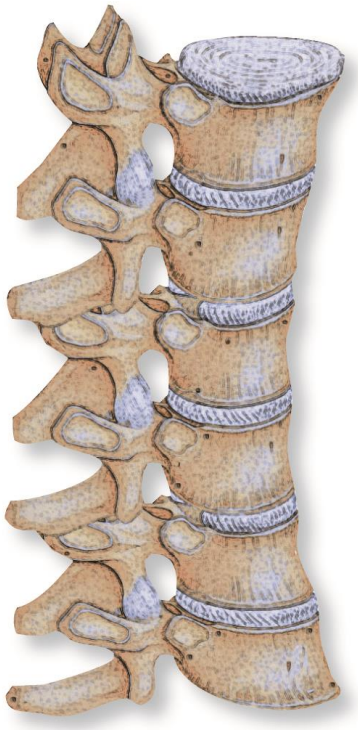
NEW YORK STATE OF OPPORTUNITY. Department of Health



SPINAL CORD INJURY RESEARCH BOARD

Annual Report

January 1, 2015 to December 31, 2015

I. INTRODUCTION

Spinal cord injury (SCI) was once thought of as incurable. Significantly, the basic science carried out by researchers in this field, much of it accomplished in New York State, has served as an important stimulus for the clinical trials now underway in fields as diverse as neuro-rehabilitation, axon growth, cell biology and robotics. Although it is not yet possible to reliably repair the human spinal cord, there are new treatments that improve the lives of SCI patients, and continued scientific explorations offer hope for doing more.

SCIs contribute to significant disability, illness and death in the United States. Each year, approximately 1,000 New York residents suffer traumatic SCIs[1] joining the nearly 276,000 people living in the United States with SCIs.[2] The personal and economic costs to these individuals, their families and society are immense.

Most frequently, these injuries are caused by motor vehicle accidents, falls, sports injuries, or acts of violence. SCI results in an abrupt change in the quality of life for those affected. Injuries to the spine near the head can result in quadriplegia, with the loss of motor control, sensation and function of the arms, legs, bowel, bladder, chest, abdomen and diaphragm. Injuries to the lower spine can result in loss of sensation and movement in the lower body, and loss of bowel and bladder control. Both types of injuries can result in significant chronic pain.

The economic costs of SCI are great. In addition to societal and individual costs incurred for medical care and through loss of productivity, there are significant costs for home and vehicle modifications, equipment purchase, medications and personal assistance services. The National Spinal Cord Injury Statistical Center reported that first-year costs for an individual with SCI range from approximately $347,484 to more than $1,064,716, with annual costs thereafter ranging from approximately $42,206 to $184,891.[2] These expenses are borne by the individuals, their families and society at large.

The New York State Spinal Cord Injury Research Board (SCIRB or Board) was created in 1998 to solicit, review and support proposals from leading New York State researchers in their efforts to find a cure for SCI. The Spinal Cord Injury Research Trust Fund (Trust Fund) was established to fund this research. It is financed primarily by a portion of surcharges on moving traffic violations, because motor vehicle accidents are the leading cause of SCI, followed by falls.[2] The Board and Trust Fund are authorized by Title IV (Sections 250 through 251) of Article 2 of the Public Health Law and Section 99-f of Article 6 of the State Finance Law.

The Board was first convened in August 1999. It is responsible for advising the Commissioner of Health on research proposals from leading New York State researchers in their efforts to find a cure for SCI. The Board is required to report annually to the Governor and Legislature on funds appropriated for SCI research and the progress of the Board in terms of the results of its SCI research efforts.

1 New York State Department of Health, Bureau of Occupational Health and Injury Prevention, 2011-2013 data

2 "Spinal Cord Injury Facts and Figures at a Glance." *National Spinal Cord Injury Statistical Center.* University of Alabama at Birmingham, February 2015. Web. 6 July 2015. https://www.nscisc.uab.edu/

The SCIRB appreciates the opportunity to serve the citizens of New York State by focusing on this important public health problem while stimulating economic growth through investigation and discovery. The Board looks forward to providing additional financial support for such highly meritorious SCI research in the coming years.

II. BOARD ORGANIZATION AND MEMBERSHIP

The Board is comprised of 13 members appointed by the Governor and legislative leaders (see Appendix 2). There are no vacancies. The current composition of the Board includes seven researchers, three clinicians and three spinal cord-injured persons. Members serve four-year terms.

III. BOARD OPERATIONS

Meetings

Meetings are announced at least two weeks in advance whenever possible and are open to the public. Meeting agendas are posted on the Wadsworth Center's web site at: http://www.wadsworth.org/extramural/spinalcord/events.htm.

