UNIVERSITY of WASHINGTON | DEPARTMENT OF BIOLOGY

BIOLOGY STUDENT NEWSLETTER

WINTER QUARTER 2021 ISSUE 37

IMPORTANT DATES FOR WINTER QUARTER

Jan 4	First Day of Instruction
Jan 6	Last Day to apply to the Biology Major
Jan 10	Last day to drop a class without a fee thru MyUW
Jan 11	All Courses Require Entry Codes to Add
Jan 15	Last Day to Apply to Biology major in Winter
Jan 17	Last Day to drop a class without the use of the ANNUAL DROP
Jan 18	Martin L King Jr Holiday
Jan 22	Spring classes should be available on MyPlan
Jan 24	Last Day to Add a Class through MyUW
Feb 5	Biology Scholarships Application closes
Feb 11	Int'l Day of Women & Girls in Science
Feb 10	Last Day to Apply for Grad Reg Priority (GSP) for Spring
Feb 12-28	Spring Reg Priority Period 1
Feb 15	Presidents Day Holiday
Feb 21	Last Day to use ANNUAL DROP or convert to S/NS
Mar 1-28	Spring Reg Period 2
Mar 8	Int'l Womens Day
Mar 12	Last Day to Withdraw (from all Win Qtr classes)
Mar 13-19	Final Examination Week
Mar 20-28	Spring Break
Mar 24	S/NS will reactivate for Winter due to extraordinary circumstances
Mar 29	Spring Quarter Starts

Jennifer Ruesink

STUDENTS OF BIOLOGY, 2020 was a tough year, revealing both the fundamental connectedness of the planet and pervasive injustice. Many of us experienced great personal loss. Our lives were necessarily less distracted by travel, commuting, team sports, and retail shopping, but we may have traded off for the stress of always-breaking news, new work challenges, disease, and communication without body language during virtual interactions. Yet, 2020 was a year to think about how higher education can contribute to the betterment of people and the planet. At the core of what education provides is an opportunity to practice critical thinking. **Or, as I heard astrophysicist Neil deGrasse Tyson say even before shut downs began, this year was a test of how much society would be willing to listen to science.**

I'm so glad each and every one of you chose to study biology. Consider how well placed you are to understand some of the year's fundamental developments:

- ***Why*** *mRNA packaged in a lipid bubble can stimulate the human immune system,*
- ***Why*** *the 2020 drop of 7% in global carbon dioxide emissions, in the context of the pool-and-flux carbon cycle of the planet, still results in rapid global warming,*
- ***Why*** *the population growth of infected hosts for a disease spread in part by airborne particles can be reduced through changes in transmission by masking up,*
- ***Why*** *racial disparities in mortality rates by COVID-19 statistically support the personal stories of unequal experience that mobilized protests against ongoing injustice in the US.*

One of the lasting gifts of 2020 will be the broadening of conversation about racial and other forms of oppression and inequity. These are often tough conversations, but they need to happen in all contexts, not just in humanities courses or those that meet the university's Diversity requirement. Biology intersects with society in so many ways, as "Vision and Change in Undergraduate Education" (2011, a national synthesis) recognized by placing "ability to understand the relationship between science and society" as one of six core competencies. Link for Vision and Change is Https//visionandchange.org/.

I'd like to offer gratitude to the students who stepped up to work towards structural change in the department and beyond this year, to the instructors who are challenging themselves to build inclusive and anti-oppressive class content, and to the staff supporting student resiliency and highlighting the excellence of BIPOC scientists (including in departmental newsletters). All students on campus have access to courses such as "Data Reasoning in a Digital World" (Biol 270), to navigate mis- and dis-information, and "Biology of Vaccines" (Biol 107), relevant to the new year's public health challenge, to name but a few.

How will you move forward? As I think about this question for myself, as this year's chair of Biology's Undergraduate Program Committee, here are my two pillars:

• to use virtual classroom and meeting space as an opportunity, not a constraint, on learning. When I am in a truly randomized group, not just with someone I would tend to sit next to, I hear a perspective I wouldn't otherwise encounter.

• to expand my understanding of how biological science connects with social issues. Here, I could make better progress with more collective experience, and I welcome your ideas and suggestions (ruesink@uw.edu). I will try to encourage more teams to move anti-oppressive content into practice in the curriculum. **Stay safe, Huskies, and keep learning and doing!**

-Jennifer Ruesink, Professor of Biology, Chair of the Undergraduate Program Committee

HOW DO I TALK TO AN UNDERGRADUATE ACADEMIC ADVISOR? Use Email or Zoom!

Biology Academic Services in-office advising & services are closed until further notice, please do not call & leave a message.

We welcome UW and prospective students to contact us with any questions regarding a Biology option.
Here are the advisors, their emails and a little bit about each one of them.

Janet Germeraad
Academic Services Director
Janetjg@uw.edu

Janet loves the natural world of plants animals & spicy foods. All things that make a good life.

Jason Patterson
Academic Counselor, Senior
patterj@uw.edu

Jason is a huge anime nerd with his collection of Sailor Moon funkos in his office and is a board game collector of over 60 games.

Sheryl Medrano
Academic Counselor, Senior
smedrano@uw.edu

Sheryl likes cheese (all sorts), the ukelele, and rides a powder blue scooter named Bernadette.

Julie Martinez
Program Coordinator
juliebio@uw.edu

Julie loves gardening during the summer and really enjoys making fresh salsa from fresh grown ingredients for her family and friends.

HELP US GIVE YOU QUALITY TIME ON YOUR ZOOM APPOINTMENT!

1) See if any of your questions can be first answered on:

- Our Dept of Biology website https://www.biology.washington.edu/programs/undergraduate
- The UW website https://www.washington.edu/coronavirus/autumnquarter/

2) Make an appointment with an advisor:

- Email either a specific advisor or bioladv@uw.edu with days and times you have available
- Please include your name and student number in your emails
- Review your DARS and/or handout prior to your meeting
- Use your MYPlan to mark classes of interest

3) Then when we zoom with you, we have more time to:

- Get to know you
- Develop unique academic plans based on what you are curious about
- Navigate opportunities to refine your academic interests
- Prepare you for the world of work
- Help you cope with the typical stress & anxiety of being in college (overwhelming even without a global pandemic)

COVID TESTING

Any students coming to campus are strongly encouraged to participate in the testing that is available on campus. If students enroll in the testing, they will be contacted to do a daily attestation. More information about that is here: https://www.washington.edu/coronavirus/2020/12/11/coming-to-campus-for-winter-quarter/
All students, regardless of whether they are coming to campus or not, are asked to commit to the Husky PACK Pledge and instructors/TAs should remind and encourage their students to commit to that, but it will not be recorded or monitored. https://www.washington.edu/coronavirus/pack-pledge/

INTERNATIONAL DAY OF WOMEN AND GIRLS IN SCIENCE Thursday February 11, 2021

On December 22, 2015, by resolution of the United Nations General Assembly the 11th day of February was established as

International Day of Women and Girls in Science

The day recognizes the critical role women and girls play in science and technology. To be Implemented by UNESCO (United Nations Educational, Scientific & Cultural Organization) and UN Women (United Nations Entity for Gender Equality & the Empowerment of Women)

Science reflects the people who make it. The world needs science, and science needs women and girls.

