

Modeling the neuroprotective role of enhanced astrocyte mitochondrial metabolism during stroke

David Terman
Ohio State University

March 8, 2013

Cerebral ischemic stroke is the number 3 cause of death, trailing only cancer and heart disease, but current pharmacological treatments have not been successful. Recent experiments have demonstrated that stimulating calcium release in cells may provide neuroprotection following cerebral ischemic stroke. I will describe a mathematical model that confirms these experimental results. The model integrates the dynamics of cell membrane potential, ion homeostasis, cell volume, mitochondrial ATP production, mitochondrial and ER Ca^{2+} handling, and IP_3 production. The model is analyzed in order to better understand its mathematical behavior and to provide insights into the underlying biological data.

The lecture will take place in Thackeray 704 at 3:30pm.
Refreshments will start at 3:00pm.