

RESEARCH REPORT

A quarterly newsletter from the Office of Research and Scholarly Activities

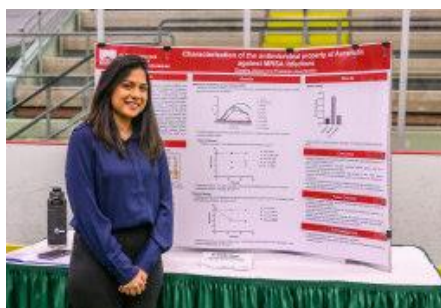


Volume 2 (2) June 2023

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RESEARCH STUDENT ACCOMPLISHMENTS



Deepika Utukari presenting her project "Characterization of the antimicrobial property of Aurano-fin against MRSA infections."



Regeneron Poster Showcase of the Capital Region

On April 24, 25 students from ACPHS presented their research posters showing at the *Regeneron Poster Showcase of the Capital Region*. This was held at Hudson Valley Community College and featured a total of 85 students from area colleges. Prizes were awarded for best posters in each degree division (BS, MS, PhD). Our own **Kaitlyn Strumski**, 5th year student in the BS/MS Pharmaceutical Sciences program, was awarded the prize for best poster in the Master's Division. Other participants included **Ahone Gina Akume**, **Deepika Utukuri**, **Meghan Volcko**, **Monika Singh**, **Nivedita Sivakumar** and **Michaela Clark**, **Rachel Sahm**, **Sydney Sheppard**, **Artem Belyakov**, **David Nicolella** and **Justin Allisha**, **Landon Thompson** and **Pankaj Kanna Paneer Selvam**, **Thomas Dunnigan**, **Trang Van**, **Aditi Rathor**, **Angeleigh R. Knapp**, **Antonia Oropallo** and **Renee Smith**, **Audrey DeGraw**, **Ayo Momoh**, **Aysha Mills** and **Diandre Slusarek**, **Casey Dang**, **Dominick Lomonaco**, **Emily Jeanne Sager**, **Molly Jade Dougherty**, **Shivam Patel** and **Sophie Otterstedt**.

RESEARCHER OF THE YEAR



Nick O'Donnell, PharmD, M.S.C. was selected as the 2023 ACPHS Researcher of the Year. Dr. O'Donnell's lab focuses on clinical and translational approaches to optimizing care for patients with infections caused by antimicrobial resistant pathogens. The primary focus of his work is on pharmacokinetic/pharmacodynamic approaches to optimizing dosing and antimicrobial combination selection for highly resistant gram-negative pathogens.

The ongoing work in the O'Donnell lab focuses on bacterial exposure-response using humanized exposures of antimicrobials in an in vitro hollow fiber infection model system. This translational approach allows for evaluation of clinically relevant antimicrobial exposures and their effect on bacterial growth and provides data that can be readily evaluated in a clinical setting.

Congratulations Dr. O'Donnell for winning Researcher of the Year, 2023!

FEATURED RESEARCH ASSOCIATES



Matt Derragon
Research Scientist
Department of Basic and
Clinical Sciences

Matt received his bachelor's degree in microbiology and master's degree in Molecular Biosciences from Albany College of Pharmacy and Health Sciences in 2017 and 2019, respectively. During his master's degree, he worked on characterizing the role of reactive oxygen species during the hyperglycemic shift from apoptosis to necroptosis in the LaRocca lab. Following graduation, Matt began working in the Amar lab at New York Medical College (NYMC). His work was mainly focused on the use of *Akkermansia muciniphila* and its anti-inflammatory properties during periodontitis. After two years at NYMC, Matt returned to the LaRocca lab at ACPHS where he picked up where he left off during his master's thesis work. Utilizing this combined expertise, he has helped to expand the project toward the involvement of genetic aspects in the same hyperglycemic shift from apoptosis to necroptosis. Since his return to the LaRocca lab, he has developed several new protocols and techniques to enhance the understanding of the mechanistic changes seen in mitochondrial fractions and fluorescence microscopy in this experimental model. In his previous and current time at ACPHS, Matt has published two first author papers in the LaRocca lab.



