recognize and celebrate high achieving faculty and staff at the 2024 Combined Awards Ceremony. The evening celebrated the very best in the College, from teaching, advising and research to inclusive excellence, administration, and service.

Elisar Barbar was awarded the F. A. Gilfillan Award for Distinguished Scholarship in Science! Read the IMPACT magazine article featuring Elisar [HERE](#).



Lauren Dalton, alongside other incredible mentors, was awarded the Whitely Faculty Scholar Award for Teaching Excellence! Read the IMPACT magazine article featuring Lauren [HERE](#).



BPS Journal Club

The **BPS Chapter** will continue to host the **Friday 9 am journal club**, every Friday starting Apr 5th, organized and led by Jesse. The schedule will include monthly contributions of papers focused on X-ray/Cryo-EM (led by Cooley), computational biophysics (led by Vanegas), NMR (led by Barbar) and one week per month will focus on introduction of work from speakers of the upcoming month (led by Jesse). Speakers/participants interested in Biophysics from OSU Cascades and from outside OSU are invited to attend by zoom. Schedule is below:

5-Apr	Intro to speakers: Lockery, Lollman, and Cotten
12-Apr	NMR: Douglas
19-Apr	X-Ray: TBA
26-Apr	Theory/Computation: Robert
3-May	NMR: Mukhtar
10-May	X-Ray: Patrick Allen
17-May	Theory/Computation: Shelby
24-May	NMR: Hannah
31-May	X-Ray: TBA
7-Jun	Theory/Computation: TBA

Upcoming Events

April 2024

- 3: Graduate Student Hannah Stuwe 3rd Year Talk
- 5: BPS Student Chapter BPS Week Activity
- 5: Faculty Meeting
- 10: BB Seminar Series Speaker Dr. Shawn Lockery
- 16: Faculty BYO Lunch Meeting
- 17: Graduate Student Nick Bretz 3rd Year Talk
- 19: Faculty meeting
- 24: Dam Proud Day

May 2024

- 1: BB Seminar Series Speaker Dr. Justin Kollman
- 3: Faculty Meeting
- 8: Graduate Student Sanjay Ramprasad 3rd Year Talk
- 14: Faculty BYO Lunch Meeting
- 15: BB Seminar Series Speaker Dr. Myriam Cotten
- 22: Graduate Student Sarah McGee 3rd Year Talk
- 29: Graduate Student Monica Vidal-Franco 3rd Year Talk

June 2024

- 14: BB Grad Dessert
- 15: Commencement
- 18: End of the Year Celebration

Thank you for reading this far, and we will catch up again at the end of Spring term. Many thanks to Kimberly Webster for compiling these events.

Elisar