NEW JERSEY COMMISSION ON BRAIN INJURY RESEARCH

Annual Report State Fiscal Year 2020

NJ Health
New Jersey Department of Health

NEW JERSEY COMMISSION ON BRAIN INJURY RESEARCH

2020 ANNUAL REPORT

January 29, 2021

The Honorable Phil Murphy, Governor
Office of the Governor
State House
PO Box 001
Trenton, New Jersey 08625

Dear Governor Murphy:

On behalf of the New Jersey Commission on Brain Injury Research, I am pleased to present the Annual Report for Fiscal Year 2020.

Since its founding in 2004, the Commission has been committed to accelerating research to develop effective interventions and cures for the disabilities associated with traumatic brain injury.

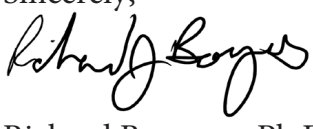
Commission grant programs have increased the importance of brain injury research, have brought new brain injury researchers into the State of New Jersey and have laid the ground work for new research and leveraged additional grants and funding.

Commission grants attract talented senior researchers and engage Ph.D. and Post-Doctoral students and young researchers to the field of brain injury research all while stimulating additional investments. Support for researchers funded by the Commission by other organizations validates the Commission grant process, and the standing of its researchers within the scientific community.

The Commission has been a major factor in fostering interest and continued involvement in brain injury research within the State of New Jersey.

I would like to acknowledge the efforts and enthusiasm of all the Commissioners during the past year, as well as the New Jersey Department of Health for their valuable support and contributions.

Sincerely,



Richard Boergers, Ph.D., ATC
Chairperson


NEW JERSEY COMMISSION ON
BRAIN INJURY
RESEARCH

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NEW JERSEY COMMISSION ON
BRAIN INJURY
RESEARCH

New Jersey Commission on Brain Injury Research
Members of the Commission

Richard Boergers, Ph.D., ATC, Chairperson
Carolyn Daniels, D.H.Sc., M.Ed.
Nicholas Ponzio, Ph.D.
Sharon Cross

Commission Personnel

Christine Traynor, Administrator
Mary Ray, Fiscal Administrator

ACKNOWLEDGEMENTS

The New Jersey Commission on Brain Injury Research would like to express its sincere appreciation to all present and past Commission members, and the New Jersey Department of Health staff.

Commission Office

25 Stockton Street, 2nd Floor Rear
Trenton, New Jersey 08625
(609) 913-5010

NEW JERSEY COMMISSION ON BRAIN INJURY RESEARCH

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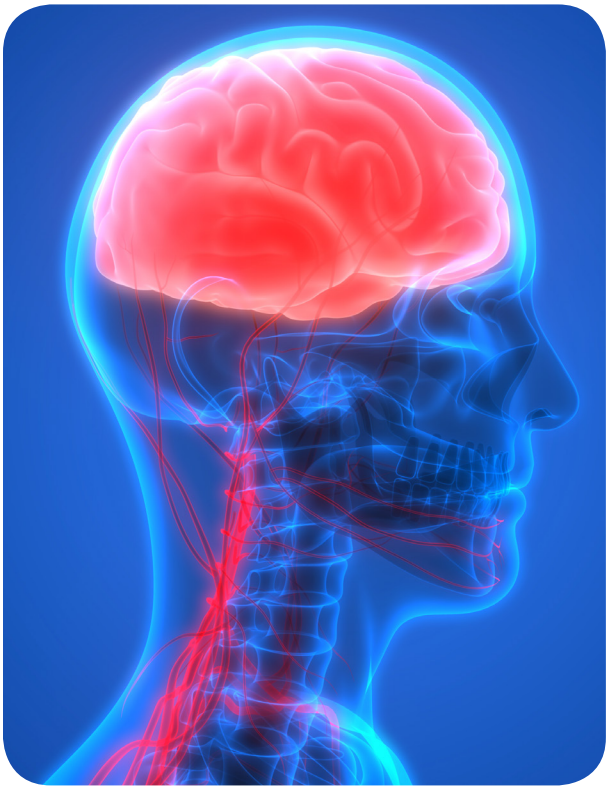
The New Jersey Commission on Brain Injury Research was established in 2004 to fund brain injury research projects in New Jersey.



Since 2007, the New Jersey Commission on Brain Injury Research (Commission) has awarded over $44 million to individual scientists at various academic and research institutions and approved 124 separate scientific research projects.