Our future will be marked by scientific and technological progress, which can only be achieved when women and girls are creators, owners, and leaders of science, technology and innovation. Bridging the gender gap in STEM is vital to achieving the Sustainable Development Goals and for creating infrastructure, services and solutions that work for all people.

At present, less than 30 percent of researchers worldwide are women. According to UNESCO data (2014-2016), only around 30 percent of all female students select STEM-related fields in higher education. Globally, female students' enrollment is particularly low in Information & Communication (3 percent), Natural Science, Mathematics and statistics (5 percent), and in Engineering, Manufacturing and Construction (8 percent).

On 11 February, we're celebrating International Day of Women and Girls in Science. We call on everyone to smash stereotypes, defy gender biases and defeat discrimination that hold women and girls back in STEM fields, and recognize achievements of women scientists and leaders.

The business community, science and research institutions have a stake in bridging the gender gap. UN Women calls for investment and opportunities for women and girls to learn, grow and innovate in science and technology, and for companies around the world to adopt the Women's Empowerment Principles that promote gender equality and women's empowerment in the workplace, marketplace and the community.

—UN Women Website

DISCOVERED HOW SMALL NON-CODING RNAS SPLICE mRNA Joan Argetsinger Steitz

JOAN ARGETSINGER STEITZ
Born January 1941 Minneapolis, MN

As a college student in the early 1960s, Joan was fascinated by science, but never imagined herself as a scientist because she had never seen a female professor or head of lab.

Luckily, her college arranged visit opportunities and sent her to MIT, where everyone was talking about something called DNA. This was years before DNA appeared in biology textbooks. Her MIT experience inspired a love of research, but she decided to pursue medical school since she "knew women could become medical doctors but not scientists". But an experience at the University of Minnesota with Professor Joe Gall, who is well-known for mentoring women scientists, changed her mind. She declined entrance into Harvard Med School and asked to join its graduate program. She completed her Ph.D. and postdoctoral research advised by famous men, including Watson and Crick, who defined biology's "Central Dogma". Then, she set out to understand the cellular machinery that connect DNA to RNA to proteins, in her own lab.

Today, Dr. Steitz is internationally known as one of the leading scientists of her generation. In her Yale University lab, she discovered the first class of non-coding RNAs that carry out an essential role in gene expression. Small nuclear RNAs (nicknamed snRNAs) are ubiquitous, abundant, and associate with nuclear proteins. After trying hard to induce antibodies that could recognize snRNA-protein particles in lab animals, she decided to take advantage of a new finding that certain patients make autoantibodies that recognize their own nuclear particles. Using sera from patients with systemic lupus erythematosus, her team cleverly used autoantibodies to isolate and define the function of all components of the complex RNA-protein machine responsible for messenger RNA splicing. They also uncovered surprisingly diverse roles for other snRNAs, rRNAs, miRNAs, and viral non-coding RNAs. Their discoveries have inspired many more scientists to join the rapidly growing field of RNA biology.

During her early career and job hunt, Dr. Steitz encountered long-standing biases and gender stereotypes that often steer girls and women away from science, yet she persisted to become a brilliant scientist and role model. She is currently Professor of Molecular Biophysics and Biochemistry at Yale University. She has earned prestigious awards that recognize not just a single scientific discovery, but a life time of seminal discoveries, many of which are described in biology textbooks today.

You can learn more about how serendipity played a role in her discovery of the spliceosome in her own words: **Joan Steitz story:** *The Discovery of SNURPSs: A story of Serendipidy* https://www.youtube.com/watch?v=7X9BgWE9NII She is widely admired for her tireless promotion of young scientists, especially women; her love of teaching; and her sage advice to mentees. Dr. Steitz emphasizes the key importance of mentors. She advises that "if making discoveries in science gives you joy, go for it!" and encourages all scientists to "tackle challenging problems."

ONE OF THE WORLD'S MOST HIGHLY CITED ECOLOGISTS Jane Lubchenco

JANE LUBCHENCO
Born December 1947 Denver, Colorado

Dr. Lubchenco is a marine biologist and environmental scientist who has deep experience in the worlds of science, academia, public engagement and government. She served as the U.S. Under Secretary of Commerce for Oceans and Atmosphere and the Administrator of the National Oceanic and Atmospheric Administration (NOAA) and as part of President Barack Obama's Science Team from 2009-2013. From 2014-2016, she was the first U.S. State Department Science Envoy for the Ocean, serving as a science diplomat to China, Indonesia, South Africa, Mauritius and the Seychelles.

She received a B.A. in Biology from Colorado College, a M.S. in Zoology from the University of Washington (academic advisor Robert T Paine), and a Ph.D. in Ecology from Harvard University. Her academic career as a professor began at Harvard University (1975-1977) and continued at Oregon State University (1977-2009) until her appointment as NOAA Administrator. After serving as the Distinguished Visitor in Public Service at Stanford University, she returned to OSU to help champion the emerging Marine Studies Initiative.

Lubchenco is one of the world's "most highly cited" ecologists; **eight of her publications are "Science Citation Classic Papers**." She is best known for her research on biodiversity, rocky seashore ecology, and human impacts on the ocean, the planet and people's well being (climate change, ocean acidification, hypoxia, overfishing, habitat destruction) and solutions to restore the ocean, planet and people (marine reserves, sustainable fisheries and aquaculture, marine spatial planning).

Lubchenco has led numerous efforts to advance scientific knowledge of a range of topics including climate change, biodiversity, conservation, sustainable fisheries, sustainable aquaculture, hypoxia, ocean acidification and a healthy ocean. She co-founded a pioneering research consortium, PISCO, that studies the near-shore ocean along the coasts of Oregon and California and resulted in significant advancement in knowledge as well as improved public awareness and management.

