

**2018 PSBR High School Essay Contest**  
***Finalist***

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Biomedical Research and My Life

Life without biomedical technology—imagine. For many, it would be an inconvenience at best. For others, it would mean life or death. Biomedical research, contrary to some beliefs, is not merely a newfangled innovation, instead having been around for centuries—tracing back to the origination of bread or wine. It is through this science that medical advances can be made that ultimately change the merging world of medicine and technology in which we live. However, without professionals within the field, the biomedical research process, and the vital role of animals within that process, everyday uses of biotechnology would be nonexistent.

The implementation of the artificial heart, for example, turned the tables of healthcare around the globe, creating a possible alternative to the nation’s number one killer—heart disease. The theory of this sort of apparatus is speculated to have been first established in 1812, but it was nearly a century later when the device came to true form. In its early stages of development, however, its dependability and practicality were tested when American surgeon Dr. John H. Gibbon, Jr. created a model apparatus for laboratory rats. Only after the successful completion of these trials was the research published, allowing fellow medical professionals to see the incredible innovations seemingly literally coming to life before them (Khan, Waqas). This example is just one of the thousands of biomedical developments that the medical field has seen and continues to observe, more so today than ever before. While biomedical research impacts nearly everyone to some extent, others have a deeper appreciation for, or dependency upon, its influences.

As a young girl, I had the opportunity of being born and raised on a farm, with dirt often under my nails, and in the barn more than at friends’ houses. As a 4-H member, I vividly remember learning how to administer vaccines to our dairy and beef cattle, goats, and sheep. At a young age, I was exposed to the medical facet of agriculture—one that shares a plethora of similarities with human health care. Little did I know, at eight years old, the knowledge I would gain from being directly involved with this aspect of biotechnology.

It wasn’t until four years ago, though, that I truly discovered the miracle of biomedical research. My little sister, Shelly, was eight years old and had just been diagnosed with Ewing’s Sarcoma—bone cancer. It was only in those next couple of years that I would find out how much goes into research, human trials, and testing before a product or procedure “hits the market” or is utilized as an accepted medical solution. Soon, I was depending on those procedures and medications to keep my sister healthy.

May 30th, 2014 is a day I will not soon forget. Shelly had surgery because through chemotherapy and radiation, her tumor had not shrunken enough. That surgery resulted in her losing her right foot back to the heel. That was when my family was introduced to the world of prosthetics and orthotics. Today, only through the research and work of biomedical engineers and scientists, and countless other professionals, Shelly can use her prosthetic brace to live just like anyone else—keeping right up with her twin sister. Through her experience, I learned a lot more about the work that goes into biotechnology—not only in prosthetics, but also imaging, medications, vaccinations, and surgical procedures, among various others.

From the implementation of the artificial heart, which may have previously appeared to be science fiction to some, to the first time I used a portable ultrasound machine to check my cows for pregnancy, there are constantly new technologies and procedures being developed, making now a more exciting time than ever for biomedical breakthroughs.

Through animal research, we are able to work with an accurate model, exhibiting similar anatomical features, through financially and morally sound means. Mice, for example, have short life spans, allowing the observation through a life cycle and across generations in a short time period. Their bodies are similar in many ways to that of a human, revealing countless answers to human problems in a humane, harmless, way.

Biomedical research has impacted all of us—if not, we wouldn't get any vaccines or wear glasses or contacts. Now, it is our duty to embrace it. Not all of our lives are directly depending upon it, but it is our future—the basis for finding cures or treatments, but most importantly, saving lives.

#### Works Cited

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