



2014 PSBR High School Essay Contest
Finalist

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Biomedical research with animals has touched the lives of nearly every person. It is through this research that modern medicine has been able to develop new drugs and vaccines, improve procedures that prevent and treat diseases and test the safety of products to save lives. Due to the many similarities between humans and animals, scientists have been able to understand how certain therapies can better work on humans by testing them on animals. This knowledge can then be applied to benefit not only people, but also the animals that help make these advancements possible. The increase of life expectancy in the United States is primarily due to the scientific and medical advances that can be attributed to our furry friends. Life expectancy has increased from an average of just 49 years in 1900 to 69.3 in 2004!

Each year animals are used in biomedical research for many important reasons. First and foremost, animals have organs and body systems surprisingly similar to humans. This enables the information discovered from research on animals to be applied directly to humans. Secondly, the short life span of laboratory animals permits researchers to study them throughout their entire lifecycle. Finally, the use of animals in biomedical research allows scientists to minimize experimental variables, since they are able to provide control over the animals' environments. Animal researchers take the utmost care to ensure that the animals do not suffer from pain or stress as this could affect the study results. In fact, most research projects do not involve pain, and certain anesthetic drugs can be used if necessary. It is very important to keep in mind that both people and animals suffer from diseases that can cause a life stricken by pain. The purpose of biomedical research is to find cures that will alleviate this pain over the course of their lives.

Much medical advancement has come from biomedical research using animals. Diseases like polio have been eliminated as a public health crisis. Children are vaccinated to protect them from polio and many other diseases such as diphtheria, whooping cough, typhus, small pox and tetanus. Animal research has enabled sick children around the world to live to become healthy adults, and has benefitted millions of Americans affected with diseases like diabetes, leukemia, arthritis, and Alzheimer's. Man's best friend has been especially critical to researchers who developed open heart surgery, discovered pacemakers and performed heart transplants. This remarkable medical progress has transformed the lives of millions who suffer from heart disease. An example of this can be found by examining the invention of the pacemaker. A precursor of this device was first studied in dogs in the 1940s. While performing experimental surgery on a dog Dr. Wilfred G. Bigelow and Dr. John C. Callaghan, discovered that stimulating a stopped heart with an electrical probe could restart the heart and change the heart's rate. It would take another ten years before the implantable pacemaker would become a reality.

The discovery of the pacemaker has touched my family who suffers from Long QT Syndrome which genetically predisposes us to sudden death due to heart rhythm abnormalities. Each year, 400,000 Americans die suddenly due to cardiac arrhythmias and almost 4,000 of them

are under the age of 35. Many of these individuals will require a pacemaker or internal cardiac defibrillator. For my family, it all started when my cousin was working her shift as a nurse. Something startled her and sent her heart racing to over 200 beats per minute. She fell to the floor in a state of ventricular fibrillation. With the aid of an automatic external defibrillator, her beat went on once again. That was the start of the many tests that our family would have to endure over the next few months. My grandfather now knew what caused the sudden death of four sisters whose lives were cut short before they reached their thirtieth birthdays. A sudden startle during a game of hide-n-seek, a phone call in the middle of the night, or even a nightmare can cause their hearts to race out of control. Inside their chests is a device, that with a jolt of energy, will enable their beat to go on. Amazingly, this device which was discovered with the help of animal research in dogs is now able to save the lives of dogs as well. Today, hundreds of defibrillators are transplanted in dogs. From pooches to people, to pooches again, this life saving device has enabled the beat to go on!

Works Cited

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<http://vetmed.illinois.edu/petcolumns/petcols_article_page.php?PETCOLID=81&URL=0>. This website helped me to understand how pacemakers can now be used in dogs.