GETTYSBURG COLLEGE DEPARTMENT OF
BIOLOGY Newsletter
SPRING 2022 http://www.gettysburg.edu/academics/biology/

FROM THE CHAIR

I hope this newsletter finds you healthy and safe as we are hopefully going through the last big COVID surge! For obvious reasons, we were unable to offer our annual newsletter in 2021, so we have much to cover in this edition. I probably do not have to describe too much of life in the last two years: Zoom classes, Zoom meetings, Zoom family reunions, synchronous classes, asynchronous classes, hybrid classes, online quizzes and exams, masking, reminding people that they breathe through their nose and have to cover their nose! As we acknowledge all of the difficulties of teaching and working during a pandemic, we did our best to engage students in our classrooms and research projects, to support them as we made sense of an everchanging pandemic landscape, and to remember to take care of each other.

After two three-year terms as chair, Professor **Matt Kittelberger** stepped down from chair duties in summer of 2021. We thank him for his steady leadership during the last few years, especially during three semesters of this pandemic which involved hiring a new administrative assistant and a new colleague (more on this below) mostly over Zoom. Given upcoming leaves and sabbaticals, it made the most sense for a previous chair to assume chair duties for the subsequent two years. So, as Arnold the Terminator would say, "I'm back," starting this past fall and through spring of 2023.

In 2020-21, we graduated a fantastic group of 35 Biology and 13 BMB majors, with 14 Bio and 4 BMB students achieving Honors. The Barnes award – established by Dr. and Mrs. Rodger W. Baier '79 in honor of Betty Barnes, a long-serving member of the faculty – is awarded annually to a senior "of high academic ability ... preparing for a career in biology." This past year we had many exceptional candidates and three recipients were awarded: **Alexandra Yiambilis, Elliana Vickers** and **Lilianna Mischke**. The Darrah award was established in 1980 through the generosity of the family of Biology Professors William C. and Helen H. Darrah, and is awarded annually to a student who has performed exemplary service to the biology community here at Gettysburg. The 2021 Darrah award went to **Alexandra Yiambilis** and **Taden Welsh**. Our Honors Day speaker in 2021 was **Dr. Peter Scacheri '94**, who is a tenured Professor in the Department of Genetics and Genome Sciences at Case Western Reserve School of Medicine and currently holds the Gertrude and Donnelly Hess Professorship in Oncology. After the talk, we celebrated our student honorees by an outdoor dinner served under Memorial Field Tents 7 and 8, following COVID gathering rules.

Despite the pandemic, we continue to involve our students in research, as highlighted throughout this newsletter. Currently, four members of the department are supported by external grants (Drs. Caldwell, Delesalle, Kerney and Powell; see more about these projects below). Our summer **Cross-Disciplinary Science Institute at Gettysburg (X-SIG)** went remote during the summer of 2020 but was in-person this past summer and we expect X-SIG to be in-person again this coming summer, celebrating its tenth year!

We have also welcomed three new members to the Department, Drs. **Jenna Craig, Sarah Meiss,** and **Angel Solis**. Both Jenna and Sarah are serving as Visiting Assistant Professors, while Angel is a tenure-track hire who will primarily teach Cell Biology and Immunobiology (again see details below). We said goodbye to Visiting Assistant Professors Drs. **Jerrod Hunter** and **Lauren Klabonski**. Dr. Hunter moved to Philadelphia for family reasons and started a position as a Visiting Assistant Teaching Professor at Villanova University. Dr Klabonski was hired in a tenure-track position at Methodist University in NC. We wish them the best and thank them for their many contributions to our department, especially during these uncertain times.

We are still dealing with the consequences of a pandemic, as there are profound changes to college demographics. As the headline of the Chronicle of Higher Education stated on January 13th regarding the national landscape: "fall enrollment drops 476,000 more, exceeding 1 Million since 2019". Gettysburg College, like many other institutions, will be challenged by the significant implications of these changes. And although we recognize that many of our alumni are also financially impacted by the current conditions, we want to acknowledge the support we are continuing to receive. In particular, we want to acknowledge a very generous and thoughtful gift by **Gail Seygal '67**, which will help us procure some much-needed equipment and allow us to offer more course-based research experiences (see below for details). If you are considering donating and want your donation to specifically help the Biology Department, be sure to designate your gift for "Biology Special Gifts." We sincerely thank you for all that you do to help the next generation of Gettysburg students. We hope you and your families are doing as well as possible in these challenging times.

