Utah State University professor researching antibiotic replacement

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USU professor Nicholas Dickenson is researching an alternative to antibiotics.

In the future, antibiotics may not be the only cure for bacterial infections.

A recently published study looks at the effect of secretion inhibitors on the Shigella pathogen and how the inhibitors could prevent the infection of host cells.

“We are really interested in taking what we are understanding now about this -- the molecular biology about how the infection occurs -- and specifically looking at this protein-based type III secretion apparatus and controlling it, shutting it down,” said Nicholas Dickenson, an assistant professor at Utah State University and a co-author of the paper.

The preliminary research in the report suggests secretions can be shut down by inhibitors, potentially offering researchers an alternative method for treating diseases. Shigella may just be the beginning. The ongoing research in Dickenson’s lab provides a basis which can be applied to other pathogens with similar secretion patterns.

Jenna Bouvang, a graduate student in the lab, is working with Salmonella as well as Shigella and attests to the viability of using shigella as an analog for other bacterial infections.

“One thing that is really cool about the Shigella system is that it is shared between many other bacteria,” Bouvang said. “What we are learning about Shigella we can apply to other organisms.”

Dickenson’s research is partially due to the growing concern around bacteria’s resistance to antibiotics.

“Here in the not-so-distant future, we won’t be able to treat a lot of bacterial infections unless we are able to find alternative ways of doing so,” Bouvang said.

Dickenson’s research is a part of the puzzle.

“While we won't be the ones directly developing the vaccines or drugs to treat these infections,” Bouvang said, “our research can provide powerful insight into the inner workings of these bacterial systems so we can exploit them.”