A. Co-op work assignment

This past summer and fall, I worked as a co-op in the Late Stage Cell Culture (LSCC) department at Genentech in South San Francisco, CA. Considered the founder of the biotechnology industry, Genentech uses human genetic information to discover, develop, manufacture, and commercialize medicines to treat serious or life-threatening medical conditions. Reliable, robust cell culture processes are required to produce quality protein therapeutics for commercial use and clinical studies. The LSCC department is primarily responsible for developing cell culture processes for Phase III and/or commercial products. LSCC is part of the Pharmaceutical Technical Development division which develops new methods and technologies to manufacture biologics and serves as the bridge between research and manufacturing.

During my co-op, I worked on a new, disposable equipment-based, cell banking process. My contributions to the project involved testing multiple cell lines for sensitivity to a significant process change, working on pre-characterization studies to determine process parameter limits/ranges, and executing characterization studies to evaluate the effects of process parameters on product quality and to compare the new process against the current manufacturing process. I became familiar with mammalian cell culture techniques, bioreactor operation, process control strategies, and factorial design of experiments and data analysis using JMP statistical software.

I attended a general new hire orientation on my first day where I learned more about the company’s history and values. The rest of my training took place within the first few weeks of my co-op and consisted of on-the-job training in the lab, short, in-person lecture-based classes on lab safety and bio-hazardous waste treatment, and computer-based, self-training. I was trained primarily by my manager, but also received training on some standard cell culture techniques and practices from other people within the department. My manager effectively functioned as a mentor and I was able to approach her with any technical or general questions I had. Other people in my group and working in the lab were also very helpful and supportive.
B. Assessment of Learning and Development

The co-op experience allowed me to see how my engineering education could be applied to the corporate world. As a Biological Engineering major with a concentration in Biomedical Engineering, my co-op was very relevant to my career interests and educational background. I was able to gain a much better understanding of the biotechnology industry and learn about the different processes and methods involved in the development of pharmaceuticals. Although I learned a good portion of new concepts on the job through reading articles and approaching my manager with questions, general knowledge of topics including cell biology, cryopreservation, mass balances, growth kinetics, and statistical analysis were helpful. I was able to apply the technical writing skills I gained through projects and case study assignments in BEE 2600, BEE 3310, BEE 3500 in authoring a technical report. The opportunity to experience professional engineering culture allowed me to see the importance of teamwork, flexibility, and patience. I appreciated the collaborative atmosphere where the exchange of ideas and information was encouraged; I saw people within the department being open to both giving and receiving feedback and I learned how to listen and give my own input. I think I grew as an individual simply through being part of a professional project team and interacting with others. I gained experience and confidence in presenting my work at the Intern Poster session and various group and project team meetings. If I were to go through the co-op again, I would take more initiative to network and become familiar with more projects in the company as a whole.

C. Life Outside of Co-op

I lived at home during my co-op and the commute was about one hour each way. Other co-ops/interns I met who were not from the area found housing in nearby cities (San Francisco, South San Francisco, Daly City, etc.). In an effort to be more sustainable and encourage employees to utilize cleaner ways to commute to and from work, Genentech offers free shuttle busses from various locations throughout the San Francisco Bay Area to the South San Francisco campus which made the commute feasible and eliminated the stress of driving in traffic. Genentech had various social and educational opportunities during the summer for interns/co-ops but in the fall there weren’t many company organized co-op events so the other co-ops and I organized weekly lunches; I also got to know some of the recent grads in my group. As a co-op, I was given a gym membership and had access to fitness classes.
D. Evaluation

One of the best features of this job was being assigned meaningful and challenging work on a project that has the potential for significant impact. Working on a project with a tangible goal was a motivating factor in driving experimental progress and understanding of the subject matter. I appreciated being given a good amount of responsibility and independence in prioritizing my workload. I found that I appreciated the workflow and projects in industry over the work I had done previously in research labs in academia. Working at a leading company in the biotechnology industry and knowing your work has a profound impact on patients’ lives across the world was very satisfying. Being able to take part in various celebrations including the release of a new drug for many blood-related cancers and a preview of the “Birth of Biotech” exhibit at the Smithsonian was also a bonus.

E. Additional info

Overall, my co-op at Genentech was a great experience and I highly recommend the co-op program.