Stay safe and well,
Kazuo Hiraizumi, Chair of Biology

GOODBYE AND HELLO

Professor Etheridge to Retire

Professor Etheridge is set to retire after this academic year (21-22). Dr. Etheridge started at Gettysburg College in 1986. As the sole physiologist in the department, she taught Comparative Animal Physiology every fall and was involved in both semesters of our introductory sequence for many years. Professor Etheridge is passionate about teaching, including teaching pedagogy, as well as art and she was able to combine these passions in her work at Gettysburg. In 1993 she was awarded a Howard Hughes Medical Institute grant to start the Advancing Science program, which loans much needed scientific equipment to local schools and teaches instructors how to use this equipment in their classroom. The program continues to this day. Since that initial award the Advancing Science Van program has been supported by many grants (totaling more than $6,500,000) but more importantly has delivered over 725,000 hands-on student experiences to 150 schools in southcentral Pennsylvania. A sabbatical allowed prof Etheridge to devote more time to painting and led her to focus on her passion for scholarship at the intersection of art and science. She has been instrumental in bringing attention to the artistic work of Maria Sibylla Merian and situating this work's important contributions to natural history, publishing a book on this subject in 2020. She has also developed a number of First Year Seminars on the connections. Between art and science (e.g., Creativity in Art and Science, Exploration of the Marvelous), ultimately resulting in a student exhibit on wonder cabinets in Fall 2019. Professor Etheridge's is finishing her time at Gettysburg College with a much-deserved sabbatical delayed by a year due to the pandemic.

In her own words: "I am living on the coast of Maine in Rockland, a great town for art, nature, food, and interesting people. This is the first place I have been able to have a garden free of deer and with enough sun to grow things, and am learning about native plants as well as growing blueberries and other fruit and vegetables. The hiking, biking and kayaking in the area is spectacular, abundant and diverse trails on land and both fresh and salt water habitats for paddling and birdwatching.

My research on connections between art and science continues with work on Maria Sibylla Merian (am co-editing a new book that will be out in the fall) and have started a new project with a broader look at insect images, with work in Virginia at the Oak Spring Garden Library and more coming up soon in Amsterdam (a much postponed trip, no thanks to Covid). Still teaching in a way (but with no grading!), leading workshops at the Oak Spring Garden Library and giving virtual lectures for the Smithsonian. In fall 2022 if travel is possible, I will give two invited lectures at Real Jardín Botánico in Madrid. Keeping busy and marginally sane!"

Dr. Angel Solis

In the fall of 2021, **Dr. Angel Solis** joined the department as a tenure-track faculty. Angel's teaching and research focuses are in immunology and cell biology, and is studying how the immune system senses and responds to its environment.

Angel grew up in Las Vegas, Nevada, where he became fascinated with the inner mechanisms of the cell. In high school, Angel was exposed to books and figures illustrating how cellular components work synchronously to perform highly specialized and critical functions in humans. Learning how these processes were controlled and how dysregulations could lead to disease made it clear to Angel that his passion was in the sciences.

After graduating high school, Angel attended Carleton College, a small liberal arts college in Northfield, Minnesota. Here, he began working towards a biology major, and became aware of opportunities that existed in biological research. As an undergraduate, Angel participated in several research internships, including summers at the University of Chicago and the University of Pennsylvania. There, Angel learned about immunology and inflammation, with a particular focus on intestinal immunity and inflammatory bowel disease.

Realizing that the immune system was a very powerful, yet highly complex system, Angel decided to pursue a PhD in immunology at Yale University in New Haven, Connecticut. During this time, Angel's research looked at how particular immune cells, called macrophages, can respond to physical mechanical force. Angel identified that PIEZO1, a mechanically-gated ion channel, can initiate strong inflammatory responses in these macrophage immune cells. His work was published in Nature in 2019.

During his time at Carleton and at Yale, Angel realized that his true passion rested in teaching and mentorship. After graduating from Yale, Angel participated in a teaching postdoc at the University of Pennsylvania. As a postdoc, Angel developed courses that were taught at nearby universities, and pushed his research in immunology and microbiology.

