*Biology Department Presents:*
*The Beaker March 2018*

University of Portland



## Chair's Corner

This issue of the Biology Newsletter celebrates our faculty and students. In particular, we recognize the good work our faculty do to help educate our students with the most innovative teaching pedagogies and opportunities to engage in high-impact practices like undergraduate research. Towards the end of this issue, we highlight the research efforts of several of our majors who presented on campus at the CAS Summer Undergraduate Research Experience (SURE) Symposium this past fall and one student who gave a platform presentation at the MJ Murdock Charitable Trust Undergraduate Research Conference in November in Spokane. We also want to introduce you to two new faculty who joined our Department this August as tenure-track Assistant Professors, Drs. Laura Dyer and Dave Wynne. We are very happy to welcome them and look forward to working with them as we advance the Biology Department's mission.

## Congratulations to Dr. Jacquie Van Hoomissen

"The sciences have really creative teachers who have been and always will be dedicated to teaching."

Dr. Van Hoomissen has been chosen to receive the *2018 Oregon Academy of Science Outstanding Educator in Higher Education Award*. Dr. Van Hoomissen is being awarded this honor for her dedication to all aspects of higher education. Her methods of teaching go above and beyond the typical lecture format. Her teaching style facilitates deeper learning by helping students make personal connections with the material, which for many students, is an unique experience compared to what they usually experience in most classrooms. She engages students and encourages their active participation in their own learning. Dr. Van Hoomissen has been at UP since 2002. One of the projects she started includes a service learning program with K-12 schools, where UP students are joined by students from the surrounding community for fun lab activities. She also encourages UP students to join her and participate in other high impact learning experiences such as undergraduate research, internships, and study abroad.

Dr. Van Hoomissen will be presented with this prestigious award at the OAS annual meeting on Saturday, March 3rd at George Fox University at 2:30 PM.

## Meet Our New Professors *By Halle Brady*

This year, Biology welcomes Dr. Laura Dyer to its faculty as a new Assistant Professor who is helping teach Human Anatomy and Physiology courses. Dr. Dyer, originally from Cleveland, went to school on the East Coast, gained teaching experience in Georgia, and recently made her way to the great Pacific Northwest. She enjoys running and hiking and in her spare time, she partakes in edible chemistry (baking).

Growing up in an area where "girls don't do science" didn't stop Dr. Dyer. Ever since she was young, she loved working with bones. She even surprised her kindergarten class with her passion during "Show and Tell" with a bag of them. Despite not having many female role models in the science field around her to emulate, Dr. Dyer had a very supportive mother who taught high school biology and chemistry. When taking classes, Dr. Dyer couldn't get enough science. She took everything from physics, biology, chemistry, and many math courses. In high school, her deep rooted passion was in the

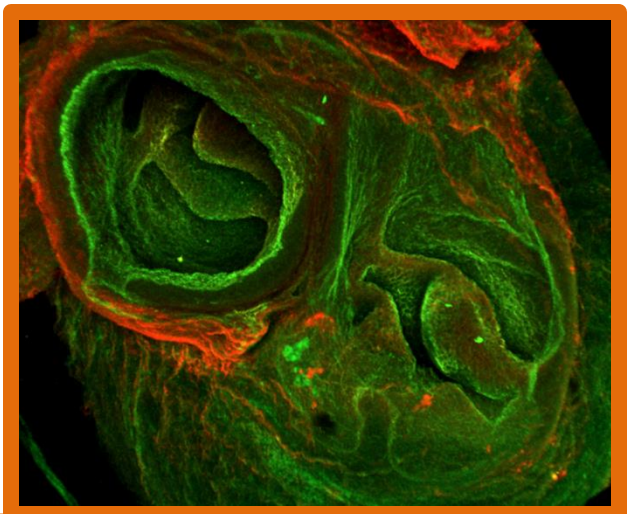
dissection lab. In her senior year of high school, she had the opportunity to work on a senior mentorship project.

With the connections she made in high school, she had the fantastic opportunity to follow and assist a professor, Dr. Mich Watanabe, in a lab studying cardiovascular development. This led to many dissections of chicken embryos making it hard for Dr. Dyer to smile back at a sunny-side up egg for almost a decade.

