

What's New with BB

(April 1st 2022 through June 30th 2022)

Dear BB community,

On three typical Oregon rainy days we bid farewell to our 2022 graduating class, their parents, and friends, had graduation dessert party, commencement ceremony, and inaugural end of the year celebration which focused on honoring our graduate students. Although the class of 2022 spent over more than half their college career behind masks in one of the hardest majors at OSU, they have been exceptionally resilient and disciplined to stay motivated during the lockdown, remote learning, social distancing, masking, quarantining, and viral infections, and make it to the finish line.



We distinguished ourselves as a department by continuing to deliver in person lab classes, a very high-quality education, exceptional mentoring, and weekly encouraging emails to all undergrads (Andy's affirmation). I am proud of the BB faculty, staff, and graduate TAs and mentors for their tireless work in creating and nourishing the BB and BMB family. I am delighted that our efforts are rewarded every year: our students lead the university and perhaps the nation in the number of nationally competitive scholarships: Barry-Goldwater awards, Fulbright fellowships, internships abroad, presentations at meetings, co-authoring peer-reviewed publications on research on SARS-CoV2, cancer biochemistry, deafness, mechanisms of aging and disease to understanding the molecular basis of how life works.

When we send these students off in pursuit of a medical profession, graduate school, or work in a biotech company, we are confident of their success, and also, hope that in their new life, they advocate for more respect for science and education, for the importance of basic science for a better society and a greener planet, and for policies that address the looming environmental crises.

The horrific invasion and assault on Ukraine are still ongoing. Closer to home, this spring had record gun violence and mass shootings, we relive the disturbing events of Jan 6 and the assault on our democracy, and then see the end of Roe v. Wade and the end of climate-fighting regulations. It is hard not to be discouraged about how little progress has been made, but as educators we remain optimistic that the future leaders we are training will be different and hopefully will make better judgments.

Keep up the good work, it has been a wonderful, eventful, and rewarding two and a half years being at the helm working with you. Looking forward to few more.

Highlights of Spring 22

Submitted Proposals:

Colin Johnson submitted a proposal to the NIH titled Characterization of Fer1L6 in muscle biology in the amount of \$1,435,724.

Alysia Vrailas-Mortimer submitted a collaborative proposal to NIH titled Neuronal Mechanisms of Copper Transport and Toxicity with the amount of \$430K to OSU.

Kenton Hokanson submitted a SciRIS stage 3 proposal in collaboration with Maude David, Pat Chappell, and Kathy Magnusson.

Dave Hendrix submitted a pre-proposal for “Dark Dimensions of the RNA Regulome (D2R2)” to the NSF.

Funded Grants:

Elisar Barbar received \$60,000 from NSF as a supplement to the EAGER: Structure and Assembly of SARS-CoV2 nucleocapsid phosphoprotein N grant.

Lillian Padgett-Cobb's NSF Postdoctoral Fellowship in Biology: Single-cell Study of Gene Expression and Regulatory DNA in the Glandular Trichomes of Hemp (*Cannabis sativa*) Flowers was recommended for funding at the Salk Institute.

Yu Zhen's RERF proposal titled: *High Capacity Centrifuge for Protein Production* was funded for \$26,386.00. This is for a new Beckman Avanti J-HC floor centrifuge to replace our old 1 lit bottles centrifuge.

Fritz Gombart, along with Maret Traber RERF proposal for a *Biotech Synergy Plate Reader* was funded for \$37,119.00.

Professional Services:

Dave Hendrix was invited to participate in an Ideas Lab workshop with the NSF.

Elisar Barbar served on an NIH panel “Biomedical Technology Development and Dissemination Center (RM1)” (ZRG1 BST-P (55) R).

Ryan Mehl served on an NIH panel.

Publications:

From the **Beckman** group

Determining Copper and Zinc Content in Superoxide Dismutase Using Electron Capture Dissociation Under Native Spray Conditions. Franklin R, Hare M, **Beckman JS.** Methods Mol Biol. 2022;2500:201-210. doi: 10.1007/978-1-0716-2325-1_14.

