



the stars
challenge

Explore
Biotechnology
Winter 2018



It was a great pleasure to guide my first group of Exploring Biotechnology students through the exciting world of Biotechnology, along with the assistance of our terrific Teaching Assistant, Bridget Letson. We began with the task of familiarizing ourselves with high tech lab equipment. Then, we studied DNA in depth. Reviewing the structure and function of DNA helped us understand it better when we extracted it from fruit and even from ourselves! We then investigated the creation of a DNA fingerprint using gel electrophoresis. This helped us lay the foundation for many more exciting activities.

Next, we dove into the world of microbes, which are essential to the study of Biotechnology. We learned basic skills of microbiology, tested the best way to kill microbes, and explored how diseases are spread. We learned the basic cornerstones of genetic engineering, including restriction enzymes and plasmids that allow us to deliver genes from one species to another. We genetically engineered bacteria to have a trait that it does not normally contain –we added a gene to E.coli to make it glow in the dark! Then, we came up with ideas for our own genetically modified organisms that could somehow help humanity.

Our capstone experience combined many of these techniques in an intense laboratory experiment. Samples of food were brought in to determine if any of the ingredients are genetically modified. We completed this by extracting DNA from our samples, amplifying this DNA using the Polymerase Chain Reaction (PCR), and running a gel electrophoresis to create DNA fingerprints. These DNA fingerprints were then analyzed in order to determine if any of the DNA came from a genetically modified plant.

Biotechnology has the potential to help us discover new ways to approach problems that have existed for many years. I encourage you to share your knowledge and continue exploring biotechnology since the journey has only just begun.

I had a wonderful time getting to know each of you. I hope you found the class exciting and that it has encouraged you to continue to expand your interest in the sciences. It has been an absolute pleasure to be able to share my passion for biotechnology with all of you!

Dr. Ellsworth



Evan

This class was a very fun class. I like it because it taught us about biotechnology. If I am unable to be a paleontologist, I would like to be a paleo biotechnologist. It helped me learn more about lab science. I liked this class a lot and it was a great introduction for me.

Ayden

The important thing is not to stop questioning. Curiosity has its own reason for existing.





Gabby

My favorite part of Stars Challenge is all of it! I like how I'm not the only kid who likes science. I have made so many friends at Stars Challenge and that's my favorite part of Stars Challenge.

Thanks.

Trestan

One of my favorite moments at the biotechnology camp was when we did the glowing E.coli experiment. I liked it because I learned the most from it, like how one organism's DNA is put into another organism's DNA. The lab part of it was also very interesting because we got to learn how to make a microbial culture. The outcome of the lab was probably the coolest thing I have ever seen too. Overall at this camp I made a lot of memories and I hope to expand my knowledge of biotechnology in the future.





Christian

In all that I do I always keep the great Wayne Gretzky's quote in mind: "You miss 100 percent of the shots you never take." Through the Stars Challenge "Explore Biotechnology" course, my favorite moment is EVERY moment I've had the "shot" to explore how biology can be used as a technology to improve our lives. Most memorable class moment for me: the flu experiment as we figured out who in class carried the flu through glove transmission.

Mei-Ling

Because of the activities in this class, I learned that some snack foods have GMOs in them.





Georgie

Thanks to this amazing class, I know how to perform gel electrophoresis.

Sophia

Follow your dreams and
even if you don't know where
your going, you will never be
lost.





Tessa

STARS was an amazing experience. I met so many people through it and learned so much! I cannot wait to do it next year!

Alex

I really loved biotech camp this year! One specific moment I remember was taking DNA from bananas and strawberries. I had a lot of fun doing that, as the results were pretty cool. I remember having a lot of fun with my partner attempting to mash the banana up. We could have definitely done a better job! It was fun nonetheless, and overall a great experience.