When Dr. Dyer went to college as an undergrad, she originally wanted to double major in biomedical and chemical engineering. She soon discovered that chemical engineering was not the field for her, and as it turned out, the biomedical engineering degree ended up being an engineering major with some biology courses thrown in. Dr. Dyer loved the logic of chemistry and pursued that as her major, even though she preferred the biological side of the laboratory work she conducted. During her summers, she had the experience of a lifetime to continue working with Mich, her professor and close mentor, who helped set up future research opportunities for her while she was an undergrad, including a summer at Harvard studying different aspects of heart development. She also did research on cancer as an undergraduate at Rensselaer Polytechnic Institute for two years—learning that it was difficult to keep cancer cells alive in the lab. She headed to Duke the summer before her graduate program officially began, starting in a lab that was more chemistry based and learning she did not enjoy chemical research as much. Then Dr. Dyer was put in contact with Peggy Kirby—one of the top cardiovascular researchers in the nation and really enjoyed it. The Kirby lab is where she completed her PhD work.

Dr. Dyer encourages freshmen and sophomores to search out research opportunities early on as undergrads because they are highly valuable and can be life changing. She advises that those students interested in research be open to the new experience and be prepared to spend a lot of time testing and retesting their hypothesis, before moving on to test alternative new hypotheses. “Negative results” are an inevitable part of research and to continue on, one must be curious and willing to go where the data may take them. Dr. Dyer is pursuing a few research ideas that circulate around the heart (ba-dum-bum-CHING). Dr. Dyer is focusing on defects that can kill a fetus, specifically how fetal alcohol syndrome affects the heart, and how two coronary arteries develop from numerous small arteries. Looking into these studies can help pregnant women know more about their pregnancy, reduce fear and stress, and help them make better and more realistic health choices. When studying these anomalies, doctors and researchers can better predict when a defect may occur and better prepare to take action.

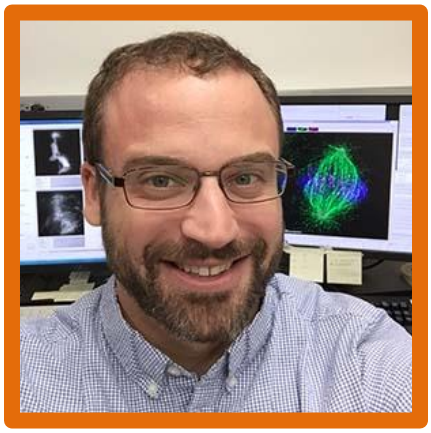
Dr. Dyer is excited to be working at UP. She loves how much undergraduates are encouraged to do research and get involved here. She hopes to do her share of mentoring and give biology students valuable research opportunities that can help shape their futures.



A look down into the aorta (left) and the pulmonary trunk (right) of a mouse heart. Green = the lining of the blood vessels (endothelium), and red = cardiac muscle.

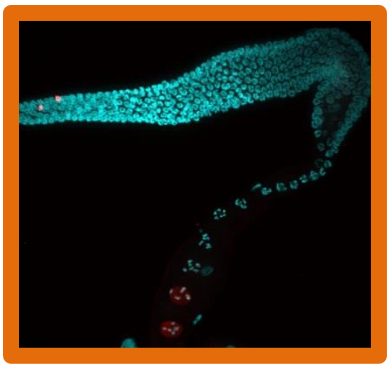
Joining Dr. Dyer is Dr. Wynne, another recent Biology faculty hire, who is also new to the Pacific Northwest. He originally grew up in New Jersey and went to college at a liberal arts school in Massachusetts. He always liked science and took all the science courses he could including math, physics, and chemistry. Biology was his favorite type of science course, and his first biology course was Evolution. He was very interested in the diverse life histories of populations and how they evolved various solutions for survival. Another major influence on Dr. Wynne's interests comes from a genetics professor. The genetics course was taught mostly with primary literature, a difficult task for an undergraduate to wade through. Because of this course, Dr. Wynne got to work with this genetics professor on a multi-semester Honors research thesis project. Although Dr. Wynne enjoyed working with her, he wanted to find a career where he could both teach and do research in a laboratory. After college, instead of taking a position in a research lab, Dr. Wynne decided to try his hand at teaching. Dr. Wynne taught grades ranging from 4$^{th}$ grade to high school before going back to school himself. He missed research so much he went to graduate school at UC Berkley where he was exposed to cell biology. He was especially drawn to microscopy and worked mostly with worms.

Dr. Wynne is passionate about teaching undergraduates. He considers it to be one of the best ages to teach because he likes the feeling that comes with getting to expose students to their first college introductory biology course and engage them in learning new material. Dr. Wynne teaches Cell and Molecular Biology in the fall (Bio 354/372) and in the spring he is teaching the beginning sequence of the introductory biology courses (Bio 207/277). For those students considering taking Dr. Wynne's classes he advises them that they will be developing skills in interpreting data and communication. He cautions that there will be talking involved in class—"I want students to share their misconceptions out loud for it is the only way to think through the problems and get to an accurate understanding together."



