

BIOLOGY DEPARTMENT ANNUAL NEWSLETTER 2021

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Picture credit : Peter Thut, Stockroom Manager



Lee Lab Research
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Hooper Lab Research
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New WWU Microscope
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MCB Grad Funding
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Reflections from the Department Chair

Dear WWU Biology Alumni and Friends,

Well, what a year! A year ago, I took over the role of department chair from Dr. Merrill Peterson. And in case you are questioning my sanity for transitioning to this position during a global pandemic, I signed up the previous year before anyone had ever heard of COVID.

I am glad to report that our department survived the year because of the amazing work of the staff, faculty, and students. I would like to acknowledge the stewardship of Dr. Merrill Peterson, which strengthened our department during his tenure as chair and positioned us to make it through a very challenging year. I also want to thank the staff that have shouldered a much greater amount of work this year to support faculty and students. Lastly, I wanted to acknowledge the dedication and commitment of our faculty that went above and beyond to develop “new” courses for students to learn in an online environment and figure out creative ways to continue their important research. It is often said that only under challenging circumstances is someone’s character truly revealed, and I can confidently say that the character of our Biology Community is compassionate and strong!

Our department remains committed to addressing issues associated with accessibility, diversity, equity, and inclusion (ADEI). Our faculty, staff, and students are involved in many efforts to create a better environment to work and learn. Although we have much work to do and some goals are still out of reach, we continue to make important improvements and advances. This year, we implemented a new admission policy to our major.

Our new policy includes additional metrics to provide a broader and more inclusive picture of applicants. We continue to vigorously argue that the ultimate solution is more resources to meet the demand from students so any qualified student can major in Biology.

I am happy to report that progress on the new Interdisciplinary Science Building has continued and is on schedule. You see the progress of the building here (<https://cpd.wwu.edu/PW733-interdisciplinary-science-building>). We hope to move into the building during winter quarter and teaching courses in spring. We are so excited to return to in-person learning! We have planned for fall quarter to serve as a transition back to in-person learning, with many in-person courses but also some remote options. Currently, we are planning for nearly all in-person courses in winter and spring quarters. I am looking forward to the excitement of the new school year in fall and interacting with colleagues and students. Below are some important news and events from the past year. I want to highlight several important retirements. Drs. David Leaf and Roger Anderson retired after long and successful careers of teaching and researching in Biology, Mary Ann Merrill, the department manager and cornerstone of Biology is retiring in August, and Dr. Kate Yamamoto, a senior instructor, retired after teaching in Biology for twenty years.

Thank you so much for continued interest and support in Biology Department’s growth, success, and future. The need for external support continues to grow and your support is critical to achieve our goals. I wish you all best, and please let me know if you would like to talk or visit. I especially enjoy hearing from our alumni and friends.

With great appreciation and thanks,



Ben Miner, Professor and Chair

Faculty Spotlight

Suzanne Lee

Awarded the Peter J. Elich Excellence in Teaching Award

I'm thrilled to be this year's recipient of the Elich Teaching Award and am equally thrilled to be in a department where I can continue to grow as a teacher and mentor. As an RNA biologist, I teach Biology courses in cell and molecular biology at all levels of the curriculum - from Introductory and Upper Division lecture courses to a 300-level skill-building lab to a 400-level research course focused on questions stemming from my research program.

As an educator, I aim to inspire and empower students to become lifelong learners and collaborative problem solvers, and employ a diversity of student-centered active learning approaches in my classroom. My favorite moments in working with students are those "aha" moments when, after a bit of struggle, concepts suddenly click for a student, and they feel that thrill of advancing their own learning. In addition, I try to weave in the nature and process of science into all of my courses, whether through data analysis, learning more about the people behind their scientific discoveries, or hands-on student-driven inquiry and authentic research. Finally, motivated by my own experiences and those of others I admire, I strive to promote greater equity and inclusion in STEM through learning about and implementing evidence-based pedagogical and mentoring approaches in our Department and in our College.



Nick Galati

Awarded the Advancing Bioimaging Scialog Award

The Advancing Bioimaging Scialog (Science + Dialog = Scialog) brings together ~50 early career scientists (the Scialog fellows) from across the US and Canada to solve the most challenging biomedical imaging problems. The Scialog fellows are an interdisciplinary group of biologists, computer scientists, and optical engineers that approach imaging from different perspectives. Each year, the Scialog fellows convene in Arizona to develop high-risk, high-reward grant proposals that will transform biomedical imaging. This past May, I participated in my first Scialog, which resulted in two exciting proposals. First, I collaborated with Doug Sheperd (Optical engineer - Arizona State University) and Shannon Quinn (Artificial intelligence - University of Georgia) to prototype a new multi-modal quantitative phase imaging/fluorescence microscope. The goal of our proposal is to combine new optical approaches with unsupervised machine learning to track and quantify sub-cellular processes in rapidly moving cells at a sampling rate of up to 1000 frames per second. Second, I collaborated with Uzay Emir (Medical Magnetic Resonance Imaging - Purdue University School of Medicine) to develop a new method to quantify the flow of cerebrospinal fluid in the brains of children with autism. The goal of our proposal is to combine optical microscopy with magnetic resonance imaging to tease apart the micro-scale hydrodynamic forces that shape the physiology of the human brain. Regardless of whether our proposals get funded, Scialog was an amazing experience, and I'm already looking forward to the 2022.



New Staff & Faculty

Glynn Daniels

Glynn Daniels will join the Biology Department in the Fall as Department Manager when Mary Ann Merrill retires. Glynn has worked at WWU since 1995. Her most recent role was as Program Manager for Language and Culture Programs in Outreach and Continuing Education. Glynn earned a B.A. in Liberal Arts with an emphasis in Education in Santa Barbara, CA and continued her studies in the visual arts in England, San Francisco and New York City. As a recent empty-nester, Glynn's hobbies include van camping, traveling, hiking, backpacking, frof in Cornwall Park with her two grown sons, cycling and her newest passion – pickleball.