A recording of each meeting is available via the Department of Health's public web site http://www.health.ny.gov/events/webcasts/archive/ for 30 days after a meeting, opening the proceedings to a wide audience.

All Board meeting agendas and approved minutes are available by request from the Board's Executive Secretary.

The Board held four meetings in 2015 (see Section V., below).

Bylaws

No changes were made to the Board's bylaws in 2015. The bylaws can be found at http://www.wadsworth.org/extramural/spinalcord/bylaws.htm.

IV. PROGRAM FUNDS

Through December 31, 2015, deposits to the Trust Fund totaled $88.16 million. Interest on unexpended funds rose to $5.3 million, for a total of $93.46 million since the inception of the Trust Fund. Total cash disbursements from the Trust Fund include: research contracts ($69.4 million); peer review and strategic planning contracts ($2.6 million); and administrative costs ($5.2 million).

Beginning April 1, 2013, other state funds were made available for SCI research. The fiscal year (FY) 2014-15 state budget appropriated $7 million and $7 million was appropriated in FY 2015-16. In the 2015 calendar year, total cash disbursements include: $6.3 million for research contracts; and $107,017 for administrative costs.

V. MAJOR ACTIVITIES OF THE BOARD AND PROGRAM

During 2015, the Board's recommendation for a standing peer review panel and a shortened peer review timeline came to fruition. The four-year peer review contract was awarded to the American Institute of Biological Sciences (AIBS) and work began on January 1, 2015.

The SCIRB intends to spend $8.5 million every year for SCI research. The program completed disbursements of $2.9 million in support of 15 "Institutional Support for Spinal Cord Injury Research (Round 4)" contracts authorized in late 2014. These contracts supported previously peer reviewed research through customary SCI research expenses; funding supported items such as publications, supplies, travel, materials, fringe benefits, indirect costs, and equipment and laboratory renovations. Eligibility for these funds was limited to organizations located within New York State that received SCI research funding from the SCIRB and/or the National Institutes of Health since the beginning of federal FY 2010.

Four additional funding opportunities were pursued during 2015. Most of the funding commitments are multiyear awards with disbursements spanning one to six years. A tabular summary of each of these procurements for SCI research in New York State are found in Appendix 1. Each resulted from the following actions of the Board:

January 23, 2015: approved the Department of Health to issue the "Translational Research Projects (TRP) in Spinal Cord Injury" Request for Applications (RFA) and the "Institutional Support for Spinal Cord Injury Research (Round 5)," a non-competitive funding opportunity.

June 25, 2015: recommended awards from the "Collaborations to Accelerate Research Translation (CART) and Innovative, Developmental or Exploratory Activities (IDEA)" RFA for a total of $5.7 million. These are three- and two-year awards, respectively, for which SCIRB authorized the inclusion of a one-time funding component. The one-time funds were designated for use in the first year of the awards to accelerate and enhance the success of the supported research projects.

The Board also expanded the eligibility criteria for "Institutional Support for Spinal Cord Injury Research (Round 5)" non-competitive funding opportunity, making funds available to organizations located within New York State that demonstrated current notice of funding award or renewal from a peer-reviewed SCI research project conducted by a principal investigator employed at their organization. As a result 19 awards were made for a total of $6.4 million to provide additional support for SCI research projects through the purchase of laboratory supplies, salaries, equipment and other customary expenses necessary to support research efforts at those organizations (see below).

September 21, 2015: recommended three-year awards for "Individual Predoctoral and Postdoctoral Fellowships in Spinal Cord Injury Research" totaling $822,541.

December 2, 2015: recommended two five-year awards for "TRP in Spinal Cord Injury" totaling $8.7 million. This RFA made up to $12 million available for award and five applications were considered.

Appendix 1

Institutional Support for Spinal Cord Injury Research, Round 4

Contract Term 12/1/14 – 8/31/15

Institution Name	*Disbursements*
Albert Einstein College of Medicine of Yeshiva University	$212,636
Burke Medical Research Institute	$212,636
Columbia University – Medical Center	$212,546
Columbia University – Morningside	$212,636
Cornell University	$212,636
CUNY – City College of New York	$212,636
CUNY – College of Staten Island	$212,636
Health Research, Inc. – Wadsworth Center	$212,468
Icahn School of Medicine at Mount Sinai	$212,633
Rensselaer Polytechnic Institute	$212,636
Sloan Kettering Institute for Cancer Research	$212,636
SUNY - Stony Brook University	$211,920
SUNY – Downstate Medical Center	$212,636
Syracuse University	$212,636
University of Rochester	$212,364
Total (15 Institutions)	**$3,188,291**

