**THE TEAM**

- Omar Ahmed, PhD
  - Principle Investigator

- Vaughn Hetrick
  - Key Participant

- Shyam Kumar Sudhakar, PhD
  - Key Participant

- Hasan Alam, MD
  - Mentor

**THE PROBLEM**

Immediately after a severe TBI, the ionic concentrations in the brain dramatically shift, causing cell death and secondary brain injury. There are currently no drugs that have been approved for use in preventing secondary brain injury.

- Cell death can cause seizures and long-term disabilities
- No pharmacological drug exists for TBI
- Limited treatment options during golden hours of TBI

**THE SOLUTION**

A drug therapy consisting of FDA-approved bumetanide and gaboxadol offers substantial neuroprotection if administered during the golden hours of TBI.

- Administered immediately after TBI
- Effective in reducing brain cell death
- FDA-approved drugs can be “fast tracked” to clinical trial

**THE TECHNOLOGY**

A novel combination of FDA-approved drugs administered immediately after TBI to reduce secondary brain injury.

- GABOXADOL
- BUMETANIDE

When the brain is severely injured, potassium increases outside of neurons while chloride increases inside, creating a “depolarization block” that leads to cell death.

Together, bumetanide and gaboxadol relieve this block by hyperpolarizing neurons and bringing them “back online,” thus offering neuroprotection.