Angel is thrilled to join the biology department here at Gettysburg. In his first year, Angel is teaching an upper-level course in immunology, and a 200-level course in cell biology. Angel is excited to work with the gifted and talented students at Gettysburg both as a teacher and as a mentor to those interested in performing research in his lab. In his free time, Angel spends a lot of time surrounding himself with music. He has played guitar and drums for over 15 years, and finds great therapeutic value in exploring his musical creativity.

Dr. Jenna Craig

Dr. Jenna Craig joined the Biology Department in January 2020 as an adjunct professor and signed on as a Visiting Assistant Professor in the Fall of 2020. She has taught BIO112, BIO211, BIO101, BIO340, and BIO251. Dr. Craig received her B.S. in molecular biology with minors in biochemistry and coaching from Millersville University where she was also a member of the women's basketball program. During her junior year, she participated in a summer research program at Penn State Hershey in the pathology department studying lung cancer.

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BIOLOGY DEPARTMENT MISSION STATEMENT

The Biology Department has adopted a new Mission Statement, which we developed this spring: **"In a world with increasingly complex medical and ecological challenges, our students become well-rounded, compassionate, global citizens who use the power of science to effect positive change."**

This statement seems eerily timely, but in fact, department members were working on drafting this well before the COVID-19 outbreak! We are proud of present students and alumni who are indeed using the power of science to effect change, and some examples are below.

This solidified Dr. Craig's love of research and her plans to pursue a doctorate in genetics. Her thesis work focused on DNA sequence impacting chromatin structure and she graduated from The Pennsylvania State University with a doctorate in genetics in 2017. Following her doctorate, Dr. Craig joined the lab of Dr. David DeGraff at Penn State Hershey. The DeGraff lab focuses on identifying major transcription factors involved in the pathogenesis of bladder cancer in the hopes of identifying new therapeutic targets. During her postdoc, Dr. Craig focused on understanding the epigenetic and genetic regulatory mechanisms in bladder cancer. At Gettysburg College, Dr. Craig continues to investigate epigenetic mechanisms in bladder cancer using genetically altered human bladder cancer cell lines.

When asked what she loves about teaching here at Gettysburg College, Dr. Craig said the opportunity to closely interact and build relationships with students. She loves to get to know students' backgrounds, learning styles, and what interests them after graduation. The ability to closely interact with students have provided her the ability to fine tune her teaching approach and be creative in the classroom.

Outside of her career, Dr. Craig enjoys spending time with her children Maddie and Beau, being outdoors to go for hikes and fishing, watching and attending (pre-COVID) sporting events, and visiting her family and friends. Whenever she has free time, she loves to play Catan or work on a 1000-piece puzzle.

Dr. Sarah Meiss

Dr. Meiss joined the Biology Department in Fall 2021 as a Visiting Assistant Professor, taking a leave from her home institution, the California University of Pennsylvania to be closer to family. Dr. Meiss grew up in Harrisburg, Pa., and went to college at nearby Bloomsburg University. She then traveled to Athens, Ohio, to earn her Ph.D. in plant microbe interactions at Ohio University. After she received her Ph.D., she got a job teaching biology at Denison University in Granville, Ohio. There, she taught courses in environmental microbiology, plant biology, and cellular and molecular biology. She then applied for and took a tenure-track job at Cal U in 2007. Her research involves plant microbe interactions, specifically in an agricultural setting. She enjoys studying fungi and other organisms that live in the soil and interact with plants.

Nese Ozgur

We are pleased to welcome **Nese Ozgur**, our new administrative assistant in Biology. Nese joined us in September 2020. Stepping into her new role during a challenging pandemic environment, Nese has done an excellent job in managing the department's many daily activities and steadily moving us forward. Holding a Master's Degree in Economics from the University of Utah, Nese is an experienced project coordinator, specializing in European Research Council-supported projects. Before joining us at Gettysburg College, Nese served as a project coordinator at Bilkent University, Turkey. We are excited and fortunate to have her join the Biology family.

