EPILEPSY CANADA
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RESEARCH REPORT

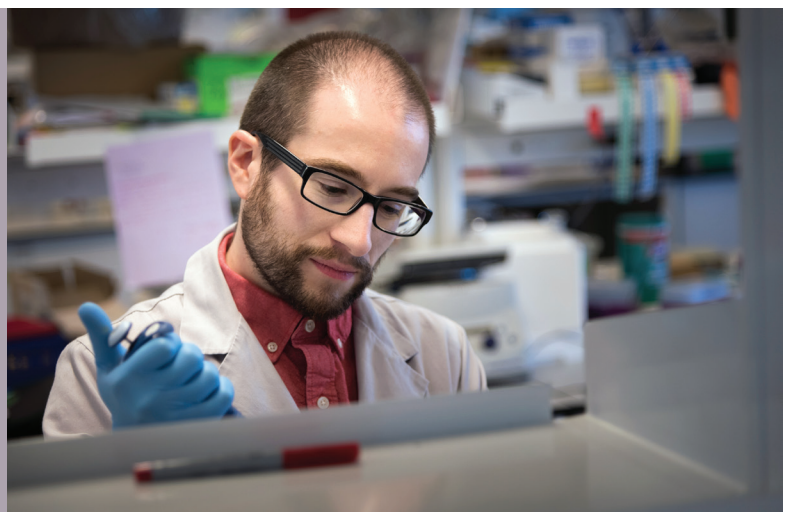

Photo credit: Ivan Yastrebov, UBC

A long tradition of supporting epilepsy research.

Epilepsy Canada has a long tradition in supporting epilepsy research. Through two major grant programs, we direct funding to support research into all aspects of epilepsy. A rigorous grant review process carried out by our Board of Directors and individuals from the medical and scientific communities across Canada ensures that the research dollars entrusted to the organization are invested in promising epilepsy research..

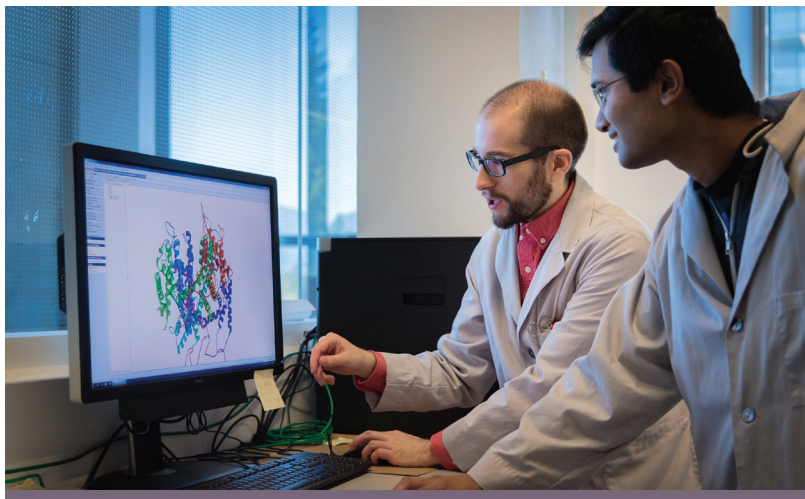
In the past 10 years alone we have funded research at many of the leading institutions in Canada. The list includes: Queen's University, SickKids Hospital, University of Toronto, McGill University, BC Epilepsy Society, QE ll Health Sciences Centre, University of Calgary, Children's Hospital of Eastern Ontario, Toronto Western Hospital, University of British Columbia, Toronto Western Research Institute, CHU Sainte-Justine, University of Waterloo, IWK Health Centre Dalhousie University and the University of Western Ontario.

"The ability to predict channel stability… will improve gene test interpretation by molecular diagnosis labs, aiding clinical diagnosis, prognosis and clinical intervention."



