



**2015 PSBR 7<sup>th</sup> & 8<sup>th</sup> Grade Essay Contest**  
***First Place***

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What is Biomedical Research?

Have you, a family member, or pet ever had a serious or life threatening disease? Unfortunately, many of us have also had to deal with the heartbreaking death of a loved one or cherished animal. These subjects are ones that are not very pleasant to think about, and thankfully, there are people whose profession is in the field of biomedical research. People and animals need science to look for methods to treat and prevent diseases, and biomedical research does exactly that.

A broad area of science that is devoted to the study of the processes of life, the prevention and treatment of diseases, and the genetic factors relating to disease and health; biomedical research utilizes experimentation, observation, laboratory work, and testing to prevent, treat, and cure diseases that cause illnesses and death in both humans and animals. Animals play a very important part in biomedical research. We may not think so, however, animals are more like us than we might imagine. Many of the same diseases, viruses, and bacteria that affect humans can also be developed in animals. The rabies vaccine was invented after studying dogs and finding out that both people and dogs can develop rabies and that both immune systems reacted similarly. Some studies may be harmful to humans, and therefore, animals are used when there is no better option.

Mice, rats, and fish account for the majority of the lab animals, while many other species have contributed to research findings. Drugs, vaccines, and surgical procedures are evaluated in animals before they are used on humans. Animals used for studies are given the utmost care. Implementation of the 3 R's-refinement, reduction, and replacement are standard in animal research. Additionally, the Animal Welfare Act and the Public Health Service provide policies on the humane care and use of laboratory animals. Basically every medical advance in the past century has been the result of studies which have utilized lab testing of animals.

When possible, other methods of collecting information are used such as from cells-in vitro, computer models, and statistics. Basic research is done to increase fundamental knowledge, applied research targets specific objectives, and clinical trials take place in humans after being safely passed in animals. Innumerable biomedical advances have extended the life expectancy and health of humans and animals, but not without ethical challenges and debates. Reassurance of properly implemented, responsible, and humane trials and studies are necessary in pointing out the unprecedented merits and contributions made to society by biomedical research.

With past successes having included every Nobel Prize in Medicine over the last three decades being dependent on animal models, the look to the future is equally imperative for biomedical research, especially in the area of Ebola and antibiotic resistance. Medical miracles will continue with biomedical research.

## Works Cited

[www.cvm.ncsu.edu](http://www.cvm.ncsu.edu)  
[www.nabr.org](http://www.nabr.org)  
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