X-SIG SUMMER RESEARCH 2020 AND 2021

The Cross-Disciplinary Science Institute at Gettysburg College (X-SIG) concluded its ninth year this past summer (2021). As with everything during the pandemic the last two summers have presented their challenges. In 2020, the X-SIG was completely virtual with four Biology faculty involving nine students in research – mostly projects focused on bioinformatics or data analyses of videos. Across division 3 (the natural sciences division), 15 faculty were able to engage 35 students in meaningful projects. In 2021, we returned to a mostly in-person summer program, although a few non-Biology faculty sponsored remote projects. In total, 72 students (six students were sponsored through external grants) were involved in research with 29 faculty. Given the lack of research opportunities in summer 2020, we made a concerted effort to involve as many students as possible in our 2021 program. In Biology that translated into 27 students working with 10 faculty members. We started the semester with an indoor masking policy that got relaxed for a few weeks in July. We took advantage of beautiful weather to have lab meetings and our X-SIG brown-bag lunches outside as often as possible. And we greatly enjoyed the vibrancy that was added to our campus by our research students.

We are grateful that additional gifts are allowing us to support more students and provide more competitive stipends. In particular, the "**Bruce R. Roberts Endowed Fund for Student Faculty Research in Biology**" made its maiden appearance by supporting Elizabeth Mehesey '22 working with Dr. Hiraizumi this past summer. We are tremendously grateful for Dr. Roberts' generosity in establishing this endowed fund. If you are interested in helping us continue these initiatives, do let us know. In particular, we have very limited funds to take our students to national meetings or do research abroad. With registration, travel and hotel, attending a meeting can cost more than $1000 per student!

All summer 2021 students contributed to the X-SIG Summer Research Blog.
These are great entries with lively writing and super photos.
Check it out at: https://xsigsummer.wordpress.com
You can stay updated about activities associated with our X-SIG program at our web site: http://www.gettysburg.edu/about/offices/provost/hhmi/

Véronique A. Delesalle
X-SIG Board Member

CALDWELL LAB, 2020-21

The Caldwell lab continued their research into sound and vibrational communication between frogs and adapted some of this research to investigate the possibility that birds may use plant-borne vibrations to communicate. Lilianna Mischke ’21 worked with Dr. Caldwell to characterize the information carried by plant vibrations produced by calling red-eyed treefrogs. She found that the vibrations produced by calling frogs carry much of the same information as airborne sounds produced by the calls, but also identified consistent differences in these two signal components which are likely relevant to aggressive and courtship interactions. We presented this work in a coauthored talk at the annual Animal Behavior Society conference.

Julianna Mendez ’23 and Aidan Phillips ’21 worked with Dr. Caldwell to determine whether calling purple martins on the Gettysburg College campus produce similar vibrations. Using a parabolic microphone and a laser Doppler vibrometer Julianna and Aiden created a catalog of vibrations these bird produce in their perches. We plan to use these recorded vibrations in future playback experiments with the martins.

Xandra Yiambilis ’21 and Zowie Searcy ’21 analyzed the behavior of frog eating bats as they swooped down to attack simulated prey. We found that these bats can switch their choice of prey mid-flight, but that this last-minute change reduces the accuracy of the attack. For bats, it may be preferable to miss a frog by a few centimeters rather than to waste energy attacking prey that has already hopped away.

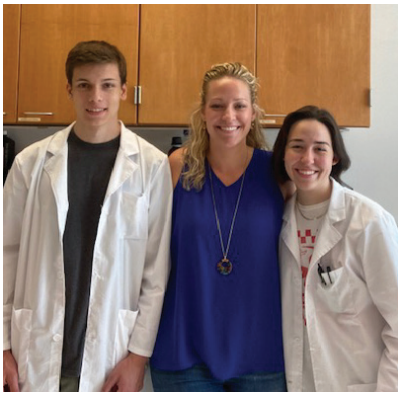
Julianna Mendez and Aidan Phillips record vibrations produced by singing purple martins.

Other work by Dr. Caldwell and his collaborators on how the biomechanics of red-eyed treefrog egg-clutches affect the ability of embryos to escape egg predators was presented at the Society for Integrative and Comparative Biology conference.

Finally, and in collaboration with Dr. Trillo, Dr. Caldwell was awarded a Smithsonian Scholarly Studies award. This funding will support field research by Gettysburg College students into the influence of eavesdropping parasites on the calling dynamics of mixed-species frog choruses at the Smithsonian Tropical Research Institute in Panama.

