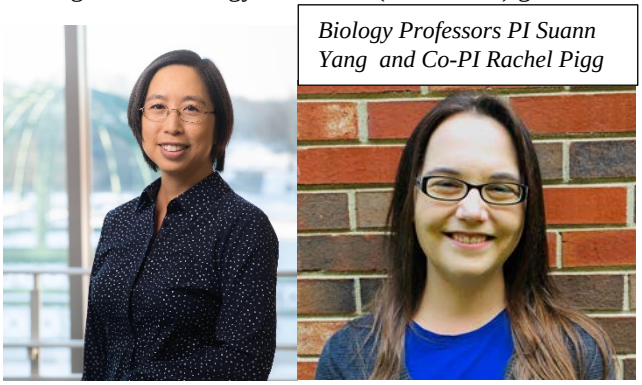
THE PROPOSAL

The Geneseo Office of Sponsored Research Newsletter Fall 2021

Fostering Networking, Data Literacy, and Belongingness

As with other STEM disciplines, biology undergraduates from historically excluded groups graduate at lower rates than their counterparts. To ameliorate this problem, during the midst of the pandemic this past winter Geneseo Associate Professor of Biology Suann Yang (PI) teamed up with a colleague and friend, Assistant Professor of Biology at the University of Louisville Kentucky Rachel Pigg (co-PI), to apply for a National Science Foundation Research Coordination Networks in Undergraduate Biology Education (RCN-UBE) grant.



Biology Professors PI Suann Yang and Co-PI Rachel Pigg

The PIs had ideas about how to increase student persistence in biology by boosting student confidence, increasing data literacy, and fostering a sense of belonging. They proposed to cultivate diversity in undergraduate biology classrooms by highlighting the contributions of biologists who are members of historically excluded groups in *Biologists and Graph Interpretation (BioGraphI): Professional development for an online curriculum to foster data literacy and value diverse identities*, one of only 12 RCN-UBE proposals funded in 2021. The PIs were awarded $499,978 for the five-year, nation-wide project, beginning October 15.

The Online Educational Resources developed will address data literacy and foster diversity in undergraduate biology classrooms by framing lessons on graph and data interpretation around the scientific contributions of biologists who are members of historically excluded groups and creating video interviews with them.

The database of BiographI modules will provide an accessible alternative to textbook resources that historically have not highlighted the work of counterstereotypical scientists. Throughout the project, over 200 faculty members nationwide will participate in professional development in inclusive, evidence-based teaching methods and improve their abilities to support diverse perspectives of their students in the biology community. Participants will engage with and support one another via network-wide online activities and discussion boards. With more diverse representation and deliberate integration of data literacy skills in biology courses, all students are expected to have a greater sense of belongingness as well as an increased confidence in the biology classroom. Student benefits from combining data literacy with diverse identities will be assessed though faculty and student reflections on how the modules affect student learning, self-efficacy, and persistence of historically excluded groups in undergraduate biology programs.

"By targeting production of OER and professional development, our project specifically addresses two American Association for the Advancement of Science (AAAS) Vision and Change Action Items: the need for opportunities for faculty to enhance their pedagogical expertise and the importance of looking beyond existing textbooks for course resources," says Yang. ♦

Persistence Pays Off

The Integrated Science Center will soon have a new state-of-the-art instrument, thanks to Professor of Chemistry Kazu Yokoyama's persistence in re-applying for a National Science Foundation Major Research Instrumentation (MRI) grant. His award-winning proposal, *Acquisition of a Three-Dimensional Raman Imaging System for the Integrated Science Center (ISC) of SUNY Geneseo*, was granted $210,132 to purchase a WITec alpha300 R Confocal Raman Microscope System with add-ons, training, and onsite installation in the ISC—scheduled for November 2021. The award also supports the creation of new curricula in advanced laboratory sections in chemistry, biology and geological sciences. (*continued on p.2)*

Top: Co-PIs Jani Lewis, Dori Farthing, Nick Warner
Bottom: Professor James Aimers, and PI Kazu Yokoyama

Persistence Pays Off *(continued)*

WITec's Alpha300 R combines Confocal Optical Microscopy with Raman Spectroscopy in one platform operated by one controller/software system, and the Raman images are created with the highest possible spatial and depth resolution possible.

