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Beckman Scholar 2006-07

Megan Culler
University of Kentucky

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written research plan and at least three letters of support from current and prospective faculty mentors and 4) the candidate’s potential for a career in research by evaluating a required written statement of educational and career plans.

To apply to become a Beckman Scholar, a student must be a sophomore or junior at the University of Kentucky, majoring in Chemistry, Biology, or a closely related discipline (such as chemical engineering or agricultural biotechnology), and have already completed at least one semester of research experience.

The Beckman Scholars for the year 2006-2007 were Megan Culler (mentored by Professors Rebecca Dutch and Diane Snow) and Kathryn Schweri (mentored by Professor Chris Schardl). The Beckman Scholars for the year 2007-2008 are Andrew Lynch (mentored by Professors Dibakar Bhattacharyya and Allen Butterfield) and Eddie Kobraei (mentored by Professor Diane Snow). In the following articles, the 2006-2007 Scholars explain and discuss their research.

For more information on the Beckman Scholars Program at the University of Kentucky, visit www.uky.edu/beckman.

I am a junior at the University of Kentucky majoring in Agricultural Biotechnology. I am a Singletary Scholar and a Beckman Fellow and plan to attend an MD/PhD program. My experiences with undergraduate research and the Beckman Fellowship have definitely prepared me for the kinds of research and higher learning I will be doing in the future, through being independent in the lab and learning to collaborate with others. I enjoy participating in community theatre, mainly musicals, traveling, French language and culture, and reading about viruses.

My experiences at the University of Kentucky have been shaped not only by my personal interests and motivations, but also to a great extent by the suggestions and encouragements of my advisor, Dr. Glenn Collins. Within the first ten minutes of meeting Dr. Collins, before I had started my undergraduate career or decided on which University to attend, I shared with him my love of science and interest in research. He successfully convinced me to enroll at UK as an Agricultural Biotechnology major. Since that first meeting, Dr. C, as most of his students call him, has contributed numerous suggestions involving my educational experiences, each of which I take without hesitation.

Dr. C knows what I enjoy and need to do often earlier than I do. He nominated me to be an ambassador for the College of Agriculture, which has been one of my favorite activities during my
time at the University. He told me from the beginning that I would want to continue my education as an MD/PhD student, although I thought otherwise. I even attempted to use high school AP credit for my physics classes, a step that would have met my degree requirements, but left me shy of requirements for some medical schools. I ended up taking the classes and, years after his original suggestions, I am asking him for recommendation letters for MD/PhD programs. Dr. C supported me when I wanted to take French or dance classes and do community musical theatre in addition to my biotech schedule. Most importantly, Dr. C arranged a meeting for me with Dr. Becky Dutch as a potential research mentor in the spring of 2005. Two years later Dr. Dutch is still graciously allowing me to work in her lab in the Biochemistry department on my independent research.

Dr. Dutch’s laboratory deals primarily with membrane fusion events promoted by the viruses of Paramyxoviridae, a family of negative-strand, enveloped, RNA viruses. These include several important human pathogens such as measles, human respiratory syncytial virus (RSV), as well as the newly emerged Hendra and Nipah viruses, making the study of these viruses important to human health. My research focuses on identification of novel interactions between cellular proteins and the cytoplasmic tail region of the fusion proteins from simian virus 5 (SV5) and Hendra virus, two distantly related viruses within the same family.

Throughout my time in this laboratory I have experienced a great deal of educational and personal growth by working on my project. I have had the opportunity to learn a great number of techniques and tests, in working with tissue and cell culture, molecular biology techniques, gel electrophoresis, and Western blotting. I have begun to acquire a sense of independence and confidence in moving about the laboratory, following protocols, and troubleshooting.

My current comfort level in the laboratory greatly contrasts with my first research experience. During my junior and senior years of high school, I completed an independent research project under the mentorship of Dr. Ernest Bailey at the University of Kentucky’s Gluck Equine Research Center. As a part of the Equine Genome Project, I had the opportunity to identify two microsatellite markers in the genome toward the advancement of the project. Though at the time I felt completely comfortable in the laboratory and my project was successful, in retrospect, I realize how much I stumbled and how much I have grown.

After about a year in Dr. Dutch’s lab, Dr. C encouraged me to apply for the Beckman fellowship, a prestigious award that supports undergraduates for two summers and the intervening academic year. The Beckman foundation encourages creativity and conversation among their scholars, inviting the scholars from across the nation each year to the Beckman Symposium, which allows them to learn from each other and share their passion for laboratory science.

My time as a Beckman scholar has allowed me to grow both in science and in other areas of my life. It has been an unparalleled opportunity to help prepare me for my future as a scientist, allowing me not only the chance to continue in my research, but to travel and present my findings. I have had the opportunity to present my work at Posters at the Capitol in Frankfort, KY, as the University of Kentucky’s oral presenter; at the 21st National Conference for Undergraduate Research in San Francisco; and at the Showcase of Undergraduate Scholars at the University of Kentucky. Over the summer I was able to attend the American Society of Virology conference and also the Annual Beckman Symposium, where I was able to learn from other virologists and also from the other Scholars from across the nation.

An integral part of the success that I have had as a Beckman Scholar has been the support of my two mentors. Dr. Dutch is always available to confer with me about lab techniques, fixing problems, new directions for projects, and life in general. From day one, she encouraged me to be independent in the lab. This is one of the most important things I think I could have learned as an undergraduate and emerging scientist, enabling me to notice and correct my own mistakes as I made them before asking others for help. Dr. Diane Snow has also been extremely supportive of my research and constantly reminds me that the world needs more women scientists. Both Dr. Dutch and Dr. Snow have provided excellent examples of people who excel in their fields, and I aspire to one day be their collaborator.

Although I have made great progress in my ability to do research and problem solve, I openly recognize that in science, there is always more to learn. After I become a “Beckman Alumnus” this summer, I will have a year remaining of my undergraduate career at UK. I would like to continue with my research and my coursework while applying to MD/PhD programs. I would also like to be involved in community theatre productions and continue being involved with campus activities.

I have always loved challenges, and laboratory research provides me with an endless number of challenging opportunities; as soon as one problem is solved, another completely different problem arises. One of my very favorite philosophies that Dr. Beckman lived by was, “don’t be afraid of making mistakes. If you’re not making mistakes, you’re probably not doing very much.” During my final year at UK, I know I will make mistakes, but I also know I will continue to learn from and grow with each one.