



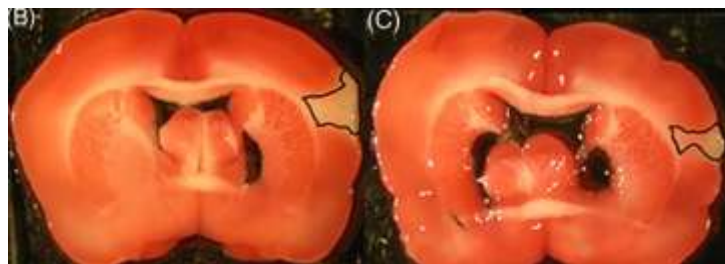
Biology @ Acadia

RELAXIN'S EFFECT ON HYPOXIA-INDUCIBLE FACTOR 1 ALPHA LEVELS IN HYPOXIC BRAIN TISSUE

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Relaxin is a peptide hormone that was originally discovered due to its role in helping to facilitate birth in mammals. As it turns out, relaxin exerts a wide variety of physiological effects throughout the body. The hormone has been shown to reduce damage in myocardial tissue deprived of blood through a variety of mechanisms. More recently, relaxin has been shown



to reduce brain tissue damage

during stroke-like conditions. The mechanisms behind this effect, however, are unknown. In this study, we endeavored to uncover a mechanism by which relaxin exerts its neuroprotection. Hypoxia-inducible factor 1-alpha (HIF-1 α) is a transcription factor that mediates oxygen homeostasis at the cellular level and has been shown to play both adaptive and detrimental roles during hypoxia (low oxygen). In my study, I used an organotypic brain slice culture technique to determine whether relaxin affects the expression of HIF-1 α . Sprague-Dawley rat brain slices were cultured for 14 days and then given one of three treatments, normoxic, hypoxic, or hypoxic with 10^{-7} molar relaxin, to mimic oxygen and glucose deprivation that occurs during a stroke. An Enzyme-Linked Immunosorbent Assay (ELISA) was used to determine the concentrations of HIF-1 α present in each treatment group. My data show that relaxin treatment does not affect HIF-1 α concentrations in hypoxic neural tissue. This suggests that relaxin's neuroprotection is not mediated by HIF-1 α . Future research should focus on strengthening this conclusion and investigating other possible mechanisms by which relaxin protects neural tissue. Relaxin continues to hold promise as a future treatment for stroke, a traumatic event for which few treatment options currently exist.



Jake Munroe graduated from Halifax West High School in Halifax, NS in 2007. He is currently completing his Honours thesis in his fourth year at Acadia. Jake received a Natural Sciences and Engineering Research Council award to conduct his Honours research. He has been awarded the Dr. Lalia B. Chase and William J. Gordon Entrance Scholarship, as well as the John MacIntyre Scholarship. He was a member of the Acadia Men's Soccer team from 2008-2010 and is currently the Coordinator of the

Acadia Community Farm and Acadia's Eco House. He has been a volunteer with the Sensory Motor Instructional Leadership Experience (S.M.I.L.E.) program for the past year and a half and is a member of the Acadia Ultimate Players Society. Next year Jake will be pursuing a Master's degree at the University of Toronto researching agroforestry systems in the humid tropics.