Greg Freedman

Greg Freedman joined the Department of Biology in 2021 as an NTT faculty member. Originally from Los Angeles, he has lived in a number of cities in five states. He graduated with his BA in psychology from UC Santa Barbara, and from medical school at Ohio State University. In addition, he is halfway through a master's degree in Adult Education at City University of Seattle.

His academic experience has consisted of teaching anatomy and physiology, general biology (101 equivalent), psychological methods of pain management, and mind/body approaches to health and wellness. In addition, Greg has worked with the Asian American Native American Pacific Islander Serving Institute at South Seattle college, which encouraged an interest in the inclusion of marginalized students in biology classes. He is also interested in the effects of stress reduction and sleep promotion on academic performance.



Jaci Scheer

Jaci Scheer joined the Department of Biology in Spring 2021 as a Human Anatomy & Physiology instructor. She earned a B.S in Biology/Anthropology from Western Washington University and an M.A. in Applied Anthropology from Humboldt State University. During her time at HSU Jaci focused on forensic methods and analyzed skeletal fracture patterns in pedestrian traffic fatalities. Outside of Western, Jaci applies her knowledge of the human body and skeletal remains in her work as a death investigator, autopsy assistant, and bioarchaeologist.



Retirements

David Leaf



In 1991, I was hired as a cell biologist with expertise in membrane traffic and developmental biology. As a post-doc, like most of my peers, I had envisaged a career at research university, or teaching at an elite liberal arts college. Now I am proud of the honorable non-elite mission that WWU plays in education, thanks to the quality of work by staff and faculty in Biology. But most particularly, thanks to the students - for their humanity and for their accomplishments after graduation. A major research highlight at WWU for me was the collaboration with my spouse, Mary Anne Pultz, on an evolutionary developmental research program studying the parasitoid wasp project, *Nasonia*.

Our Ph.D. advisors at Indiana University had been key founders of evo devo and we had shared a split position soon after I was hired at WWU, which freed up time to start a new project. When we began, the gene regulatory network (GRN) controlling embryonic patterning in fruit flies was understood (thanks to the work of the 1996 Nobel Laureates: Ed Lewis, Christiane Nusslein Vollhard, and Eric Wieschaus). It seemed promising to ask the question of whether evolutionarily distant insects that develop very similarly also have early development governed by a conserved GRN. Mary Anne's lab initiated the work with genetic screens in *Nasonia* for genes important for embryonic patterning and my lab focused upon cloning and mapping these genes and generating antibodies for localizing the proteins encoded by these genes. What we and collaborators established in papers published in *Development* and *Nature* was that even though *Nasonia* and fruit fly development were morphologically identical and controlled by the same genes (with one major exception), the gene networks were wired differently. Hence, contrary to traditional ideas about early development, GRNs responsible for early development are amenable to tinkering by evolution. This work engaged many talented undergraduate students, several of whom were awarded Goldwater Scholarships and NSF Graduate Fellowships.

Another collaboration in teaching and research I've been grateful for was with Joann Otto. We co-taught a microscopy course for 8 years, as well as collaborating on a research program studying the regulation of actin dynamics in living cells. The most rewarding aspect of working with students on research microscopes was how this could reveal substantial talents of students who had not always thrived in lecture-based courses. Secondly, were Joann's whoops of enthusiasm when a student imaged a particularly beautiful image of mitosis.

One piece of good advice given to me as a grad student was to mostly associate with scientists smarter than yourself. In the latter half of my tenure at W/W/U, I've expanded upon this advice to associate with faculty who are also more enthusiastic, energetic, idealistic, and bring in new intellectual tools. So, it's been a great pleasure to mentor and learn from junior faculty over the years and has made my life in the department much more interesting.

Now Mary Anne and I are setting up a sea kayaking base camp on our lot on Lopez Island and trying to to set up another sea kayaking base camp on our lot in Haida Gwaii. I'm looking forward to seeing what Nick Galati and his students are doing with FRET-FLIM on the new microscope and contributing to a course on kayak safety with Ben Miner and Marion Brodhagen. Otherwise, I hope to be mostly paddling.

Continued on the next page 

Mary Ann Merrill



On 31 August 2021 Mary Ann, Biology's Department Manager, will retire from Western after 31 years of service.

She began her career at WWU in September 1990 at the Shannon Point Marine Center in Anacortes. She was hired to work as an Editorial Assistant for the SPMC Director Steve Sulkin, who was also an Editor for the journal *Estuarine, Coastal, and Shelf Sciences*. In time, she also served as their Administrative Manager. In 2001, Mary Ann's husband had a job change that moved them from Anacortes to Bellingham, so she was commuting from Bellingham to SPMC five days a week. Because spending 2 hours per day on the road wasn't ideal, Mary Ann started looking for positions on the main campus. In April of 2005, Mary Ann moved to the position of Department Manager for the Biology Department on the main campus in Bellingham. She knew that she enjoyed her time at Shannon Point and missed her co-workers but working on the main campus was a

totally different world. What an exciting change it was.....the main campus, such a hub of activity, so many people to interact with, so many new things to learn. Mary Ann thrived in this environment and embraced the challenges. She always took pride in the work she did and thoroughly enjoyed helping faculty, staff, and students alike.

Mary Ann would like to give special thanks to the following people who have made an impact on her life over the past 31 years:

- From Shannon Point: Steve Sulkin, Brian Bingham, Gene McKeen, Nate Schwarck, Suzanne Strom, Kelley Bright, and Kerri Fredrickson.
- From Biology: Maren Brinson, Alexis Donnelly, Hailey Rieman, Merrill Peterson, Ben Miner, Peter Thut, Erin Macri (also worked with at SPMC), Kendra Bradford, Sarah Hoag, Joe Somera, Brady Olson (also worked with at SPMC), Shawn Arellano (also worked with at SPMC), Deb Donovan (also worked with at SPMC), and of course all of the other faculty members.
- From CSE: Tonya Alexander, Brad Johnson, Mikayla King, Heather Greenlaw, Amber Asbjornsen, and all of the other CSE Department Managers.
- University Wide: Ichi Kwon, Debbi Baughn, Gretchen Lucas, Denise Mor, Megan Spiegel, Theresa Barnhart, Tracey Finch, Larry Palmer, and many more.

