



## Clarkson University Writing Center

165 Bertrand H. Snell Hall

CU Box 5760

Potsdam, NY 13699-5760

315.268.4439

### **SAMPLE:** PERSONAL STATEMENT

My pursuit of a Ph.D. in cancer research started with Oprah. It may seem silly, but my childhood interest in cancer research was sparked when I watched Oprah's guests donate hair to Locks of Love. This nonprofit organization makes wigs for children with medical hair loss from chemotherapy or other cancer treatments. The loss of my grandfather to lung cancer a few years later ultimately propelled me toward this career. No longer did I just want to sit back; I wanted to be a key part in changing the world and many lives. I wanted to design a novel anticancer drug which would prevent many people from losing their lives prematurely.

Since that decision, I have single-mindedly pursued an education in biological research. I chose Clarkson University for my undergraduate work not only for its interdisciplinary Bio-Molecular Science program, but also for its strong emphasis on laboratory skills and research for both students and faculty. The interdisciplinary major helped me to understand both the chemical and biological sides of a research problem. Through my laboratory classes I gained experience using standard lab machinery, and I feel confident in that setting. More importantly, I am fortunate as an undergraduate to complete a research thesis on developing novel anticancer drugs for estrogen-dependent breast cancer. I am using CQSAR, a computer program which compares the structure-activity relationships between novel ligands and the estrogen receptor. My research focuses primarily on the work of Dr. .... (Northeastern), who is studying the relative binding affinities (RBA) of substituted estradiol ligands to the estrogen receptor. Using the data generated by Dr. ....'s lab, I've developed a quantitative equation relating certain qualities of the ligands to the RBA. The hydrophobicity of the ligands, as well as their length and size, plays a negative role in binding affinities, suggesting that larger, more hydrophobic ligands are not necessarily a better design. My thesis will propose a novel drug structure and simulate binding of it to the estrogen receptor using molecular modeling software. This project focuses on one perspective, considering the chemical aspects of the molecule and how ligands affect binding.

Although my research at Clarkson is computational, I experienced a more hands-on approach when I interned in Wyeth's oncology group as part of the In-Vivo lab. My primary experiments dealt with evaluating the phosphorylation status of Her-2 in various human tumor lines grown in nude mouse xenografts after dosing with small molecule kinase inhibitors. Instead of focusing on just the drug's interactions with the receptor, I studied an entire in vivo system and the drug's effects on both the tumor and the animal itself. At Wyeth I used Western Blotting, PCR, Histology, and Tissue Culture

techniques that I am practicing again in a Molecular Biology course. Fortunately, I have conducted both computational and hands-on research. Through each, I gained a better sense of the 'big picture' of cancer research, from conceptual design through testing in animal models. Although I am competent in both approaches, I most enjoy the bench work, running the gels and handling the animals.

My personal experience has allowed me to observe researchers in both academia and industry. Although each researcher works in a completely different field, I have noticed that all possess the same characteristics. Those researchers have been extremely organized, focused on their objectives and completely dedicated to their work. For those in cancer research, they feel strongly about their field and wish to help better the world. I identify with this belief -- it is the major reason why I am pursuing this career. Once I set my sights upon a goal, I will do everything in my power to achieve it. For example, my pursuit of music shows my dedication and discipline toward a goal. Music has always been a huge part of my life. While at Clarkson, I have overloaded courses and rearranged my schedule each semester in order to include at least one chorus class. Music helps me to be a better scientist because it allows me to express another side of my personality and gives me a release from the pressures of a demanding student life. My experiences at Clarkson, Wyeth, and in the arts have strengthened the qualities and skills essential for my graduate study.

I will pursue a career in cancer research, designing and developing new cancer therapies. I am interested in discovering the mutations seen in cancerous cells that allow the tumor to grow rapidly. These mutations may be a key part in designing treatments which inhibit or destroy cancerous cells. I wish to focus on cell signaling and apoptosis in order to further understand the differences in mechanisms between normal and cancer cells as well as the binding interactions between a drug and a cell. A degree in cellular and molecular biology will enable me to design a drug molecule which will target only the cancer and not other cells of the body. I am interested in all parts of the process, from design through clinical trials. In order to realize this goal, I am pursuing a Ph.D. at the University of ... where I can focus on drug design and actions of mechanism. Ultimately, I would love nothing more than to propose a drug structure and take it through testing until it is released for public use.

Scientific research will always be a part of my life. Through my work at Wyeth, I know that the drug development process takes years. My ultimate goal is to develop tumor-specific cancer treatments and therapies with fewer side effects. I am prepared to dedicate my life to designing and developing those drugs, taking them through all the stages until they are deemed safe for use in humans and could help to save a child's life. They could even save children from losing their hair during treatment. Although I have donated my hair three times to Locks of Love, I hope to see the need for that organization disappear.