Lubchenco has been in the forefront of sustained efforts to inspire, incentivize and enable scientists to serve society by being more engaged with citizens and leaders. She co-founded three non-profit, non-advocacy organizations that enhance scientific communication and engagement with the public, policy makers, media and industry. **The Leopold Leadership Program** trains mid-career academic environmental scientists to be effective leaders and communicators. **COMPASS** enables scientist to engage effectively in the public discourse about the environment through communication trainings, coaching and networking. **Climate Central** researches and reports the science and impacts of climate change. Each of these three start-ups is now a thriving organization that is enabling science and scientists to better serve society. These efforts are now even more relevant in our post-truth world.

DRAWING ON BOTH INDIGENOUS & SCIENTIFIC KNOWLEDGE Robin Kimmerer

ROBIN KIMMERER
Born 1953 Upstate New York

Kimmerer is a Distinguished Teaching Professor at the Environmental and Forest Biology Department at State University of New York College of Environmental Science & Forestry (SUNY ESF). She teaches the following courses on Land and Culture, Traditional Ecological Knowledge, Ethnobotany, Ecology of Mosses, Disturbance Ecology, and General Botany**.** She is the director of the **Center for Native Peoples and the Environment** established in 2014 at SUNY-ESF, which is part of her work to provide greater access for Native peoples to study environmental science, and to create programs which draw on the wisdom of both indigenous and scientific knowledge for our shared goals of sustainability.

Kimmerer received BS in Botany, 1975 from State University of New York, MS in Botany 1979 and PhD in Plant Ecology 1983 from Unversity of Wisconsin, Madison.

Her current work spans traditional ecological knowledge, moss ecology, outreach to tribal communities and creative writing. Kimmerer has helped sponsor the Undergraduate Mentoring in Environmental Biology (UMEB) project, which pairs students of color with faculty members in the enviro-bio sciences while they work together to research environmental biology. Kimmerer is also a part of the United States Department of Agriculture's Higher Education Multicultural Scholars Program. The program provides students with real-world experiences that involve complex problem-solving. Kimmerer is also involved in the **American Indian Science and Engineering Society (AISES)**, and works with the Onondaga Nation's school doing community outreach. Kimmerer also uses traditional knowledge and science collectively for ecological restoration in research. She has served on the advisory board of the **Strategies for Ecology Education, Development and Sustainability (SEEDS) program**, a program to increase the number of minority ecologists. Kimmerer is also the former chair of the **Ecological Society of America Traditional Ecological Knowledge Section**.

Robin Wall Kimmerer is an enrolled member of the Citizen Potawatomi Nation. She is the author of *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teaching of Plants*. Her first book, *Gathering Moss: A Natural and Cultural History of Mosses*, was awarded the John Burroughs Medal for outstanding nature writing, and her other work has appeared in Orion, Whole Terrain, and numerous scientific journals. She tours widely and has been featured on NPR's *On Being* with Krista Tippett and in 2015 addressed the general assembly of the United Nations on the topic of "Healing Our Relationship with Nature."

DISCOVERED CRISPR GENE EDITING Jennifer Doudna & Emmanuelle Charpentier

JENNIFER DOUDNA
Born February 1964 Washington, D.C.

Doudna, currently Professor of Chemistry and Biochemistry at UC-Berkeley, studies non-coding RNAs & their associated proteins.

Jennifer's scientific story begins with an early childhood love of nature and an interest in chemistry sparked by a high school teacher. She entered college excited about majoring in Chemistry. However, she struggled mightily in her first chemistry courses and was so disheartened that she considered switching her major to French. But she was advised "to stick to science and do French on the side" by her French professor! Jennifer then discovered a passion for Biochemistry, which led to graduate and postdoctoral training with J. Szostak and T. Cech, who were among the first to discover catalytic RNAs.

EMMANUELLE CHARPENTIER
Born December 1968 Juvisy-sur-Orge, France

Charpentier studied biochemistry, microbiology and genetics. Her PhD project investigated molecular mechanisms involved in antibiotic resistance. She developed a fascination for how bacteria adapt to their environment and resist death by antibiotics and viruses. To pursue her independent career, Emmanuelle moved long distances and often; she left France for the US, then Austria, Sweden, & Germany. Today, she directs the Max Planck Institute's Pathogen Section in Berlin.

A conversation with Doudna at a conference started a fruitful partnership. Charpentier had discovered that *Streptococcus* used two small RNAs, along with a protein called Cas9, in its adaptive immunity response to viruses, but she did not know how the components interacted. Doudna was interested in how Cas9 manages to find and destroy viral DNA. Together, their research teams showed that Cas9 uses RNAs as guides to find and base pair with a target DNA sequence, before cleaving the DNA. They had the insight to simplify the components to enable a transferrable, highly efficient, and precise RNA-programmable DNA editing system. This CRISPR-Cas9 system has proven so versatile that it works in microorganisms, plants, and animals to correct, delete, add, or replace genes of interest.

Jennifer Doudna and Emmanuelle Charpentier, pioneers of revolutionary CRISPR gene editing win chemistry Nobel.

Jennifer Doudna and Emmanuelle Charpentier knew their lives would change with the October 7th announcement of the recipients of the 2020 Nobel Prize in Chemistry. Many predicted that the development of gene editing methods would be recognized at some point by the Nobel Committee since several groups had achieved some success, but the award to these two scientists was fervently celebrated worldwide for many reasons.

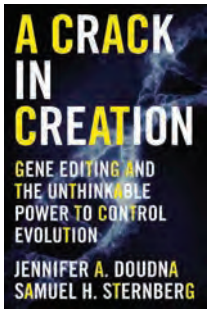
The Nobel Prize is one of many awards recently received by Charpentier and Doudna but it is one of historic importance. Since 1901, there have been 962 Nobel laureates, yet only 57 have been women. Charpentier and Doudna are the first two women to share the prize. Typically, several decades pass between the time of a scientific discovery and receipt of the prize, but only eight years have passed since their 2012 landmark publication. The impact of their science is undeniable. It took only few months for a "CRISPR-Cas9 revolution" to start transforming basic research, agriculture, industry, and medicine. In less than five years, CRISPR-Cas9 was used to precisely correct a mutation in human stem cells which were then transfused into patients to treat blood diseases in clinical trials.

Today, CRISPR-Cas9 is considered one of most important breakthrough discoveries in the life sciences. Both scientists point out that they have spent most of their careers working on topics that most people had never heard of but were driven to seek answers to fundamental biological questions. They stress that it is essential to support basic research and keep an open mind about how the results might lead to important applications in other fields.

You can learn more about the path that led to the birth of the technology in "*A Crack in Creation: Gene Editing and the Unthinkable Power to Control Evolution*" (2017) a book by J. Doudna and S. Sternberg.