In her retirement, Mary Ann is looking forward to several things.....working on her musical talents (playing guitar, improving piano skills, and learning how to play the ukulele), doing more quilting, traveling more after Bob retires in 3 years, spending more time with family (daughter Sarah (Nate) and granddaughter Oakleigh who live in north Idaho and daughter Emily (John) who live in Maryland). It has also always been a plan for her to volunteer at the hospital after her retirement. Mary Ann has a degree in Respiratory Therapy and was a practicing RT before having a family. She has always missed working at the hospital and would love to be able to help out where she can again.

The Biology Department also wants to recognize two more retiring professors, Roger Anderson and Kate Yamamoto!

Promotions

Shawn Arellano

Shawn Arellano joined the Biology Department faculty in Fall 2018 and was promoted to Associate Professor in Fall 2021. Her teaching focus is in marine ecology, biostatistics, and marine science courses. Prior to joining the Biology faculty, she spent six years as a Marine Scientist at Western's Shannon Point Marine Center where she co-developed and taught in the Marine Science Distinguished Scholars Program for freshmen and sophomores, in collaboration with the Biology Department. Shawn was active in the development of the Marine and Coastal Science (MACS) undergraduate degree program at Western and has held a joint appointment as a core MACS faculty member since the program's inception in 2019. Shawn's research program focuses on marine invertebrate larval ecology and deep-sea ecology. At Western she has mentored 8 M.S. students, 4 Multicultural Initiatives in Marine Science Undergraduate Program interns, 9 Research Experience for Undergraduate interns, and 8 undergraduate research assistants. Arellano currently maintains an active deep-sea research program and has taken 4 graduate students and 7 undergraduates on deep-sea research cruises to work with the manned submersible DSV Alvin, the remotely operated vehicle ROV Jason, and the automated underwater vehicle AUV Sentry.



Brady Olson

Brady Olson has been at WWU since 2009, where he began as a resident marine scientist at WWU's Shannon Point Marine Center and as an instructor in the biology department. He joined the biology department as a tenure track professor in fall quarter 2018, and was promoted to associate professor in fall of 2020 in the biology department and the marine and coastal sciences program. Brady's teaching focus is ecology and marine sciences, and he teaches upper-division courses in biological oceanography and marine algae. He has mentored many undergraduate and graduate student researchers over the years, and enjoys getting to know his students on personal levels. Brady's research focuses on the ecology of marine plankton, from the smallest protists to larval fish. He is particularly interested in understanding the mechanisms that govern predator-prey relationships in the plankton, and how these relationships, in turn, structure biogeochemical cycling in the ocean. His research has taken him from the Bering Sea to the northeast equatorial Pacific Ocean, and many places in-between. He is currently collaborating with Dr. Nick Galati studying the biomechanics and ecological implications of jumping behavior in marine ciliates, and with Drs. Jim Cooper and Karin Lemkau on the effects of natural and man-made chemicals on forage fish ecological and reproductive fitness.



Dan Pollard

Dan Pollard joined the Biology Department faculty at Western in 2015, and was promoted to Associate Professor in the Fall of 2021. His research interests are at the intersection of evolutionary genetics and molecular cell biology. Supported by the National Science Foundation, he and his student colleagues investigate the molecular mechanisms by which DNA variants result in differences in protein abundances amongst individuals in a population. They have authored published manuscripts and have presented their work at regional and national conferences. Dan teaches a breadth of courses including Genetics, Biostatistics, and Genomic Data Analysis, all of which emphasize quantitative and computational skill building.

He uses student-centered instructional design and has been a leader in implementing and promoting equity driven pedagogies, including mastery-based equity grading. He leads an inter-departmental professional learning community whose goal is to explicitly address the science and social context of race and sex/gender in the curriculum. He is looking forward to teaching an honors college course on human genetics and race, sex/gender, and ability in Fall 2021.



Department News

Lee Lab Research Paper Published

This Spring, the Lee Lab along with professors Dan Pollard, Nick Galati and Matt Zinkgraf published their research paper, "Disruption of a ~23-24 nucleotide small RNA pathway elevates DNA damage responses in *Tetrahymena thermophila*" in the *Molecular Biology of the Cell Journal*.

Read the full research paper on the *Molecular Biology of the Cell Journal's* website, found [here](#).



The Lee Lab at an end of the year lab party
Left to Right: Jason Sasser, Erin Tessier, Maya Matsumoto, Suzanne Lee, Megan Morris, Christina Mong, and Courtney Yoshiyama.

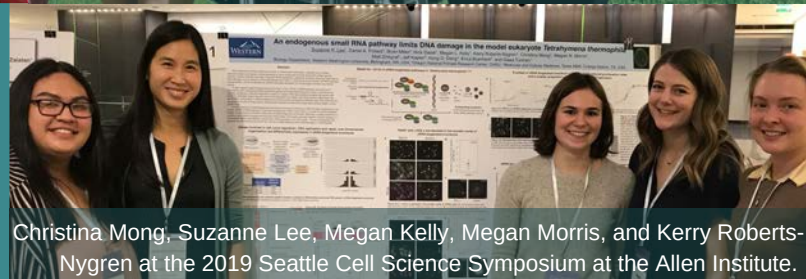
"Our study investigated the biological role of an RNA interference pathway that exists in a ciliated model eukaryote *Tetrahymena thermophila* and represents an effort led by the Lee Lab in collaboration with Dan Pollard, Nick Galati and Matt Zinkgraf. In addition to the contributions of four Biology faculty at Western, 10 of the co-authors are WWU Biology undergraduate alums or current students.

As a result of these collaborations, we were able to apply a wide range of experimental approaches to address our research question, ranging from high throughput RNA sequencing and analysis requiring bioinformatics to protein analysis through biochemical and high resolution microscopy.

