MSc opportunity in Animal Genetics

An MSc opportunity is available at the department of Animal Science, McGill University to study the genetics of bovine milk cholesterol (Identification of molecular determinants and biomarkers of milk cholesterol)

Project description

The dairy industry ranks third in the Canadian agricultural sector generating about $5.5 billion in net farm receipts and sales of $13.7 billion in year 2010 alone. Recently, health conscious people have driven changes in the demand for milk and milk components resulting in the restructuring of major global milk markets. Milk/dairy products supply high quality nutrients in the diets of Canadians, including bioactive lipids (some unsaturated fatty acids) and peptides with well documented health benefits. Cholesterol is the major sterol in milk fat and milk fat is the second contributor to daily dietary cholesterol intake after eggs. Numerous human studies have linked increased blood concentrations of cholesterol in low density lipoprotein to increase risk of cardiovascular diseases (CVD) and increased blood concentrations of cholesterol in high density lipoprotein to improved human health. Human mortality in the West is still caused to a large extent by CVD. Milk cholesterol content is highly variable between breeds and species and is influenced by several factors including genetics. The research strategy would be to determine quantitative trait loci (QTL) and SNPs associated with milk cholesterol content through a genome wide association study using Illumina 50K SNP chip; identify causal mutations or quantitative trait nucleotide (s) (QTN) explaining heritable variance of most significant QTL peaks through a fine mapping approach; validate identified QTN in further herds and by functional studies for use in breeding programs for milk cholesterol content; and determine the relationship between milk cholesterol and milk fatty acids. The selected candidate will work alongside a PhD student, under the supervision of Professor Xin Zhao and Dr. Eveline Ibeagha-Awemu at Agriculture and Agri-Food Canada.

Qualifications

- Bachelor's degree in animal science, biochemistry, genetics, biology, molecular biology, biotechnology, microbiology or related topics

Other information

- This position will be available for 2 years starting in January 2015
- Experience working with DNA manipulation and purification
- Knowledge of molecular biology techniques
- Knowledge of statistical analysis of data
- Willingness to work in contact with dairy cows
- Good writing skills in English

Interested candidates should apply online (http://www.mcgill.ca/gradapplicants/apply). Any inquiry should be directed to Professor Xin Zhao (xin.zhao@mcgill.ca)