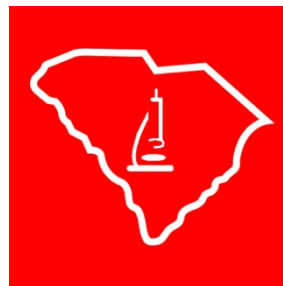


ASM SC

NEWSLETTER

Fall 2021



AMERICAN SOCIETY FOR MICROBIOLOGY

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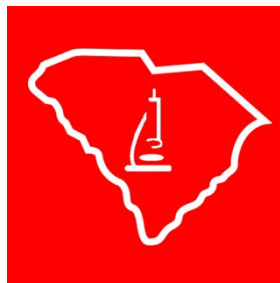
Dr. Caroline Westwater, MUSC

Upcoming Meetings

October 29th: Fall 2021 SC ASM meeting, Virtual

November 10-13: Annual Biomedical Research
Conference for Minority Students (ABRCMS), Virtual

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Greetings From The President:

Colleagues,

As the President of the South Carolina Branch of the American Society for Microbiology, it is my pleasure to announce the launch of a newsletter for our Branch. I am also pleased to announce that Dr. Ginny Webb, the President-Elect for this Branch, will be serving as the Editor-in-Chief for this newsletter. Ginny is an enthusiastic and driven member of this Branch, and I have no doubt that this newsletter will be a success under her leadership.



The South Carolina Branch has realized significant growth in recent years. We have seen the number of student chapters grow from a single chapter to three chapters with more being planned, and our last meeting had record breaking attendance. In the coming months, we will be discussing much needed amendments to our Constitution which was last revised in January of 1979 and standing up committees as outlined in our Constitution. We will also introduce a new website which will need pictures of you and your students presenting, performing research, etc., so please feel free to email me. This is truly a time of growth for this Branch, and I am thankful to all of you to have been given the opportunity to serve as President.

I would also like to take this opportunity to announce that the Executive Committee in coordination with the Local Arrangements Committee has agreed upon October 29th as the date for our next meeting which will be held virtually. As in previous iterations of this Fall conference, we will soon be soliciting student talks; therefore, if you know of students who would be interested in presenting, please alert them to this opportunity. In the coming weeks, we will be announcing more details about this conference, but please take this opportunity to save the date. Thank you all for your continued commitment and service to this Branch. I look forward to its continued growth and prosperity.

Sincerely,

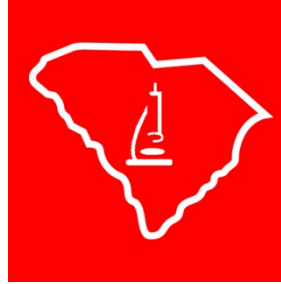
Steven E. Fiester, Ph.D.

President, South Carolina Branch of the American Society for Microbiology (ASM)

ASM Ambassador to South Carolina

Director of Strategic Research Initiatives, UofSC School of Medicine Greenville

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Journal Article Highlight: Microbiology Education

The Impact of Experiential Learning in Host-Pathogen Research on Medical Students' Interests and Attitudes towards Microbiology and Immunology

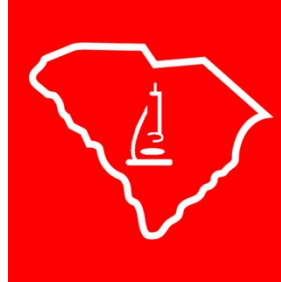
There has been a declining interest in infectious disease fellowships among internal medicine residents. This has led to concerns about the field's ability to meet future public service needs and address the emergence of new diseases. This study explored the importance of experiential learning activities to foster an interest in microbiology and immunology.

Many residents who selected a career in microbiology were interested in the field before or during medical school. So, current teaching methods in medical education could contribute to declining interest. Teaching methods that rely on active learning increase the likelihood of residents selecting infectious disease.

Researchers sought out to examine the effect of experiential learning on medical students' experiences. The study focused on sixteen medical students who were completing independent research projects on host-pathogen interactions. The participants were given a survey to assess their motivation and attitude changes from their microbiology research.

Students pursued their research to make themselves better doctors, aid in career advancement, and to gain experience. The results show that medical students felt this experience increased their interest and confidence in microbiology. Additionally, experiential learning created a new social niche where medical students met and learned to appreciate others who share their passion for science. This study highlights the importance of experiential learning in motivating students to potentially pursue infectious disease specialties.

Cervantes J, Hong B-Y. 2021. The impact of experiential learning in host-pathogen research on medical students' interests and attitudes towards microbiology and immunology. *J Microbiol Biol Educ* 22:e00101-21. <https://doi.org/10.1128/jmbe.00101-21>.



Journal Article Highlight: Microbiology Research

Influenza Virus Infection Impairs the Gut's Barrier Properties and Favors Secondary Enteric Bacterial Infection through Reduced Production of Short-Chain Fatty Acids

Along with respiratory symptoms, respiratory viruses can result in negative effects on other organs within the host. This study aimed to study digestive disease outcomes caused by the influenza A virus (IAV).