There are profound implications for editing human cells. You can learn how experts view the current issues in "Human Genome Editing – the Science, Ethics and Regulation", a free 2017 report from the National Academies of Science.

You can read about the latest and very promising results of the clinical trials for *beta-thalassemia* and sickle cell disease patients in the *The New England Journal of Medicine* (Frangoul et al., 2020, Dec 9).

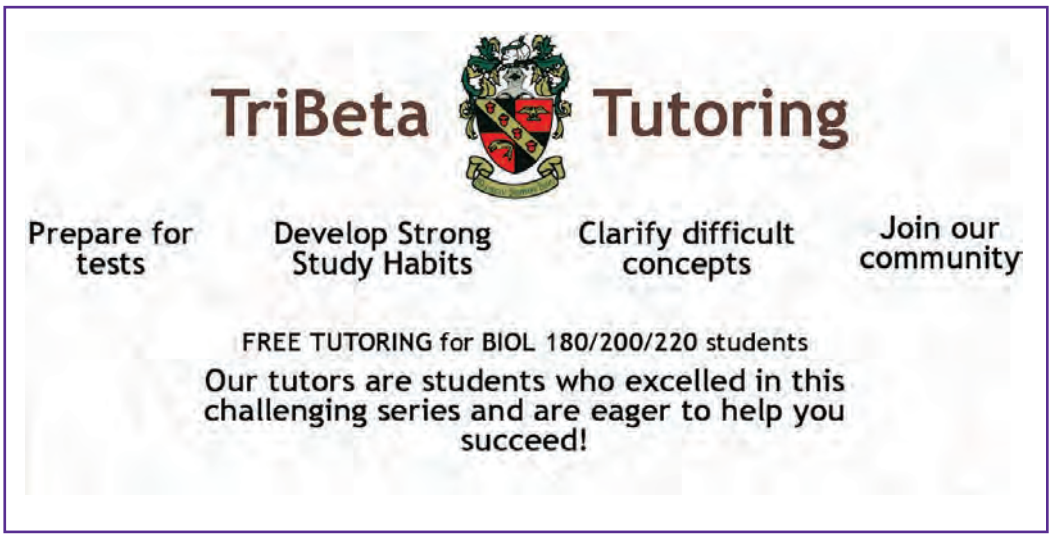


TRIBETA TUTORING ONLINE FOR WINTER: Monday - Thursday: starts Mon January 11

TriBeta Tutoring will be offered Winter Quarter online using Zoom.

Tutoring starts during the second week of the quarter on January 11 and ends the week before final exams.

Tutors will be present in Zoom, Mon-Thurs to answer your questions about BIOL 180/200/220. Zoom link and finalized schedule on our website: https://sites.google.com/view/uwtribeta/tutoring?authuser=0



Instructions: Click on the Zoom link on our website to join. When you join, a tutor should be present to assist you. Tutors will have a tutor designation in their Zoom name. If multiple students are present in the meeting, then the tutor might move you into a "breakout" room so that they can assist you more individually or encourage you to work with other students in your class. If no tutors are present in the meeting, then it is likely all tutors have moved into breakout rooms to assist other students. Please wait a few minutes for a tutor to become available.

We provide free tutoring for introductory biology (BIOL 180/200/220) students at the University of Washington. Our tutors are undergraduate students at the UW who have very successfully completed the introductory biology classes and are eager to help other students succeed too. Website of our tutoring page: https://sites.google.com/view/uwtribeta/tutoring?authuser=0

TriBeta Biological Honor Society

2020-2021 Executive Board

President, AMANDA GARDINER amadamg@uw.edu
VP of Tutoring, RD PANT..... rdrpant@gmail.com
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Adviser, BRIAN BUCHWITZ..... bjb@uw.edu

Full Membership is eligible to **any** student who has completed two Intro Biology courses (180/200) and one additional biology course with a GPA of 3.0 or higher.

Our website
https://sites.google.com/view/uwtribeta/home

WHAT IS TRIBETA?

Beta Beta Beta is a national honor society dedicated to improving the understanding and appreciation of biologial studies. It is a platform for students to earn recognition for their efforts and accomplishments while networking with other students and UW Biology staff with the same interests.
In short: a really great organization.

Be on the lookout for TriBeta virtual events for this coming quarter.

BIOLOGY STUDENTS FOR EQUITY: Lookout for Future Events on Instagram or Facebook

BSE

Greetings from
Biology Students For Equity

We are an RSO started about 4 years ago, but never more relevant. "Unprecedented" is overused, but you know now, more than ever, we need community, safe spaces for difficult conversations, and action to help make the department climate kinder and more productive for our BIPOC (black, indigenous, people of color) community members.

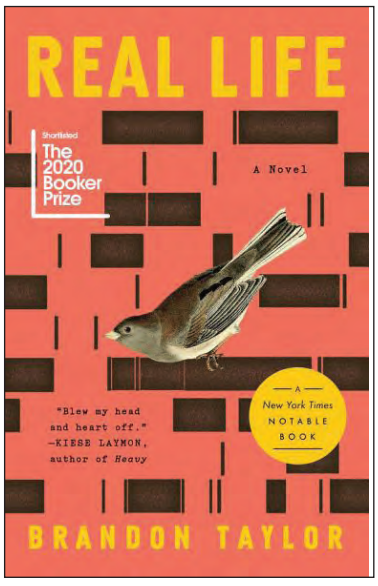
We seek to give undergraduates a voice through our collaboration with the Biology department's Diversity and Equity Committee as well as foster community through our undergraduate mentorship program. Our main goals are to discuss, call out, and address inequities in STEM. Follow us on our Instagram or Facebook Page (@biologystudentsforequity) to keep up to date with future events.

If you are interested in joining our email list, becoming a member, or want to learn about how to plug in to our community, please email us at biologystudentsforequity@gmail.com. We hope to work with you and for you.

All Humans Are Welcome.

BIO BOOK CLUB: *Real Life* by Brandon Taylor

Get Ready for Bio Book Club! We will choose a fiction or non-fiction book each quarter with a scientific thread, but that also examines social, cultural, and environmental topics. Please feel free to send book recommendations to **Sheryl Medrano** at *smedrano@uw.edu*.



