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Research Story

At Hotel Dieu Hospital, Dr. Mark Ropeleski is collaborating in a long-term, international, multidisciplinary study entitled the **G**enes, **E**nvironment, **M**icrobes (**GEM**) project. The collaboration began in March 2008, and is projected to continue for several years. The **GEM** Project is a unique international endeavor aimed at understanding the genetic, environmental and microbial causes/triggers of Crohn's disease in an at-risk population. Five thousand healthy siblings and offspring of patients with Crohn's disease are being studied prospectively while collecting blood, demographic and dietary data as well as other biological specimens at entry and at various time-points thereafter. Samples from subjects who develop Crohn's disease will be compared to the original samples as well as four matched controls from the at-risk cohort. This world-acclaimed study has been dubbed the "Framingham" study for Crohn's disease.

Partners involved in the **GEM** collaboration include Memorial University, Dalhousie University, Université de Montreal, McGill University, Queen's University, University of Toronto, Western University, McMaster University, University of Manitoba, University of Saskatchewan, University of Alberta, University of Calgary, University of British Columbia, University of Connecticut, University of Michigan, University of New Hampshire, University of North Carolina, and various centres in Israel including Share Zedek.

Dr. Mark Ropeleski is one of four collaborators leading this international study, and is Principal Investigator at the Hotel Dieu Hospital site. Disciplines involved in this collaboration include medicine, pediatrics, microbiology, genetics, epidemiology, and physiology.

Internationally, the prevalence of Inflammatory Bowel Disease (IBD), which includes both Crohn's disease and Ulcerative Colitis, is 396 cases per 100,000 persons annually.¹ The onset of IBD is most likely between the ages of 15 and 30¹, when individuals may be at the beginning of their most productive years. Canada has one of the highest incidences of IBD in the world, with over 200,000 Canadians suffering from inflammatory bowel disease.² In Canada, the total direct and indirect cost of IBD to patients, families, the health care system and society at large is estimated to be \$1.8 billion.²

The aims of the **GEM** collaboration are to identify usable biomarkers for elevated risk of development of Crohn's disease. This information can then be used to counsel patients as to how to mitigate their risk and even potentially prevent development of the disease. Also, interventions can be planned together with patients strategically, given better predictability of the natural course of the disease. Patients and their families will be better positioned to manage the risk of the disease in their lives. An international, multicenter, interdisciplinary collaboration is ideal because a large sample is needed to draw meaningful

data, and also because the range of environmental factors that can be studied is broadened with geography.

It is anticipated that apart from real change in the lives of patients mentioned above as the aim of the **GEM** collaboration, Hotel Dieu Hospital will be recognized internationally as a centre of excellence in the study, treatment and prevention of IBD, as well as in training health professionals who care for IBD patients.

References

1. Centers for Disease Control and Prevention. Inflammatory bowel disease (IBD). [Available at http://www.cdc.gov/ibd/#epidIBD](http://www.cdc.gov/ibd/#epidIBD). Accessed October 2, 2013.
2. Crohn's and Colitis Foundation of Canada. The burden of IBD in Canada. [Available at http://www.cafc.ca/site/c.aJlRK4NLLhJOE/b.6431205/k.884D/The_Burden_of_IBD_in_Canada.htm](http://www.cafc.ca/site/c.aJlRK4NLLhJOE/b.6431205/k.884D/The_Burden_of_IBD_in_Canada.htm). Accessed October 2, 2013.