

Dr. Roger Moorehead

Transgenic mouse models & the role of insulin-like growth factors in tumourigenesis

Dr. Moorehead's research examines the role of cell receptors in tumourigenesis. The receptors being investigated include the insulin-like growth factor receptor (IGF-1R), which is thought to play an important role in breast cancer development, and HER-2, another tumour-inducing receptor. Researchers are also studying the interaction between IGF-1R and HER-2 and their involvement in drug-resistant tumours. By focusing on type 1 insulin-like growth factor receptor (IGF-1R), a protein on the surface of the cell that signals the growth or death of the cell, Dr. Moorehead and his colleagues hope to determine the IGF-1R pathway in order to develop more effective cancer treatments. IGF-1R therapeutic treatments for breast cancer are currently in early-stage clinical trials.

Dr. Moorehead and his colleagues have also established transgenic mouse models, and primary cell lines derived from the tumours of these animals, to further their investigation in determining the role of IGF-1R. In 2008, Dr. Moorehead and his team characterised the first primary murine mammary tumour cell line with doxycycline-inducible IGF-1R expression, an important model to further examine the function of

IGF-1R in mammary tumourigenesis. [This study](#) used the UHNMAC Microarray Service to identify genes regulated by IGF-1R. The results of this study suggested that at least some of the proliferative actions of IGF-1R are mediated through the proto-oncogene cyclin D1. In a more recent publication (July 2009), Dr. Moorehead and his colleagues revealed that two novel transgenic mouse models in which IGF-1R is overexpressed in either lung type II alveolar cells (surfactant protein C [SPC]-IGF1R) or Clara cells (CCSP-IGF1R) in a doxycycline-inducible manner had been produced. [This study](#) found that overexpression of IGF-1R in either cell type led to alveolar hyperplasia with papillary and solid adenomas.

[Dr. Roger A. Moorehead](#) is an Associate Professor in the Department of Biomedical Sciences at the University of Guelph. In May 2009, Dr. Moorehead received a special Lung Cancer Initiative grant from the Canadian Cancer Society, one of only five awarded across Canada.

UHN Microarray Centre is an Authorized Service Provider for the Affymetrix microarray platform. The centre also offers bioinformatics services, from experimental design to downstream data analysis and mining, enabling researchers to maximise the success of their genomics projects.