Another reason to be thankful: Turkeys may be lifesavers

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While the turkey you eat on Thursday will bring your stomach happiness and could probably kick-start an afternoon nap, it may also save your life one day.

That's because the biological machinery needed to produce a potentially life-saving antibiotic is found in turkeys. Looks like there is one more reason to be grateful this Thanksgiving.

"Our research group is certainly thankful for turkeys," said BYU microbiologist Joel Griffitts, whose team is exploring how the turkey-born antibiotic comes to be. "The good bacteria we're studying has been keeping turkey farms healthy for years and it has the potential to keep humans healthy as well."

That's because the good bacteria, Strain 115 as scientists know it, produces the MP1 antibiotic—a known killer that could target staph infections, strep throat, severe gastrointestinal diseases and roughly half of all infectious bacteria. This antibiotic, however, is not in widespread use because of its complex structure.

Griffitts, colleague Rich Robison and graduate student Philip Bennallack have been using serious science (mass spectrometry and nuclear magnetic resonance spectroscopy) to identify exactly how Strain 115 makes this antibiotic—and how it manages to do so without killing itself. What they're finding is that the mechanism for producing it is surprisingly simple.

They found the engine inside of Strain 115, a compact DNA molecule also known as a plasmid, produces both the killer antibiotic and a self-protecting agent. It makes a "spare" ribosome part which, when inserted into a normal ribosome, renders it immune to the antibiotic.

"It's sort of like outfitting a car with special tires that protect against unusual road hazards," Griffitts said.

But what makes this turkey story so great is that, just like Thanksgiving, it has a great beginning. It started with a turkey farm more than three decades ago, when now-retired BYU professor Marcus Jensen discovered Strain 115.

Through his research on the strain, Jensen went on to develop three vaccines vital to the prevention of diseases in turkeys. And while his work with turkeys became widely known and led to awards, his research moved in new directions and the strain was set aside in 1983.

Some 30 years later, a student found the strain in a freezer. After some initial research efforts by undergraduates, Bennallack took the project

into high gear. And now, with mentoring from Robison and Griffitts, the group has published their new findings in the *Journal of Bacteriology*.

"Sometimes bacteria retire with the people who discover them," Griffitts said. "We simply rediscovered it and now we are capitalizing on it once again."

Provided by Brigham Young University