This Winter we will read: ***Real Life* by Brandon Taylor**

A FINALIST FOR THE 2020 BOOKER PRIZE & A NY TIMES NOTABLE BOOK OF THE YEAR & EDITORS' CHOICE "A blistering coming of age story" —O: The Oprah Magazine

Named a Best Book of the Year by The New York Times, The Washington Post, New York Public Library, Elle, NPR, The Guardian, Harper's Bazaar, Financial Times, BBC, Vulture, Thrillist, SELF, and Shelf Awareness

Almost everything about Wallace is at odds with the Midwestern university town where he is working uneasily toward a biochem degree. An introverted young man from Alabama, black and queer, he has left behind his family without escaping the long shadows of his childhood. For reasons of self-preservation, Wallace has enforced a wary distance even within his own circle of friends—some dating each other, some dating women, some feigning straightness. But over the course of a late-summer weekend, a series of confrontations with colleagues, and an unexpected encounter with an ostensibly straight, white classmate, conspire to fracture his defenses while exposing long-hidden currents of hostility and desire within their community.

Real Life is a novel of profound and lacerating power, a story that asks if it's ever really possible to overcome our private wounds, and at what cost.

MEET OUR THREE NEW BIOLOGY FACULTY Officially Started in Autumn Quarter 2020

BRIANA ABRAHMS
Assistant Professor & Boersma Endowed Chair of Natural History and Conservation

What is your research or interest in?
I study the ecological causes and consequences of animal behavior and the impacts of environmental change on wildlife populations.

What classes will you be teaching?
I will be teaching **Conservation of Large Vertebrates**, and the **Ecology of Animal Movement.**

What is one piece of advice you would give students in your class?
A key to success is engaging.
Find something within the class that makes you curious, and let that curiosity fuel your engagement.

What is your favorite part of the class?
Aside from getting to know students, my favorite part of class is being stumped by the incredibly creative questions students come up with!

All time favorite Biology subject?
Animal ecology!

Other than Biology what academic subject would you like to study?
Musicology.

Is there a book/video that you would recommend to students outside of what there is in class?
To any students interested in Biology, I would recommend *The Beak of the Finch* - it's a great read.

BERRY BROSI
Associate Professor

What is your research or interest in?
I am a community ecologist, which means I am interested in how diverse multi-species communities are formed, how they maintain their diversity, and how they function. In particular, many of the questions my lab is asking currently are about ecological networks—what are the patterns of connections among species in terms of their ecological interactions? And how does that interaction network structure affect ecosystem stability and functioning? We primarily use plant-pollinator networks as a model system to ask these questions. We take a multi-faceted approach to answering biological questions and we have done work in the field (recently, primarily in the Colorado Rockies, though we're looking to expand to some local Washington field sites too), in the lab (with both molecular tools and also behavioral assays), and with mathematical models, and we may expand to greenhouse studies as well.

What classes will you be teaching?
I will be teaching an upper-level class in **Community Ecology** in Spring quarter, and **Conservation Biology** in Autumn quarter.

What is one piece of advice you would give students in your class?
Be curious!

What is your favorite part of the class?
It's hard to pick just one favorite part… but one favorite is sharing the wonder, diversity, complexity, and beauty of life with students.

All time favorite Biology subject?
Ecology :-) but I find all facets of life to be fascinating, and I really appreciate how the UW Biology dept is focused on integrating across the scales of organization of life.

Other than Biology what academic subject would you like to study?
There are so many! I was a double major in art and biology as an undergrad, and I did an interdisciplinary environmental Master's degree before starting my PhD in Biology. But if forced to choose one thing to study more right now, it would probably be mathematics—to learn more of the hidden beauty and power therein.

Is there a book/video that you would recommend to students outside of what there is in class?
Again, hard to think of just one. I'd suggest that students read broadly and tackle books that challenge their preconceived notions, both about biology and outside of biology.

ELLI THEOBALD
Assistant Teaching Professor

What is your research or interest in?
I am a climate change ecologist by training and now I study equity in higher education STEM classes. Specifically, I use quantitative and sometimes qualitative approaches to: 1) describe inequities in college STEM classes; 2) identify student and instructor practices that disrupt inequities; and 3) scale equitable practices to all classes in all STEM disciplines. At the heart of my research is the question: what can I do to ensure that all of my students succeed?

What classes will you be teaching?
I am joining the dynamic and dynamite team who teach **Biology 180**. This course is the first quarter of introductory biology (with a focus on Evolution, Mendelian Genetics, and Ecology). I will also teach a graduate-level course in evidence-based teaching.

What is one piece of advice you would give students in your class?
Do this course for you. By that I mean three things: 1) ignore academic competition (don't let how others do in this course impact how you feel you are doing and vice versa); 2) find the content that you love within this course and dive into it (even it is different from what your roommate/friend/family loves); and 3) let your hard work and persistence determine your success (even if this means redefining success to be something other than grades).

What is your favorite part of the class?
I really love all of it. Anthropogenic global changes are a pressing scientific and social issue and I love that in this class we can integrate our understanding of biology across scales (space, time, and organization) into knowledge about the impacts of global changes.

All time favorite Biology subject?
Climate change ecology! How will individuals, populations, and communities respond to and survive in the changing climate?

Other than Biology what academic subject would you like to study?
Statistics.

Is there a book/video that you would recommend to students outside of what there is in class?
There are so many! I think all biologists should read *"The Immortal Life of Henrietta Lacks"* by Rebecca Skloot and *"Braiding Sweetgrass"* by Robin Wall Kimmerer.

DEPARTMENT AUTUMN AWARDS

Undergraduate Student Awards

Donald S. Farner Scholarship
Jake Laes

Excellence in Biology Scholarship
Amanda Tang
Sunny Ye
Thuan Bui
Angela Bebina

Porath-Johnson Scholarship
Angela Bebina
Bailey Werner
Andy Xie

Edith Lucena Riehl Scholarship
Katie Daugherty
Bill Young

Frye-Hotson-Rigg Award
Anthony Garcia

John & Dorothy Franco Award
Jiatai Liu

Graduate Student Fellowships

Distinguished Teaching Graduate Fellowship
Savannah Olroyd

Melinda Denton Writing Fellowship
Ana Maria Bedoya

Frye-Hotson-Rigg Fellowship
William Brightly

Kathryn C. Hahn Writing Fellowship
Stuart Graham

MANDY SCHIVELL INVERTEBRATE ZOOLOGY: Converting hands-on labs for Online

With the move to online teaching, we had to change our labs from hands-on experiences with animals in the lab to group work in breakout rooms. We wanted to make labs engaging for students and also have them practice scientific communication skills in various ways.Students used the infographics to teach each other about specific organisms during lab. Students also wrote social media posts as a way to practice communicating science to the general public. Finally, we encouraged creativity with a poem or drawing exercise.

I have to give all the credit for these "social media" type ideas to my amazing TAs - graduate students Kindall Murie, Jacquelyn Shaff and Raven Benko.

