

Scientists take animal breeding to the next level

March 18 2010, By Michel Proulx

(PhysOrg.com) -- University of Alberta scientists have successfully sequenced the genome of two influential bulls, one beef and one dairy, the first animals to have been fully sequenced in Canada.

Sequencing the genome of these two bulls enables scientists to more accurately identify the genetic markers that are responsible for economically important traits such as efficiency, yield, fatness and tenderness, say the scientists. Producers can use that information to breed healthier dairy cattle that produce more and higher quality milk as well as beef cattle that produce better quality beef.

This project takes Alberta to the forefront of livestock genomics science worldwide.

"Consumers will benefit from more cost-effective and healthier products on store shelves," said Stephen Moore, head of the Bovine Genomics Program at the U of A, who along with his colleague, Paul Stothard, completed the sequencing. "Understanding what genes contribute to specific cattle traits will also have spinoff applications related to other fields like human health and disease."

The team sequenced the bulls' genomes using Life Technologies Corporation's Solid 3 System, which enabled them to complete the work in seven months at a cost of \$130,000. The first cow was sequenced in 2009 after four years at a cost of \$50 million.

The animals used in the project have had a high impact on the breeding and commercial sectors in dairy and beef. The dairy bull was sequenced in collaboration with Semex Alliance, a Canadian dairy bull breeding company that owns and samples 450 dairy bulls per year globally and marketed over 7.5 million doses of semen in 2007.

"This sequencing is significant to the [dairy cattle](#) industry because the bull's genes are likely to make an important contribution to the [genetic makeup](#) of future generations," said Jacques Chesnais, chief geneticist at Semex Alliance.

There will also be benefits for the beef industry. Better knowledge of the [genetic variation](#) across the breeds will, through better breeding decisions, improve production efficiency, product quality and animal health, and reduce the environmental footprint of [beef cattle](#) production.

"This technology has allowed us to generate high density sequence information in a small number of runs. Combined with the high accuracy of the data, it has made the recent sequencing much more effective than was previously possible" said Moore.

Provided by University of Alberta

Citation: Scientists take animal breeding to the next level (2010, March 18) retrieved 26 April 2024 from <https://phys.org/news/2010-03-scientists-animal.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.