TRANSLATIONAL TECHNOLOGIES
MOREHOUSE SCHOOL OF MEDICINE

Technology: PCTx, conotoxin, to treat epilepsy, stroke, seizures due to brain injury and nerve agent exposure

Morehouse School of Medicine (MSM) Case No.: IP-0017

Issued Patents: US 7,892,764; US 8,030,442; US 8,076,450

Abstract:
The current standard of care for acute therapy of stroke is aggressive supportive therapy to preserve neuromuscular and cognitive function and reduce recovery time. In cases of ischemic stroke, therapy may also include the use of a thrombolytic drug such as recombinant tissue plasminogen activator (tPA), which enzymatically dissolves intra-arterial clots causing the ischemic stroke. However, tPA must be administered within three hours of the onset of symptoms, and tPA, while producing reperfusion, does not directly protect the brain.

Investigators at MSM have developed a new treatment for stroke, epilepsy, and other patients with acute neuronal damage. This treatment is based on a novel synthetic peptide PcTx, which reduces neuronal cell death by blocking the calcium permeable, acid sensing ion channel 1a (ASIC1a). Neuronal cell death associated with CNS injury and acidosis due to: Alzeimer's disease, stroke, epilepsy, neonatal hypoxic ischemia, and seizures associated with brain injury (TBI, MS, etc.) can be treated with PcTx. MSM has a dominant patent position for the treatment and prevention of neuronal injury by inhibition of acid sensing ion channels. The mode of action of PcTx has been tested in animal models of stroke and demonstrates efficacy over five hours. Hence, it could be used with tPA (three hours after stroke onset) to treat stroke patients, alone in stroke patients beyond the tPA time window as well as treat patients with seizures associated with epilepsy, neonatal hypoxic ischemia, and traumatic brain injury.

Applications:

- Treatment of acute ischemic brain injury (e.g., stroke)
- Treatment of epilepsy and seizure induced brain injury

Value Proposition:

- *Proprietary Position:* "*Treatment of Injury to the Brain by Inhibition of Acid Sensing Ion Channels*" and Epilepsy Treatment protected by issued patents: **US #8,076,450, US #8,030,442, and US #7,892,764**.
- *In vitro Efficacy* neuroprotection and stroke, epilepsy, and seizure models.
- *In vivo Efficacy and dose* determined in neurotoxin exposure, ischemic stroke, epilepsy, and Alzeimer's disease rodent models.
- *Proprietary Model:* Optimized animal models to test other ASIC1a inhibitors efficacy against neuronal injury.
- *Research Team:* NIH-funding, stellar research team lead by Roger Simon,
- *Conotoxin as Therapeutic:* Prialt currently FDA-approved for pain.