CRAIG LAB, 2020-21

Since the initial start-up of the Craig lab in Summer 2021, we have had new members and new funding! Two X-SIG students, Everett Gillis and Lucy Bourdeau, were members of the Craig lab in the Summer of 2021. Both students experienced the defeat and success of research in their projects and presented their work in the Fall to their fellow students, faculty, and family. Even more exciting, the Craig lab was awarded funding via a Research and Professional Development Grant through Gettysburg College. This will fund several students’ research projects for the next two years. Currently, Kelly Gaudian is completing a BIO460 focused on determining the consequences of RB1 loss in human luminal bladder cancer cells. She will also characterize the alteration to the DNA methylation profile in these cells following RB1 deletion. Everett Gillis has also returned for the Spring 2022 semester for a BIO290. He will continue to determine drug efficacy in bladder cancer cells lines with and without altered RB1 status. Additionally, the Craig lab is looking forward to welcoming two X-SIG summer research students this coming summer. These students will continue to expand on the progress and success of Everett, Lucy, and Kelly’s projects. Dr. Craig is very grateful for the hard work these students have put in to these projects over the last year as it has been an excellent start to the research program in Dr. Craig’s lab!



Everett Gillis, Dr. Craig and Lucy Bourdeau

DELESALLE LAB, 2020-21

The Delesalle lab, aka the Phages Rock lab, went remote from March 2020 until May 2021. Happily, we had enough data to sustain us during this period. So, Rachel Loney ’20 and Will Stump ’20 were able to finish their capstone projects. Rachel is currently working at Walter Reed and applying to graduate school, while Will is working on his Master’s at Drexel. In summer 2020, Sam Roth ’21 and Leigh Magness ’22 worked on a total of 13 genome annotations that have all been submitted to the NCBI database. Sam did a comparative study of her seven phages for her capstone project and was a co-author on three “Microbiology Resource Announcements” papers published this past fall.

In summer 2021, five students were back doing wet work in my lab. Sam and Leigh took the lead in training new lab members: Sarah Ellis ’22; Megan Czerpak ’23 and Anya Pant ’24. My research collaborator, Dr. Greg Krukonis, was also on campus. We conducted an

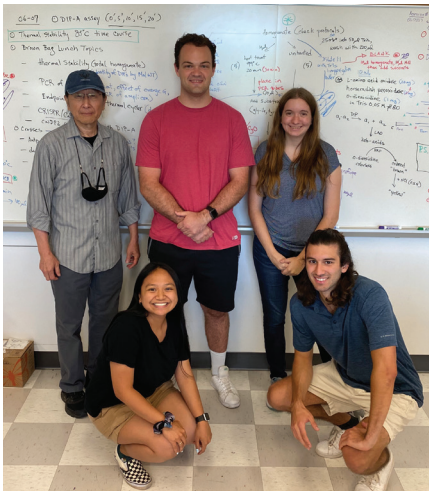
experimental evolution study focusing on the genetic changes in two related phages as they adapted to two related hosts under two different treatments (so eight experimental groups). We extracted DNA from over 60 samples and will compare the genomes of the evolved phages as they adapted to "killing" their new hosts. Preliminary data look very promising and the lab is looking forward to delving into data analyses this coming semester.

Our DNA samples have been sent for sequencing: jumping for joy!

Lab Summer 2021: Dr. Delesalle, Sarah Ellis, Leigh Magness, Sam Roth, Lab Summer 2021: Megan Czerpak, Anya Pant, Greg Krukonis

HIRAIZUMI LAB, 2020-21

Navigating through the pandemic to offer research opportunities to students has been a challenge but new directions have presented themselves as a consequence. The Drosophila lab continues to study the genetic regulation of digestive enzymes using Drosophila melanogaster as a model system. During the summer of 2020, four students (Elizabeth Mehesy BMB '22, Nate Rell Biology '22, Abby Roy Biology '23, Caroline Soderman Biology '22) participated in the X-SIG summer research program remotely. They used online bioinformatics tools to compare protein structure of different peptidase enzymes and to conduct phylogenetic analysis of their amino acid sequence in addition to their respective gene sequences. During the summer of 2021, four X-SIG summer research interns (Manti Batistas Biology '21, Fran Amor Aguilar Biology '22, Elizabeth Mehesy BMB '22, Justin Winkel Biology '22) conducted experiments in person in the research lab. Some of the projects included construction of a CRISPR/Cas9 vector to knockout the Dip-B dipeptidase gene in Drosophila melanogaster cell line, comparison of Drosophila DIP-A enzyme and human non-cytosolic carnosine dipeptidase II, and optimizing a microassay for dipeptidase enzyme activities. During the 2021 - 22 academic year, six students are contributing to the continuation of these research projects in addition to exploration of transcriptional regulation of Drosophila DIP-C, an analogue of the human prolidase enzyme that is involved in collagen metabolism. All of the students are excited to be back in the lab and are looking forward to completing various experiments.



