

2016 PSBR High School Essay Contest

Finalist

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There is a quote by the famous mathematician Alan Turing: “Sometimes it is the people no one imagines anything of who do the things no one can imagine” (“Alan Turing Quotes”). I believe this sentiment resonates on both a social and scientific level. People as a whole take for granted the magnificence of scientific discovery. Yes, we see the men and women in white lab coats on a regular basis, but we never imagine, although we may hope, that they will discover a cure for cancer or a vaccine for Ebola within our lifetime. Only by digging deeper can we truly understand the effort and experimentation needed to create the unimaginable.

How biomedical research affected me was my first question upon my discovery of the practice. All the while, my cat purred inquisitively at my feet, and just outside my window, my furry companions barked at the neighborhood squirrels. In the background, the news anchor recited the fact that this year has been one of the worst for ticks in my area bringing to mind my dog, Nikki's, diagnosis of Lyme disease earlier last year.

Biomedical research was a foreign entity to me until recently. The simple question, what is biomedical research, merits a complex answer. Perhaps one of the most complex responses given to a question: it's life. It's not only life, it's discovery, it's innovation, it's survival. Without biomedical research some of the most important medical discoveries, like anti- Leukemia drugs and vaccines, would have been little more than inconceivable thoughts (“Biomedical Research”).

Lyme disease, a tick born disease that has affected upwards of 300,000 people in the U.S. alone, can lead to damage of the heart, joints, and nervous system (“Lyme Disease Vaccinations”). Once being a victim myself of a tick bite, I became intrigued by what damage such a small organism could cause. Luckily for myself and others, biomedical research is helping to aid in the treatment and diagnosis of the disease in both humans and animals.

Dr. Stephen Barthold, a veterinary pathologist, has become a leader in the Lyme disease crusade. He created the UC Davis Center for Comparative Medicine, which combines the expertise of medical doctors and veterinarians in the research of diseases (“Linking Human Animal Biomedical Research to Benefit Both”). “We take advantage of the concept of 'one medicine,’” the doctor said in one interview, “Every human disease has an animal counterpart, what we learn from one benefits the other” (“Linking Human Animal Biomedical Research to Benefit Both”). After much research, Dr. Barthold and his fellow researchers determined that even after antibiotic treatment, the disease continues to manifest (“Linking Human Animal Biomedical Research to Benefit Both”). I never conceived the idea that perhaps the work of vets and medical doctors together could correlate into discoveries impacting all species. It is most definitely something that most of us take for granted; no matter how civilized and intelligible the human species is, we are all just animals.

The connection between Lyme disease and biomedical research continues with a vaccine created for mice. The bacteria that causes Lyme, *Borrelia burgdorferi*, has been most prominently detected in mice, and Maria Gomes-Solecki of the University of Tennessee decided to test her theory that by giving the mice a vaccine for Lyme, the disease's spread would lessen. Ticks

spreading Lyme disease usually feed off of mice, and, if the mice have the antibodies in their blood, the Lyme infecting the tick would then be eradicated. These Lyme vaccinations were proven to have ill effects on humans but do not effect mice. Maria and her colleagues created a Lyme vaccine pellet, and, in areas where it was tested, it showed a 76 percent drop in ticks infected with Lyme disease (Betelho). By testing her theory with mice, Gomes-Solecki has created something that could substantially reduce the risk of getting Lyme disease in the future.

Thanks to the researchers who dared to pass the boundaries between human and animal medicine and to those who thought beyond the realms of human vaccination, I and surely many others are reassured that the future will be a safer place for both pets and their owners. Although my dog has already been infected with Lyme, I know that with future studies her illness can be better treated and managed so that I may be gifted with many more precious and unforgettable years with my best friend.

Works Cited

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