



MASTER OR DOCTORAL STUDENT FELLOWSHIP OPPORTUNITY (2010)

“PRION ECOLOGY DURING BIODIGESTION AND COMPOSTING”

Background: Transmissible spongiform encephalopathies (TSE) are a group of progressive conditions including bovine spongiform encephalopathy (BSE) that affect the brain and nervous system in mammals. BSE has been observed globally, likely due to the feeding of the BSE infectious agent (PrP^{BSE}) contaminated feeds such as meat and bone meal to cattle. A new variant of the fatal human prion disease has been linked to the consumption of BSE-contaminated meat products, creating a potential ongoing health risk. For this reason, tissues considered likely to contain PrP^{BSE} have been deemed specified risk materials (SRM). As a result, SRM are separated from the carcass at slaughter for disposal. In Canada, SRM are rendered and then disposed of in landfills, which is both uneconomical and a poor environmental practice. Consequently, alternative methods of safe SRM disposal are needed that potentially derive value from generated SRM.

Project Description: Our research team has recently shown that liquid biodigestion (*Gilroyed et al. 2010, 101, Biores Technol*) and composting (*Xu et al. 2009, 43, Environ Sci Technol*) are effective for utilizing organic by-products. Furthermore, we developed a novel assay for the detection of prions using immuno-quantitative real-time PCR (*Reuter et al. 2009, 78, J Microbiol Meth*).

Besides current methods, our group is looking to develop a Protein-Misfolding Cyclic Amplification assay (*Saborio et al. 2001, 411, Nature*) to monitor prion ecology along the chain of organic by-product utilization in complex biological matrices (compost, manure).

We are looking for enthusiastic and highly motivated biology, biochemistry or related students holding or about to obtain a BSc, or MSc degree, diploma or equivalent, with an interest pursuing M.Sc or PhD in prion ecology. A background in molecular biology would be an asset.

We offer an open, supportive, internationally competitive academic environment with excellent training opportunities within our state-of-the-art facilities.

We have received a number of external research grants and our students have won scientific competitions and are involved in several national and international collaborative projects. We use a wide spectrum of methods, including cloning, cell culture, bioassays, PCR, Western, Southern, ELISA, in situ hybridization, microscopy, image analysis, animal models and industry scale applications.

Location and Scientific Supervision:

Animal Diseases Research Institute, Canadian Food Inspection Agency, Lethbridge.
Agriculture Agri-Food Canada, Lethbridge, Alberta, (located about 200 km SE of Calgary).

Conditions:

The position is for 1 year, renewable for another 2 years (renewal dependent upon progress and funding). Tentative start date is summer, 2010.

Please send your CV to:

Dr. Tim McAllister, Principal Research Scientist Email: tim.mcallister@agr.gc.ca