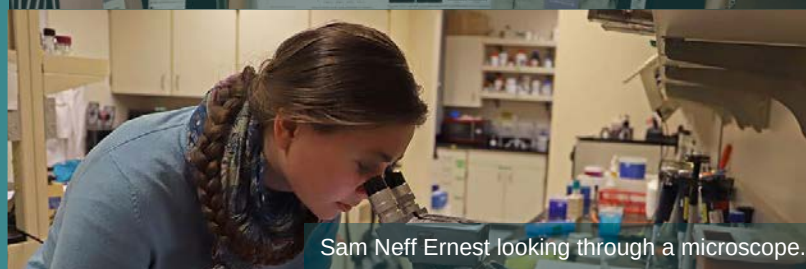
Excitingly, our findings reveal for the first time that a biologically important role of the RNAi pathway in *T. thermophila* is to protect the cell's genome against DNA damage. This is a significant finding because such a role for RNAi pathways has only very recently been observed in other types of organisms, including humans. This conservation likely means that the pathway we are studying in *T. thermophila* is of foundational importance for sustaining cellular health. Our lab is now eagerly examining the mechanisms by which this DNA protective function is achieved."

-Suzanne Lee, Biology Professor

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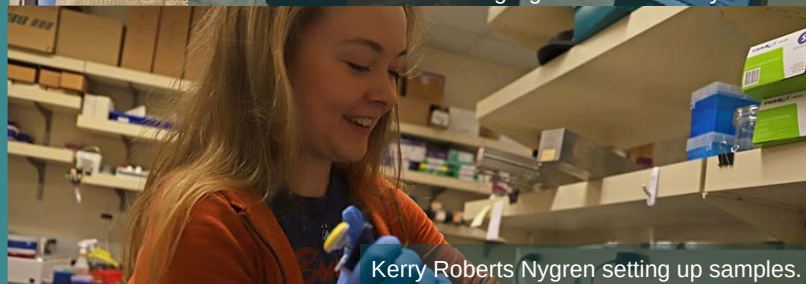
Christina Mong, Suzanne Lee, Megan Kelly, Megan Morris, and Kerry Roberts-Nygren at the 2019 Seattle Cell Science Symposium at the Allen Institute.



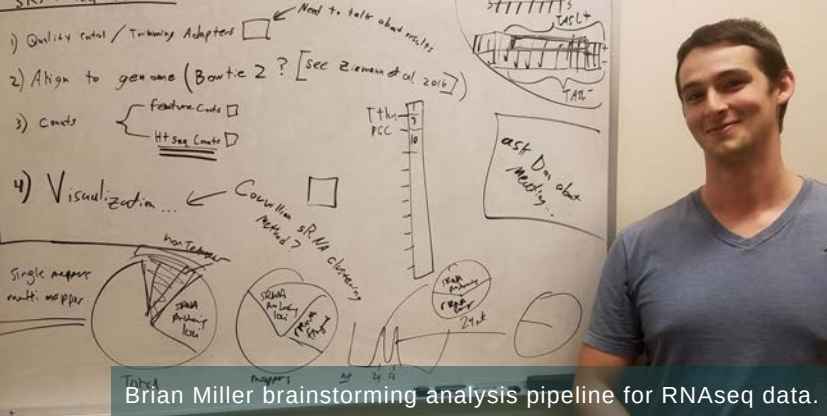
Sam Neff Ernest looking through a microscope.



Megan Kelly in the fluorescence microscope room imaging mutant *Tetrahymena*.



Kerry Roberts Nygren setting up samples.



Brian Miller brainstorming analysis pipeline for RNAseq data.

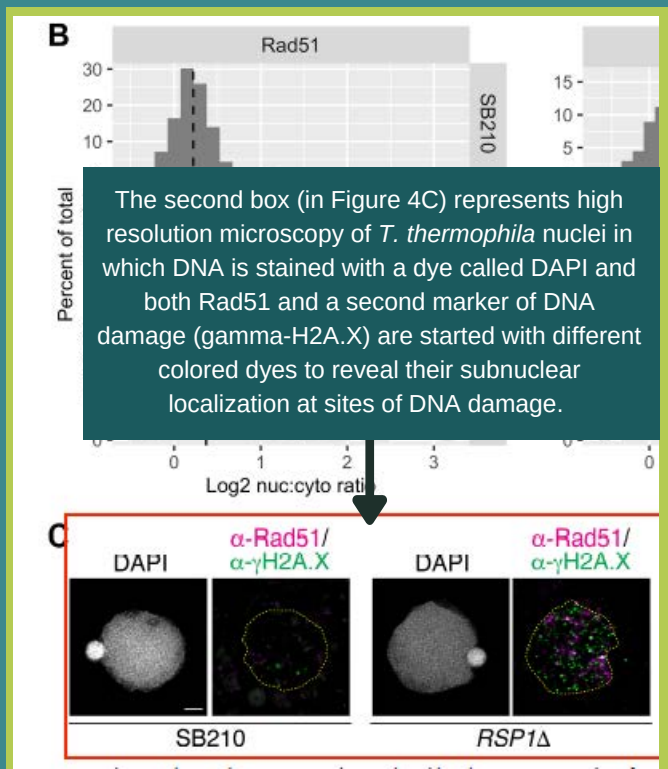
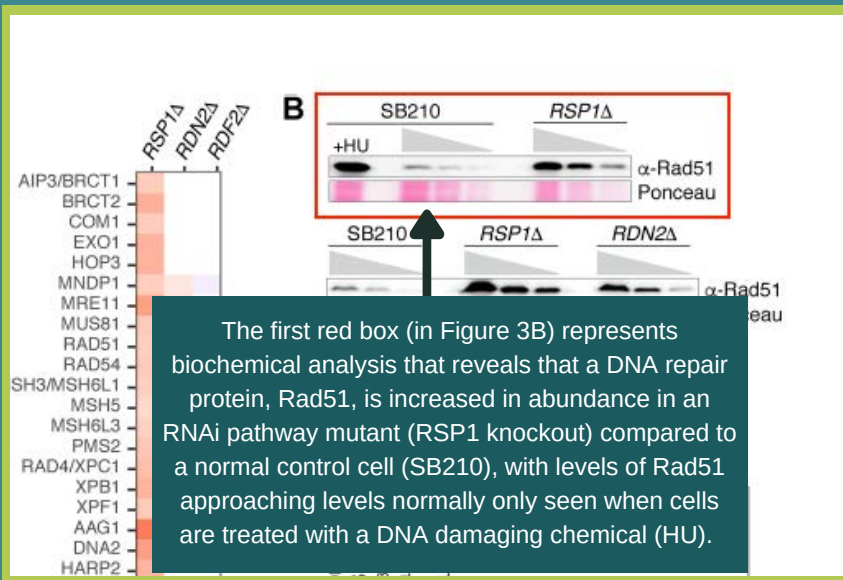


Megan Kelly, Sam Neff Ernest, and Kerry Roberts Nygren

Professors Matthew Zinkgraff (left), Dan Pollard (center), and Nick Galati (right) who helped contribute to the research paper.



