EpiGenWestern

The Epigenetics Profiling and Reprogramming Research Group

EpiGenWestern is the acronym for the *'Epigenetics Profiling and Reprogramming Research Group at the University of Western Ontario*. Our Research Group has two aims.

Our ***first aim*** is to better understand epigenetics as it relates to the basic biology of human development and the process of tumourigenesis.

Our ***second aim*** is to translate our research into improved molecular diagnostics, advancements in assisted reproductive technologies and in the development of novel targeted therapies for genetic diseases including cancer.

What is Epigenetics? Epigenetics involves the creation and maintenance of DNA methylation and histone changes in the cell, so that genes can be precisely expressed at specific times in specific cells, and so the structural integrity of chromatin can be maintained. This process is critical to proper embryonic and fetal development. Epigenetic alterations can derail normal development, lead to a variety of paediatric genetic diseases and cause a variety of cancers. Epigenetic changes may also contribute to complex multifactorial disorders such as autism and mental retardation that have, to date, been difficult to unravel. Furthermore, recent data suggest that problems with assisted reproductive technologies, cloning and livestock breeding are linked to epigenetic errors that result in embryo mortality.

EpiGenWestern was formed to foster collaboration among a growing group of UWO epigeneticists that includes established scientists, recent appointees and new recruits. These scientists bring together technical and scientific expertise in the areas of epigenetics, human molecular genetics, developmental biology, and cancer research. Our complementary research programs are focused on changes in gene expression, imprinting and DNA methylation patterns during preimplantation development, placental and fetal development, paediatric genetic disease and in cancer genetics. Our group will take advantage of operating grants, group grants and RFA opportunities offered through CIHR and other funding agencies.

Western is uniquely positioned to contribute to the field of epigenetics research. Members of our group have their academic homes in the UWO Departments of Biochemistry, Paediatrics, Physiology/Pharmacology, Obstetrics/Gynaecology and Oncology. We have our laboratories located in the Children's Health Research Institute, the London Regional Cancer Program and the Victoria Research Laboratories.

EpiGenWestern creates new research opportunities across disciplines to address epigenetics in relation to gene function, pre- and postimplantation development, failed pregnancies, human genetic diseases, tumour progression and the development of targeted cancer therapies. As well, the potential to manipulate or correct epigenetic errors raises the possibility of exploiting this process in the field of animal husbandry as well as the ability to improve clinical outcomes in a variety of human reproductive disorders.

For more information contact us at: epigenwestern.com

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