

## About Us

Our goals are to translate basic neuroscience into clinical practice, understand brain and spinal cord injury, train the next generation of neurotrauma clinicians and scientists, and educate the public on neurotrauma research.

From its inception in 2002, BASIC investigators and clinicians have been pursuing outstanding patient care and world-class research to achieve a better understanding of treatment for traumatic brain and spinal cord injuries. Each member of BASIC brings enormous expertise to the Center, and by working together we are creating a synergy that will facilitate translation of fundamental understandings into clinical practice.

Despite challenging economic conditions these are exciting times for neurological research and we are building capabilities across the full spectrum of research activity. Major areas of strength within BASIC include:

- ? Multi-center and investigator-initiated clinical trials that take place at San Francisco General Hospital Trauma Center.
- ? Preclinical in vitro and in vivo model development for understanding the biology of neural injury and repair, to identify treatments and for engineering tissue repair through use of cellular and biomaterial implants.
- ? Translational neurotrauma research using a variety of neurological outcome measures for assessing survival, phenotypic differences and effects of treatment conditions on recovery and cognitive function.
- ? Identification of genetic determinants and pharmacologic interventions to prevent or reverse cellular damage.
- ? Bioinformatics infrastructure to link preclinical and clinical data on neurotrauma.
- ? Clinical studies with ICU minute-to-minute patient monitoring to provide a rich dataset for evaluating the physiological course of TBI and SCI, as well as v providing a baseline for treatment evaluation.
- ? Coordinated, multi-disciplinary patient care teams for managing ED care, intra-operative care, ICU care and restorative care for severely injured patients.
- ? Access to state-of-the art neuro-imaging studies for improving classification of patient injuries and for guiding treatment decisions.

Our investigators serve in national and international leadership roles in the neurotrauma community and are developing categorization criteria for TBI and clinical treatment guidelines for TBI and SCI. The Brain and Spinal Injury Center is a dynamic and productive environment for recruitment of highly qualified individuals for clinical and laboratory training opportunities.

### What is Neurotrauma?

Traumatic injury to the brain and spinal cord can produce dysfunctions of movement, sensation, memory, and other cognitive functions. Every 21 seconds, someone in America has a brain injury and every 41 minutes, someone has a spinal cord injury. Traumatic injury to the nervous system is the most common causes of death in younger individuals, and the most common cause of neurological disability. Approximately 1.5 million Americans sustain a traumatic brain injury each year, and 5.3 million have chronic disability due to their injuries; approximately 12,000 Americans sustain a spinal cord injury each year, and approximately 200,000 are living with chronic injuries. The direct and indirect cost of these injuries is staggering, costing billions of dollars per year in medical costs and loss of productivity, and the personal loss and effects on the families of affected individuals is

immense.

#### Who Studies Neurotrauma and How are Their Findings Implemented?

At the Brain and Spinal Injury Center (BASIC), investigators and associates represent a multidisciplinary group with diverse interests ranging from the biology of neural injury and repair to biomedical informatics for neurocritical care. Established in 2002, the Center consists of nearly 10,000 square feet of integrated basic and clinical research space to facilitate translational neurotrauma research. We are housed at SFGH, providing optimal integration of basic and clinical programs. BASIC also has an animal research core to facilitate translational research and pre-clinical testing of medical devices and therapeutics for brain and spinal cord injuries. The BASIC clinical research core is home to the new UCSF Critical Care Data Warehouse and is one of the 11 hubs for the new nationwide NIH-funded Neurological Emergencies Trials Network. BASIC investigators are supported by grants from the National Institutes of Health, Centers for Disease Control, Department of Defense, National Aeronautic and Space Administration, and numerous foundations. The SFGH Neurotrauma Program and BASIC have had great success translating the latest research findings into improvements in patient care, saving many lives that would have been lost less than a decade ago. These achievements have been recognized internationally, with a growing number of institutions in the United States and Europe beginning to replicate the model neurotrauma system developed at UCSF and SFGH.

#### What is Translational Research?

Our view is that translational research involves not only moving research findings from the bench to the bedside (and vice versa) but also translation from the clinical research setting to medical practice in the community, i.e. directly applying the information derived from basic and clinical research to the patient. Therefore, faculty at the Brain and Spinal Injury Center participate in basic and clinical research as well as educational endeavors that reach out into the community to inform medical workers (e.g. nurse practitioners, emergency medical personnel, doctors, etc) as well as scientists and lay persons about the effects of neurotrauma and the most current treatments. The Neurotrauma Program at SFGH and BASIC sponsor a yearly symposium on Neuro-Critical Care of the Trauma Patient which provides up to date information on the latest treatments and research in neurotrauma.

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