We hope the students would appreciate the challenge of summarizing a lot of information into small, discrete packages. They also learned to be "champions" for the protection of various organisms from the damage that humans have done through carbon emissions and plastic pollution (as two examples).

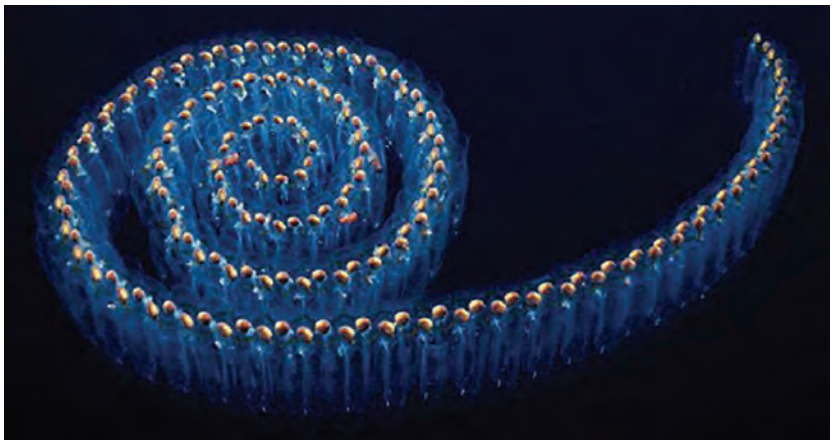
Invertebrate Zoology focuses on all of the major (and some minor) phyla of animals that exist on Earth. We study how the vastly diverse array of animals survive at the physiological, behavioral and ecological levels. We also think about the evolutionary relationships between all of the groups and what common survival strategies have been maintained throughout evolution as well as how some similar features have evolved multiple times across different groups.

My goal is for students to appreciate how human beings fit into the animal kingdom and how our capabilities can seem mundane when compared to such organisms as the velvet worm (that shoots slime to capture its prey), cnidarians (with their venomous stinging cells) and cephalopods (which can alter their skin color and texture in an instant!)

Oh sea urchin how
you scare me yet intrigue me
with your spikey body.
why would anyone
want to eat you and your spikes?
I would leave you be.
–Anonymous

This isn't a jellyfish! This is a group of sea salps, and they're pretty closely related to you! As chordates, salps grow a nerve cord on their back and a heart on the front, just like humans. They look weird, but they're vital to ocean health! #notajellyfish #weirdrelatives
–Anonymous

Did you know sea salps play crucial roles in recycling ocean carbon? These gelatinous, ghostly organisms recycle ocean carbon through pooping it out! Who knew ocean poop was so helpful!
–Avneet Bhullar



These "transparent fish" are actually sea salps, and they have a major role in carbon sequestration AND are important for many marine food webs, especially in the Southern Hemisphere! #seasalp #nowyouseemenowyoudont *–Anonymous*

–Katia Oliva

Poem and drawing by Rachel Battersby

MR. NOAH

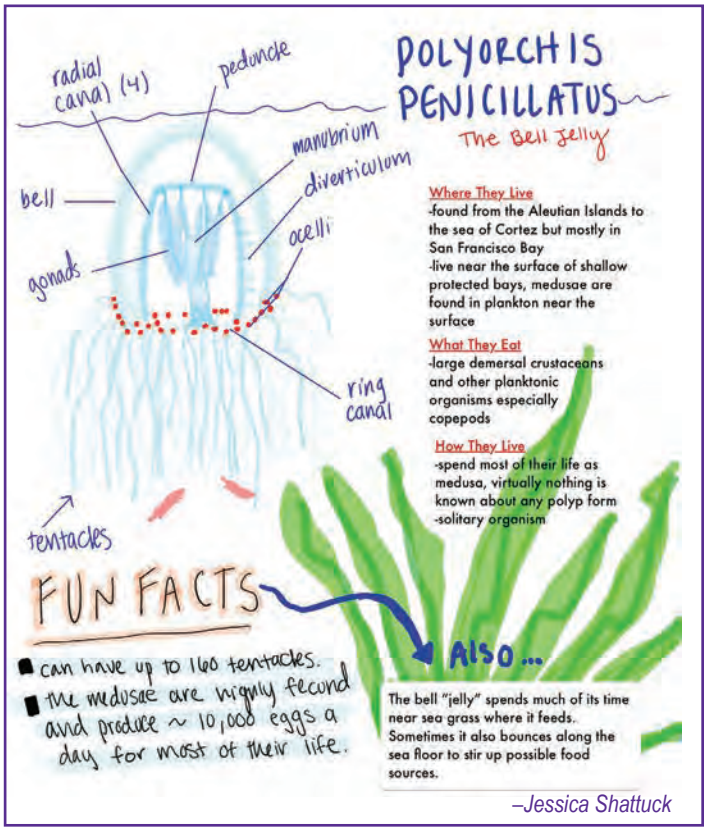
Mr. Noah the medusazoa
He glides through the ocean while creating a commotion.
Mr. Noah likes to swim, but did you know he has no fin?
So how does he swim through thick and thin without a fin?
Mr. Noah creates a pulsation with his bell that's made of gel
With his bell in one direction, he floats with lots of affection!
I do love Mr. Noah the medusazoa
Though he might not have a heart, I know we won't be apart

Poem about the comb jelly, by Linnea Pearson

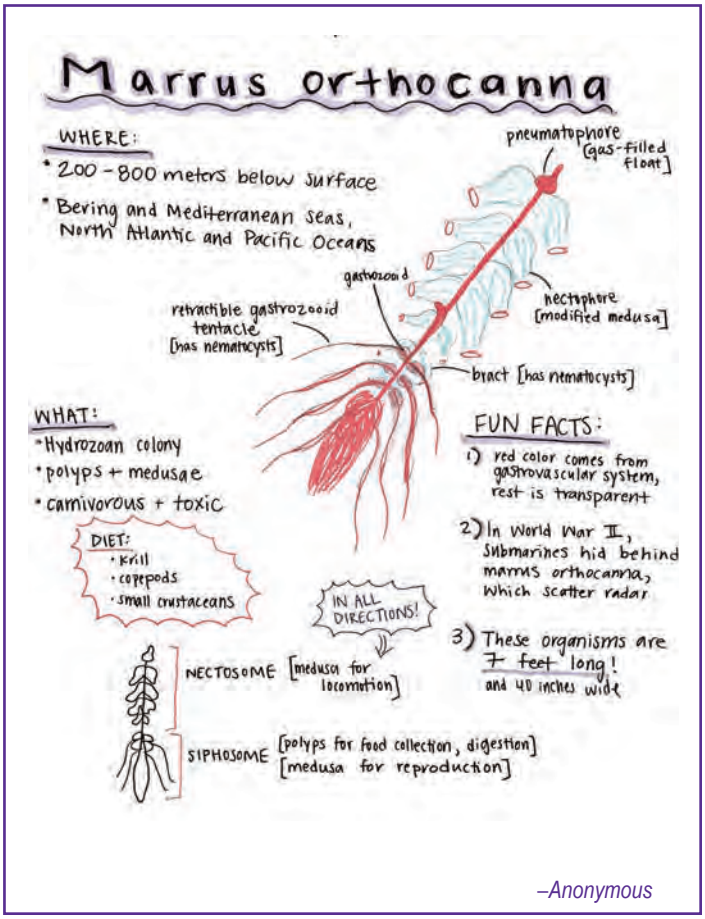
Lonely, distant cousin
One billion times removed
Your name is known to few above, of that spiny clan
Who crossed veil of blue

