

2016 PSBR High School Essay Contest
Finalist

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Diabetes is a condition in which the carrier does not respond to insulin, or does not produce it in their pancreas. The first symptoms of diabetes had been recorded in 1552 BC. “Written on a 3rd Dynasty Egyptian papyrus, physician Hesy-Ra mentions frequent urination as a symptom. This is the earliest known record of diabetes”. (4) Insulin is used to regulate the body's use of glucose. Without it, there can be serious conditions such as stroke, circulation problems, and damage to the kidneys and eyes. (1) As a diabetic myself, biomedical research has benefited my life in many ways. Biomedical research has helped with pharmaceutical drugs and medical devices that help control diabetes.

Insulin, my diabetes pump, and my diabetic meter have helped me survive and control my blood sugars. Insulin is a hormone produced in the pancreas by the islets of Langerhans that regulates the amount of glucose in the blood. The lack of insulin in my body caused me to acquire diabetes at the age of nine. Ever since then, I have relied on technology and medicine to keep me alive and healthy.

Biomedical research has helped assist in the understanding of diabetes by discovering that insulin has an effect in lowering blood sugars. Without using insulin, I would have terrible symptoms and could even lose my life. (1) Many other lifesaving technologies and medicines relating to diabetes have been created over time with the help of animal research in medicine and science. These technologies have helped save many people, including myself, and animals in the world.

Animal research has helped advance the science and studies of diabetes in many ways. In the year of 1889, a German physiologist, named Oskar Minkowski, tested a dog to see what would happen if he removed their pancreas. He found that the dog tested had acquired symptoms similar to those with diabetes. The dog had become excessively hungry, thirsty, urinated a lot, and dealt with weight loss and fatigue. He had no idea why this had occurred until a surgeon discovered insulin in 1921.

In 1921, Frederick Banting brought his idea of extract that came from a fully degenerated pancreas to John Macleod, department head at the University of Toronto and a leading authority on carbohydrate metabolism. Eventually, Macleod agreed to help Banting, and provided him with research facilities. He also provided ten research dogs and agreed to overview his proposal. Insulin was first discovered when a surgeon named Frederick Banting was experimenting on dogs in his laboratory. He tied up the pancreatic ducts in the dogs and obtained their extract, which he then injected into dogs whose pancreases were removed. While experimenting, he discovered that injections of the pancreatic cell extracts relieve diabetic symptoms and lowered the blood sugar levels in dogs significantly. They later refined the extract and created a substance later named insulin. (5) (1)

After administering many tests, it was realized that the extract was sufficiently pure for testing on humans. On January 11, 1922, insulin was given to a fourteen year old boy named

Leonard Thompson. Leonard had a severe case of diabetes, and when his blood sugar levels were tested, the insulin was discovered to not be effective enough. After a second trial of more purified extract was performed, it was discovered to have lowered his blood sugar significantly more. In February of 1922, six more patients were treated with this extract and had equally favorable results. Insulin was later industrially produced and was presented to diabetics for use. (6)

In conclusion, animal biomedical research has helped save many lives, including my own. Animal testing has been very efficient in biomedical research and has helped create many new devices and medications.

Citations Page

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