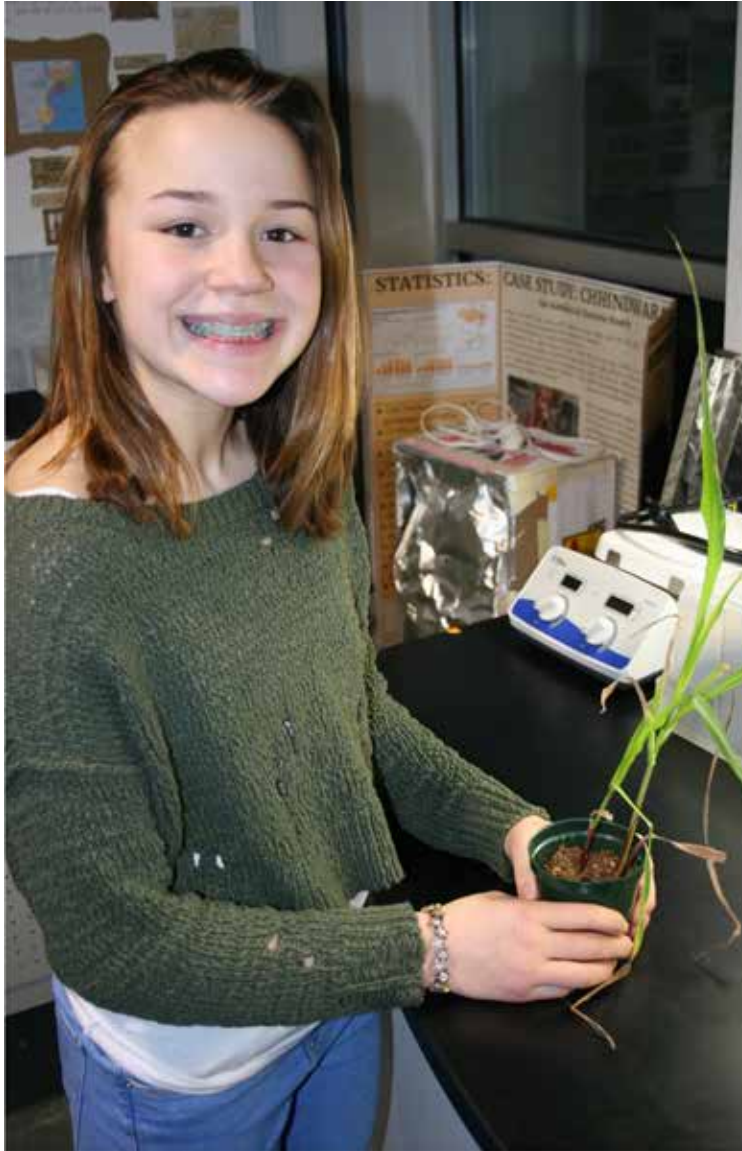
Kathleen

I enjoyed taking the biotechnology course this winter. It allowed me to explore concepts that I didn't even know existed and opened my eyes to the rapidly growing field of biotechnology. My favorite activity was testing snack foods to see if they were GMO products. I liked it because we were able to utilize the techniques we learned such as gel electrophoresis. Another favorite activity was when we tested antibiotics and disinfectants to see which did a better job of killing bacteria. All in all, thank you to everyone for making this class so interesting and enjoyable.

Megan

I learned how to detect
GMOs in chips, while having
a fun time doing it.





Sophia

One of my favorite activities in the Biotechnology Course was the virus spreading experiment that was demonstrated through the hand shaking exercise. It was an eye opener to see how viruses spread in a community through casual contact. In addition, it was impressive how we were able to narrow down the original source of the virus.

Lidhu

A beautiful day begins with a positive mindset. Take a moment to think about how privileged you are to be alive. The moment you start acting like life is a blessing, I assure you it will start feel like one. It comes a full circle, feeling blessed, feeling grateful and wanting to do more and feeling happier. You begin to see and feel how precious life is and know that time spent living is time worth appreciating." From rrrtv.me. Remember enjoy everything you do, you only live life once!





Andrew

I thoroughly enjoyed this class. It was interesting to use high-tech tools to explore biotechnology. I would do this course or another like it again. I liked doing PCR for replicating DNA.

Francesco

I rate this class a 15 out of 15. I learned many scientific procedures of biotechnology, and it behooves me to learn more