- Progress made by researchers has been presented in abstracts, scientific conferences, symposia, and meetings.
- Commission programs have facilitated scientific interaction and research collaborations, in New Jersey as well as out-of-state.
- The number of qualified research institutions eligible to apply for Commission grant funding opportunities has grown substantially since 2004.
- Success in achieving Commission funding has resulted in academic and career advancement for New Jersey researchers.

INTRODUCTION

This report is written in accordance with the enabling Statute, which stipulates that the Commission shall provide a report to the Governor and the Legislature on the status of the Commission's activities and the results of its funded research efforts.[1] The Brain Injury Research Act created the New Jersey Commission on Brain Injury Research and the New Jersey Brain Injury Research Fund to support its activities. The Brain Injury Research Act resulted from the collaborative efforts of people with brain injuries and their families, clinicians, scientists, public officials, and representatives of research, rehabilitation, and non-profit organizations.

The Commission provides the opportunity for New Jersey to become a leader in traumatic brain injury research, as our program was the first of its kind in the nation. The Commission serves as a

1. P.L. 1968, c.410 N.J.S.A. 52:9EE-1, et seq. Enabling statute is attached hereto as "Attachment A".

role model for other states to follow in search of medical research, treatments and interventions. The early recognition of unmet needs in traumatic brain injury research is paving the way to develop methods of regeneration and repair.

BACKGROUND

Traumatic brain injury (TBI) is a major cause of death and disability in the United States. TBIs contribute to about 30 percent of all injury deaths.[2] Every day, 153 persons in the United States die from injuries that include TBI.[3] For those who survive a TBI, they may experience effects that last a few days, or alternatively the rest of their lives. Effects may include: impaired thinking or memory, movement, sensation (e.g., vision or hearing), or emotional functioning such as personality changes and depression.

Motor vehicle injuries represent the leading cause of traumatic brain injury deaths in the nation. In 2013, about 2.8 million TBI related emergency department (ED) visits, hospitalizations, and deaths occurred in the United States. Of the 2.8 million motor vehicle injuries, TBI contributed to the deaths of nearly 50,000 people, 282,000 hospitalizations and 2.5 million ED visits.[4]

It is estimated that 12,000 to 15,000 New Jersey residents suffer brain injuries from traumatic events each year, of which 1000 are fatal. Approximately 175,000 New Jersey residents are currently living with disabilities that result from TBI. The total cost of ED visits, hospitalizations, and deaths related to traumatic brain injuries, either alone or in combination with other injuries, exceeds $82 billion annually.[5]

NEW JERSEY BRAIN INJURY REGISTRY

The "Brain Injury Research Act" mandated the establishment of a central registry of people who sustain brain injuries throughout the state. This registry consists of a database that provides information on the incidence and prevalence of brain injuries and serves as a resource for research, evaluation, and information on traumatic brain injuries. The Registry collects brain injury data from New Jersey hospitals, and provides data analysis for health professionals.

2. Centers for Disease Control and Prevention, (2016). "Traumatic brain injury in the United States: fact sheet." Available at: http://www.cdc.gov/traumaticbraininjury/get_the_facts.html.

3. Ibid.

4. Ibid.

5. Based on 2015 estimates from the Centers for Disease Control and the New Jersey Department of Health Center for Health Statistics.

NEW JERSEY'S COMMITMENT TO BRAIN INJURY RESEARCH

The Brain Injury Research Act anticipates that brain injury research will lead to effective treatments and cures for brain injuries and relieve other consequences of brain injury.

New Jersey is a leader in supporting research aimed at developing effective interventions and cures for disabilities associated with traumatic brain injury. The Commission provides research grant programs for both established scientists and young researchers committed to the goals of brain injury research. The Commission also supports the New Jersey Department of Health, which maintains a database of traumatic brain injuries in New Jersey.

Now in its sixteenth year of operation, the Commission has funded 124 scientific research projects and supported individual scientists at institutions around the State. Its impartial and scientifically rigorous application and review process has helped make the work of the Commission vital to New Jersey's best scientists in their pursuit of brain injury research.

NEW JERSEY COMMISSION ON BRAIN INJURY RESEARCH

1. MISSION AND GOALS

The Commission's mission is to encourage and promote innovative brain injury research projects in New Jersey through the funding of approved research projects at qualifying research institutions in the State of New Jersey.

The Commission supports meritorious research projects that advance the understanding of traumatic brain injuries and is committed to accelerating research to develop effective interventions and treatment for the disabilities associated with traumatic brain injury.

Simply stated, the Commission's goals are:

- To advance and accelerate brain injury research,
- To promote collaboration among brain injury researchers in New Jersey,
- To promote the development of brain injury researchers and their research capabilities for obtaining federal and other external funding, and,
- To encourage innovative research.

