

MURAJ: In Focus – From Fish Fins to Writing with Dr. Leslie Schiff

By Ananya Vegesna¹

¹N.H. Winchell School of Earth & Environmental Sciences, University of Minnesota – Twin Cities

From researching fish fins to becoming the Director of Undergraduate Research at The University of Minnesota, Dr. Leslie Schiff has done it all. I met with Dr. Schiff to discuss her journey from an undergraduate student to the Director of Undergraduate Research and Associate Dean. Dr. Schiff discussed with me the importance of scientific writing, teaching students how to write, and finding the right fit in a research lab as an undergraduate student. As a STEM undergraduate student myself, I left our discussion inspired by her journey and excited to experience my own.

As the new Director of Undergraduate Research, Dr. Leslie Schiff has come a long way from when she was an undergraduate student herself. As an undergraduate student, Dr. Schiff studied biology and later specialized in virology. She recalls that her first lab experience was researching the importance of nerves in the regeneration of fish fins after amputation. This experience is what sparked her love and interest in the sciences. Later, after spending a summer in Boston performing research in a transplantation lab, Dr. Schiff decided to focus her studies on immunology and pursue higher education. After starting graduate school and joining a lab where an RNA tumor virus was used to study the rearrangement of immunoglobulin or antibody genes in B cells, she became more interested in studying viruses.

After finishing graduate school, Schiff



Figure 1: Professor Leslie Schiff, Associate Dean for the Undergraduate Curriculum at the University of Minnesota.¹

took her next career step by working as a postdoctoral fellow. She worked on a team that studied the Reovirus, a virus that most people have had as a kid that does not cause a significant disease in humans.

Dr. Schiff then brought her research to the University of Minnesota, where she was awarded grants from the American Cancer Society and the National Institutes of Health. At the University of Minnesota, she worked closely with undergraduate students as well as those working on their doctorates, which made her realize she had a passion for teaching. She asked to teach undergraduate classes, but she was nervous at first, because she lacked formal training in education and teaching. In order to prepare for this new role, she attended seminars and read books on how to be an effective instructor and eventually grew to love teaching.

Dr. Schiff's career took a turn when she was asked to join the Office of Undergraduate Education as the Associate Dean for the University curriculum. She was hesitant at first, thinking she would lose her identity as a virologist if she strayed further away from the lab and closer to the classroom and administration. She also worried that if she left research, she would not be able to achieve funding from the National Institutes of Health again. Dr. Schiff accepted the new position and soon realized that she was also interested in the impacts of writing in the sciences and began to stress the importance of writing in science fields in her new position. Soon after, she designed a thesis writing course for CBS students while also teaching virology in the spring.

Along with her colleagues from the University of Michigan and Duke University, Dr. Schiff holds a grant from the National Science Foundation to study how writing affects critical thinking in STEM and how professors

can prompt better writing from their students. Schiff jokes that with this research, her lab has become the classroom. In her perspective, the most important and challenging part of writing is leveraging literature to craft a research question and argument. She also believes that writing should explain why people should care about the subject matter. She teaches how to bridge this knowledge gap in her class with a session about epistemology—the study of knowledge. She explains the importance of epistemology and how it demonstrates how strongly a person believes in their work as well as the work of others.

Dr. Schiff also emphasizes that citations and the way scientific literature is used is an important part of supporting claims in writing and can make the difference between a good and bad argument. In addition, she has found that the use of tenses in writing can create a strong argument. Phrases like “this shows” can indicate strong knowledge, while writing statements such as “they reported that” can show that you are noting the fact that science is evolving and that the topic is open for argument. To address these writing features in her class, Honors Thesis in the Biological Sciences (BIOL 4960H/4961H), Dr. Schiff has developed writing exercises in her class that utilizes peer review teams to evaluate students' work over time. The objective of the activities is to demonstrate improvements in synthesis and the quality of arguments in a peer's writing.

Dr. Schiff says that she knows writing is often difficult. It is more enjoyable to do the research and to conduct the experiments than to

write about them. At the same time, Dr. Schiff described how there is also a sense of accomplishment once you have finished writing and are able to contribute to the knowledge in your field. She explains that you can separate what you know from what you don't know by writing and struggling with the content. She says that students should not be writing their papers in one night, but rather she encourages students to really sit and struggle with the topics.

On the topic of research, Schiff's advice to undergraduates looking for research experience is that finding the right fit in a lab is more important than the actual project. She says that the project is important, but it does not have to be something that you think you will be doing for the rest of your life. "Find a fit where you think you'd like to be with the right people," she says, "See what it's like. Is the lab fun? Do you like the people? If not, thank them for the experience and try again. You will take something away from the experience no matter what." In addition to the fit, Dr. Schiff says it is important to write good emails to faculty members. She says that rejection is a part of the game of searching, but at the same time, she encourages students to not be afraid to send a follow-up email if they have not yet received a response. Dr. Schiff understands that COVID-19 has made it tough to get lab experience, but she encourages students to not give up. "Finding the right people to work with is what makes research enjoyable," she says. With most classes back in person, Dr. Schiff emphasizes that she is excited to work with people again and see her students' faces.

¹Figure taken from UMN Office of Undergraduate Education webpage: <https://undergrad.umn.edu/about/staff/schiff>.

This profile is part of the series MURAJ: In Focus, organized by the Minnesota Undergraduate Research & Academic Journal, with funding from the University of Minnesota Office of Undergraduate Education.

Ananya Vegesna is a junior in the Earth Science major and computer science at the University of Minnesota. She has done research on the decline of Wild Rice in Minnesota. She is the outreach director for the Minnesota Undergraduate Research & Academic Journal.

Dr. Leslie Schiff is a professor of microbiology in the College of Biological Sciences at the University of Minnesota. Her research interests include virus entry and translational control, microbiology education, teaching with writing, communication/writing in STEM disciplines, and active learning.