Explanation of Paper Visuals:



"We are working on a refined approach that will allow us to redo our past and current quantifications to acquire greater and more accurate measurements."

-Maya Matsumoto, Undergraduate Alum

"I was fortunate enough to contribute to the gene subcategorization portion of the project. It was an extremely valuable experience to be able to contribute to real science and have it be published in the scientific literature. The work itself... required a lot of teamwork, organization, and time management. I learned a lot about bioinformatics and I even got to name some new genes that haven't been named before!"

-Erin Tessier, Undergraduate Alum



The Suzanne Lee Lab in a Zoom meeting
1st Row: Jason Sasser, Suzanne Lee, Kerry Roberts-Nygren,
2nd Row: Erin Tessier, Maya Matsumoto, Christina Mong,
3rd Row: Megan Morris, Courtney Yoshiyama.

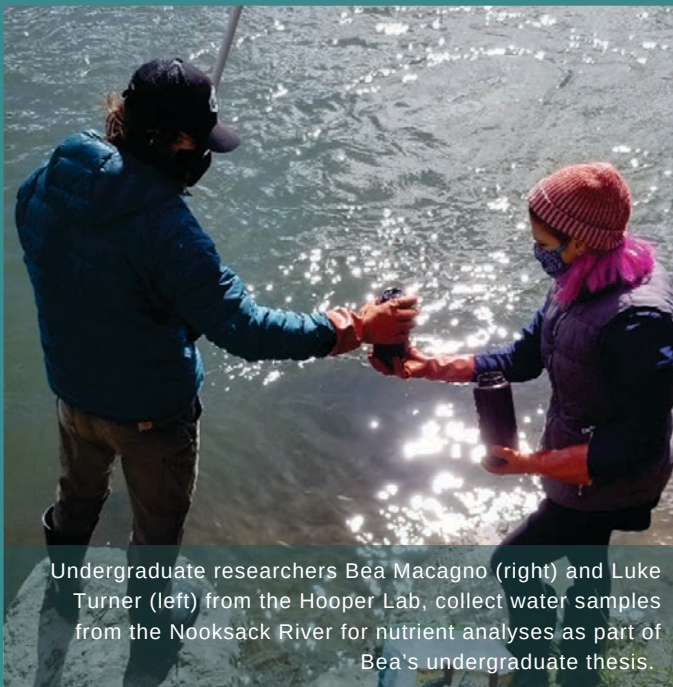
Department News

Dave Hooper Working on International Nitrogen Effort

Nitrogen is an essential plant nutrient, a key ingredient in enzymes like RUBISCO that drive photosynthesis. It is also the element most limiting plant production in many ecosystems, including the agriculture that is striving to feed a human population of over 7.8 billion (and growing!). Ironically, we're literally bathed in nitrogen, as unreactive dinitrogen (N_2) makes up 78% of the atmosphere. Fertilizers containing reactive nitrogen (N_r) compounds (ammonium, nitrate, and urea) have thus been essential to increasing crop yields to feed humanity. But this success has come at a cost. Excess reactive N (that not taken up by crops, or that released by fossil fuel combustion and human sewage) has led to a variety of environmental and human health impacts, including eutrophication and hypoxia ("dead zones") of marine ecosystems, drinking water contamination, and air pollution in the form of ground-level ozone and small particulate matter (PM_{2.5}).



Corinne Galy-Lacaux from CNRS, France, demonstrates equipment for sampling atmospheric deposition of reactive nitrogen near Mbita, Kenya, in the Lake Victoria watershed, which serves as the East Africa Demonstration Project for INMS.



Undergraduate researchers Bea Macagno (right) and Luke Turner (left) from the Hooper Lab, collect water samples from the Nooksack River for nutrient analyses as part of Bea's undergraduate thesis.

The project "Towards an International Nitrogen Management System (INMS)", (<https://www.inms.international/>) based at the Center for Ecology and Hydrology at the University of Edinburgh, seeks to maximize the benefits of reactive nitrogen while minimizing its unintentional waste and adverse effects. As the name suggests, it has global scope, but also local foci. Biology Prof. David Hooper has participated in INMS since 2017. Locally, Hooper, and grad students and undergrads working in his lab, seek to quantify the impacts of riparian buffers on nitrogen fluxes from small watersheds in the Nooksack River basin. Regionally, Hooper has served since 2016 on the Steering Committee for the Nooksack-Fraser Transboundary Nitrogen (NFTN) project, a working group of multiple local, state and national agencies and multiple universities, in both the U.S. and Canada. In 2020, the group published a nitrogen budget for the Nooksack watershed, helping to highlight the sources, fates, and impacts of nitrogen in this watershed. NFTN also serves as the North American Demonstration Project for INMS (scroll down to the map at the INMS link above, and click on North America for more information). After representing NFTN at several international meetings of INMS, Hooper was invited to co-lead Component 3 of INMS. Component 3 coordinates the activities of all the INMS demonstration projects, which are strategically placed in East Asia, South Asia, East Africa, Eastern and Western Europe, and South America, in addition to NFTN in North America.