Glittering, eldest cousin,
Though it would behoove
Your family here who breathe the air, who passed the veil
To say it, few here do

Fragile, white-veiled cousin
You glide on waves, aloof
So I'll tell your tale: of the sea before both blood and bone of the eldest born and you

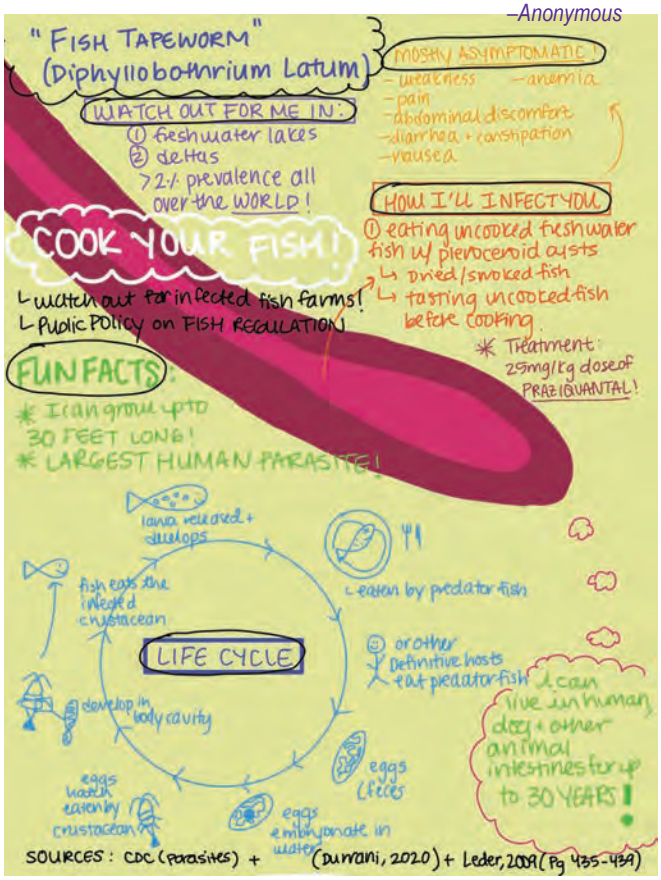


–Jessica Shattuck



–Anonymous

BIOLOGY 434: Infographics on Flatworms, Poem and Instagrams on Water Bears



–Anonymous

Poem:

OCTOPUS MAYA ARE CAPTIVATING

***O**bservant*
***C**reature*
***T**hinking,*
***O**r*
***P**urposefully*
***U**nderwater*
***S**neaking.*

***M**imiking*
***A**ctions*
***Y**ielding*
***A**rms.*

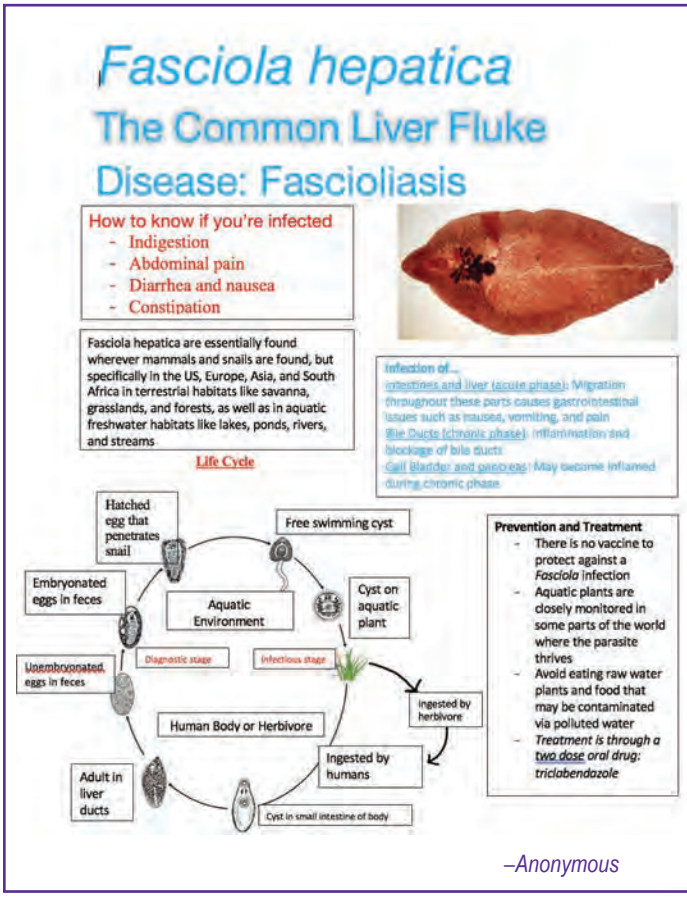
***A**lways*
***R**eadily*
***E**scaping.*

***C**hromatophores*
***A**llow*
***P**ortrayal*
***T**weaks.*
***I**ridophores*
***V**ary*
***A**ppearances*
***T**oo.*
***I**nking,*
***N**owhere,*
***G**one.*

Instagram

–Nayana Bhatnagar

Commonly known as the water bear, the Tardigrade is an extremely resilient species, living in a wide range of habitats (they can even survive in space!). Tardigrades can also survive in environments with other toxic chemicals, such as asbestos which contains particles called free radicals that are damaging to many species. Tardigrades make a protein called Dsup that binds DNA to help protect it from toxic free radicals. They synthesize antioxidants to soak up dangerous chemicals to mitigate the effects of free radicals as well. #resilient #antioxidants #waterbear



–Anonymous

Instagram

–Nikki Jafarinejad

Tardigrades, also known as water bears, are eight-legged microscopic animals known for their high resilience to extreme environments. They are found in nearly every environment on Earth, from the Arctic tundra to tropic rainforests. An extreme condition they can handle particularly well is desiccation or extreme dryness. Tardigrades survive desiccation by going into a near death-like state known as cryptobiosis. They curl into a ball, known as a tun, by retracting their head and legs. Their organs are protected by a sticky sugar, trehalose, and their metabolic activity decreases to 0.01%. If water is reintroduced, tardigrades will come back to life within hours. Amazing, right? Tardigrades can thank their genes for their fascinating ability to increase desiccation tolerance! #tardigrades #waterbears #microscopicanimals #wow #nextlevel

WHAT TO EXPECT IF YOU DO HAVE AN IN-PERSON CLASS

If you are in one of the three classes for Biology that have in-person labs, there are Covid-19 protocols for each building and lab. Always keep a 6-foot distance from others and wear a mask at all times.

