



## Abstract

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**PI Title:**

**Project Title:** Thermoregulatory Sequela of Traumatic Brain Injury

**Abstract:** *DESCRIPTION: (provided by applicant) The goal of this experiment is to characterize an animal model of post-traumatic hyperthermia (PTH) in order that future interventional studies may be undertaken and then translated to patient care. PTH is a condition that affects up to 37% of patients with moderate-severe traumatic brain injuries (TBI). It has been well documented that hyperthermia post-injury worsens outcome in animal models of ischemia and TBI. Hyperthermia increases metabolic expenditure, resulting in the inability of patients to maintain muscle or fat stores. Muscle loss can significantly extend the time required to return to maximal function. Additionally, PTH is a diagnosis of exclusion, requiring the patient to be subjected to multiple costly and painful diagnostic tests. This delay in diagnosis also delays initiation of appropriate treatment as traditional interventions for fever are ineffective, and can delay transfer to rehabilitation. To date, studies have been aimed solely at determining incidence, thus very little is known about the phenomenon of PTH. The development of an animal model of PTH using lateral fluid percussion injury would provide needed knowledge about this sequela, particularly regarding the effect of temperature in the immediate post injury phase on inducing the subsequent development of PTH. The effect of PTH on behavior and cognition will also be examined in this exploratory study. Additionally, the findings of this study will provide information on the relationship of three acute phase reactants, copper, zinc, and alpha-1 antitrypsin, to PTH to determine their potential use as biological markers.*

### **Thesaurus Terms:**

*biological model, body temperature regulation, brain injury, hyperthermia, medical complication, model design /development, neuromuscular disorder, trauma*

*alpha 1 antitrypsin, behavior, cognition, copper, disease /disorder prevention /control, disease /disorder proneness /risk, hypothalamus, neurophysiology, zinc blood chemistry, immunocytochemistry, implant, laboratory rat, neuropsychological test, statistics /biometry*

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