-David Hooper, Biology Professor



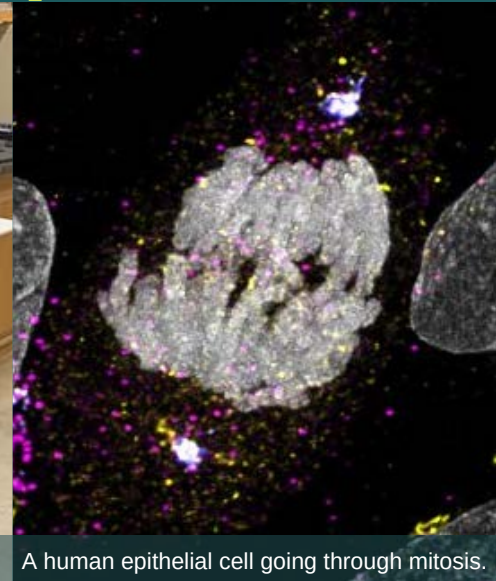
Hippos in Lake Victoria, near Kisumu, Kenya. Lake Victoria suffers severe eutrophication from excess nitrogen and phosphorus, much from human sewage, contributing to algal blooms and invasion of water hyacinth.

Department News

New WWU Microscope



The new laser scanning confocal microscope in Bond Hall.



A human epithelial cell going through mitosis.

This past year, an interdisciplinary group of biologists, chemists, and neuroscientists collaborated to bring a cutting edge \$680,000 laser scanning confocal microscope to the Western campus through the National Science Foundation - Major Research Instrumentation program.

In a nutshell, the microscope generates optical sections of fluorescent specimens by scanning a focused laser beam across a fluorescent sample. The fluorescence can come from staining samples with fluorescent molecules to reveal specific cellular or sub-cellular structures. Alternatively, some samples have high intrinsic autofluorescence that allows them to be imaged with the microscope without any additional staining.

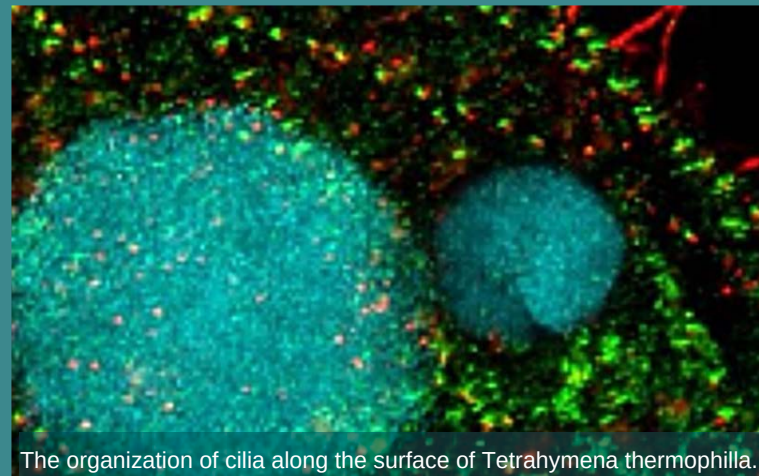
This technique is powerful because it allows one to generate 3D reconstructions of cells and tissues in live samples as they respond to their environment. In addition to the optical sectioning capabilities, the microscope is extremely powerful because it can do something called Fluorescence Lifetime Imaging.

Fluorescence Lifetime Imaging allows us to analyze the behavior of single molecules in live samples. When you combine the optical sectioning with the single molecule analysis, this microscope can collect data from the nanometer scale to the millimeter scale spatially and at the sub-second scale temporally as live specimens adapt and change.

Getting this microscope was an extremely important addition to the WWU campus for several reasons. First, we are one of the first primarily undergraduate institutions in the country to acquire such a sophisticated optical microscope. This puts us in a fantastic position to train students in cutting edge techniques that are being developed at major research institutions across the globe.

Second, the instrument will allow us to increase our capacity to conduct biomedical research into the cellular basis of disease. Third, the instrument has strong synergy with other recently acquired instruments such as a new Raman microscope and two new high-end mass spectrometers. Together, these instruments will put WWU at the forefront of interdisciplinary optical microscopy research approaches.

-Nick Galati, Biology Professor



The organization of cilia along the surface of *Tetrahymena thermophilla*.



An entire leaf from a developing *Arabidopsis thaliana*.

The grant team consisted of:

- Dr. Galati, (PI-Biology),
- Dr. Shawn Arrelano (Co-PI, Biology and MACS)
- Dr. Lynn Pillitteri (Co-PI, Biology)
- Dr. Jackie Rose (Co-PI, BNS)

Along with 6 major users:

- Dr. Jeff Carroll (BNS)
- Dr. Suzanne Lee (Biology)
- Dr. Dan Pollard (Biology)
- Dr. Serge Smirnov (Chemistry)
- Dr. Suzanne Strom (Shannon Point Marine Center)
- Dr. Adrienne Wang (Biology)
- Dr. David Leaf (Professor Emeritus Biology)

Department News

Supporting Summer Research by Cell and Molecular Biology Grad Students

We just raised \$37,000 to support graduate research! Under the leadership of the Graduate Committee, and in partnership with the WWU Alumni Association, the College of Science and Engineering, and Northwest Laboratories, the Biology Department undertook a fundraising campaign to support summer research by graduate students who focus in cell and molecular biology. Our MS students have a tremendous opportunity to make progress on their thesis research during their first summer, when they are free from the responsibilities of taking and teaching classes. The Biology Dept has striven over the years to find ways to support this summer research, when students aren't being paid for teaching assistantships. Previous generous donations have provided sources of summer fellowships and research supplies to grad students focusing in plant and marine biology. However, the recent expansion in the number of MS students pursuing cell and molecular biology left us with a funding gap that we're now working to fill.



A WWU grad running a robotic pipettor to help speed up the processing of Covid-19 samples.

We took several steps in this campaign.

