The INNOVATOR

The Voice of the PSM

Articles In This Issue

Message from the Editor

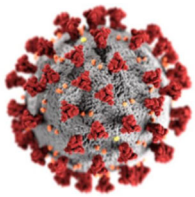
While the pandemic changed plans during the past year, the PSM community responded with creativity and flexibility. This issue of The INNOVATOR, shares the contributions of PSM students and alumni to help solve COVID issues. Travel and meeting restrictions have changed recruitment efforts, so explore how virtual graduate fairs can help recruit PSM students (Kuter). An opinion article challenges us to consider PSM Externships for undergraduates (Chubin and Tobias). Helpful to PSM directors, learn about the changes and improvements to the PSM affiliation process (Freer, Friedman and Hoobler) and research on communications skills in PSM students (Egan Warren). Enjoy!

The INNOVATOR is NPSMA's peer-reviewed publication that shares best practices and other relevant information with the PSM community.

FEATURE ARTICLE

PSM Students and Alumni Meet Challenges from the Pandemic

THE SARS COV-2 PANDEMIC HAS PRESENTED A SEEMINGLY NEVER ENDING NUMBER OF SCIENTIFIC CHALLENGES REQUIRING SOLUTIONS FROM DIVERSE SCIENTIFIC DISCIPLINES.



PSM programs cover a wide variety of scientific fields and specialties. Since, in addition to scientific expertise, the calling cards for PSM students and alumni are teamwork, problem-solving abilities, and flexibility, it comes as no surprise that they are rising to meet these challenges. A few examples follow.

Rutgers University Externship Students Help a Small Town

Externships (small, collaborative, multidisciplinary team projects) have always been a part of the experiential learning component of the Rutgers Master of Business and Science Program (MBS). In the spring of 2020, Bianna Cruz was the team leader in an MBS externship project to redesign the website for the small town of New Wilmington, Pennsylvania. When the pandemic hit, Cruz and her team had a decision to make: would they complete the partially finished website redesign or would they pivot to another way to help the town in light of the impacts of COVID-19? "There was no other choice, to be honest," said Cruz. "The point was to help the town in some way; now you have [COVID-19] that's not only impacting the town, but the whole country and world. In my mind, it's 'what do you need me to do?'"

Cruz and her teammates launched an all-hands-on-deck effort to assist New Wilmington's residents, especially its small businesses. The team researched and short-listed grants, helped strategize and implement a curbside pickup system for restaurants, and helped develop and implement an idea for online "shop local" baskets – ultimately creating an internet ordering system that allowed consumers to purchase items from multiple stores and then have items shipped or delivered in one convenient bundle. The town is still using the students' research and marketing ideas, and the project is ongoing.

University of Connecticut PSM Students & Alumni Advance State's SARS-CoV-2 Testing

In a pre-pandemic world, Sema4 was a patient-centered health intelligence company focused on improving the diagnosis and treatments in reproductive health and oncology. However, when cases of COVID19 surged across the country exposing a desperate need for increased molecular virology testing, Sema4 quickly pivoted and deployed many of its resources and highly skilled team members to support the Connecticut public health response to the SARS-CoV-2 pandemic.

Matthew Capozziello, a 2013 graduate of the University of Connecticut's Professional Science Master Program in Applied Genomics and a scientist on the Sema4 Clinical Test Innovations (CTI) team, quickly volunteered to help drive the COVID19 testing development at Sema4 Genomics. "It was never even a question, of course I am going to do whatever I can to help with the public health response," Matt said when asked by friends and family why he volunteered. Matt, and the rest of the CTI team that stepped up, routinely worked 12+ hour shifts 6-7 days a week to support the implementation and validation of a high-throughput molecular virology laboratory in a matter of weeks. Even after the new laboratory was completed and validated, Matt and the CTI team volunteered again to run patient samples while training other members of Sema4's lab staff on the test protocol. Through his and many other peoples' efforts, Sema4 expanded its capacity for COVID19 testing from 0 to 15,000 tests/day in a matter of weeks in support of Connecticut's COVID19 response.

The University of Connecticut's PSM in Health Care Genetics (HCG) is intended for those interested in using genomic information to improve health. Eric Carrano (B.S. UConn) and Trevor Hunter (B.S. Hofstra University) joined the Health Care Genetics Program in the fall of 2019. Eric's academic preparation and 3-years of work experience in Yale University School of Medicine's Cytogenetics Laboratory led to an offer of a graduate teaching assistant position as an instructor of record for two HCG courses in fall 2019-spring 2020. After successfully completing professional development modules in learning systems and teaching and mentoring, Trevor was also hired as an instructional assistant for two sections of a laboratory in diagnostic molecular techniques. In spring 2020 Eric and Trevor provided 24 senior high school students from the Health Careers Opportunity Program with a Saturday workshop including hands-on laboratory training with DNA extractions and microarrays. Then the summer of 2020 brought an unexpected change in focus for both Eric and Trevor when a need arose for qualified technologists to help with the ramp up of clinical testing for the SARS CoV-2 virus across the state of Connecticut. Eric and Trevor both applied for temporary technologist positions in Connecticut laboratories to help in the efforts to meet testing demand. Trevor was hired at the HCG program workforce partner's laboratory, SEMA4, in Branford, CT. Eric was hired with the HCG program partner, the Jackson Laboratory of Genomic Medicine. While completing online courses for the fall 2020 semester, Trevor and Eric will continue to contribute to the efforts of these companies to bring fast and quality testing to various populations across Connecticut.