Brain injury is often misdiagnosed, misunderstood and under-funded. Until there is a cure, people who sustain brain injuries must have timely and equal access to expert trauma care, specialized rehabilitation, lifelong disease management and individualized support services. This is critical for individuals to live healthy, independent and satisfying lives. The State of New Jersey benefits in savings on medical and support costs as well as research activities for treatments and cures for brain injuries and their effects.

2. OBJECTIVES

The Commission is committed to accelerating research to develop effective interventions and cures for the disabilities associated with traumatic brain injury. Its primary objectives are:

- To advance the field of brain cell repair and regeneration in New Jersey's research community, by encouraging established scientists to apply their expertise to brain injury research.

- To foster collaborative, interdisciplinary approaches to brain injury research.
- To develop models of neural repair and regeneration that establishes a basis for additional scientific investigation.
- To develop models of neural repair and regeneration after brain injury that can lead to clinical interventions.
- To stimulate epidemiological analysis of the New Jersey Traumatic Brain Injury Registry data to improve injury prevention, develop treatment guidelines and enhance patient outcomes.
- To promote dissemination of the research findings generated by those scientists supported by the New Jersey Commission on Brain Injury Research.
- To develop and evaluate clinical interventions that lead to improved treatment and function after traumatic brain injury.

3. MEMBERSHIP AND ORGANIZATION

Created as a semi-independent public body, the New Jersey Commission on Brain Injury Research is "…allocated in, but not of…" the New Jersey Department of Health. It is subject to all the administrative rules and procedures of the Department, but is not part of the Department's budget.

The Commission establishes and oversees the administrative operations of the grants making process as well as other activities that are implemented by its administrative staff. Eleven uncompensated Commissioners are appointed by the Governor with the advice and consent of the Senate and serve a three-year term.

Two Commission seats are designated by Statute to represent the state's major academic research institutions and stakeholders.[6] Public members provide a diversity of backgrounds and interests united by a shared commitment to brain injury research. The Commission will always have one or more individuals from each of the following institutions and categories:

The Commissioner of the New Jersey Department of Health, or designee, Rutgers, The State University of New Jersey, eight public members – at least one licensed physician, an individual with a brain injury, a parent of an individual with a brain injury, one public member appointed by the President of the Senate, and one public member appointed by the Speaker of the Assembly.

All public members shall be residents of the State, or otherwise associated with the State, and shall be known for their knowledge, competence, experience or interest in brain injury medical research.

6. New Jersey Statute (N.J.S.A. 52:9EE-1)

Any qualified person wishing to be considered for appointment may submit his or her name to the Governor's Office of Appointments.[7]

Public meetings are held at least four times a year. Members are recused from discussing or voting on matters in which they may have a potential conflict. A Chair and Vice-Chairperson are elected and preside over all formal proceedings.

The Commission also maintains committees that meet and provide an informal structure to discuss issues on an ad hoc basis prior to presenting them to the Commission.

4. ADMINISTRATION

The Commission's administrative office provides the vital linkages to implement its programs and ensure the integrity of its operations. The office staff manages the day-to-day operations, including program administration, interaction with applicants and grantees, contract administration, budgeting and financial matters, record-keeping and reporting.

The office staff schedule and facilitate all activities, manage the scientific merit review process, negotiate with outside vendors, and maintain the necessary relationships within state government.

5. FUNDING

Under the enabling Statute, the work of the Commission is supported entirely by a one-dollar surcharge on all traffic and motor vehicle fines or penalties. Monies generated from these fines or penalties are collected by the State Treasurer for deposit into the New Jersey Brain Injury Research Fund. All grant programs and other activities are funded entirely from this dedicated source. No part of the operating budget is paid for out of New Jersey's general tax revenue.

7. Information on how to apply can be found on the following website at: http://www.state.nj.us/governor/admin/bca.

RESEARCH FUNDING PRIORITIES

The Research Program Guidelines set forth the Commission's scientific agenda, research criteria and areas of interest.[8] The guidelines offer applicants detailed guidance and instruction on funding criteria and policies.

The Commission funds research activities that hold the promise of developing effective treatments, interventions and cures for the disabilities associated with traumatic brain injury. An array of grant programs is offered including Individual Research Grants, Fellowships, Pilot Research Grants and Programmatic Multi-Investigator Research Grants. The areas of research listed below highlight the focus of current emphasis and funding.

