

**INDIANA SPINAL CORD AND BRAIN INJURY
RESEARCH FUND**

2009 ANNUAL REPORT

Submitted January 29, 2010

This report is in compliance with P.L. 234-2007 and contains information generated from 12 months of work on the part of 9 Board members and one staff member. This report is funded by the Indiana Spinal Cord and Brain Injury Research Fund.

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The Indiana Spinal Cord and Brain Injury Research Fund was created by the 2007 Indiana General Assembly under Indiana Code (IC) 16-41-42-4. Decisions for the fund are made by the Spinal Cord and Brain Injury Research Board who are appointed by the Governor, Indiana University, Purdue University, Brain Injury Association, National Spinal Cord Injury Association, and Rehabilitation Hospital of Indiana.

The Fund is to be used for the following purposes:

1. Establish and maintain a state medical surveillance registry for traumatic spinal cord and brain injuries.
2. Fulfilling the duties of the board.
3. Funding research related to treatment and cure of spinal cord and brain injuries, including acute management, medical complications, rehabilitative techniques, and neuronal recovery. Research must be conducted in compliance with all state and federal laws.

The Board is charged with the following duties:

- (1) Consider policy matters relating to spinal cord and brain injury research projects and programs,
- (2) Consider research applications and make grants for approved research projects,
- (3) Formulate policies and procedures concerning the operation of the board,
- (4) Review and authorize spinal cord and brain injury research projects and programs to be financed under this chapter,
- (5) Review and approve progress and final research reports on projects,
- (6) Review and make recommendations concerning the expenditure of money from the fund.

Executive Summary: During the 2009 legislative special session, some of the Indiana Spinal Cord and Brain Injury Research Fund (ISCBIRF) was appropriated to the Spinal Cord and Head Injury Research Center at Indiana University (\$534,230), thus reducing the amount of funds available to be awarded through the competitive grant application process. Previously, the funding for the IU Spinal Cord and Head Injury Research Center has been funded by through a line item in the budget (since 1999).

The fund has begun to impact additional funding for Indiana. The awards for research related to brain injury research served as matching funds to attract a federal HRSA grant worth \$1.6 million.

In 2009, the Board formally met in the spring to accomplish the goal of awarding the second round of research grants. The Board did not meet in the fall/winter of 2009 to prepare for the next grant cycle. As outlined below, the legislative changes significantly impacted the Indiana Spinal Cord and Brain Injury Research Fund's level of available funds and remainder of the year was focused on allocation processes to meet the demands of the already approved grants. It was determined that a scheduled grant cycle for early 2010 would not be able to occur due to lack of available funding and monies already encumbered. Grant cycles would reinitiate in a year when more funding had been generated.

In the first quarter of 2009, the Board was dedicated to preparing for a second round of grant applications after having reviewed the first cycle and determining that utilizing a different time frame for grant submissions and awards would allow applicants more conducive project timelines and be more consistent with other funding cycles. The grant application was modified and improved to allow for improved focus of program objectives and provide clearer guidelines. The Indiana State Department of Health continued its contract with Lisa Dinsmore, Director of Operations, Office of Research Administration, Indiana University School of Medicine, to coordinate the scientific review process. The grant review process was fully supported by the monies of the fund. The revised application was approved by the Board, the Request for Applications (RFA) was posted on January 14, 2009, and twenty-six applications were submitted by researchers from around the state.

Ms. Dinsmore created the Independent Scientific Advisory Panel, which was co-chaired by a representative from Purdue University, Indiana University and Rehabilitation Hospital of Indiana. These representatives were, respectively, Dr. John Turek, Dr. Gerry Oxford, and Dr. Jim Malec. Applications were triaged and reviewed by the individual reviewers, followed by an Advisory Panel Meeting for discussion and final scoring; National Institutes of Health (NIH) scoring was utilized. Scores and recommendations were presented to the Board for final selection.

The Board met on May 22, 2009 for final deliberations and award decisions after reviewing the scored applications. The decision was made to fund fifteen applications from four different institutions/companies within the state. These applicants were fairly evenly split between spinal cord and brain injury projects and several were collaborative projects. This award cycle resulted in a distribution of approximately \$1.7 million in funding to Indiana researchers and institutions. When added to the 2008 grant awards, this brings the total money awarded for spinal cord and brain injury research to nearly \$3.4 million. Each grantee was to receive \$120,000 over two years; however, the re-appropriation of funds that occurred during the 2009 special legislative session significantly decreased the availability of funds to be awarded. On June 15, 2009, the Indiana State Department of Health announced the second grant recipients as follows:

Trexler, Lance E.	Ph.D.	Rehabilitation Hospital of Indiana	Randomized Controlled Trial on the Effectiveness of Resource Facilitation on Return to Work after Traumatic Brain Injury: Replication of a Pilot Study
Malec, James F.	Ph.D.	Rehabilitation Hospital of Indiana	Outcomes and perceived needs among individuals with TBI and SCI in Indiana
Brustovetsky, Nickolay	Ph.D.	IUSM	Role of calpain activation in glutamate excitotoxicity
Rodgers, Richard B.	M.D.	IUSM	20% Mannitol vs 3% Hypertonic Saline in the Treatment of Intracranial Hypertension in Patients with Traumatic Brain Injury: A double-blinded, randomized trial
Hudmon, Andy	Ph.D.	IUSM	Calcium-Dependent Neuronal Death Induced by Traumatic Brain Injury: the role of CaMKII interaction with NMDA receptors

Xu, Zao C.	M.D., Ph.D.	IUSM	K ⁺ current and neuroprotection against ischemic brain injury
Chen, Jinhui	M.D., Ph.D.	IUSM	Enhancing neurogenesis for promoting functional recovery following traumatic brain injury
Shi, Riyi	M.D., Ph.D.	Purdue	Anti-Acrolein Treatment in a Live Animal Model of SCI
Sengelau, Dale R.	PhD	Indiana University, Bloomington	Prevention of Motoneuron Atrophy after Spinal Cord Injury

Cummins, Theodore	Ph.D.	IUSM	Role of sensory neuronal ion channels in hyper-excitability and pain mechanisms following spinal cord injury
Lei, Zhigang	Ph.D.	IUSM	I_A current in the prevention and treatment of post-traumatic epilepsy
Deng, Ping	M.D., Ph.D.	IUSM	Roles of I_h in Hippocampal Cells after Traumatic Brain Injury
Jin, Xiaoming	Ph.D.	IUSM	Complement-mediated Synaptic Elimination in Posttraumatic Epileptogenesis
Yoder, Karmen	Ph.D.	IUSM	PET Imaging of TBI-Induced Neuroinflammation: An Innovative Tool for Tracking Treatment Efficacy
Yang, Jiaan	Ph.D.	Microtech, Inc.	Design Effective IGF-I to Improve Treatment of Hypoxia-Ischemia Encephalopathy in Brain Injury

With knowledge and lessons learned from implementation of the first two grant cycles, the Board now seeks to increase the awareness of the fund throughout the state. The goal is to increase both the number and quality of the applications from throughout the state.

With regards to Board membership, the Governor did not identify new representatives for the positions of Neurosurgeon or Psychiatrist and, as a result, Dr. Henry Feuer and Dr. Chuck Dietzen continue in those roles for an additional four-year term. Furthermore, in 2009, Governor appointed position of representative of the life sciences was due for reappointment. The Governor did not identify a new representative and Mr. Ron Henrikson will continue in that position for a new four-year term. Also in 2009, the Brain Injury Association appointment was up for renewal. Dr. Lance Trexler will continue in that position for a new four-year term.

The Board is preparing for 2010 with some uncertainty as to the stability of the Fund and is awaiting financial guidance before proceeding with next steps.

Spinal Cord Injury/Brain Injury Trust Fund Board Membership List

(** - Governor appointed position)

1. Spinal Cord/Head Injury Person or Family Member**

Bob Setree
President, Southern Indiana Traumatic Brain Injury Foundation

2. Physician/Neurosurgeon**

Dr. Henry Feuer (Board Vice Chair)

3. Physiatrist, Board Certified APMR**

Dr. Chuck Dietzen
Medical Director, Easter Seals Crossroads

4. Technical Life Sciences Industry**

Ronald D. Henriksen
President and Chief Executive Officer, EndGenitor Technologies
Partner and Chief Investment Officer, Twilight Venture Partners
Chairman of Cytori Therapeutics, Inc.

5. Indiana University

Dr. Paul B. Nelson
Chairman and Betsy Barton Professor
Department of Neurological Surgery
Indiana University School of Medicine

6. Purdue University

Alan H. Rebar, DVM, PhD
Senior Associate Vice President for Research
and Executive Director of Discovery Park
Hovde Hall

7. National Spinal Cord Injury Association

Janeen Earwood, Director of Rehabilitation, American Senior Communities

8. Rehabilitation Hospital of Indiana

Annette Seabrook, Therapy Program Manager
Inpatient Spinal Cord and Orthopedic Programs
Rehabilitation Hospital of Indiana

9. American Brain Injury Association/Brain Injury Assoc. of Indiana

Lance E. Trexler, Ph.D, Director, Dept. of Rehabilitation Neuropsychology
and Program Director for Neurobehavioral Services
Rehabilitation Hospital of Indiana