Zhuo Ma, PhD
Research Associate
Department of Basic and
Clinical Sciences

Dr. Zhuo Ma is an experienced microbial geneticist and molecular biologist and has published over 30 research articles in top-notch journals such as *Molecular Cell*, *Nuclei Acid Research*, and *Molecular Microbiology*. He earned his PhD in China and did postdoctoral training at St Jude Children's Research Hospital and University of South Alabama, where he worked with pneumococcal pathogenesis and *Escherichia coli* acid resistance, respectively. Later Dr. Ma moved to Albany and studied genetic regulation of *Saccharomyces cerevisiae* and *Mycobacterium tuberculosis* at Wadsworth Center, New York State Department of Health. Currently, Dr. Ma is a research associate in Dr. Meenakshi Malik's lab, working on the genetics and pathogenesis of intracellular bacterial pathogen *Francisella tularensis* and antibiotic resistance in methicillin-resistant *Staphylococcus aureus* (MRSA) and has identified multiple factors involved in the oxidative stress and pathogenesis of *Francisella tularensis* including EmrA, an outer membrane protein and OxyR, a global regulator of antioxidant systems. Additionally, Dr. Ma guides graduate students in their research projects and maintains the operations of the laboratory.



Kelly Moolick
Research Assistant
Department of Pharmacy
Practice

Kelly received her Bachelor's degree in Biology from Siena College in 2016 where she also participated in an evolutionary biology lab working with whole mitochondrial genomes in *Maxomys spp.* spiny rats. After graduating, she began working in the Breen Lab at North Carolina State University College of Veterinary Medicine. While there, she worked on fluorescence in-situ hybridization assessment of urothelial carcinoma. After moving back to Albany, she came to work at ACPHS in a joint research role in the O'Donnell and Butler labs. At ACPHS, she has developed expertise in bacterial PK/PD infection models, including the hollow-fiber infection model. She continues to independently train and oversee student research assistants in collaborative and layered learning models, maintaining a safe, welcoming, and productive learning environment. She has gone above and beyond expanding her knowledge base by recently completing an R certificate program. Kelly exemplifies the college's core values and is a major contributor to the success of the lab research within the department of Pharmacy Practice.



Sonia Parikh
Research Associate
Department of
Pharmaceutical Sciences

Sonia has been a Research Associate in Dr. Manish Shah's laboratory for the last 5.5 years. She received her bachelor's degree in Molecular Biology and Biochemistry from University at Albany (SUNY) and her Master's degree from Boston University. Prior to joining the Shah lab, she worked in laboratories at Albany Medical College, Rockefeller University, and Hunter College (CUNY) in New York City. Sonia has over 15 years research experience and has co-authored several peer reviewed papers. She is a critical thinker with the ability to plan, design, conduct and troubleshoot experiments.

She is an avid runner, two-time marathoner, mountain climber and enjoys cooking and crafting and being outdoors kayaking and riding her motorcycle.

SELECTED FACULTY PUBLICATIONS

Crocetta N**, Guay K, **Watson A**. Evaluation of a pharmacist's impact on the use of glucagon-like peptide-1 receptor agonists for weight management in a family medicine setting. *Fam Pract*. 2023 Mar 28;40(2):255-260. doi: 10.1093/fampra/cmacc110.

Nero A*, **Weber M***, Reveles KR, **Carrero JJ**. Population based cohort to examine association between geospatial antibiotic factors and urinary tract infection outcomes. *Am J Infect Control*. 2023 Feb 1:S0196-6553(23)00052-4. doi: 10.1016/j.ajic.2023.01.011. Epub ahead of print.

Negron VV*, **Briceland LB**, **Denvir, PM**. Student Pharmacist Engagement in Infographic Creation to Increase Awareness of Impostor Phenomenon. *American Journal of Pharmaceutical Education*. 2023 Mar 19; online ahead of print. doi: <https://doi.org/10.5688/ajpe9362>

McLaughlin CC, Boscoe FP. The geography of Medicare's hospital value-based purchasing in relation to market demographics. *Health Serv Res*. 2023 Feb 8. doi: 10.1111/1475-6773.14141. Epub ahead of print.