From the **Gombart** group

Upregulating Human Cathelicidin Antimicrobial Peptide LL-37 Expression May Prevent Severe COVID-19 Inflammatory Responses and Reduce Microthrombosis. Aloul KM, Nielsen JE, Defensor EB, Lin JS, Fortkort JA, Shamloo M, Cirillo JD, **Gombart AF**, Barron AE. Front Immunol. 2022 May 12;13:880961. doi: 10.3389/fimmu.2022.880961. eCollection 2022. PMID: 35634307 **Free PMC article.** Review.

Perspective: Role of Micronutrients and Omega-3 Long-chain polyunsaturated Fatty Acids for Immune Outcomes of Relevance to Infections in Older Adults - a Narrative Review and Call for Action. Eggersdorfer M, Berger MM, Calder PC, **Gombart AF**, Ho E, Laviano A, Meydani SN. Adv Nutr. 2022 May 19:nmac058. doi: 10.1093/advances/nmac058. Online ahead of print. PMID: 35587877

Micronutrients to Support Vaccine Immunogenicity and Efficacy. Calder PC, Berger MM, **Gombart AF**, McComsey GA, Martineau AR, Eggersdorfer M. Vaccines (Basel). 2022 Apr 6;10(4):568. doi: 10.3390/vaccines10040568. PMID: 35455317 **Free PMC article.**

From the **Mehl/Karplus/Beckman** groups

Nanobody assemblies with fully flexible topology enabled by genetically encoded tetrazine amino acids. Van Fossen EM, Bednar RM, Jana S, Franklin R, Beckman J, **Karplus PA**, Mehl RA. Sci Adv. 2022 May 6;8(18):eabm6909. doi: 10.1126/sciadv.abm6909. Epub 2022 May 6. PMID: 35522749 **Free PMC article.**

From the **Nyarko** group

Multivalent Angiomotin-like 1 and Yes-associated protein form a dynamic complex. Vogel A, Crawford A, **Nyarko A.** Protein Sci. 2022 May;31(5):e4295. doi: 10.1002/pro.4295. PMID: 35481651

Faculty Talks:

Tuesday, May 3 was the 2022 F.A. Gilfillan Memorial Award Lecture, presented by University Distinguished Professor **Michael Freitag**. The lecture was held in person at the LaSells Stewart Center and via Zoom. <https://science.oregonstate.edu/impact/2022/04/gilfillan-lecture-our-lives-among-the-peaks-tales-of-chips-enrichment-and-decay>



OSU's 2022 University Distinguished Professor **Michael Freitag's** lecture titled, "Epigenetics: I Know It When I See It" was held on Friday, May 20 at 9 a.m. in the MU Horizon Room, followed by a Q&A moderated by Roy Haggerty, Dean of the College of Science.

Dave Hendrix gave a talk on May 23 titled "Deep Learning and Data Science Methods to Uncover Sequence Elements that Promote RNA Coding Potential", a hybrid discussion held in Johnson 102 and via Zoom.

Elisar Barbar gave a talk on May 3rd at The 12th NMR a tool for Biology conference, at Institut Pasteur in Paris.

Teaching News:

Monday, June 6th was the BB483/583 seminar titled “Stress and Resilience at the Molecular Level: A few key concepts and landmark studies”. This was an amazing capstone project, and kudos to **Andy Karplus** and the capstone class for pulling it off. Seminar available to view by clicking this link: https://media.oregonstate.edu/media/t/1_u3xhjh1y

Congratulations to **Kari Van Zee** for being invited to participate in the Fall 2022 cohort of the Career Champions Program! Kari will be part of a group of teaching faculty working to learn and develop tangible ways to incorporate career connections into the classroom.

Department News:

Congrats BB Faculty & Staff on their promotions and tenure!

Dr. Kari Van Zee
Senior Instructor II

Dr. Lauren Dalton
Senior Instructor I

Dr. Afua Nyarko
Associate Professor
Tenure

Congratulations for reaching these milestones and for the recognition of the hard work and dedication to BB and OSU students, which in all three cases surpassed the criteria established in our department for promotion. In **Afua**'s case, she has established an independent, nationally recognized program of research and scholarship and is an outstanding instructor and mentor of students, and a valuable departmental citizen. With **Kari**, she has sustained a record of exceptional achievement and evidence of professional growth and innovation in leadership, teaching, service, outreach, and community building. With **Lauren**, for her dedication to teaching and innovative ideas to improve teaching and student success and we count on her for keeping us informed with the latest pedagogy to help maintain our teaching excellence. I am proud to have you in our department and to welcome you to the next phase.