This year research fellowships were granted to Dr. Melanie Jeffrey at Toronto Western Research Institute and to Dr. Alexander Smith, who is working at the University of British Columbia. In addition, summer studentship grants were awarded to enable two members of the next generation of researchers to work in their areas of interest. The recipients were the Children's Hospital of Eastern Ontario (Mr. Owen Weisman BSc Psychology) and CHU Sainte Justine in Montréal (Ms. Sophie Ehresmann, BA Biochemistry and Molecular Medicine)

The goal of the Epilepsy Canada funded study at the University of British Columbia is to eliminate the trial and error that patients currently endure to find a medication that will manage their seizures. The study is focusing on a common cause of pediatric epilepsy, the mutation of a single sodium channel gene: SCN1A.


Dr. Alexander Smith works in the lab.

Dr. Alexander Smith is leading a team that will create a model that it is hoped will be able to accurately match the medication with the greatest efficacy to the specific conditions arising from the mutation. To accomplish this they have assembled an extensive database of existing cases from the BC Children's Hospital as well as hospitals in Spain and London and Glasgow.

As noted by Dr. Smith in the submission for funding, "The ability to predict channel stability… will improve gene test interpretation by molecular diagnosis labs, aiding clinical diagnosis, prognosis and clinical intervention." The results of the work are expected to be known in the spring of 2016.

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Dr. Melanie Jeffrey,
Toronto Western Research Institute

How is alcohol linked to FASD and seizures?

Could genetic testing provide a basis for pre-emptive anti-epileptogenic treatments? This is just one important questions that Dr. Melanie Jeffrey is interested in answering as she and her team explore the relationship between neuro-development and epilepsy. Specifically, she is placing the relationship between seizures and brain development in Fetal Alcohol Spectrum Disorder (FASD) under the microscope.

Dr. Jeffrey is undertaking the work, which is expected to take a full year, with a grant from Epilepsy Canada at the Toronto Western Research Institute, under the supervision of Dr. Peter Carlen.

"There can be an 18-fold increase in the expected incidence of seizures and epilepsy in patients diagnosed with FASD."

Researchers at TWRI note that studies of patient histories show that there can be an 18-fold increase in the expected incidence of seizures and epilepsy in patients diagnosed with FASD. But the brain mechanisms that link prenatal alcohol exposure with seizures and behavioral problems are largely unknown.

The research is investigating the effects of potential treatments on the development of seizures and epilepsy in humans as well as the severity of behavioral abnormalities with the assistance of a guinea pig model of FASD.

Other important questions to be answered include: are there treatments that can reduce the adverse effects of alcohol on a developing fetus? Are subclinical seizures common in FASD? What role do they play in brain development?

We're encouraging the next generation of epilepsy researchers.

Two one-time research bursaries were granted under the 2015 Summer Studentships Program. The recipients were Owen Wiseman of the University of Ottawa and Sophie Ehresmann of the Université de Montréal.

The purpose of Epilepsy Canada's summer bursary program is to encourage outstanding students to pursue careers in epilepsy: in research or practice settings. The bursaries are intended for third and fourth year undergraduates earning a B.Sc., graduates in psychology, sociology, biochemistry and medicine.

Ms. Sophie Ehresmann, BA Biochemistry and Molecular Medicine studies described the support from Epilepsy Canada as "Amazing!" Ms. Ehresmann worked at CHU St Justine Montréal under the supervision of Dr. Phillippe Campeau. Recent work there has identified an epileptic syndrome apparently caused by mutations of a gene never before associated with the disorder. The Epilepsy Canada grant helped the study team confirm that the suspected mutations can in fact lead to epilepsy.

Mr. Owen Wiseman, BSc – Psychology, worked on an important study under the supervision of Daniela Pohl MD PHD at the Children's Hospital of Eastern Ontario. He examined the effects of a motivational exercise program, using peer-to-peer support, to increase physical activity and improve the quality of life for children with epilepsy. He commented, "People's behavior has always interested me, so neurology became the only career choice for me as I progressed with my education."

Sophie Ehresmann,
Université de Montréal

Owen Wiseman,
University of Ottawa