From the first day I could talk, my favorite question has always been "Why?". My insatiable curiosity along with my desire to know not just facts, but the reasons behind facts made science a natural career choice. Unfortunately, to the casual observer my chances of becoming a successful researcher must have appeared slim. I was raised by a single mother without a high school education in a poor southern town where dropping out of high school was an easy choice. As valedictorian of my class of 201 students, I was one of only a few dozen to attend a four-year university, and I am the first person in my family to earn a bachelor's degree. It is only now, in hindsight, that I realize how much the odds were against me and how much my mother sacrificed in order to keep me on track to succeed. My ever-present motivation is the knowledge that I have opportunities no one else in my family has ever experienced, and that it is my responsibility to them and to myself to make the most of these opportunities by excelling in everything that I do.

My mother recognized my gift for communication at an early age, and she always encouraged me to practice my speaking and writing. At the same time, she made sure I was aware that not everyone had the same capabilities that I did, and that it was my responsibility to use my skills to help others. My teachers recognized this combination, and I began tutoring fellow students as early as middle school. What started as a chore at that age became a joy in high school, and in college developed into a passion that I hope to pursue throughout my life.

I entered the Sally McDonnell Barksdale Honors College at the University of Mississippi as one of only two recipients of the Carrier Foundation Scholarship, a full coverage award that is the university's highest honor. I brought two things with me: a fascination with chemistry and a desire to use my communication and leadership skills, and I quickly found ample opportunities to engage both. My enthusiasm caught the eye of my freshman chemistry professor, Dr. Walter Cleland, and he took me under his wing, starting a mentorship that would last throughout my college career. He encouraged me to jump right into research, and he helped me find a faculty member whose interests matched with mine, leading to my experience in research.

Outside of class, I joined the Student Affiliates of the American Chemical Society (SAACS) and the Model United Nations (MUN) team. Through SAACS, I was able to participate in outreach activities such as Science Day, a day-long workshop of games and fun "experiments" that was open to middle and high school youth from the surrounding area. This program was especially meaningful to me, since it represented an opportunity that I did not have in grade school. Through MUN, I continued to hone the public speaking and communication skills that I had developed through high school, and I earned many awards in competition.

During my sophomore year, I began to take on more active and substantial roles in my activities. I was elected vice president of SAACS, and I began building professional relationships with faculty members from the chemistry department. I used my connections and communication skills to recruit members by speaking to freshman chemistry classes, and I worked closely with the faculty advisor for the campus chapter of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE) to recruit minority students, who were heavily underrepresented in SAACS. At the request of the faculty advisor for MUN, I became the official student instructor for the club, giving me my first introduction to classroom teaching. I developed lesson plans, quizzes, and speaking exercises/drills to help my teammates learn the communication skills that had helped me succeed. At the same time, I began tutoring fellow students in organic chemistry, combining my love for the subject with my growing fondness for teaching. Having come from a poor family and attending college only because of generous scholarships, I recognized the hardship of some students, and I gave free or reduced rate tutoring to minority students or those who told me they could not afford to pay me.

Academically I was recognized with membership in the National Society of Collegiate Scholars and a nomination by my department head for the United States Achievement Academy National Collegiate Physical Science Award.

I continued these activities into my junior year, when I was elected president of SAACS and chosen as a teaching assistant for organic chemistry under Dr. Daniell Mattern, in addition to continuing my work with MUN. Juggling so many roles kept me busy, but it also taught me more about myself and my abilities than any other experience in college. As president of SAACS, I continued my efforts for recruitment and diversity, as well as my support for outreach events like Science Day. Recognizing how much an early start in research had benefited me, I expanded the professional aspect of the organization by starting a speakers series, a program in which upperclassmen gave presentations about their research to other members. I coupled this with a number of Q&A sessions where first and second year students could confidentially ask older members about their laboratories and advisors. As Dr. Mattern's TA, I led weekly review sessions for groups of 20-30 students, as well as study sessions before every exam that would regularly attract more than 80 people and last five or six hours. No matter how stressed or tired I was, leading these sessions was always a joy. Watching the flash of understanding in my students' eyes when they understood a concept for the first time would easily make all my worries disappear. My job prohibited me from tutoring for money as a TA, but I continued to offer free one-on-one tutoring to any student who asked. I was again recognized academically by being inducted into both the Phi Kappa Phi and Phi Beta Kappa honor societies, as well as by winning the Barry M. Goldwater Scholarship.

At the start of my senior year, I knew for certain that I wanted to become a professor and devote my life to research and teaching. In order to better focus on academics – graduate school applications, honors thesis, and research – I stepped down from my positions as SAACS president and as a TA and proudly watched students that I had mentored take over my roles. I stayed active as a member in SAACS, giving the new president advice and suggestions, as well as in MUN by being elected president. I also continued my involvement with Dr. Mattern's class, returning to full time tutoring and helping the new TA's by filling in when they were sick or giving them breaks during long study sessions. I applied and was accepted to graduate programs at Harvard University, University of Michigan, and the Massachusetts Institute of Technology. The biological engineering program at MIT was an easy choice, not only because I had worked there previously, but also because it would allow me to substantially affect the lives of people outside my laboratory. MIT was one of the first – and is still one of the few – universities to offer a program in biological engineering, and work in the department continues to shape public opinions and government policies about the still-emerging field. By coupling my gift for communication with a world-class education in this area, I will help guide the development of the field to best address issues in human health.

As I prepared to begin graduate school, tragedy struck on May 16, 2008 when my mother was diagnosed with inoperable stage IV lung cancer. My mother had always been my emotional support, and I knew her support had helped me achieve all my successes. I was terrified, but I was also motivated beyond description. I knew in an instant that this would be the focus of my life, and I knew that BE was the best way to approach it. Traditional approaches to cancer therapy have become increasingly ineffective, and the latest breakthroughs have come from the fusion of engineering approaches to biological problems. An NSF fellowship would grant me the freedom to choose my research advisor and thesis project based on my passion, rather than monetary concerns. This is the first step to a career dedicated to advancing basic science and public health, and to the realization of my family's dream, my mother's dream, and my dream.