Dr Hiraizumi, Franchesca Aguilar, Justin Winkel, Elizabeth Mehesy, Manti Batistas

FONG LAB, 2020-21

Professor Fong's lab continues to work on the effects of human pharmaceuticals, such as antidepressants, on aquatic organisms. In the spring of 2020, Isabelle Hanna (Biology'20) completed a Biology 460 project on the loss of algal symbionts in sea anemones exposed to the antidepressant fluoxetine (Prozac). This work was initially begun by Olivia Lambert (Biology'18) and Courtney Ward (Biology'20). These students found that loss of symbionts occurs within 4 days of exposure, which has potential consequences for animals like corals which depend upon algal symbionts for survival.

Emma Hedgepeth (Biology'22) is continuing work begun in summer'20 on the uptake of gold nanoparticles by adult and juvenile freshwater clams. Emma is currently measuring gold nanoparticles in the laboratory of Chemistry Professor, Lucas Thompson.

Summer'21 X-Sig students from left to right Rebecca Blaszczyk (BMB'23), Molly Butler (Biology'24), and Jake Stergio (Bio/ES'24) collecting crabs and snails from an intertidal mud flat at Lewes, Delaware.

In the summer of 2021, Professor Fong and his X-Sig students Rebecca Blaszczyk (BMB'23), Molly Butler (Biology'24), and Jake Stergio (Bio/ES'24), worked on two projects, 1) the effects of serotonin, serotonergic ligands, and antidepressants on the activity of the foot in freshwater clams and 2) how exposure to antifouling chemicals affects behavior in intertidal crabs. This tireless group of students known as "Operation Crustacean" found that normal clam foot behavior could be disrupted by neurotransmitters and antidepressants. The latter group of chemicals being important environmentally as contaminants of emerging concern.

KERNEY LAB, 2020-21

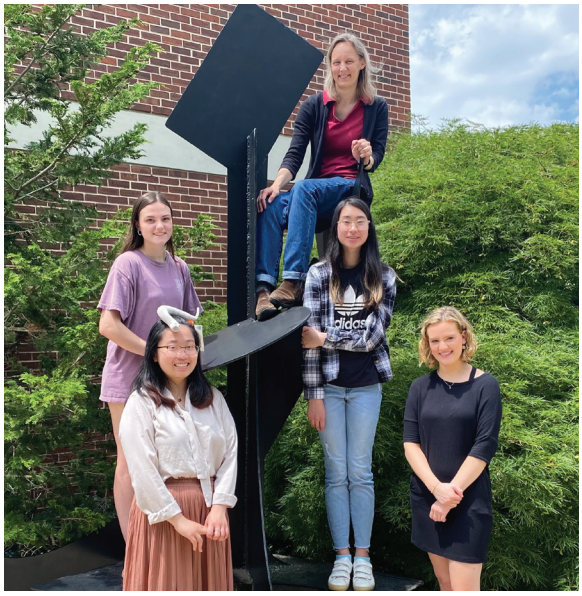
The Kerney lab has had a busy year with various lab- and field-based research projects. Elliana Vickers ('21) was hired for six months as a post graduate researcher, and worked on projects in collaboration with Solange Duhamel and Hui Yang from the University of Arizona. Mathew Cherubino ('22) and Christina Sanchez ('23) spent a summer working through the X-Sig program on tail tip regeneration and lungless salamander development, respectively. Matt continued through the fall and worked closely with Zoe Bender ('22) and the "Tail Tip Team" on regeneration research and a review article that was just accepted to Trends in Biotechnology. Additional publications from the lab included a review of embryo microbiomes and a collaboration on microbiota associated with German agile frog (*Rana dalmantina*) embryos. Dr. Kerney taught two new courses: "Comparative Vertebate Morphology" (Bio230) in the Spring semester, and "Special Topics: Regenerative Biology" (Bio250) in the Fall semester. Dr. Kerney will be teaching the London Seminar in the Fall of 2022, which will focus on the history and implications of Darwinism.