Students in the News:

Gretchen Fujimura is one of two Oregon State students to receive the 2022 Goldwater Scholarship, the nation's top undergraduate award for sophomores and juniors in STEM fields. Gretchen will spend the summer in Toyko, for an internship with American multi-national biopharmaceutical company Amgen, Inc. Article available here: <https://science.oregonstate.edu/impact/2022/04/prestigious-goldwater-award-will-pave-the-way-for-developing-life-saving-vaccines>



Grace Petrina, a third-year Honors College student majoring in BB makes volunteerism a big part of her life outside of school, generously donating her time and efforts to the Polk Community Free Clinic and the South Corvallis Food Bank. Follow the link to read the article:

<https://science.oregonstate.edu/impact/2022/06/volunteerism-a-way-of-life-for-biochemistry-and-biophysics-student>

Bereket Berhanu, in the McFadden Lab, shared his experience in undergraduate research at the Board of Trustee breakfast.



Congratulations also to the students who received SURE and CURE awards, to conduct research in the summer, listed below, along with their labs:

2022 CURE Awardees	
Name	Mentor
Lizzy Milford	Michael Freitag
Devin Wright	Michael Freitag
Coban Brooks	Elisar Barbar
Dylan Lefor	Elisar Barbar

2022 SURE Award Winners	
Ramzy Al-Mulla	Heidi Kloefkorn
Rebecca Bingham	Maria Franco
Evan DuVivier	Adrian Gombart
Mathew Frischman	Kathy Magnusson
Jenna Gaston	Kenton Hokanson
Minh Triet Ho	Dee Denver
Kaitlyn Kim	Kathy Magnusson
Finn Lawless	Martin Schuster
Auria Lee	Taifo Mahmud
Ebunoluwa Morakinyo	Gitalia Indra
Annalee Pelayo-Ortega	Michael Freitag
Lydia Pung	Afua Nyarko
Abigail Pung	Ryan Mehl
Rachel Pung	Dr. Dallas
Rebecca Purcell	Patrick Chappell
Jake Reotcisoender	Daniel Rockey
Alexis Schwartz	Kenton Hoakanson
Kavi Vaidya	Claudia Maier
Mitchel Wambui	Lia Danelishvili

Biochemistry Club:

Warm welcome to the new officers of the Biochemistry Club!

President: Kaitlyn Kim

Vice President: Reja Shakya

Operations Director: Abigail Pung

Social Committee Chair: Rachel Pung

Academic Committee Chair: Lydia Pung

Outreach Committee Chair: Alyssa Pratt

Social Media Chair: Reja Shakya

Senior Class Representative: Coban Brooks

Junior Class Representative: Christopher "CJ" Rosete

New Faces:

New Faces to BB
Welcome Kimberly Webster & Jessica Siegel!



We're very excited to have Kimberly join our BB office staff and Jessica join us as an Associate Dean of Academic and Student Affairs!

New Faces to BB
Welcome Juan Vanegas, Nathan Mortimer, & Alyria Vrailas-Mortimer!

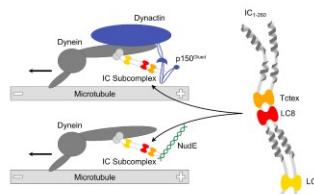


We're very excited to have you all join our BB family

Grad Specific News:

Congratulations Dr. Kayla Jara-Weber!

Context Matters: Assembly and Disorder in the Regulation of Multivalent Complexes



On May 31st, **Kayla Jara** defended her thesis titled, “Context Matters: Assembly and Disorder in the Regulation of Multivalent Complexes” summarizing her work in the Barbar lab! We’re thrilled to have Kayla remain a member of the BB community in her next position as Program Coordinator of the GCE Center! Congratulations, Kayla!

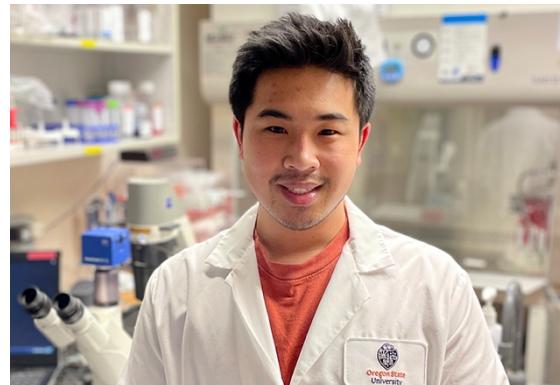
Congratulations Dr. Rosalyn Fey!

