



Breeding for health

Testing your cows' immune response could help you manage your herd's health

You may soon have one more tool in your farmer's toolbox to improve herd health, says a University of Guelph researcher.

Animals with higher immune response are less susceptible to illness and require less therapeutic intervention, including antibiotics treatments, notes professor Bonnie Mallard, department of pathobiology.

She and her research team developed a patented five-minute test to measure a cow's immune response to foreign particles culled antigens.

"It is very similar to giving a vaccine and then looking at the level of protective immune responses to that vaccine," says Mallard. "The animal's rank, based on immune responsiveness to the test antigens, gives the producer an idea of how these animals may respond to future disease challenge."

The researchers believe identifying and then breeding these animals to pass the genes to their progeny can help reduce disease risk.

"Research has shown that immune responsiveness has moderately high heritability of about 20 to 30 per cent," says Mallard. "Given this statistic, we think there is a very real opportunity to design a breeding program for enhanced immune response and improved animal health."




Animals with higher immune response are less susceptible to illness and require less therapeutic intervention.

The test immunizes cows with carefully selected antigens and monitors the cows' response. Cows with high immune response have fewer cases of mastitis, metritis, ketosis and retained fetal membranes.

"High immune responders have also been shown to respond better to commercial vaccines, and should require fewer therapeutic interventions," says Mallard.

Consumers have become increasingly concerned about antibiotic use in animals in recent years. Some believe these animals will develop antibiotic resistance, which could lead to the same outcome in humans when the animal's byproducts are consumed.

"A healthier animal won't need to be treated as often," says Mallard. "We will reduce the risk of antibiotic resistance."

Identifying high responders offers obvious economic incentives, but so does identifying low responders. It would let you develop an alternative management system to better deal with these animals, through culling or tailored management practices suited to their response profiles. 

Alycia Moore is a student writer with the University of Guelph's office of research. Many graduate and post-doctoral students that worked in the Mallard lab contributed to this study, as well as Drs. Bruce Wilkie, department of pathobiology, Ken Leslie, department of population medicine and researchers from the university's Centre of Genetic Improvement of Livestock. Funding for this research has been provided by the Canadian Dairy Network, Dairy Gen and the Canadian Bovine Mastitis Research Network.