2015 CART/IDEA Recommendations for Award

IDEA Contract Term 11/1/15 – 10/31/17; CART Contract Term 11/1/15 – 10/31/18

Organization	*Principal Investigator*	*Funding Mechanism*	*Project Title*	*Recommended Award*
Albert Einstein College of Medicine, Yeshiva University	David Sharp, Ph.D.	CART	Harnessing Microtubules to Enhance Urological Function after Spinal Cord Injury	$1,197,182
Burke Medical Research Institute	Dianna Willis, Ph.D.	IDEA	Alterations in Extracellular Vesicle Communication as a Cause of NMJ Dysfunction after SCI	$448,978
Burke Medical Research Institute	Jason Carmel, M.D., Ph.D.	IDEA	Delayed Versus Immediate Motor Training Following Brain Stimulation to Enhance Recovery in Rats with Chronic Corticospinal Tract Injury	$450,419
CUNY City College of New York	John Martin, Ph.D.	CART	Repairing the Damaged Corticospinal Tract after Cervical Spinal Cord Injury	$990,000
Health Research Incorporated, Wadsworth Center	Johnathan Carp, Ph.D.	IDEA	Role of Abnormal Urethral Sphincter Motoneuron Properties in Urinary Tract Dysfunction after Spinal Cord Injury	$442,373
Icahn School of Medicine at Mount Sinai	Hongyan Zou, M.D., Ph.D.	IDEA	The Role of HDAC3 in the Epigenetic Regulation of Functional Polarization of Microglia and Macrophages after Spinal Cord Injury	$360,000
Icahn School of Medicine at Mount Sinai	Noam Harel, M.D., Ph.D.	IDEA	Augmenting Hand Muscle Control in Cervical SCI through Paired Cortical and Cervical Stimulation	$391,353
Regenerative Research Foundation	Sally Temple, Ph.D.	CART	Sustained Delivery of IL10 and SHH to Promote Spinal Cord regeneration After Injury	$1,097,684
SUNY Downstate Medical Center	Joseph Francis, Ph.D.	IDEA	24/7 Use of Fully Integrated Bi-Directional Autonomous Brain Machine Interface in Non-Human-Primates	$341,559
			Total (9 awards)	**$5,719,548**

Institutional Support for Spinal Cord Injury Research, Round 5

Contract Term 2/1/16 – 8/31/16

Institution Name	*Award*
Albany Research Institute, Inc. - Albany Stratton VA Medical Center	$337,218
Bronx Veterans Medical Research Foundation - James J. Peters VA Medical Center	$337,218
Columbia University	$337,218
COM Affiliation, Inc. - Albert Einstein College of Medicine	$337,218
Cornell University	$337,218
Health Research, Inc. - Wadsworth Center	$337,218
Icahn School of Medicine at Mount Sinai	$337,218
Regenerative Research Foundation	$337,218
Research Corporation of Long Island, Inc. - Northport VA Medical Center	$337,218
Research Foundation of CUNY - City College	$337,218
Research Foundation of CUNY - Staten Island	$337,218
Research Foundation of SUNY - Albany	$337,218
Research Foundation of SUNY - Downstate Medical Center	$337,218
Research Foundation of SUNY - Stony Brook	$337,218
Sloan-Kettering Institute for Cancer Research	$337,218
Syracuse University	$337,218
The Feinstein Institute for Medical Research	$337,218
University of Rochester	$337,218
WM Burke Medical Research Institute	$337,218
Total (19 Institutions)	**$6,407,142**

