



2014 PSBR 7th & 8th Grade Essay Contest
Third Place

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A young girl scores the winning goal of a soccer game, a smile spread across her face. No one would even be able to tell that this same girl had been diagnosed with diabetes just a year before. A teenage boy screams in joy as he finds out that he has aced his finals. One would never be able to discern that he was undergoing cancer treatments. These individuals are able to enjoy the pleasures of life due to biomedical research. With the help of biomedical research, medical discoveries once impossible are now used in everyday life.

Scientists use the scientific method to gain an understanding about research. The scientific method can be broken down into four parts: observation, hypothesis, experimentation, and conclusion. When a scientist observes, they begin with basic research. Basic research is the foundation to a building and it allows scientists to fully comprehend research. Next, a scientist uses applied research, existing knowledge adapted to focus on a medical discovery. Clinical research involves using humans to learn more about safe uses of treatments. Using the scientific method and the three branches of research, scientists gain extensive knowledge.

A scientist uses many alternative methods such as *in vitro* tests, simulations, clinical trials, and epidemiological studies. *In vitro* refers to experimenting outside the organism and in a controlled environment. Scientists use simulations to test their hypothesis in a virtual environment. However, scientists cannot always use alternatives to gain a reliable conclusion. Therefore, it becomes necessary that scientists use animal models.

Animals share numerous physical features with humans. We share 95% of our genes with mice. Animals have shorter life spans, making it easier to observe them over their lifetime and over generations. An animal's environment can be controlled. Animals also benefit from biomedical research. Cancer and allergies, along with other diseases, affect both animals and humans. Over 90% of the species used in animal testing are rodents. Canines were used to discover insulin and monkeys were used to discover the polio vaccine. To insure animals are treated carefully, regulations are put in place. Animal testing in the U.S. follows the Animal Welfare Act. Scientists use animal models before transitioning to clinical trials. However, human testing without consent is unethical and illegal, causing scientists to put safety measures in place.

Biomedical research is not just a term; it means much more. We all know someone who has had an illness before. It may have been a loved one, or someone that we just pass in the hallway or at work. These people would have suffered without biomedical research. Already, biomedical research can be credited for the discovery of insulin and the polio vaccine. Nearly 1,000,000 children survive each year after exposure to a poisonous substance. Cures for AIDS, cancer, and so many other once fatal diseases are now at the tips of our fingertips. Thanks to dedicated researchers and the use of animals in research, millions of lives are being positively affected by biomedical research.

Works Cited

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