VEX Robotics and Biochemical Engineering

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Introduction

As high school seniors interested in STEM, the decision to explore a potential career path can be both exciting and scary for us. In this essay, we will share some of the things that we learned about biochemical engineers and STEM. By doing this, we can also draw parallels between the engineering design process employed by professionals and the skills honed through our participation in VEX Robotics.

The allure of biochemical engineering, with its blend of biology, chemistry, and the engineering principles we learned from VEX, captivated our imaginations. The contributions we could make towards groundbreaking advancements in world-changing technologies were an irresistible draw. Biochemical engineering, we realized, is more than a career because it's also a pathway to shaping the future through innovative problem-solving.

Our Exploration of Biochemical Engineering

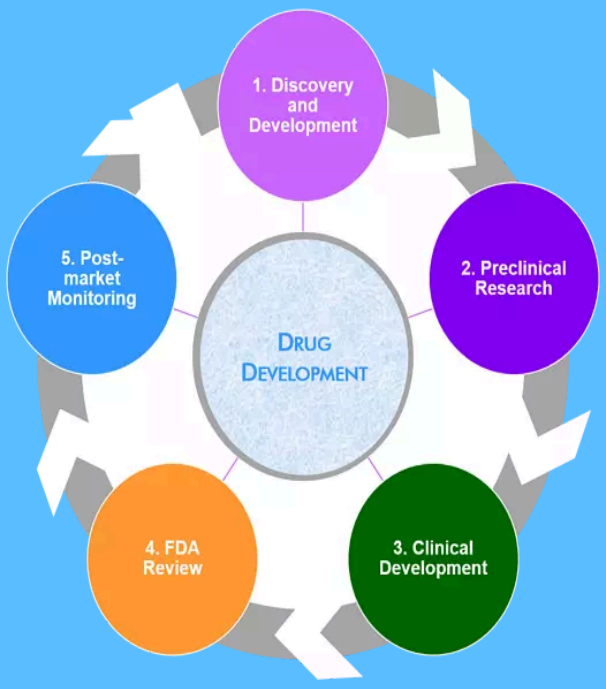
To learn about biochemical engineering, we turned to a diverse variety of resources. Countless YouTube videos, Wikipedia articles, and websites of biochemical engineering facilities like Amgen became our windows into the daily lives of biochemical engineers. Learning about their projects and successes provided insight into the world that we were so interested in.

None of our team was all that familiar with biochemical engineering compared to some of the other fields of engineering, such as electrical or civil engineering, but a quick look into Amgen made it clear why this subject was something to care about. In the past, Amgen had released a drug, Neupogen, to prevent infections in those undergoing chemotherapy ("Amgen History" and "Is NEUPOGEN Right For Me?"). This was an incredible topic for us to research, as biochemical engineering was helping make the lives of those undergoing treatment for cancer so much easier!

The Scientific Method, VEX, and Biochemical Engineering

The science behind how these medicines go from concepts to drugs that affect the lives of millions is detailed on Amgen's website, titled "How Are Biotechnology Medicines Discovered and Developed?" The first step in the process is defining the disease, how it is spread, and what cells it affects, similar to the first step in VEX, identifying the problem. Next, a drug type is selected to most efficiently target the disease out of several possible steps, a parallel to the brainstorm and select stage used in VEX Robotics. Third, a prototype drug is developed that only broadly targets those cells affected by the disease in a certain way, which could be considered a prototype of the drug. This prototyping is also the next step of VEX Robotics. The

next step is repeatedly developing and testing the drug across different populations and phases to guarantee safety. This is considered the building and testing phase in Robotics. Then, in a final comparison, the drug is approved by the FDA and sent to the market, which could be considered similar to us competing in a competition to round out the analogy.



The application of the engineering design process in biochemical engineering struck a chord with us. From defining problems to prototyping and refining solutions, this algorithmic approach resonated deeply. Professionals in this field navigate intricate challenges – designing efficient processes for their work, optimizing conditions for optimal results, and pioneering biotechnological applications (“What is Biochemical Engineering?”) This structured problem-solving approach mirrored the essence of what we strived for in VEX Robotics.

VEX and Career Preparedness

Participating in VEX Robotics laid a solid foundation for our journey into studying a career in biochemical engineering. The skills honed during countless hours of designing, building, and troubleshooting robots translated seamlessly into the all-to-similar processes used by these professionals. The critical thinking and hands-on problem-solving cultivated in robotics provided a versatile toolkit. The nature of robotics competitions aligned perfectly with the dynamic challenges awaiting those in biochemical engineering, preparing us for the ever-evolving landscape of exploring STEM careers.

Along with the engineering aspects of VEX, the teamwork we practiced was also really important. According to the US Bureau of Labor, biochemical engineers work in teams in various types of settings ranging from designing medical equipment to helping those in the healthcare and social assistance field. The variety of fields that biochemical engineers work in means that there is also a wide range of people they must interact with. In VEX, we must also work with our teammates through several different situations, wildly varying in both goals and stress. To be a successful team, you must learn to always clearly and effectively communicate with your teammates, which will then also be used as a biochemical engineer.

Conclusion

In conclusion, the systematic problem-solving approach and teamwork observed in professionals align with the skills fostered through our participation in VEX Robotics. As we stand at the beginning of our life paths, the lessons from VEX Robotics serve as a compass, guiding us into the thrilling and challenging world of STEM careers.

Works Cited

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