

# Lost Opportunity

New Texas A&M University research aims to reduce cow pregnancy loss.

**R**eproductive inefficiency costs the beef industry billions of dollars every year. Most of the loss is driven by embryonic mortality and pregnancy loss, according to Ky Pohler, chair of the Pregnancy and Developmental Programming Area of Excellence at the Texas A&M College of Agriculture and Life Sciences.

“Beef producers are paid on pounds of a weaned calf or a live calf,” Pohler said. “If there is no calf born, then there is no profit. And the producer’s input costs continue to increase. Our cow-calf operations must get more efficient, or we won’t be able to maintain them.”

Pohler is leading a series of studies to evaluate important components to a cow’s developing pregnancy and how much of pregnancy loss is associated with animal physiology versus genetics.

Pohler’s project to advance the understanding of embryonic mortality and pregnancy loss in the cow is funded by a \$500,000

Agriculture and Food Research Initiative grant from the USDA National Institute of Food and Agriculture. One of the project goals is to provide foundational information on the physiological and molecular mechanisms associated with embryonic survival and mortality in beef cattle.

## Gene editing potential

The new grant also allows Pohler’s team to study gene knockouts, utilizing an approach to gene editing known as CRISPR/Cas9 technology.

“You basically knock out a single gene and see what happens with the developing embryo,” Pohler explained. “Does the pregnancy develop forward, or does it terminate right there? We’re excited to start using this technology in our projects to really understand pregnancy and developmental programming.”

Specifically, Pohler said his team’s research aims to show the impact of a gene family called pregnancy

associated glycoproteins (PAGS). These proteins have been known for years; they are the foundation for blood and milk-based pregnancy testing in cattle. The team will remove those genes one by one to

strategies.” One of the other projects Pohler and his team are working on is determining how much contribution to embryonic mortality comes from the bull and how much from the cow.

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## Developing more than a Band-Aid

Pohler emphasizes that pregnancy is the most economically important factor in a cow-calf operation.

“All the other things we do are important, but pregnancy is 20 times more financially important than any other production trait,” Pohler said. “If you take it all the way to the consumer level, if you don’t have the pregnancy, you will never realize the potential of that animal to generate a steak for the consumer.”

That is why he is concentrating on ending embryonic mortality.

Current industry practices intended to minimize pregnancy loss are akin to Band-Aids, according to Pohler. “... I know if I do [one practice], it will help me decrease [pregnancy loss], but it doesn’t help me eliminate it. So, we want to understand what the real mechanisms are and how do you eliminate it.”

Pregnancy loss will likely never be completely eliminated, but Pohler said, “We can develop genetic tests. We can develop other types of tools to help minimize that loss. I think what we will be able to do is develop better management

“We’re studying all sides of it,” Pohler said. “This project is really female focused. But there is a whole opportunity on the bull side as well. And I think understanding both sides is going to be critical. If it ends up being on the bull side and you can develop a genetic test, there are fewer bulls than there are cows. So, you can make a bigger impact in a shorter time. If it ends up being on the cow side, it will take a longer time to make that impact.”

Pohler estimated only about 25% of beef producers utilize pregnancy diagnosis in their herds, even though the technology has been around for years.

Utilizing pregnancy diagnosis can help determine when an animal loses a pregnancy. With technology and better management practices, producers can be more efficient in generating calves, having animals with better genetics than the previous year, and producing a more uniform calf crop; all of which help make a producer’s beef cattle operation more financially sustainable.

“Don’t adopt technology for the sake of adopting technology,” Pohler said. “Use the technology you need to get where you need to go. You have to capture the value on it.” **HW**

**Editor’s note:** Adapted from news provided by Texas A&M Agrilife.

