

I was born in Russia amidst political turmoil and economic instability. I vaguely remember standing with my mother and father in long lines outside of grocery stores only to find mainly empty shelves inside. Many Jewish families, my own included, decided this was the moment to try and start a new and better life in Israel. In 1991, my grandmother, my parents, and my sister and I flew from Moscow to Tel Aviv, where all of us faced the challenge of learning a new language even as we adapted to a very different culture and environment than we were accustomed. However, no sooner had we begun to feel at home, my family won a visa lottery to come to the United States, and thus started yet another chapter in our lives in Vicksburg, Mississippi, where my father had been offered a position with a chemical company. My parents had studied English back in Russia, but once again my sister and I had to learn our new language and find a way to excel in our studies, something our parents had always made a priority. When my father's company closed down four years later, we were once again uprooted, this time to New Jersey where I have lived ever since beginning eighth grade.

As my father did during his youth in Russia, I ran on my high school cross country and track teams, setting school records in both the mile and two mile events. Throughout my high school running career, my father was not only my inspiration but also my coach, mentor, and friend. And for four years our family, finally settled down, lived the American dream, with a new house and everyone who lived there thriving and healthy. Then suddenly, in the winter of 2006, my father was diagnosed with what was by then incurable stomach cancer. He fought valiantly for ten difficult, painful months until he passed away in November, 2006, just after the start of my sister's second year at Rutgers and my first. Words really cannot describe the loss we both felt.

And to make matters even worse, our mother was laid off from her job unexpectedly, making paying tuition very difficult. My sister and I both became commuter students to cut down on expenses, and I often considered dropping out to support the family financially. However, my mother insisted that I continue as my father wished not only by completing my college education but also by pursuing a career in science and engineering that he always hoped I would have.

My father was a talented athlete, a successful chemical engineer, and a selfless, inspirational human being. Throughout my life I have always tried to emulate his example. My involvement in cross country and track throughout high school and college, my coming to Rutgers to become a biomedical engineer, my experiences as a researcher on-campus and beyond— all stem in great part from knowing the hopes my father had for me and that he can never see realized. He would be proud to know that while excelling in the classroom first, I was also a member of two varsity sports teams for four years and the first student-athlete at my university to be named a Goldwater Scholar.

Varsity letters and academic honors aside, what I believe might have most pleased my father is my record of accomplishments at the bench. Over the past three years I have worked as an undergraduate researcher in the department of biomedical engineering, studying human stem-cell behavior on polymeric biomaterials for tissue engineering applications. Using image processing and computational modeling techniques, our team

has developed a cell profiling toolbox that allows us to predict stem-cell lineage commitment and from this research we have an article currently under review at the xxxxxxx. I also contributed to another publication, currently in press at xxxxxxx which focuses on smooth-muscle cell behavior on biomaterials of varying chemistries as well as one, currently in press at xxxxxxxx, which studies morphological properties of rare-earth nanoparticles for biomedical imaging applications. I have also worked as a research intern at xxxxxxx, a biotechnology company at which, as a novice scientist, I discovered an important breakthrough in a drug's efficacy. However, I feel as if I most honor my father's legacy whenever I am helping others, especially younger researchers and scientists. I recently founded my university's first campus-wide "Undergraduate Research Society," devoted to helping its members find research and publication opportunities, and I am currently mentoring two local high school students through whom we hope to establish a high-school outreach program for future scientists.

For graduate study I am interested in the biomedical imaging and image analysis discipline for developing image-based therapeutic, monitoring, and diagnostic tools. The Institute of Biomedical Engineering at the University of Oxford is a state-of-the-art, interdisciplinary center for translational research, where laboratory research groups tackle a wide range of clinically-relevant problems. In particular, Dr. *Last name* group in the Biomedical Image Analysis Laboratory utilizes microscopy and image processing techniques to investigate intracellular events, research that is similar to my undergraduate work in studying morphological changes of stem cells during differentiation. In order to gain the in-depth, professional training at Oxford, I plan to pursue the twelve month full-time MSc in Biomedical Engineering and complete my dissertation in the biomedical image analysis research group.

After completing this program I plan to pursue MD/PhD training at an institution that produces high-quality biomedical engineers, such as the Johns Hopkins or joint Harvard-MIT programs, to become a researcher in academia, solving clinically-relevant biomedical problems in pathology and radiology by using quantitative and computational methods developed in the biomedical imaging field. In attending Oxford, I hope to share what I have learned during my travels across three continents, immerse myself in British scientific and social culture, lifestyle, and traditions, continue my athletic running career by joining the Oxford University Athletic Club, and obtain world-class training in biomedical engineering.