Dr. Wynne's research involves the worm *C. elegans*, known in the biology world as "the worm." Reminding him of his undergrad and graduate days, this worm is often used as a genetic model system. He is studying how chromosomes split the way they do in meiosis and mitosis. Studying this

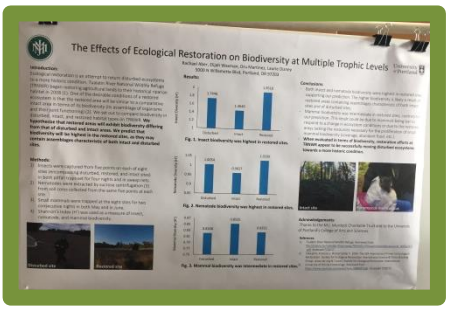
area is important when looking into the errors that are associated with birth defects and cancer. Dr. Wynne is passionate about getting undergraduate students involved in research. He wants students to be prepared to fail when doing research, but develop skills to recover from each failure. Students need to be prepared for the fact that most experiments don't work the first time and that they need to learn how to trouble shoot what went wrong. Students will be learning to make judgement calls and develop independence in a laboratory environment. Dr. Wynne wants to cultivate these skills in students that will aid them in undergrad and graduate research and beyond. If interested in research, Dr. Wynne is looking for students "that can commit time, because that is what it takes to progress towards research independence."



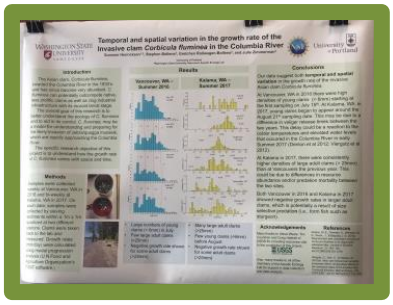
## Biology Department Representation at the CAS SURE Presentations

The Biology Department should be proud of its fabulous students who presented their work at the Summer Research Poster Session and elsewhere. Well done everyone!

University of Portland Student Athlete Nutrition Study
Presenter: Katelyn Coughlin
Sponsor: CAS SURE
Faculty: Dr. Terry Favero

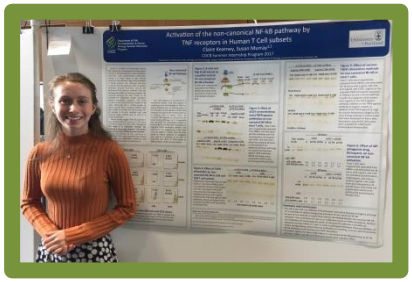


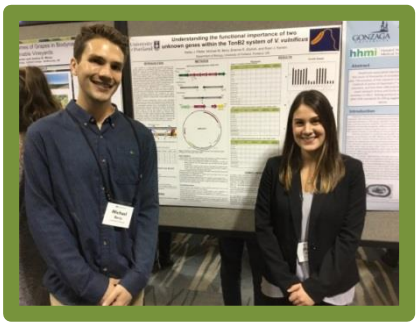

Temporal and Spatial Variations in the Growth Rate of Corbicula Fluminea in the Columbia River
Presenter: Summer Henricksen
Sponsor: School of the Environment at WSU Vancouver
Faculty: Dr. Laurie Dizney




The Effects of Ecological Restoration at Multiple Trophic Levels
Presenter: Rachael Aber
Sponsor: Murdock Summer Undergraduate Research
Faculty: Dr. Laurie Dizney

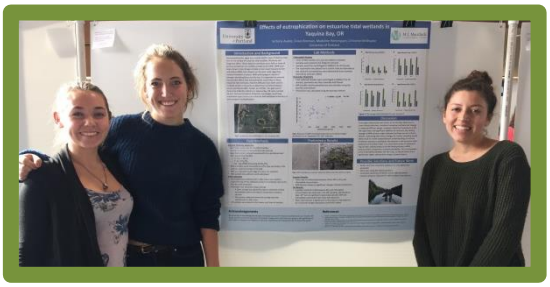
Activation of the Non-canonical NF-kB Pathway by TNF Receptors in T Cell Subsets
Presenter: Claire Kearney
Sponsor: CAS SURE