Tail tip team Fall 2021: Zoe Bender, Christine Ciganik, Sarah Feldman, Nathan Motel, Preston Southwick, and Matt Cherubino

POWELL LAB, 2020-21

Jennifer Powell spent the first half of 2020 on sabbatical in Germany. She worked in the lab of Dr. Ralf Baumeister at the University of Freiburg, at least as much as pandemic restrictions permitted! Luckily, there was plenty of local hiking and outdoor activities to keep Jen and her family entertained during the lockdown. Jen's sabbatical was extended during the 20-21 academic year so that she could replace research materials lost due to an equipment failure, with the expert assistance of recent Powell lab graduate San Luc ('20).

Meanwhile, the Powell Lab has continued exploring the molecular mechanisms by which cells respond to different types of stress, including infection, oxidative, cold, and osmotic stress. Jen attended and/or presented at several virtual meetings, including the European *C. elegans* Meeting and the Allied Genetics Conference in 2020 and the International *C. elegans* Meeting in 2021. San Luc ('20) also presented a poster at the International *C. elegans* Meeting. Jen recently co-authored the paper "Cold shock induces a terminal investment reproductive response in *C. elegans*" with first author Leah Gulyas ('19); this work was Leah's undergraduate thesis research from the Powell lab, and her second first author paper from her time at Gettysburg.



Isabella Jensen, San Luc, Dr. Powell, Alisa Liu, Keira Tuberty

TRILLO LAB, 2020-21

In 2021, Dr. Trillo's lab published the article: "Mechanisms of collateral damage: heterospecific neighbor density mediates parasitism by eavesdroppers on hourglass treefrogs" in the journal Ethology, Ecology and Evolution with Brian Ruether '19 as first author and Meghan Brady '16, Taylor Derick '20, Brendan Dula '16, Sarah Smith '17, as co-authors. This was the culmination of a three-summer long experiment at the Smithsonian Tropical Research Institute in Panama. In collaboration with Dr. Caldwell from Gettysburg College and colleagues from Dartmouth and the Smithsonian Tropical Research Institute, Dr. Trillo was also awarded a Scholarly Studies Grant from the Smithsonian Institution, to continue to carry out her studies on eavesdropper predator and parasite attraction to mixed-species aggregations of frogs. With this grant, the lab will be able to employ an acoustic camera to examine real time spatial and temporal changes in call behavior when mixed-species frog choruses are faced with different levels of eavesdropping predation and parasitism pressure. Also in 2021, Aidan Phillips '21 completed research at Dr. Trillo's lab investigating eavesdropping fringe-lipped bat preferences for novel calls of túngara frogs. Aidan found that fringe-lipped bats have latent preferences for novel calls that differ from those of female túngara frogs. This result helps us understand the sensory ecology of fringe-lipped bats and gives us an insight into potential novel evolutionary trajectories for túngara mating calls.

Oliver Pickering, Dr. Trillo, Lidia Molina-Serpas

GIFTS FROM ALUMS

Gail Seygal, Class of 1967

We are very pleased to announce a generous gift of $300,000 from **Gail Seygal, class of 1967**, for the purchase of **three epifluorescence microscopes**, and for the establishment of several **course-based undergraduate research experiences (CUREs)**, to be developed over the next 3-4 years. The new microscopes are student-friendly and research-capable, and will be especially valued in our core Cell Biology course, where our majors will use them to conduct experiments with cancer cell lines. The scopes also bring important new technology for student-faculty research, including temperature and CO2-controlled environment, Z-stacking of images, and sophisticated quantitative analysis tools to enable deconvolution of Z-stacks and many other applications. For research-based courses, this gift will provide for course releases, supplies and reagents, and new equipment. We are very excited to bring these new tools and enhanced learning opportunities to our students!

In providing this transformational gift, Gail reflected on her love of biology and her special connections with the Biology Department. Gail states that "Biology has always been a special interest (for me). My father was a physician in Harrisburg, PA and I had early access to his medical textbooks and his microscope and slides from medical school. Thanksgiving always included lessons on the dissection of the turkey. I chose Gettysburg College because they had a strong biology department. I have fond memories of Dr. Robert Barnes, Mr. William Darrah, Dr. Ralph Cavaliere, and Dr. Neil Beach"

Upon graduating in 1967, Gail worked as a research assistant at various laboratories at the University of Pennsylvania, Monell Chemical Senses Center, University of Texas Medical School Houston and Harvard School of Public Health in Boston. In 1981 she returned to school at Thomas Jefferson University in Philadelphia to become an Occupational Therapist, and worked with a variety of patients and retired in 1996. She became a volunteer docent at the Philadelphia Zoo, helping with research projects and teaching guests about conservation, enrichment, and animal behavior. Gail also owned a restaurant in Philadelphia!