"This grant application started from the time when I fell in love with the system at the workshop of WITech held at Harvard University in 2014," says PI Yokoyama. "Since then, I was able to establish a great relationship with the technical staff of WITech." PI Yokoyama credits the company's discount for SUNY Geneseo's purchase to this relationship.

The WITec system's modular design makes possible five research projects by SUNY Geneseo's faculty:

PI Yokoyama (Chemistry) is studying how pathogenic viruses, including chikungunya, dengue, and some types of coronaviruses, become protected by a viral membrane which requires a viral capsid to fuse with a cell as an initial step in the infection process. He will use the instrument to monitor the cell fusion process in SARS-CoV2 membrane protein to elucidate the underlying physical principles governing the kinetics of this protein machinery.

Co-PI Jani Lewis (Biology) will use the instrument to identify and classify changes in protein expression and localization associated with epithelial-mesenchymal transitions—a biologic process in which epithelial cells are converted to more invasive and active mesenchymal cells—in human vulvar carcinomas after exposure to a corticosteroid medicine traditionally used to treat cancer vulvar inflammation. Changes characteristic of the clobetasol induced protein expression and localization could help with staging and subsequent treatment options of vulvar cancers.

Co-PI Dori Farthing (Geological Sciences) will use Raman imaging to enhance understanding of the mineralogy and chemical makeup of slags (the byproduct of smelting—a process that enables metal to be extracted from natural ore) with the goal of determining whether a slag will release unhealthy chemicals into the surroundings.

Co-PI Nicholas Warner (Geological Sciences) investigates the past habitability (i.e., the potential for life) on Mars. His studies will be enhanced by Raman spectroscopy, which can be used to characterize key mineral signatures that indicate the presence of water. His work directly relates to NASA mission objectives and the ongoing exploration of potentially habitable environments.

Professor James Aimers (Anthropology) will use the 3D Raman imaging technique to analyze pottery samples quickly and help determine the manufacturing techniques of stylistic types, to investigate pottery from the ancient Maya site of Tipu, Belize. The main goal of this research is to use technological groupings of the pottery to suggest patterns of exchange across Maya sites.

The instrument also can be adapted to other research projects and will be made available to faculty and undergraduate researchers from St. John Fisher College and other regional institutions of higher education. Upon installation of the instrument, Geneseo will become the only institution in the Rochester region possessing a Raman Imaging System with the highest capability available in the current market. ♦

We've Moved!

The Offices of Sponsored Research and Grant Management have moved in together at Erwin 221. Stop by to see our new surroundings!

Upcoming Deadlines for Faculty
https://www.geneseo.edu/sponsored_research/internal
Upcoming Deadlines for Students
https://www.geneseo.edu/undergraduate_research/campus-based-research-funding

Council on Undergraduate Research
Learning Through Research

CUR provides resources such as webinars, seminars, workshops and institutes on various topics related to undergraduate research. CUR provides information and resources regarding undergraduate research across diverse fields, and an electronic subscription to the CUR Quarterly is included when you sign up. Our enhanced institutional membership covers the cost.

Activate your enhanced institutional membership here: https://www.cur.org/what/membership/join/enhanced/, listing your institution as "State University of New York- Geneseo."

Metabolic Activity of Deep-sea Fishes

Brett Woodworth
Class of 2022

Faculty Sponsor:
Dr. Mackenzie Gerringer,
Biology

Tell us about your project: We tested metabolism, the sum of all chemical reactions in the body, with depth through the way fish move, or swimming kinematics, over a depth range of 0 - 5,878 meters. A proxy for metabolism, swimming kinematics include speed and tail beat frequency. We analyzed deep-sea fish videos taken from the NOAA's Okeanos Explorer, while I recorded and analyzed my own videos of shallow-water fishes at the Friday Harbor Laboratories in Washington state. My results show that swimming speed decreased with habitat depth in certain fishes; and speed decreased as water temperature and ocean oxygen concentration decreased. Low temperatures and oxygen levels are thought to slow metabolic activity, so, the metabolism of deep-sea fish seems to be slower when compared to shallow-water fish.

How is your project funded? The Geneseo Foundation Undergraduate Summer Research Fellowship and Friday Harbor Lab's NSF Research Experiences for Undergraduates (REU) Program.