- The first was an informational webinar on March 30 focusing on the key role of students in Biology and several other WWU departments who worked at NW Labs, helping that Bellingham testing center expand its capacity for rapid COVID-19 testing during the height of the pandemic. If you missed it the first time, you can still watch the recording of that webinar here: <https://alumni.wvu.edu/event/story-pandemic-partnership>.
- We initiated a Viking Funder campaign to crowd-source support. We particularly thank Dr. Greg Wolgamot at NW Labs, who was instrumental in this campaign's ongoing success. NW Labs provided a starting donation of \$10,000 plus two additional \$5,000 matching gifts leading up to and during WWU's Give Day on May 27, 2021. Many additional donors helped us reach our initial goal of \$30,000, and we're now at almost \$37,000 and counting! The fundraiser is still open until Sept 30: <https://vikingfunder.com/CMBgradprogram>. Any additional contributions above our original goal will go towards helping to fund future cell and molecular biology grad students through a combination of building an endowment and short-term support. If you're interested in starting your own summer fellowship (\$5,000 per fellowship), please contact Amber.Asbjornsen@wvu.edu.
- We worked with the Alumni Association to reach out to past Biology graduates via text, email, and direct mail to let them know about the need and our current campaign.
- Many grad students and undergrads participated in these efforts – see their reflections on their Biology education at WWU and working at NW Labs in the short intro video on the Viking Funder page: <https://vikingfunder.com/CMBgradprogram>.

This has been a tremendous collaborative effort! The Graduate Committee wants to thank everyone who has helped make this campaign a success, from the generous donors, to the support staff at the Alumni Association and CSE (particularly big shout outs to Amber Asbjornsen, Nick Harvey, and Jeniene Bengtsson), and to the Biology grad students, undergrads, and faculty who lent their time, effort and voices to spread the word.

-David Hooper, Chair of the Biology Graduate Committee

Biology Scholarship/Award Recipients

Undergrad Scholarships and Awards

Biology Alumni Fund

Courtney Yoshiyama

Biology Student Athlete Scholarship

Katelyn Wick

Biology Department Tuition

Waiver Scholars

Amanda Jackson

Haley Walk

Katelyn Wick

Frances and Alfred Baker Memorial Scholarship

Kyra Bankhead

Biology Faculty Fellowship Fund

Elizabeth Cameron

Hodgson Family Scholarships

Darmon Ghanbari

Amanda Jackson

Declan Barron Memorial Scholarship

Darmon Ghanbari

Courtney Yoshiyama

Ross Undergraduate Scholarship

Haley Walk

Outstanding Graduating Senior Award

Christina Mong

Biology Undergraduate Research Award

Akimi Green

Maya Matsumoto

Graduate Student Awards

WWU Graduate School Outstanding Graduate Awards

Biology-MESP: Megan Russell

Biology: Tanner Thuet-Davenport

Biology Outstanding Graduate Student Research Award

Micaela Pribic

Biology Outstanding Graduate Teaching Assistant Award

Bobbie Buzzell

We also wish to recognize nominees for the Graduate Student Awards. Though not selected for the award, their nomination letters highlighted their hard work, creativity, and dedication to their research and teaching.

The Biology Outstanding Research Award: Hana Busse, Anastacia Wienecke, and Lizzie Diehl,

The Biology Outstanding TA Award: Kathleen McKeegan, and LiAn Noonan.

Department Graduates

Graduate Students

Summer 2020

Janie Aguilera - Biology
Clayton Mazur - Biology MESP
Megan Russell - Biology MESP
Amanda Stromecki - Biology MESP
Anastacia Wienecke - Biology

Fall 2020

Jonathan Blubaugh - Biology MESP
Nathaniel Guilford - Biology MESP

Winter 2021

Hana Busse - Biology MESP
Taylor Cofer - Biology
Tanner Thuet-Davenport - Biology

Spring 2021

Bobbie Buzzell - Biology

Undergraduate Students

Summer 2020

BA Biology

Parker Michaels

BS General Biology

Cassia Scott

BS Molecular and Cell

Jack Johnson
Joseph Parmenter
Kathleen Penaranda
Rex Terry

BS Ecology, Evolution and Organismal Biology

Shanon Moore
Paige Neufeld

BS Biology/Anthropology

Bryan King

Fall 2020

BA Biology

Elizabeth Cunningham
Megan Sandwith
Ashley Slemmons

BS General Biology

Erica Francoeur
Sarah Gamber
Savvy Paeth
Brooke Stoddard

BS Ecology, Evolution and Organismal Biology

Kaitlyn Diamond
Drew Larson
Daniel Rayment

Nina Scruton
James Shepherd
Annalena Stenger
Janna Bodnar

BS Marine Biology

Addison Dillon Karoline Magolske
Stephanie Guerin Shaelynne Trunk
John Leonard

BS Molecular and Cell

Jessica Adams Taryn Harris Sean Van Zandt
Charles Aikala Shiri Hayardeny Kimberly Wallace
Logan Clark Morgan Lakey Carter Wolf
Brianna Ferguson Beatriz Morales
Miles Gori Brandy Schaefer

BS Biology/Math

Sophia Cressler
Gloria Goni-Mcateer
Victoria Kelley

BS Biology/Anthropology

Lucy Brockway Serena Riley
Helen Dolejsi Emma Rodriguez
Christiane Jones Ana Stoumbos
Emma Kooyman Elliott Tan
Taylor Mohs



Department Graduates

Winter 2021

BA Biology

Sam Gillman
Megan Guanci
Kylie Larsen

BS General Biology

Auryana Ashoori John Atticus Everett
Skylar Bangarter Abigail Koenig
Julianna Chiesa Hally O'Neill
Gillian Conkling Grace Rabourn
Briana Diehl Bodi Van Roy

BS Ecology, Evolution and Organismal Biology

Taylor Murrey

BS Marine Biology

Spencer Edwards Brenna Taylor
Nina Flack Krista Thom
Garrett Michael Katharine Wicklun
Kai Pierced

BS Molecular and Cell

Myles Atkinson Michael Henderson
Abigail Belden Josh McNamara
Zerach Coakley Christina Mong
Kevin Croft

BS Biology/Anthropology

Sarah Beam Bridget Lindquist
Ashley Castle Taryn Strong
Makaila Deen Emily Van Deirse

