

**2015 PSBR High School Essay Contest**  
*Grand Essayist*

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“How has biomedical research on animals affected my life?” An interesting question, one which I thought there was no answer to until I simply looked a little closer. I uncovered vast archives of information, filled with all the progress animal research has given us. I saw how advances in biomedical technology had weaved together as a net that kept me alive even before I was born. I saw how most of these advances had come to exist due to animal testing.

It began six weeks prior to my anticipated birth. My mother wasn't doing well: her blood pressure 199/119, her urine had high protein levels, she had severe headaches. She arrived at a hospital where they found her to be experiencing the effects of preeclampsia, forcing the doctors to induce labor.

The premature birth from the induced labor meant my lungs would not be fully developed. The doctors gave my mother antenatal corticosteroids shortly before I was born. After my birth, I was given supplementary surfactant to assist in inhalation.

In this small section of my life, in this one room, in this one hospital, many biomedical advancements are displayed in full. Observe the careful breakdown of this seemingly microscopic yet finely granular scene. Oxytocin, Antenatal Corticosteroids and supplementary surfactant, that saved both my mother's and my life, each played a vital role into my successful delivery into the world.

Preeclampsia, the diagnosis given to my mother, is a condition in pregnancy with often fatal repercussions for both mother and infant. The only cure is to give birth to the child, often by inducing labor.

Labor is induced by oxytocin, discovered by Sir Henry H. Dale. In his experiment, cats were given the hormone oxytocin slightly before their body would have produced it on their own. It was found to simulate childbirth contractions in not only cats but every mammalian species. It has been used as a method for incepting childbirth since 1911.

Premature births, like the ones created from oxytocin, have their own complications. Many infants are born with respiratory distress syndrome (RDS), which causes the infant to have difficulty inhaling. Untreated, it frequently results in the infant's death. RDS occurs because underdeveloped lungs do not create adequate amounts of surfactant, a soap-like substance that is required for normal breathing.

One of the major treatment methods for RDS is the use of antenatal corticosteroids before birthing. This allows the lungs to speed up their development inside the womb to the point where the amount of surfactant in the lungs will allow breathing to occur with regularity.

Antenatal corticosteroids were discovered in 1969 when Graham Liggins learned that lambs born prematurely that were given steroids prior to birth lived longer than the lambs born prematurely that were not given steroids. These steroids significantly help in reducing premature birth fatalities, but sometimes they are not enough. The doctors decided to provide me additional surfactant to finalize the development of my lungs.

This method of using replacement surfactant was developed in the late 1950s, but was not available for human use until late into the 1980s. Premature rabbit pups received a mixture made from adult rabbit lungs that had allowed them to inflate and deflate their lungs, purging their breathing difficulties.

The vast majority of premature birth infant fatalities have been drastically reduced in a short period of time thanks to the animal research conducted by professional scientists. In fact, just a few decades ago, President John Kennedy's child was diagnosed with RDS. Even after consulting with the brightest doctors from across the nation, Patrick Bouvier Kennedy died just two days after his birth. Patrick was born 5 ½ weeks premature, but the research that would save my life 36 years later was not available to the President's son.

Even today, continued biomedical research through animals allows for refinement of these processes. Some animal right advocates think it would be better to flip a coin than to use animal testing; this is inaccurate. Animal testing allows researchers to vastly narrow down the possibilities for a cure. Animal advocates argue, "90 percent of medications approved for human use after animal testing later proved ineffective or harmful to humans in clinical trials." If it weren't for animal testing that number would be far closer to 100 percent.

Who would have thought my life would be impacted by cats, lambs and rabbits? I never gave it much thought, but after this research I have learned that I'm truly grateful for biomedical research and animal testing.

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