- **Your instructor has emailed lab protocols and class room assignments, please read them thoroughly.**
- We encourage you to read the Biology Covid-19 Prevention Plan, in particular the Common Spaces Guidelines. There are signs posted through all the buildings to assist you.
- **Masks / Face coverings for both buildings that meet the following SEVEN required conditions:** **Fit snugly against the sides of the face; completely cover the nose and mouth; be secured with ties, ear loops, elastic bands, or other equally effective method; include at least one layer of cloth, although multiple layers are strongly recommended; allow for breathing without restriction; be capable of being laundered and machine dried without damage or change to shape; and be free of holes, tears or VALVES that have the potential to release respiratory droplets.**
- Lounging areas in Hitchcock are limited or closed, do not use furniture that is taped off or lounge areas that are or are at maximum safe social distancing occupancy. All tables have an occupancy limit of 1.

HITCHCOCK HALL (HCK)

BIOL 302 Lab Techniques in CMB (HCK 343 & 347)

Main outside east doors *of Hitchcock Floors 1,2 & 3 will be unlocked on a limited basis for this class for security.*

HERE ARE SOME OF THE BUILDING PROTOCOLS

- Facial coverings to meet **SEVEN** required conditions above.
- Keep a 6-foot distance from others at all times.
- Restrooms are **ONLY ONE** person at a time
  - — Leave main door propped open
  - — If it is full, wait in the main corridor not the small hallway
  - — Wash hands after using restroom
  - — Wear mask
- Entire hallways are **ONE** person at a time.
  - — Look before you walk
  - — Wait for others to finish their journey
  - — (Step aside into door ways if you need to let someone by to maintain a 6-foot distance)
- Enclosed stairways in HCK are all one-way
- The open staircases is only one person at a time.
- Elevators are **ONLY ONE** person at a time.
  - — Take the stairs or wait for the next elevator
  - — Priority for those with mobility needs, carts or heavy objects
  - — Stand at least 6-feet from elevator doors.
  - — Wash or sanitize hands after leaving the elevator
  - — Wear mask
- Drinking fountains usage: Please fill water bottles only
- While waiting to get into your class room. Wait 6-feet apart.

BURKE MUSEUM

BIOL 450 Vertebrate Paleo (Burke 007)
BIOL 557 Vertebrate Paleo (Burke 007)

Your instructor will confim building access protocol depending on whether the museum is open to visitors.

HERE ARE SOME OF THE BUILDING PROTOCOLS

- Facial covering to be worn in the building at all times.
- Facial coverings to meet **SEVEN** required conditions above
- Practice a strict 6-foot distance from others at all times.
- Class room seating placed at least six feet apart
- Occupants must abide by directional flow and maximum occupancy signage (elevators and staff stairways)
  - —Small elevators are two people at a time, freight elevator is four
  - —No directional restrictions for the public grand staircases
- Multi-stall restrooms capacity may not exceed the number of stalls
  - — Wash hands thoroughly for 20 seconds when using restrooms
- Many hand sanitizer dispensers are available in public places and classrooms, occupants encouraged to use often
- Classroom tables / workstations should be wiped down with disinfectant spray / wipes at the end of each use
- Instructor should provide separate instructions for cleaning / disinfecting any class room materials (if applicable should collections be involved)
- Per UW EH&S, no restrictions on using water fountains, though occupants may wish to utilize their own water bottles while onsite

NEW 4-STORY HEALTH SCIENCES EDUCATION BUILDING East of Hitchcock

This photo was taken by Jason Patterson the end of December 2020 before Winter quarter started.

Progress of the construction for a new 4-story Health Sciences Education Building.

It will become a new student hub for the Health Science schools of Dentistry, Medcine, Nursing, Pharmacy, Public Health and Social Work with classrooms, study areas, library & a new anatomy lab.

The site is no longer a giant mud pit.

This photo was taken by Ron Killman the end of September 2020 before Autumn quarter started.

GRADUATE SEMINAR IS BACK Starting January 15 on Fridays 12 to 1:00 pm

JANUARY 15

Jordan Claytor
Wilson Lab

Jeremy Chan
Riffel Lab

JANUARY 22

Hayden Davis
Leaché Lab

Melissa Delgado
Cabernard Lab

JANUARY 29

Robin Fales
Carrington Lab

Kaysee Arrowsmith
Brossi Lab

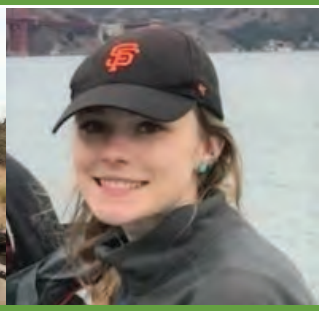
FEBRUARY 5

Nathan Grassi
Kerr Lab

Natalia Guayazan Palacios Steinbrenner Lab

FEBRUARY 12

Caroline Cappello
Boersma Lab



Kayla Hall
Summers Lab

FEBRUARY 19

Mohammad Tariq
Gire / Perkel Lab

Andy Kim Hempton
Imaizumi Lab

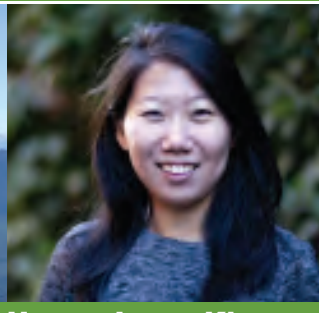
FEBRUARY 26

Katie Holt
Boersma Lab

Aji John
Hille Ris Lambers Lab

MARCH 5

Evan Graig
Rasmussen Lab



Hyeon Jeong Kim
Wasser Lab

MARCH 12

Ryan McGee
Bergstrom Lab

This seminar's mission is to showcase graduate student research, provide equitable access to scientific communication training for our graduate students, and, importantly, build community across all groups in our department.