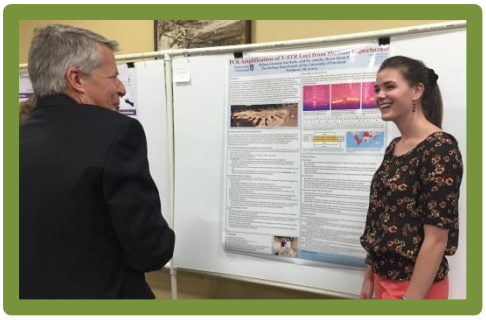
Faculty: Dr. Susan Murray
Understanding the Functional Importance of Two Unknown Genes Within the TonB2 System of V. Vulnificus
Presenter: Hailey Pfeifer and Michael Berry
Sponsor: CAS SURE
Faculty: Dr. Ryan Kenton

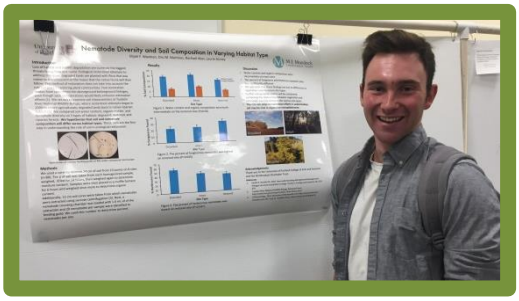
Effects of eutrophication on Estuarine Tidal Wetlands in Yaquina Bay, OR
Presenter: Victoria Avalos, Grace Brennan, and Madeline Henningsen
Sponsor: Murdock Summer Undergraduate Research
Faculty: Dr. Christine Weilhoefer



Effects of Disturbance on Stress and Immunity in Deer Mice
Presenter: Dru Martinez
Sponsor: CAS SURE
Faculty: Dr. Laurie Dizney

PCR Amplification of Y-STR Loci from Human Expectorate
Presenter: Raluca Gosman
Sponsor: CAS SURE
Faculty: Dr. Ami Ahern-Rindell





The Relationship Between Nematode Diversity and Soil Composition in Varying Habitat Sites
Presenter: Elijah Waxman
Sponsor: CAS SURE
Faculty: Dr. Laurie Dizney

## Research in Real Life *By Halle Brady*

On campus research is often talked about by professors. "You should do research. It will help you in the future." For many it may still be hard to understand how realistic and beneficial it is to do undergraduate research at UP. Raluca Gosman, a senior biology major, at first had some questions about the undergraduate research here at UP. Now finishing her final semester she looks back at where she started and how much she has grown both professionally and personally through these opportunities and experiences.

Raluca started doing research with Dr. Ahern-Rindell in the summer after her sophomore year. She was invited to participate in an archeological dig in

Pollentia, Spain on the island of Mallorca and work with students from various disciplines. Her research project involves studying DNA found in ancient bones of people buried on the island to determine their geographic origins.

During her junior and senior year, Raluca had many opportunities to share her findings with others through presentations. She was honored to give a talk at the 2017 Murdock Charitable Trust College Science Research Conference in Spokane, Washington. The Murdock Charitable Trust funds a lot of research on campus as well as independent scholars from the Northwest region. Several students from UP, including Raluca, were asked to attend the conference and present their research. Raluca had the opportunity to give a 15-minute oral presentation to about 150 attendees.

Some skills that Raluca has developed include how to talk about research in front of those that may be skilled in the discipline and also those who are not. She has learned how to condense important information in an organized way, to be able to talk about her research in different ways, to not talk too quickly or go over her time limit, and to keep the audience's attention. She wants and is excited to share her research with her peers and professors. "With passion everyone else also gets excited by what is being presented. It continues to foster the drive to conduct research and encourages others to get involved."

Raluca sees many benefits from presenting as a researcher. It exemplifies how much teaching and collaborating with others there is in research. Also, it is easy to get caught up in the lab work and forget why this research is taking place. Through presenting, she is reminded of what the overall goal and importance is of her research. Presentation experiences and attending symposiums can also help with networking, finding more sources of funding, and opening up opportunities outside of UP.

**Raluca speaking at the 2017 Murdock Charitable Trust College Science Research Conference in Spokane, WA**

Raluca also gained the opportunity to delve into the ethics surrounding her research by being involved as a Dundon-Berchtold student fellow. She, along with her mentor, is investigating the respectful ways to handle human remains, how to respect culture and traditions, and how to open discussion about the benefits of doing science in general.

For those interested in research, Raluca recommends honest communication between students and mentors. When you get to know faculty, they can really open doors for you and provide you with great opportunities. Don't be afraid to reach out, start early, question what professors are doing in their labs, and overall get involved

## Upcoming Events

Registration for Fall 2018 begins the week after spring break. Be sure you are in contact with your academic advisor either in the CAS Office or, for upper classmen, one of the Biology Faculty to schedule an advising meeting before registration.

**Bio majors and faculty, if you have any newsletter ideas please feel free to submit them to Halle Brady at bradyh18@up.edu**