2015 Individual Predoctoral/Postdoctoral Fellowships Recommendations for Award

Contract Term 3/1/16 – 2/28/19

Organization	*Investigators*	*Funding Mechanism*	*Project Title*	*Recommended Award*
Rensselaer Polytechnic Institute	Ryan Gilbert, Ph.D. Christopher Johnson, D.L., B.S. Diana-Andra Borca-Tasiuc, Ph.D. Lee Lignon, Ph.D.	Predoc	Magnetic Alignment of Electrospun Fibers for Treatment of Acute Spinal Cord Contusive Injury	$135,600
Research Foundation for SUNY, University at Albany	Ben Szaro, Ph.D. Rupa Choudhary, M.S. Melinda Larsen, Ph.D. Gregory Lnenicka, Ph.D. Kurt Gibbs, Ph.D. Cara Pager, Ph.D.	Predoc	Intracellular Modulations of Cytokine Signaling Leading to Successful CNS Axon Regeneration in a Vertebrate Model	$85,585
The Research Foundation of CUNY obo City College of New York	John Martin, Ph.D. Alzahraa Amer, M.S.	Predoc	Modulating Spinal Cord Neural Activity to Promote Recovery of Motor Function After SCI	$135,600
The Trustees of Columbia University in the City of New York	Ulrich Hengst, Ph.D. Jose C. Martínez	Predoc	Control of the Transcriptome in Regenerating Axons through mRNA Degradation	$127,500
Winifred Masterson Burke Medical Research Institute	Jason Carmel, M.D., Ph.D. Caitlin Hill, Ph.D. Hongguen Park, Ph.D.	Postdoc	Dissecting and Strengthening Corticospinal Connections After Spinal Cord Injury Using Advanced Neuroscience Methods	$172,902
Winifred Masterson Burke Medical Research Institute	Jian Zhong, Ph.D Mariel Voutounou, Ph.D. Francesco Boato, Ph.D.	Postdoc	Promoting Intrinsic Growth Competency of Injured Neurons Using Genetic and Small Molecule Approaches	$165,354
			Total (6 awards)	**$822,541**

2015 Translational Research Projects (TRP) in Spinal Cord Injury Recommendations for Award

Anticipated Contract Term 6/1/16 – 5/31/21

Organization	*Investigators*	*Project Title*	*Recommended Award*
Columbia University; Sub-applicant- University of Louisville Research Foundation	Sunil K. Agrawal, Ph.D. Susan J. Harkema, Ph.D.	Tethered Pelvic Assist Device (TPAD) and Epidural Stimulation for Recovery of Standing in SCI	$5,033,354.00
RFCUNY obo The City College of NY/CUNY School of Medicine; Sub-applicant- Winifred Masterson Burke Medical Research Institute; Sub-applicant- Bronx Veterans Medical Research Foundation	John Martin, Ph.D. Jason B. Carmel, M.D., Ph.D. Noam Y. Harel, M.D., Ph.D.	Combined Motor Cortex and Spinal Cord Stimulation to Promote Arm and Hand Function After Chronic Cervical Spinal Cord Injury	$3,737,948.00
		Total (2 awards)	**$8,771,302**

Appendix 2

NEW YORK STATE SPINAL CORD INJURY RESEARCH BOARD

Roster of Members

As of December 31, 2015

Lorne Mendell, Ph.D., Chair
Stony Brook University, SUNY

Donald S. Faber, Ph.D., Vice Chair
Albert Einstein College of Medicine at Yeshiva University

Thomas N. Bryce, M.D.
Icahn School of Medicine at Mount Sinai
The Mount Sinai Medical Center

Anthony Oliver Caggiano, M.D., Ph.D. *
Acorda Therapeutics, Inc.

David A. Carmel
Carmel Asset Management, LLC

Jeffrey D. Ehmann[+]
Gannett Co., Inc.

Michael E. Goldberg, M.D.
Columbia University
College of Physicians and Surgeons

Bernice Grafstein, Ph.D., DSc*
Weill Medical College of Cornell University
Department of Physiology and Biophysics;
Department of Neuroscience; Brain and Mind
Research Institute

Keith Gurgui
Resource Center for Accessible Living

Nancy A. Lieberman
Skadden, Arps, Slate, Meagher & Flom LLP

Gary D. Paige, M.D., Ph.D.
University of Rochester Medical Center
Department of Neurobiology and Anatomy

Paul Richter[+]
Spinal Cord Society

Fraser Sim, Ph.D. *
University at Buffalo
Department of Pharmacology and Toxicology

Mark Menniti Stecker, M.D., Ph.D.
Winthrop University Hospital
Department of Neuroscience

Adam B. Stein, M.D.
North Shore-Long Island Jewish
Health System
Department of Physical Medicine and
Rehabilitation

Jonathan R. Wolpaw, M.D. [+]
Wadsworth Center
New York State Department of Health

***** Appointed in 2015
\+ Service concluded during 2015

Appendix 3

NEW YORK STATE DEPARTMENT OF HEALTH

Wadsworth Center, Extramural Grants Administration

Staff Support to the Board

Victoria Derbyshire, Ph.D.*

Bonnie Jo Brautigam+

Teresa K. Ascienzo

Charles J. Burns

Jeannine M. Tusch

Carlene Van Patten*

Division of Legal Affairs
Bureau of House Counsel

Diana Yang, J.D.

***** Service commenced during 2015
+ Service concluded during 2015