Goal 1.2 paper

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Acquire depth of knowledge in the micro-level of biology

The new biology catalogue at Longwood was designed to split up biological topics so students will acquire knowledge at each level of biology, this will help to lay a foundation for future classes and careers. One of these levels includes knowledge at a micro-level. One of these foundation courses was biology 250, introduction to genetics. In biology 250, we learned about cellular and molecular functions within the body. As I moved through my curriculum, I built upon the knowledge I learned in introduction to genetics. One of the classes in which I really built upon this knowledge was biology 305, microbiology. In microbiology, I took the knowledge from introduction to genetics and I used it to understand and learn about bacteria and the cellular and molecular functions. Another class which I have found these skills very useful is biology 425, modern genetics, which I am currently in this semester.

In biology 250, one of the projects we performed was a partner research project. For this project, my partner and I designed our own experiment and performed our own tests and analysis on the data. For our research project, we decided to test how heavy metals in parking lot runoff effects the microbes in the soil. In this experiment, we collected samples and we isolated soil microbes and performed PCR on the DNA. From the PCR product, we sequenced the data and used online genetic libraries to identify our bacteria species. From the attached document below, you can see the development of the knowledge at a cellular and molecular level and how the hands-on laboratory really helped to connect what we were learning and how to apply it to the real world.

Although microbiology was based on the study of bacteria, the knowledge I gained in introduction to genetics really helped me to understand and build my skills at a micro-level. A lot of the things I learned in introduction to genetics, such as cell division, organelle function, and DNA replication, were all present in microbiology, just in a different form. Having that basis of what the steps and functions are really helped to more easily grasp the concepts in a bacterial term, while also helping in understand newer material such as metabolism, respiration, and disease transfer. As you can see from the group PowerPoint posted below these two classes really helped to bridge between cellular division and replication and real-life situations.

With these two classes I gained a lot of experience, which has definitely come in handy this semester. Although I did not take the intermediate level genetics, I am currently in biology 425, modern genetics, this class is very hands-on, and I have found biology 250 and 305 both very helpful in preparing for this class. In this class we are doing less lecture and more lab-based classes, in this class we have used skills gained from both the foundation classes, especially biology 250. In this class, we have already performed and completed a whole PCR, something that took half a semester in our foundation class. So having those hands-on techniques from biology 250, really helped in performing this task. We are also performing lots of DNA analyses, which has us using lots of information that we learned from introduction to genetics.

All these classes have really helped me to gain knowledge at a micro-level in biology. I am able to think at a cellular and molecular level and understand and comprehend things, such as DNA reads, performing PCR, inoculating plates, etc. With all this knowledge and hands-on skills I have gained, I can use take them and possibly use them in a future career in preserving and conserving genes and genetic diversity in our wildlife.