



Research project summary

Glycine Transporter Blockade and Neuroprotection

- Principal Investigator: Richard Bergeron
- Awarded \$ 1,051,875 from the Canadian Institutes of Health Research (CIHR) in January 2018

Stroke is the 3rd leading cause of death and is a leading cause of long-term disability in Canada, with the risk of stroke doubling every 10 years after the age of 55. The Canadian Stroke Network's Burden of Ischemic Stroke (BURST) study has calculated that 50,000 new strokes occur each year. This leads to health-care costs in excess of \$2.5 billion. For the most part there is not much we can do to treat or prevent strokes at this time other than encourage patients to develop good lifestyle habits that promote cardiovascular health. The clot-busting drug tPA is used to treat patients who have a large stroke and results in very favorable outcomes. However, the vast majority of strokes are "covert" strokes with no obvious clinical presentation. The cumulative impact of these strokes leads to substantial, irreversible neuronal damage. Our research aims to characterize a new mechanism by which we can protect the brain against these stroke events. In this proposal, we set out a series of experiments to characterize a potential new avenue for stroke therapy. Our preliminary results show that administration of drug that increases brain glycine, called NFPS, leads to a dramatic decrease in stroke size. In our proposed experiments, we will elucidate the molecular mechanism that underlies this phenomenon and also determine the therapeutic window of NFPS as a stroke treatment. NFPS is well tolerated in the clinic and our discovery will open up new avenues for treatment using a drug that is readily available. This will greatly improve the health of Canadians and lessen the economic costs associated with stroke recovery.

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