*Understanding circadian and light-activated transcriptional regulatory changes during aging in *Drosophila melanogaster**



On June 7th, **Rosalyn Fey** defended her thesis titled, “Understanding circadian and light-activated transcriptional regulatory changes during aging in *Drosophila melanogaster*” summarizing her work in the Hendrix lab! She has investigated mechanisms of regulation of mRNA expression including the prediction of binding sites for transcription factors that could explain the changes. Furthermore, she has created a new small RNA data set that quantifies expression around the clock and proposes several regulatory impacts due to age-dependent small RNA expression. Rosalyn has also been active in the GSA, especially in inviting and hosting seminar speakers. Outside BB she was the vice president of the astronomy club for 2 years, organizing trips to places such as the Pine Mountain observatory near Bend, and was an invited speaker in the Physics department. Congratulations, Rosalyn!

Kyle Nguyen participated as a panelist in the ASBMB Education and Professional Development Committee’s “Insider perspectives” series on June 22. This panel is about graduate school after the qualifying exam. <https://www.asbmb.org/meetings-events/thriving-in-graduate-school>



Alumni News:

Former BB students **Justin Hall**, **Andrea Hall**, and **Andres Cardenas** were some of the panelists for the College of Science’s career exploration program, Science Pro, a hybrid discussion event held on April 5th that allowed students to connect with guests from Pfizer, Intel, academia and more.

Heather Mason-Forsythe has accepted a position in the NSF Office of the Assistant Director in the Directorate for Computer and Information Science and Engineering as a “Fellow for Research Impact Analysis and Communications”, which she will be moving to Alexandria, VA for. Congratulations Heather!

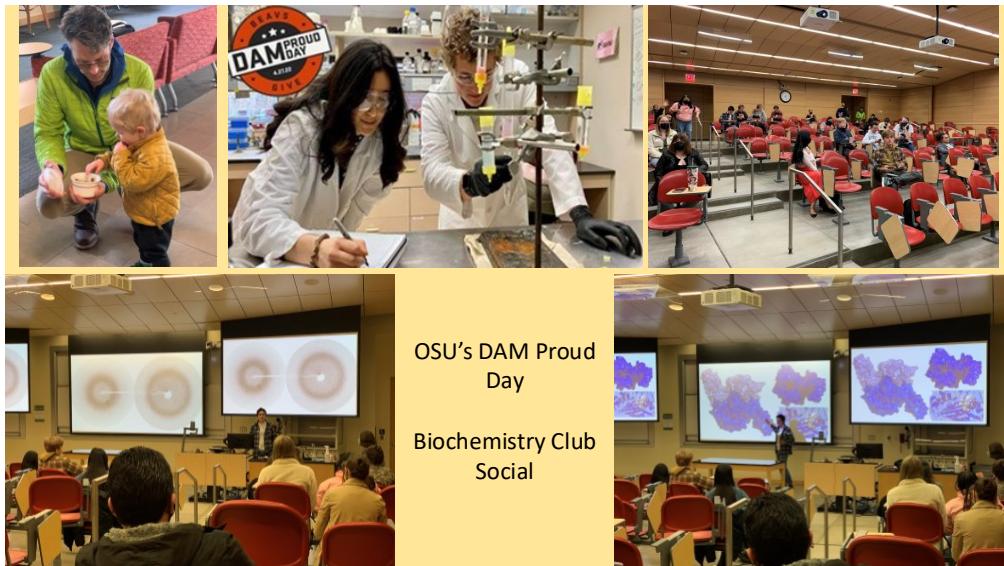
Past Events:

April

April 9th was the first Oregon Biophysics Symposium, organized by our Biophysics Student Chapter. Biophysics is a bridging science, bridges Chemistry, Physics, Biology, and Math. These are time consuming and stressful events to organize in the best of times, and the students did an absolutely wonderful job. It was great to see people meet again in person, listen to talks, have poster competitions, one was won by Gretchen from among the undergrads, and the other by Amber from the grads. Thanks to the judges, the organizers, the attendees, the visitors from Eugene and Portland, for taking time on a Saturday to spend discussing science.