What did you hope to gain from working on this project? Hands-on lab experience.

Is there anything that has surprised you? Patience is a big part of research**,** and to see your work completed is satisfying. I've been working on this project since my junior year and there's still more to go! If experiments fail, it's a learning experience that hones your skills as a researcher.

How has working on this project impacted your long-term plans? Before the project I was contemplating Pre-Med or a marine biology related field. The amount of information that is still unknown about the deep sea pulled me toward a career in marine biology research.

What have you enjoyed the most? My experience in Friday Harbor—collecting specimens, then labwork to record and analyze data and interacting with scientists.

What advice do you have for other students? Look for a research project or topic of study you're interested in. ♦

Journalists' Perceptions of Mass Shootings*

Tyler Grasso
Class of 2022

Faculty Sponsor:
Dr. Atushi Tajima,
Communication

Tell us about your project: We look at how the 2017 Sutherland Springs and 2019 El Paso shootings were presented in both local and national news media. Dr. Tajima and I have reviewed news coverage by the *San Antonio Express-News*, the *El Paso Times*, and *The New York Times* to see how different elements of the shootings are presented. I interviewed two journalists who reported on the Sutherland Springs shooting. Their insights have been incredibly helpful.

How is your project funded? I was awarded a part-time summer fellowship through the Geneseo Foundation's Undergraduate Summer Research Fellowship program.

What did you hope to gain from working on this project? New research skills and experiences from working on a rigorous research project, and a greater understanding of how news media operate and present tragedies to their readership.

Is there anything that has surprised you? The fundamental disparity between the Sutherland Springs and El Paso shootings. While the two appear to be similar on the surface level, any level of analysis will reveal that the two events are radically different, and they are likewise presented by the news media in completely different ways.

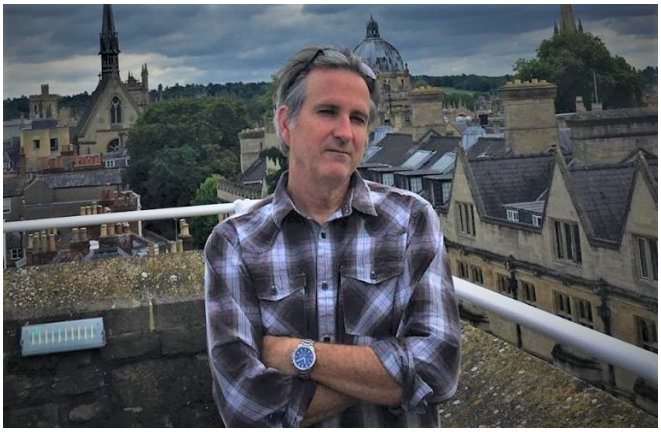
How has working on this project impacted your long-term plans? It has given me the confidence to consider applying to graduate schools, so I am excited to see where that goes.

What have you enjoyed the most? The interviews that I conducted with the journalists have been one of the highlights of this project. It was humbling to speak with professionals about their fields and journalistic processes on the whole.

What advice do you have for other students who may be interested in working on a research project? My advice for students who think that they'd be interested in working on a research project is this: don't be afraid to reach out to faculty members about doing a project. Even if you're unsure about what you want to research, it won't do any harm to talk with different professors about potential options. ♦

*Tyler and his sponsor plan to submit their paper to Eastern Communication Association and to journals for publication.

Showcasing Local History



Once Distinguished Professor of History Michael Leroy Oberg launched the Center for Local and Municipal History, he realized that on top of his teaching and research responsibilities the job of Center Director was too big for him to handle alone. Dr. Oberg began looking for grants to fund the salary of a director. He applied for and was awarded an NEH American Rescue Plan: Humanities Organizations grant, for humanities institutions that are feeling the impact of COVID-19.

