Finding DNA markers for feed efficiency

Project Title: Whole Genome Scan for Feed Efficiency
Researchers: Dr. Stephen Moore, Dr. Stephen Miller, Dr. Graham Plastow, Dr. Zhiquan Wang, Dr. Paul Stothard, Dr. Changxi Li, Dr. John Basarab, Dr. Tim McAllister, Dr. Ira Mandell, Dr. Kendall Swanson

**Background:**

The largest cost of raising beef cattle is due to feed. Feed efficiency is heritable, meaning that feed efficient parents produce feed efficient offspring. However, feed efficiency has rarely been the subject of breeding efforts because of the labor, pen space and specialized feeding equipment required to measure feed intake on individual animals. Individual feed intake is usually only measured in research situations or specialized bull test stations.

An animal’s genetic potential is programmed in its DNA. Ongoing improvements in genomic tools are steadily increasing the number of DNA tests that can be done, while reducing testing costs. It is now possible to test animals at 50,000 different DNA markers at the same time. If several (or many) of these DNA markers on the “50K SNP chip” are strongly associated with feed intake, it may be possible to start pre-selecting animals based on an inexpensive DNA test instead of requiring feed intake tests on every potential breeding animal.

**Objective:**

The objective of this study is to improve the reliability of DNA tests for feed efficiency.

These researchers will use the 50K SNP chip to identify DNA markers associated with feed efficiency. They will first DNA test 2,000 more animals to confirm which DNA markers are most strongly associated with feed efficiency. Once the most informative markers have been identified, they will examine the surrounding DNA more closely to increase the chance of finding actual genes affecting feed efficiency. This will help them to develop a smaller commercial test kit composed of the most valuable feed efficiency markers.

**Implications:**

A DNA test panel that accurately identifies an animal’s genetic potential for feed efficiency will help cattle producers refine their
procurement, pricing and management of breeding stock and feeder cattle.

Proudly Funded By:

The Beef Cattle Industry Science Cluster is funded by the Beef Cattle Research Council, a division of the Canadian Cattlemen’s Association, and Agriculture and Agri-Food Canada to advance research and technology transfer supporting the Canadian beef industry’s vision to be recognized as a preferred supplier of healthy, high quality beef, cattle and genetics.

For More Information Contact:  
Beef Cattle Research Council  
#180, 6815 - 8th St. NE  
Calgary, AB T2E 7H7  
Tel: (403) 275-8558 Fax: (403) 274-5686  
info@beefresearch.ca

For More Information Visit:  
www.beefresearch.ca