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**FURSCA – End of Summer Report**

This summer I researched the role of the mating type proteins in mating in *Tetrahymena thermophila*. In order to do this I had to do two things. First, I had to create a mixed mating type mutant with the mating type II MTA gene (MTA2) and the mating type III MTB gene (MTB3). Second, I would have to introduce those mutants to each of the seven mating types of *T. thermophila* and starve the population. I would then be able to observe if mating occurred. The mating patterns observed would give me a better understanding of the mechanisms behind the mating type proteins. The goal of this project is to simply gain this understanding. These results could also provide a better understanding of the human immune system sense mating in *T. thermophila* and destruction of foreign cells in the immune system work by the same mechanism.

This summer I was not able to achieve my goal. I was only able to create the fragments of DNA I needed to make the mutant and begin to make many copies of them. I have yet to insert those fragments into wildtype *T. thermophila* and create the mutants to observe mating. Because I failed to mate the mutants with each mating type in *T. thermophila,* I have no data to present. However, from what I was able to accomplish, I learned a couple things. First, I learned that when performing PCR with *T. thermophila* DNA it is most effective to do so using the In-Fusion PCR kit. I also learned that colony PCR is the most effective technique when looking to create many copies of *T. thermophila* DNA.

This project helps shape my future at Albion College and will effect my future beyond Albion. For my remaining time at Albion I will continue to work on this project and others with Dr. Cervantes both during the school year and summer. I will also be attending various conferences to present my research. This includes Elkin Isaac as well as other biology and *Tetrahymena* conferences. Working on this project has also inspired me to write my own thesis, using this project as the subject. After Albion I want to go medical school and eventually become a doctor. This research will go a long way in order to increase my chances of getting into a good medical school. It will also provide me with important background information and teach me valuable lessons that will be useful at medical school. Doing this research made a difference in my life as well. Doing research hasn’t affected my plans of becoming a doctor, but I did learn that doing research would be a good alternative for me if I change my mind on going to medical school. Through this project I also made many connections I didn’t previously have and strengthened the connection I had previously. I met and further developed my relationship with many of the professors at Albion over the course of the summer. This will be especially helpful when looking for people to write letters of recommendation for me. I was also able to meet and create friendships with other students. Overall, this research made a positive difference in my life and will have a large impact on the rest of my time at Albion and beyond.