**Dr. Valerie Abadie - Development of a Physiopathological Mouse Model of Celiac Disease**
**Summary of James A. Campbell Research Award**

Celiac disease (CD) is a complex intestinal inflammatory disorder induced by dietary gluten, which development is controlled by a combination of environmental and genetic risk factors. CD is highly prevalent in North America with around 1% of the Canadian population affected by the disease. The classical pathological changes of CD in the small bowel encompass an increased number of intraepithelial lymphocytes, the presence of autoantibodies, and a destruction of the lining of the small intestine (called villous atrophy). The only effective treatment currently available for CD is a lifelong gluten free diet (GFD), yet persistent symptoms and intestinal tissue damage are commonplace among celiac patients that adhere to a GFD. Thus, there is an urgent need for non-dietary therapies that improve patient health and alleviate the social and personal constraints associated with following a GFD. The development of new therapies has however proven challenging because of the lack of a disease-relevant animal model. Our laboratory has recently developed a **novel mouse model of CD where administration of gluten alone triggers the development of villous atrophy.** During the past few years we have examined closely the impact of oral gluten challenge on the development of anti-gluten immune responses and CD-associated histological abnormalities. We have confirmed that the induction of CD-like pathology requires the predisposing genetic factor HLA-DQ8 as in humans as well as $CD4^+$ T cells, which are the cells involved in the inflammatory process. This new mouse model represents the first physiological relevant model of active CD and is likely to revolutionize research in CD by allowing to study the complex innate and adaptive immune mechanisms that lead to villous atrophy as well as providing a model to test novel therapies.