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commentary

Research Experience Outside the Lab

—**Loreen Fournier** (Edited by Jennifer Lee)

During the summer of 2006, before my senior year at the University of New Hampshire, a UNH Summer Undergraduate Research Fellowship (SURF) enabled me to continue my research on breast cancer at the Yale University School of Medicine in New Haven, Connecticut. In addition to acquiring technical skills and specialized knowledge in my laboratory work, I also gained valuable experience outside the lab by participating in activities around the medical school and in the medical community.



The author inside a lab at UNH

I attended many seminars given by doctors, researchers, and graduate students on their current work. These seminars exposed me to the most recent advances in medical care and technology, and they also gave me the chance to observe how a seminar works. Whenever a fellow UNH student had questioned my work or critiqued my ideas during a class, I could almost certainly count on a later apology, or at least a compensatory “Great job” after class. The contrast of a Yale seminar and a UNH class was startling. It was eye-opening for me to hear the criticisms from colleagues and see how heated some debates became.

During a “welcome seminar” for a woman recently recruited as a new faculty member, she was interrogated so menacingly I imagined she might just walk off and decline her new position. Instead, completely composed, she fired back a firm rebut at each scientist, proving all questioning of her methods and reasons to be ungrounded. Before this summer, I had never seen anything similar to that. I only hope that some day I will stand so confidently in front of my peers with my work and earn the same level of respect that she gained from her audience.

A second new experience was the weekly meetings that took place within each lab group. I attended lab meetings for three different laboratories. This gave me a chance to witness firsthand how scientists come together to work as a group. Each week, selected members of the lab would present their work. Their presentations were then open for troubleshooting and suggestions. Every member of the lab would contribute by offering his or her prior problem solving experience or by proposing a different method. When lab members could not come up with effective modifications to protocol, the primary researcher always seemed to know the

optimum path to solution. I was impressed not only by the primary researcher's leadership and knowledge, but also by how smoothly and efficiently the groups came together to move forward. These dynamics were an aspect of working in a lab that I never could have anticipated from simply reading published papers or research summaries.

A third valuable outside-the-lab experience was attending the Susan G. Komen Breast Cancer Mission Conference in Washington, DC. During the conference I heard world-renowned scientists speak of their research endeavors and discoveries of the past year. At the poster session I read about new therapies that utilized radioactive antibodies against the same protein that I work on. Much of the conference was listening to amazing stories of perseverance told by breast cancer survivors. Equally inspiring was hearing the struggles of doctors starting the first breast cancer clinics in Africa or trying to eliminate the stigmas and shame surrounding the disease in South America. Now I have a much better grasp of why my UNH and Yale labs are working on the research that we are. Most importantly, I was able to give more meaning to my work, the most beneficial result of attending the conference.

Not only did I learn a great deal during my summer at Yale, I also was given the chance to teach. A local high school student, Stephanie, came to work on her own small research project, and I was able to teach her some of the techniques I had learned and practiced. In addition, I provided her with some key background information for the lab procedures we were carrying out. My teaching opportunities extended beyond Stephanie: two members of my UNH lab came down to learn Western-blotting techniques. I demonstrated to them how to run proteins on a gel and then transfer these proteins to a membrane so that they could complete this procedure without assistance. Teaching others reinforced the methods for me; at the same time, I was able to give something back to our lab.

The laboratory work I did that summer broadened my knowledge of many different skills and techniques and allowed me to start long-term projects that I continued during my last year at UNH. An equally valuable benefit of my time at Yale was the exposure to a high-powered scientific environment. The summer's work, both in and outside the lab, gave me a greater incentive to apply to medical school so that some day I, too, can be part of a dynamic research community contributing to medical knowledge.

I would first like to thank the SURF program for the funding that allowed me to carry out research at the Yale School of Medicine. I would also like to express my gratitude for the help and guidance I received from my mentor, Andy Laudano, and his student, Don Sharon.

Loreen Fournier, a senior from Belmont, New Hampshire, will graduate in May 2007 with a degree in molecular, cellular, and developmental biology. Knowing little about cancer, she went to work in Dr. Laudano's research lab and became fascinated with the complexity of the disease: "Cancer is not one single pathway leading to a certain condition. . . Now I understand why cancer research takes so long." She has come to "appreciate how complex your body's regulatory system is, and what can happen when just a part of that system becomes defective." She credits Dr. Laudano with giving her confidence and making research an enjoyable experience: "I have been lucky to work in a lab where the primary investigator is especially interested in teaching and helping—and not just in getting results." She knows now that her goal of attending medical school is reachable and that the medical research she wants to do has a huge impact on the lives of many.

Mentor Bio

Dr. Andrew Laudano is an associate professor of biochemistry and molecular biology at the University of New Hampshire. As a graduate student his doctoral work on the mechanisms of blood clotting pointed him toward further research on its connection with cancer. However, his advisor recommended he focus directly on cancer, which led to his current research. During his twenty years at UNH, Dr. Laudano has mentored many "outstanding students." He notes that today's students are more independent: "They want to be self-sufficient and don't ask me for help every step of the way as they used to." This can be upsetting some times, such as when Loreen, because of time constraints, went ahead with a transfection procedure he had not yet taught her. "Fortunately, all transfections went very well, and the new cell lines developed have been very valuable to my current work." For him, the most important and exciting part of the experiments like the one Loreen participated in is the clinical potential for breast cancer patients who do not respond to estrogen blocking drugs.