The $172,615 grant will support a 0.75 FTE Director for the Geneseo Center for Local and Municipal History for one year, the maximum length of award. Funds will also support 21 undergraduate student interns who will work with local historians to research local history collections. When completed, the projects will be incorporated into exhibits at local history museums and in digital projects that will be displayed on the Center's webpage. Projects already completed include:

- The ratification of the 19th Amendment in Rural NYS
- Native American women in Buffalo, New York, late 19th and early 20th centuries
- Italian immigration into Livingston County
- The history of salt-mining in Livingston County

The new part-time director will teach two courses in public history during the year, including Teaching Local History for education majors in spring 2022; network and liaise with the Center's partners, especially local history centers, societies, and official municipal historians, as well as nonprofits, foundations, history organizations, businesses, and other groups; recruit, place, and advise interns; annually evaluate the internship program; oversee the development of the Center's website; apply for external funding to sustain the Center and work with College Advancement to identify donors; and recruit and mentor students pursuing the new, accelerated BA/MA Program between Geneseo and Claremont Graduate School. ♦

Introducing Nicole Manapol

The Center for Integrative Learning (CIL) Community Development Specialist Nicole Manapol is a Peace Corps Fellow with an MPA from the Middlebury Institute of International Studies. She holds a BS in International Affairs from Georgetown University's School of Foreign Service and lived and worked in 14 different countries as an international development practitioner. After returning to her roots in Livingston County to be closer to family and help launch the Letchworth Gateway Villages initiative, Nicole was hired by the SUNY Performance and Investment Fund grant-supported CIL position in 2020. She is building CIL's capacity to respond to regional needs, in part by pursuing external grants for the CIL.

Nicole helped secure a $152,629 grant from the Northern Border Regional Commission and USDA to establish the Genesee Valley Rural Innovation Institute, whose goal are to:

- Attract new talent to the Genesee Valley by creating a supportive hub for creative and entrepreneurial people

- Stem "brain drain" by providing employment pathways for youth and Geneseo graduates to live locally and work globally

- Create a physical and virtual space where rural innovators and educators can design a 21st Century rural economy with diversified, sustainable and inclusive ventures that draw upon our regional assets and strengths.

To reach these goals, the institute will develop Geneseo-wide expertise in design thinking over the next 15 months. "Design thinking, or Human Centered Design, is a process for creative problem solving used by various sectors that puts people at the center of the design process. While design thinking is often associated with tech and engineering, it is used in government, education, and nonprofits to drive social innovation or organizational change," says Nicole. The institute certified 9 faculty and staff in Design Thinking in August 2021. Certificate holders are developing micro-credentials, courses, and other projects that promote rural innovation and address regional development challenges. ♦
https://www.geneseo.edu/cil/genesee-valley-rural-innovation-institute

Forum on Constitutionalism and Democracy

Project Director (PD) and Lecturer in Philosophy Carly Herold and Co-PD Assistant Professor of Political Science & International Relations Aaron Herold have received a renewal award of $15,000 from the Jack Miller Center to continue the SUNY Geneseo Forum on Constitutionalism and Democracy program focusing on America's constitutional principles and history.

Drs. Carly and Aaron Herold

The program will host four speakers and at least two student discussion groups during 2021-22, as well as a keynote speaker for the 2022 Summer Institute in Justice and Ethics in Modern America. The events will all continue to reflect on the theme of rights, law, and morality, and their connections to civic education.

The Summer Institute is a four-week remote study program for high school students that introduces the relevance of philosophy in examining both the ethical and political challenges that currently face American society. PD Carly Herold and Associate Professor and Chair of the Department of Philosophy David Levy co-directed the first Summer Institute in 2021 and are working to expand its size and scope, including developing it into a residential program in 2022 that will include discussion groups, visits to sites of historical and political interest in our region, and the keynote address, which will be covered by the Jack Miller Center grant. Dr. Carly Herold is also the Coordinator of Geneseo's Conflict Studies Minor and Dr. Aaron Herold is the coordinator of the Legal Studies minor.♦

Changes in NSF Biosketches and Current & Pending Support

In the latest NSF Proposal & Award Policies & Procedures Guide (PAPPG), effective October 4, 2021, the Biographical Sketches format has been revised to **increase the page limit to three pages.** Individuals designated as senior personnel now must use SciENcv or the NSF Fillable PDF form to prepare their biosketches.

The PAPPG also requires senior personnel to list "all the individual's academic, professional, or institutional appointments, beginning with the current appointment." With regard to professional appointments, senior personnel must identify all current domestic or foreign professional appointments outside of the individual's academic, professional, or institutional appointments at the proposing organization.