Rice University PSM Student Designs an Inexpensive Classrom Protective Barrier

In the summer of 2020, Rice University's Department of Mechanical Engineering Chair Laura Schaefer received an email from a Houston elementary school teacher asking for a cheap protective barrier that the teacher could use in her classrooms as they did not have the funds to purchase barriers offered by outside vendors. Schaefer forwarded the request to all mechanical engineering juniors and seniors. Answering the call was Loren Young, a PSM student in the Rice University M.S. Space Studies program, Class of 2022. Loren explains: "The barriers were to be used on 4-person school desks such that students would not need to wear masks while during class and maintain proper physical-distancing. As such, that morning I designed such a barrier and sent the design/assembly document to the teacher in need. She said she would forward the design to her fellow teachers to help them formulate other creative ideas for erecting such structures." (Figure 1)

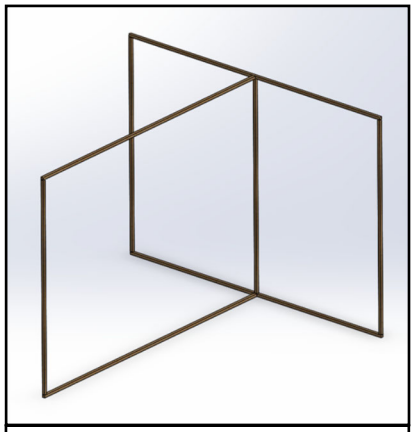


Figure 1. Full assembly of T-shape

Loren's design for a simple desk barrier was lightweight, affordable, easy to assemble, and transparent for students to see through. At a cost of about $8 per 2-student barrier, the design employed a balsa wood frame and plastic wrap physical barrier that provided an easily replaceable sanitary shield.

University of Illinois at Urbana-Champaign PSM Students Join Teams to Develop Web Applications to Track COVID-19 and to Facilitate Ordering Fresh Food

As the pandemic unfolded, researchers at the University of Illinois' CyberGIS Center for Advanced Digital and Spatial Studies organized a team of graduate students and postdocs to develop a web application to track COVID-19 cases and visualize the impact on different geographic scales. PSM student Yong Liang, a Geographic Information Science major, was part of the WhereCOVID-19 Platform team for his summer internship experience. (Figure 2) Different than other tracking apps, this team included social vulnerability and healthcare facility accessibility throughout Illinois in the app. Through the project Yong participated in real-world application of his GIS skills, and coordinated with other University of Illinois departments and the Illinois Department of Public Health for the development and continuation of the information. "This experience gave me a new perspective to explore the application of GIS in the field of healthcare, which might have a promising future due to the increasing demand for health facilities and supplies," said Yong. The team received accolades from other researchers throughout the world and in the U.S. popular press. To view the team's work, visit: *https://wherecovid19.cigi.illinois.edu/*

The pandemic had a different kind of effect on the Meat Science Laboratory at the University of Illinois that serves a dual purpose of research outcomes of livestock grown for food, while providing an outlet for surplus fresh meat, meat products, and eggs. While the research schedule continued in March as COVID precautions were put in place, the freezers were quickly reaching capacity and the lab's staff needed to devise a way to allow meat sales that would protect the health of both the staff and the public. For her summer internship, Alexis Remmers, a PSM student studying Animal Production, was on the team to develop an online ordering system, inventory and market available products, answer questions from the public, pack orders, devise a customer pick up system, and safely deliver the order to the customers' vehicles in the parking lot. Alexis created a new database of product photos for the website, maintained the Facebook page and produced marketing content to push new inventory or flash sales as needed as part of her responsibilities. "I believe that this internship allowed me to explore different areas and help determine that I enjoy engaging with customers and helping them with their needs. Overall, this taught me that sales is an area that I would like to go into as a long-term career," Alexis explained. The lab continues to use the ordering system and marketing techniques.

The INNOVATOR Editors thank the program directors and others who contributed to this article: Deborah Silver (Rutgers), Judy Brown (UConn HCG), Todd Arnold (Sema-4), Dagmar Beck (Rice), Natalie Bosecker (U. Ill.). If you have examples to share in the next issue, please email a descriptive paragraph to the INNOVATOR editor at natalieb@illinois.edu with the subject "COVID".

Figure 2: Screenshots from the University of Illinois WhereCOVID-19 Platform.