BS Biology/Math

Margaret Barry
Annika Goranson

Spring 2021

BA Biology

Madison Brodahl
Olivia Holbrook

BS General Biology

Nick Andrews Aidan Higbee
Nicole Barrows Emily Hinojosa
Daniela Batiz Hannah Matison
Cordelia Brown Aidan Port
Joan Cho Kelsey Singer
Erik Ehlers Katelynn Smith
Carrera Gemmer Ashley Woodbury

BS Ecology, Evolution and Organismal Biology

Isabella Chang Evangeline Schmitt
Luke Codenys Shannon Schneider
Tanner Draper Jane Schrock
Zoe Gustafson Anna Szabo
Benjamin Petropoulos Anna Zywica

BS Marine Biology

Breanna Baisch
Ryan Brubaker
Lilian Gray
Jeremy Johnson
Karrin Letcher
Adrian Mendoza
Olivia Mueller
Amanda Rueda

BS Molecular and Cell

Clovas Barta-Brown Krista Miller
Alexandra Bogacz Tulip O'Neill
Bailee Burns Jessica Panwar
Corbin Chapman Christian Paradis
Melesa Chow Meghan Quinlan
Hailey Dearing Kaleb Richman
William Dowell Gabreil Santana
Hannah Downing Sarah Schweinler
Eve Dunkley Rebecca Skotheim
Ahmed Faruqi Sarah Smith
Golda Ferraz Annalisa Stewart
Akimi Green Ian Taylor
Jordyn Janshen Erin Tessier
William Magedanz Jesse Wiley
Maya Matsumoto Amy Williams
Elvis Mendez

BS Biology/Anthropology

Ethan Asay Spencer Niederstadt
Mya Gallegos Elizabeth Richmond
Reuben Glusman Jessica Steward
Sophia Hale Brenna Tennant
Parker Henrich Lucile Williams
Kellie Ketchum

BS Biology/Math

Kili Robinson
Leah Adams

BS Secondary Teaching

Austin Countryman



CONGRATS CLASS OF 2021!

Alumni Spotlight

Deborah Purce

Fellowship and Research Specialist,
Washington Sea Grant



Getting Started

I have followed what I like to call a serendipitous career path - sort of a bread crumb trail of my own curiosity and joy - with marine science as an overarching theme informed by people and places that I have felt interested in and connected to. After undergrad I worked for two years at a marine science study abroad school in Baja, Mexico and during that time I met Dr. Brian Bingham (Director - WWU MACS program & Shannon Point Marine Lab) at a conference. He encouraged me to apply to graduate school at WWU and to apply for a fellowship that would fund my studies. I was successful on both counts and joined the Donovan lab in 2004 where I studied scallop ecophysiology and was lucky enough to conduct my research back in Baja with some of my former colleagues. Dr. Donovan came down to help with some of my field work and she loved it so much that she's been teaching a tropical marine science course for WWU summer students ever since!

Work After WWU

After graduating from WWU, I decided to pursue an interest in coastal policy and management. I was granted a Fulbright scholarship to study marine protected areas in Chile and then a two-year NOAA Coastal Management fellowship through Washington Sea Grant that allowed me to work on shoreline public access projects for the Washington State Department of Ecology. In Chile I looked at the strengths and weaknesses of how natural resource managers, scientists, and resource users (including indigenous communities, commercial and recreational fishermen, and tourism providers) collaborated to establish Chile's first three marine protected areas. At the Department of Ecology I got to do a lot of on the job learning about our state and federal Coastal Zone Management programs and the nuances and challenges of providing (and protecting) public access to marine shorelines in WA state where we have an impressively complex patchwork of shoreline ownership situations.

Current Work

In my current role as the Fellowships and Research Specialist with Washington Sea Grant I manage six different marine policy, fisheries, communications and other marine science fellowships for recent graduates with an emphasis on creating pathways into marine careers for students of color, indigenous students and others who are traditionally underrepresented in these fields. I work closely with state agencies, nonprofits and tribal governments to develop fellowship positions and funding strategies. Additionally, I support the selection and implementation of competitive research grants based on proposals submitted in response to WSG's biennial request for proposals. I am proud to be a founding member of WSG's Diversity, Equity and Inclusion Workgroup where I sit on several subcommittees and champion WSG's commitment to achieving organization-wide DEI goals. I bring my perspective as a woman of color and DEI practitioner to all my work, including to my role as a founding member of WWU's Marine and Coastal Sciences Program Advisory Board.

I've always been open to many opportunities and versions of what a career in marine science might look like while continually seeking meaningful and fulfilling work/life balance. I have three young children (6, 3, and 4 months) and a husband who works in emergency medicine so being part of a workplace that offers a positive, supportive, and flexible culture is as much a priority for me as being able to do meaningful work that I care about. That has never been more true than during the Covid-19 pandemic. In this way and many others, Washington Sea Grant is a wonderful organization to be a part of.

Many of our efforts to offer a first-rate educational experience require financial backing from the state, from private foundations, and from individual donors. We are extremely grateful to the many people who have contributed donations this past year. Such donations have provided many valuable experiences and opportunities for our students, including:

- Materials, supplies, and instrumentation for undergraduate and graduate research
- Funds to help undergraduate and graduate students attend scientific meetings
- A new server to support bioinformatics and computational biology in teaching and research
- Support for the Biology Seminar Program to bring in top-notch speakers
- Undergraduate and Graduate Scholarships and Awards

Click here to donate to
WWU Biology

The faculty in the College of Science and Engineering has established a fund to provide support for Black students in science, technology, engineering, and mathematics (STEM). Black people face unique and systemic barriers to succeeding in STEM, contributing to historical and ongoing underrepresentation in undergraduate and graduate STEM programs, and in STEM careers. The impetus for the fund is the 2020 protests in support of the Black Lives Matter movement. Through this scholarship we can, together, make an impact on the educational goals of Black students at WWU for generations to come.

Our initial goal is to raise \$25,000 to establish an endowment fund that will support the scholastic and research aspirations of Black undergraduate and graduate students. Please join us in making a lasting impact for our students. Together we can make a difference.

The donation page can be found [here](#).

If you are interested in learning more about ways to continue to support the mission of Biology or Western, see <https://foundation.wwwu.edu/>.

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