Researchers at Utah State University are working toward a potential cure for diabetes — and they’re using a bubonic plague enzyme to do it.

For the past month, Professor Alvan G. Hengge, the head of the chemistry department, and his team of student researchers have been studying insulin enzymes and bubonic plague enzymes to discover why they catalyze at different speeds.

One potential result of the research, according to student researcher Ryan Hirschi, is finding a way to control insulin enzymes and insulin secretion.

“Theoretically, if you could control enzymatic rates, you could control insulin release,” Hirschi said, “which opens the door to potential cures for diabetes.”

Student researcher Gwen Moise said plague enzymes try to “turn off” the immune system, while insulin enzymes regulate the amount of insulin in the body. Insulin enzymes are much slower than plague enzymes.

“The one from the plague acts really, really fast — it’s like a thousand [reactions] per second — but the one secreted from our body is only about fifty [reactions] per second,” Moise said.

In order for the researchers to treat diabetes, Hirschi said they would have to speed up the insulin enzymes. They are trying to accomplish this by making the insulin enzymes similar in structure to the plague enzymes.

For the past month, the researchers have been mutating the structures of the amino acid residues in the two enzymes, attempting to speed them up and slow them down. Hirschi said the team hypothesized that changing the enzymes’ structures would make the insulin enzyme speed up and the bubonic plague enzyme slow down.

However, Hirschi said that when they conducted the experiment, the bubonic plague enzyme slowed down slightly and the insulin enzyme died. He said the next step of the research is to figure out why that happened.