SciENcv - NSF has partnered with the National Institutes of Health (NIH) to use SciENcv: Science Experts Network Curriculum Vitae as an NSF-approved format for use in preparation of the biographical sketch section of an NSF proposal. SciENcv will produce an NSF-compliant PDF version of the biographical sketch. Proposers must save these documents and send them to the Office of Sponsored Research (OSR). We will then submit them as part of the proposal application package via FastLane, Research.gov or Grants.gov. An FAQ document answers most SciENcv questions.

NSF Fillable PDF - NSF provides a fillable PDF for use in preparation of the biographical sketch. Proposers should download and save the blank PDF document prior to adding content. NSF recommends that both Mac and Windows users open and fill in the blank PDF document using Adobe Acrobat Reader. The completed and saved PDF can then be sent to the OSR. We will upload biosketches via FastLane, Research.gov or Grants.gov. See FAQs on using NSF Fillable PDF.

The Current and Pending Support (CPS) format has also been revised. A table has been developed to assist users in completion of this section of the proposal. An FAQ sheet will answer most questions about CPS. SciENcv may also be used to create CPS.

Changes in NIH Biosketches

NIH is also revising its biosketch formats for application due dates on or after January 25, 2022 (See NOT-OD-21-073 / NOT-OD-21-110 for specific changes and details).

The NIH provides a Template for a non-fellowship biosketch and an FAQ sheet. Applicants may also use SciENcv: Science Experts Network Curriculum Vitae.

The biosketch may not exceed 5 pages per person. This 5-page limit includes the table at the top of the first page.

2020-21 Faculty/Staff Grant and Fellowship Awards
14 Awards Totaling $3,512,964

Lewis, J., Helms, E., Pellerin, A., Sheldon, A., & Sutherland, M., Biology, Chemistry, Physics & Astronomy, Geological Sciences, and Mathematics, G-STEMS: A Comprehensive Program for STEM Majors, Including an Interdisciplinary First-Year Seminar, to Increase Retention, Persistence, and Graduation Rates and Preparation for Successful Careers, National Science Foundation, $999,994

Yang, S. & Pigg, R. (University of Louisville), Biology, RCN-UBE: Biologists and Graph Interpretation: Professional Development for an Online Curriculum to Foster Data Literacy and Value Diverse Identities, National Science Foundation, $499,978

Smith, L. & Manapol, N., Center for Integrative Learning, The Genesee Valley Rural Innovation Institute: Curriculum for the Community, Northern Boarder Regional Commission/USDA, $152,629

Urso, A., Education, Soaring Stars Program, Greater Rochester Summer Learning Association, $10,000

Urso, A., Education, Soaring Stars Program, United Way of Livingston County, $3,182

Urso, A., Education, Soaring Stars Program at Geneseo, Rochester Area Community Foundation/Feinbloom Supporting Foundation, $20,000

Babović, J., History, Yugoslavs and Other Animals: A Social History of Human-Animal Relationships in Twentieth Century Yugoslavia, American Councils on International Education, $12,500

Oberg, M., History, Chenussio: An Indigenous History of Livingston County, Rochester Area Community Foundation, $5,000

Lindsay, R., Library, Milne Library Coordinated Collection Aid, NYS Education Department, $7,501

Herold, C. & Herold, A., Philosophy and Political Science & International Relations, SUNY Geneseo Forum on Constitutionalism and Democracy, Jack Miller Center, $10,000

Herold, C. & Herold, A., Philosophy and Political Science & International Relations SUNY Geneseo Forum on Constitutionalism and Democracy, Jack Miller Center, $15,000

Padalino, S., Freeman, C., Fletcher, K., McLean, J., Pogozelski, E., & Yuly, M. (Houghton), Physics & Astronomy, Continuance of the Nuclear and Plasma Diagnostics for the EP-OMEGA and MTW Laser Systems, University of Rochester Laboratory for Laser Energtics/U.S. Dept. of Energy, $466,990

Cope, J., Provost, SUNY Geneseo Student Services (SSS) Success Program, U.S. Department of Education, $1,309,440

Levy, R., Student and Campus Life, Communities Talk to Prevent Underage Drinking, SAMHSA Communities Talk Stipends Program, $750