April 20th: Dr. Steven Friedman, a Clinical Variant Scientist and Supervisor of the Genomics Analysis group at ARUP laboratories, presented at a BB Seminar with his talk titled: AN ALTERNATE PATH: FROM ACADEMIC RESEARCH TO THE FRONT LINES OF PRECISION MEDICINE. Dr. Friedman joined ARUP laboratories in 2017 after completing his PhD in the Freitag lab at Oregon State University.

As part of OSU’s Dam Proud Day of Giving on April 27, 2022, the Biochemistry Club hosted a fun-filled evening social in the Linus Pauling Science Center atrium and auditorium. Students, faculty, and family members gathered to celebrate all things biochemistry and biophysics by playing giant Jenga and crystal-themed Kahoot. We topped off the evening with a “protein structure reveal” of an engineered acridone tRNA synthetase by our own Ilana Gottfried-Lee member of the Cooley/Mehl lab and BMB Class of 2021. This was the first year that BB joined the excitement of Dam Proud Day, and we raised \$5000 for the Biochemistry and Biophysics (BB) Excellence Fund to support undergraduate research, travel to conferences, and valuable training opportunities. We will use some of the funds raised to support BB/BMB students in presenting their research at the ASBMB National Meeting next March 2023 in Seattle. Stay tuned as we hope to plan a BB-in-Seattle alumni informal gathering in conjunction with the meeting.



MAY

BB Seminar Dr. John Perona giving his talk titled “A Biochemist looks at Climate Change: Science, Policy, Politics, and Advocacy in the Contemporary US”. Dr. John Perona is Professor of Environmental Biochemistry and Law at Portland State University, and member of the Institute for Sustainable Solutions and the Center for Life in Extreme Environments at PSU. His research focuses on how advances in science and technology can be incorporated into policymaking, focusing on climate change and the transition to a renewable energy economy. Dr. Perona leads seminars on climate science and policy for public and university audiences and is author of *From Knowledge to Power: The Comprehensive Handbook for Climate Science and Advocacy*, a detailed guide to climate science, policy, and politics in the contemporary US.

Grad Appreciation Week May 9-13

This is our chance to recognize our hardworking students and say "thank you" for all the work they do in research, teaching, mentoring and training of undergrads, and their heavy involvement in outreach. I am thankful for our amazing grad students who continue to make us proud and to step in to help make the department nationally and internationally recognized and also an attractive place to foster friendships.

May 13th was the Inclusive Excellence Fellow Showcase, where **Phil McFadden**, a 2021-2022 fellow and the other IE@OSU fellows shared the insights and innovations that they have developed over the course of their fellowship.

2022 Honors College Thesis Research Conference was held May 16-20.

May 25 was a BB seminar hosted by Kayla and the Barbar Lab. Dr. Jim Prell from the University of Oregon gave a talk titled “New Mass Spectrometry Strategies for Characterizing and Quantifying Proteins in Real-World Samples”

JUNE

June 6th: BB-483 seminar held via Zoom, with a Q&A time following. The title of the talk was “Stress and Resilience at the Molecular Level: A few key concepts and landmark studies.”