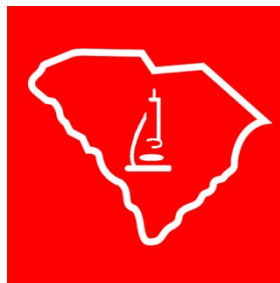
Signs of intestinal disease and an inflammatory response was the highest at day 7 following IAV-infection. Along with these signs, the mice also showed changes in the gut microbiota resulting in less short-chain fatty acids (SCFAs) produced by gut-microbiota.

IAV-infected mice given SCFAs had restored intestinal barrier properties and a decrease in the translocation of *Salmonella* species resulting in increased survival.

This study concludes that IAV can cause intestinal injury resulting in secondary bacterial infections which can be partially countered with treatment with SCFA.

Sencio, V., Gallerand, A., Gomes Machado, M., Deruyter, L., Heumel, S., Soulard, D., Barthelemy, J., Cuinat, C., Vieira, A. T., Barthelemy, A., Tavares, L. P., Guinamard, R., Ivanov, S., Grangette, C., Teixeira, M. M., Folligné, B., Wolowczuk, I., Le Goffic, R., Thomas, M., & Trottein, F. 2021. Influenza virus infection impairs the gut's barrier properties and favors secondary enteric bacterial infection through reduced production of short-chain fatty acids. *Infection and Immunity*, 89(9).
<https://doi.org/10.1128/iai.00734-20>

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Student Spotlight:

Summary of Research and Education

As a first-generation college student, I received my B.S. in Biological Sciences with minors in chemistry and medical humanities from the University of South Carolina, where I became interested in cellular biology. I then entered industry as a laboratory analyst at Shealy Environmental Services where I tested wastewater, drinking water, and solid wastes for various chemical and microbiological analytes. I also worked as a laboratory technician at Solvay, where I tested manufactured carbon fiber to ensure that it met industry specifications. Then, as an associate chemist at Nutra Mfg., I tested vitamins and supplements to ensure that each product met its label claim. During my time in industry, I learned many valuable laboratory skills; however, my interests lay in cellular biology and human health; thus, I began my M.S. in Biological Sciences in August 2017.



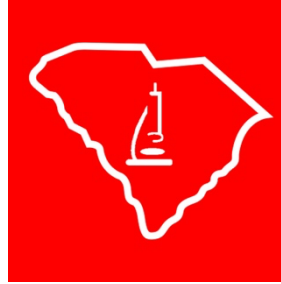
I quickly learned new molecular biology techniques and excelled in research, where I have been investigating the stress response of the human pathogen *Entamoeba histolytica* that affects millions of people worldwide. Current therapies commonly cause adverse side effects; therefore, new treatments are needed. In the human host, *Entamoeba* experiences stresses brought on, in part, by the host immune system. Understanding both stage conversion and the stress response of this pathogen may lead to new drug therapies. In addition to research and coursework, I have also been employed as a graduate teaching assistant and a technology transfer intern for Clemson University's Research Foundation. The culmination of my experiences in industry, public health research, and teaching has led me to pursue my doctoral degree in cellular biology, with a career focus on drug repurposing and drug discovery. I aspire to have a role in mentoring future scientists.

Thoughts on Micro Research, Graduate Work, Career Plan:

While microbiology research has always been important, I feel like that fact has never been clearer than during a global pandemic. I am grateful to be a scientist and to be able to help fight misinformation daily, which further motivates me to continue to mentor younger people and cultivate their interests in scientific research.

Heather Andrews Walters, M.S.
Ph.D. Candidate
Biological Sciences
Clemson University

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Faculty Spotlight:

Summary of Research and Accomplishments

As a microbial ecologist, I use molecular techniques, high-throughput sequencing technologies and bioinformatics approaches to investigate microbial ecology and ecosystem function via, microbial species distribution and community metagenomics. My overall research aims to understand how microbial communities form and what the determinants are for microbial community composition. This has led me to study three distinct microbial habitats: (1) hydrothermal vents, (2) Charleston area salt marshes and (3) macroalgae. The majority of the work on these projects is carried out by graduate and undergraduate student researchers in my laboratory at the College of Charleston.



In studying these diverse biomes, I get to travel. One such instance was in December 2019 where I dove on the East Pacific Rise in the human occupied vehicle Alvin. During this expedition, I collected microbial mats at 2500m depth from multiple hydrothermal venting locations. This was my second time in Alvin, and it was an absolutely amazing experience. The ocean became very dark and very cold as we descended, so there wasn't much to see in terms of life until we arrived at the hydrothermal vents. These deep-sea oases teem with life and every organism there depends on the primary productivity of the microbes. Using samples from this expedition, I hope to determine how the microbial communities develop at these deep-sea oases and increase our understanding of their foundational role in this unique environment.

Heather Fullerton, PhD
Assistant Professor
Department of Biology
College of Charleston