Etukakpan A, Uzman N, Ozer O, **Tofade T**, Leite SN, Joda A, Choonara Y, Mwila C, Azzopardi LM, Mantel-Teeuwisse AK, Rahal M, Darwish R, Lee BJ, Shakya R, Gallagher PJ, Moreau P, Lourenço L, McKinnon RA, Altieri RJ. Transforming pharmaceutical education: A needs-based global analysis for policy development. *Explor Res Clin Soc Pharm*. 2023 Feb 14;9:100234. doi: 10.1016/j.rcsop.2023.100234.

Grabe DW. Preventing progression in IgA nephropathy: a managed care focus on emerging therapies. *Am J Manag Care*. 2023 Mar;29(3 Suppl):S31-S43. doi: 10.37765/ajmc.2023.89344. PMID: 37129957.

Deragon, MA, McCraig, WD, Truong, PV*, Metz, KR*, Carron, KA*, Hughes, KJ*, Knapp, AR*, Doherty, MJ*, **LaRocca, TJ**. Mitochondrial trafficking of MLKL, Bak/Bax, and Drp1 is mediated by RIP1 and ROS which leads to decreased mitochondrial membrane integrity during the hyperglycemic shift to necroptosis. *Int. J. Mol Sci*. 2023, 24, 8609 doi 10.3390/ijms24108609

*ACPHS Student

**ACPHS PGY-2

2023 ANNUAL ACPHS RESEARCH SYMPOSIUM

The Annual Research Symposium was held April 6-7, 2023. In this year's poster presentations, we had 33 students participate and over 125 spectators who came to view and discuss the work presented by students and faculty. Topics presented included mechanisms of breast cancer progression, opioid use, to stressors in the environment that influence health and processes associated with HIV infections.



Ahone Gina Akume presenting "HOXB7 Protein Promotes Breast Cancer Cell Growth Through Activation of the CCL5/CCR5 Pathway in the Crosstalk of Adipocyte."

On the second day of the Symposium, we welcomed the keynote speaker, **Dr. Angela Kashuba**, Dean of the Eshelman School of Pharmacy at the University of North Carolina at Chapel Hill. Dr. Kashuba presented a talk on "*Exploring Inside and Out: A Pharmacologic Journey of Mass Spectroscopy Imaging to Inform HIV Treatment, Prevention and Cure.*" Following Kashuba's talk we had a total of eleven students and faculty update us on their research projects and methods. It was a well-attended event and one that will be hard to top in 2024!



Kaitlyn Strumski presenting "Assessment of Hydrolysis of Prodrugs and Co-drugs Derived from 5-Aminolevulinic Acid and Mycophenolic Acid."

2023 STUDENT RESEARCH AWARD PROGRAM

Eight students were recipients of the 2023 Student Research Award to pursue their research over the summer and throughout the next academic year.

- **Adrian Belrad**, Mentor: Manish Shah, “Structural and Functional Studies of Human Cytochrome P450 CYP2C9*2 Genetic Variant;
- **Thomas Dunnigan**, Mentor: Pradeepa Jayachandran, “Identification of Novel Molecular Regulators of the SOS Response in MRSA;
- **Kayleigh Early**, Mentor: Barry Decoster, “On the Ethics of Anonymous Expedited Partner Therapies for LGBTQ Communities: Sexual Minority Exclusions or Good Public Health Policy?”
- **Doran Katz**, Mentor: Vir Singh, “Investigating the Role of RNA Pol III Inhibition/Depletion in Monocytes and Macrophages”
- **Dominick Lomonaco**, Mentor: Kideok Jin, “Role of IL-11 in HOXB7 Overexpressing Breast Cancer Cells”
- **Donovan McCray**, Mentor: Meenakshi Malik, “Understanding the Role of Sodium/Hydrogen Antiporter in the Host Adaptation of Francisella Tularensis”
- **Aditi Rathor**, Mentor: Anne McCabe, “Exploring the Mechanisms of Antibiotic Resistance in Collateral Sensitivity to Other Antibiotics in Klebsiella Pneumoniae”
- **Kaylee Stewart**, Mentor: Stacy Pettigrew, “Effects of Historic Redlining in Albany, NY: Presence of Stressors Surrounding Elementary Schools Across Seasonality”

Congratulations to all awardees and their mentors!