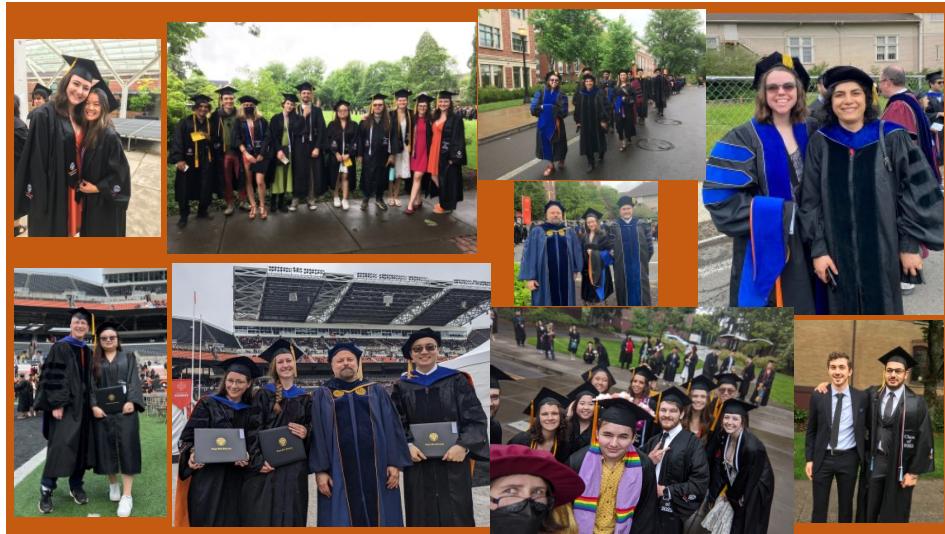
June 10th : Spring Term Rotation Talks took place in ALS 4001. **Moriah Mathis** from the Barbar lab spoke on “Linker Mutations of SARS-CoV2 N Protein Affect Complex Formation with Viral RNA”. **Melinda Rydberg** from the Franco lab titled her talk “The Effect of Nitrated Hsp90 on Breast Cancer Cell Viability and Mobility”. **Reginald Appiah-Kubi** from the Hendrix lab titled his talk “Comparative Genomic Analysis of Long Non-Coding RNAs in Hops (*Humulus lupulus*) and Hemp (*Cannabis sativa*) Synteny”. **Sarah McGee** from the Nyarko lab spoke on “A Look into the Binding Interactions of Yorkie WW Tandem Domains and Hippo”, and **Hannah Stuwe** from the Reardon Lab titled her talk “An Interdisciplinary Approach to Combating Snail Fever: Where Biology and Biophysics Meet”.

June 10th was the BB Annual Graduation Dessert for seniors, friends, and family members at the Lions Shelter at Avery Park.



2022 Commencement Ceremony: June 11th. Congratulations to the graduating class of 2022!!!





On June 15th, the BB End of Year Celebration was held at Tyee Wine Cellars



Congratulations to the 2022 Graduate Award Winners!

Graduate Service Award: Rachel Franklin

Graduate Leadership Award: Kayla Jara

Graduate Teaching Assistant of the Year: Jesse Howe

Graduate Researcher of the Year: Aiden Estelle

Graduate Researcher of the Year: Lillian Padgett-Cobb

Graduate Mentor of the Year: Amber Vogel

The recipient of the 2022 Mathews Fellowship Award is **Moriah Mathis**. Congratulations, Moriah!! We thank Chris and Kate Mathews for their endowment of this fellowship and their continuous generosity.



Our final award was the **pandemic resilience award**, and we decided that the grad students who had to social distance at the beginning of the pandemic, endure lockdown, anxiety about parents and loved ones, and still come to the lab, and also those who set up a home office and moved from one zoom meeting to another, and gave presentations on zoom, all deserve a resilience and grit and motivation award.

Admin Corner

June 27 through September 2, 2022 In accordance with the university memo that was sent on June 21, 2022 by Heather Horn, the BB dept. will comply with the OSU's commitment to work life balance by participating in the pilot program "summer flex time" from June 27 through September 2nd, 2022 in which to reduce service and operations each Friday from 1pm – 5pm, please plan accordingly.

Warm thanks to **Kimberly** for her help with this quarterly newsletter.



Save the Dates / Upcoming Events:

Summer Quiet Week: August 29 through September 2, 2022

We will be observing August 29 through September 2, 2022 as a “quiet week,” with limited meetings and emails. This will be a good time to take vacation days. I will take this week off through Sep 7th.

September 9th, 1-5pm

Please join the Linus Pauling Institute and the Pacific Northwest Center for Translational and Environmental Health Research for a tribute to the life and career of Dr. Donald Reed, from 1-5pm. Symposium followed by reception on the 1st floor lobby of Linus Pauling Science Center. For details and updates, please see: ipi.pub/ReedSymposium

September 14th, 8am-5pm

BB Retreat, LPSC 125 and LPSC Lobby. More information to come.

October 6th

OSU will be holding a symposium called the "2022 Oregon Bioengineering Symposium" in LaSells. For more information, please check out the link: <https://blogs.oregonstate.edu/bioengineering/>

October 21st

Alumni Awards event: The Young Alumni Awardee this year is our own **Tari Tan**. This is the second year in a row BB wins the Young Alumni Award. More info will follow.

Have a great summer and we will catch up again after Sep 12th.

Elisar