Gail says that "I have supported the College for many years but have made the Biology Department my focus in recent years. The opportunities that are available now for students are so exciting. I am very happy to be able to help with the new epifluorescence microscopes. The projects your students are tackling are challenging and appropriate for the needs of today. It makes me proud to see Gettysburg College students taking advantage of all the possibilities available to them."

We and our students are looking forward to thanking Gail in person when she next visits our campus, hopefully soon. Until then, our biggest thank you for her support.

Peter Cordray, Class of 1995

Peter Cordray '95 gifted the Biology Department with a donation of nearly $35,000 to acquire a **new qPCR machine**. qRT-PCR, or Quantitative Reverse Transcriptase PCR, is a powerful technique to measure gene activity, using the Polymerase Chain Reaction (PCR) to quantify the RNA that results from the expression of a gene. This vital technology will enhance faculty-student research by allowing studies which measure changes in the expression of a gene in, for example, normal versus malignant cells, pharmacological studies to measure the effects of drug treatment on gene expression, and immunological studies of quiescent versus activated macrophages and other white blood cells of the immune system. This new machine has barely been set up and already faculty and students are lining up with their experiments! Thank you, Peter, for this wonderful gift!

STEM SCHOLARS PROGRAM

Dr. Urcuyo was awarded the inaugural **Bruce S. Gordon Diversity, Equity, and Inclusion Teaching Excellence Prize**, in large part for his work as the program director of our STEM Scholar program. This is a scholarship and mentoring program designed to recruit, retain and graduate first-generation and underrepresented minorities in the sciences. Every fall, Gettysburg College's STEM Scholars Program welcomes a cohort of approximately 10 first-year students who plan to earn a bachelor's degree in any of the following disciplines: Biology, Biochemistry & Molecular Biology, Chemistry, Computer Science, Environmental Studies (B.Sci only), Health Sciences, Math, Physics and Psychology. By carefully targeting recruitment efforts and providing mentoring during the crucial first and second years, this program creates a supportive environment to nurture students for the purpose of retention in their chosen STEM majors and persistence in the STEM workforce after graduation. Below Dr. Urcuyo provides a summary of this program's accomplishments:

> "Our Program has supported 58 students in six cohorts (including students initially supported by a National Science Foundation S-STEM grant to Gettysburg College in 2014). I am happy to share that our program has graduated 10 Bio/BMB majors in our first two cohorts (members of the class of '20 and '21) and we have a total of 36 STEM Scholar students currently enrolled (6 of them are Bio/BMB). Our Program's STEM retention rate (those students who were initially admitted to the STEM Scholars Program and either already graduated with a STEM degree or are currently pursuing a STEM degree) is 94%. We are very excited for the success of the STEM Scholars Program and also honored to be working with these talented, resilient and inspiring students. If you know of a rising high school junior or senior who might be interested in learning more about the STEM Scholars Program at Gettysburg College please ask them to visit our website at http://www.gettysburg.edu/s-stem/ and contact our Admissions Office (Tyra Crosbie '17, tcrosbie@gettysburg.edu, Senior Assistant Director of Admissions) or myself (Dr. István Urcuyo, iurcuyo@gettysburg.edu, STEM Scholars Program Director)."

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Supporting the Biology Department

Any gifts that you make to the Gettysburg Fund indirectly support the work that we do in the Biology Department. If, in addition, you want to support the Biology Department directly, you can now do that in one of two ways:

- Donations to the "**Alberte Fund**" will allow us to grow that resource and to support more summer student researchers.
- Donations to the "**Biology Special Gifts**" fund will be used to support new teaching initiatives and to buy small pieces of equipment for particular research projects.

Until the next Newsletter

Please visit the departmental website at www.gettysburg.edu/academics/biology/ for more stories about student and faculty research, and current information about the department. And remember, we always love to hear from our alums and have set up a web site for your updates: https://www.gettysburg.edu/academic-programs/biology/alumni/alumni-news