2023 LAB SAFETY AWARENESS WEEK

A big **thank you** to everyone who participated in Lab Safety Week. Many labs were cleaned and checked for safety and some labs started the process of throwing out older chemicals and broken tools and equipment. We had daily tips and daily prizes and even a reception! ORSA thanks you for your excitement around this topic and hopes it will persist throughout the year.

GRANTS AND CONTRACTS

2022-2023

(as of March 31, 2023)

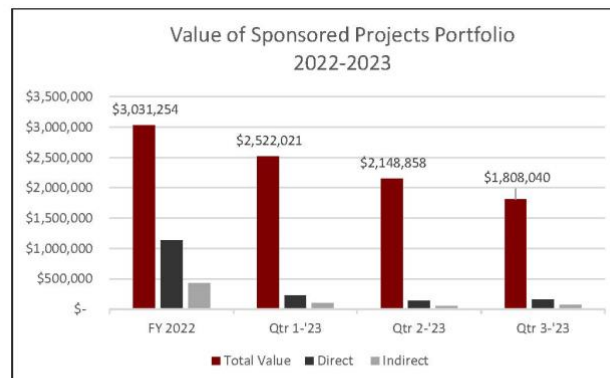


Figure 1. Total, direct and indirect dollars for fiscal year (FY) 2022 (July 1, 2021-June 30, 2022) and the first three quarters of FY 2023 (July 1, 2022-March 31, 2023). Most recent total value of sponsored projects portfolio is \$1,808,040.

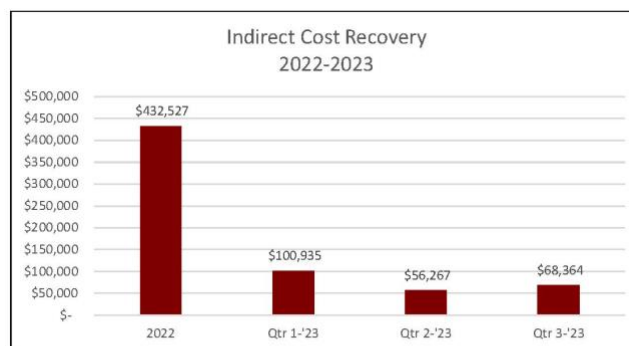


Figure 2. Indirect cost recovery is total indirect dollars (Facilities and Administrative Costs, F&A) collected from sponsored projects in FY 2022 and each of the first three quarters of FY 2023. Total indirect cost recovery to date in FY 2023 is \$225,566.

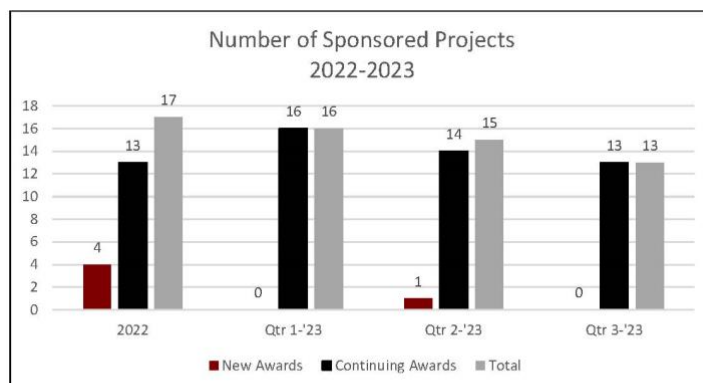


Figure 3. Number of new, continuing and total sponsored projects in FY 2022 and the first three quarters of 2023.