Basic Studies

- Study strategies to promote neuronal growth and survival, encourage the formation of synapses, enhance appropriate myelination, restore axonal conduction, replace or regenerate injured brain cells, or otherwise improve function after brain injury.
- Evaluate the efficacy of drugs and other interventions that prevent or reduce secondary neuronal injury or providing insight into the mechanisms causing progressive damage.
- Define anatomical characteristics of brain injury in animal models and in the human brain, specifically documenting the cellular systems vulnerable to injury and the functional losses which occur.
- Perform translational research on the mechanism and interventions that promote recovery of function after brain injury.

Clinical Studies

- Demonstrate efficacy of innovative rehabilitation strategies based on basic research that offer promise to promote recovery of function (e.g., physiologic function, cognitive impairment, activity limitation, social participation, quality of life) through their clinical application.
- Demonstrate mechanisms of action and rehabilitation intervention based on changes in brain activity (e.g., functional imaging), neurocognitive function, or psychosocial factors (e.g., resilience).
- Perform comparative effectiveness research to evaluate the relative risks and benefits of alternative rehabilitation interventions intended to promote recovery of function.
- Conduct epidemiological studies of the New Jersey Traumatic Brain Injury Registry data, to identify contributions of demographic and risk factors, patient transport, rehabilitation and physical therapy, and medical/surgical interventions to population treatment and outcomes.

8. The full text appears on the website at: www.nj.gov/health/njcbir.

GRANT APPLICATION AND REVIEW PROCESS

The grants review process was modeled on the National Institutes of Health standards and procedures to provide an impartial and rigorous review of research proposals. This effort has been largely successful and has earned respect from grantees and applicants.

Application Process
The grant application process is now entirely electronic utilizing the State of New Jersey System for Administering Grants Electronically (SAGE). The on-line process ensures broad access, convenience, flexibility, and greatly reduces administrative workloads for applicants, the Commission office, and the Scientific Merit Review Panel.

Grant Review Process
The grant review process consists of a three-step review.

- First, all grant applications are reviewed by the Commission's administrative staff to ensure compliance with New Jersey Statutes and regulations and to ensure accuracy.

- Second, an independent relevance review is conducted by a three-person panel appointed by the office of the Commission. The panel determines the relevance of all applications to the Commission's mission, priorities and Research Program Guidelines, and will assign scientific reviewers for each proposal that meets the relevancy requirements. In the event the panel determines that an application does not meet those requirements, the application will be triaged, and will not be forwarded for independent scientific merit review.

- Third, members of the Independent Scientific Merit Review Panel convene to evaluate all grant applications forwarded by the Independent Relevance Review Panel, applying the criteria described below. This panel will assign scores to each application and make funding recommendations to the Commission. If it is determined that an ad hoc expertise is needed, additional scientific referees may be used.

Recommendations and Authorization
The Independent Scientific Merit Review Panel will forward its recommendations to the Commission for final review and action. Grants triaged by either the Independent Relevance Review Panel and/or the Independent Scientific Merit Review Panel will not be forwarded to the Commission and will not be funded.[9]

9. The authority to authorize or not authorize grants is fully vested in the Commission according to New Jersey Statute (N.J.S.A. 52:9EE-1).

CURRENT GRANT PROGRAMS

Grant programs are designed to provide scientific opportunities attractive to a wide range of researchers. Awards are intended to promote collaboration among brain injury researchers in New Jersey and encourage innovative research. The intent is not to provide long-term support for research. It is expected that this initial support will lead investigators to acquire the necessary levels of preliminary data, so they may compete successfully for federal grant support.

The Individual Research Grant is designed to fund senior independent researchers, while the Fellowship Grant offers encouragement to graduate students and post-doctoral researchers. The Programmatic Multi-Investigator Grant supports collaborative research from at least three investigators from different laboratories, and the Pilot Research Grant enables researchers to pursue a new direction in brain injury research, or encourages new investigators who want to gather preliminary data for larger research projects, the Brain Injury Core Facilities Grant was designed to make research more efficient and provides state-of-the-art equipment and highly skilled staffing to support researchers with centralized expertise.

Inter-institutional and/or inter-state collaboration is strongly encouraged. Complete details on all grant programs are available on the Commission's website.

INDIVIDUAL RESEARCH GRANTS

- Individual Research Grants support senior scientists to explore meritorious novel scientific and clinical ideas.
- Up to $540,000 for up to three years ($180,000 per year).
- The key goal is to enable established researchers to test and develop pilot data needed for future funding.

FELLOWSHIP GRANTS

- Postdoctoral and Graduate Student Fellowships engage promising young investigators in brain injury research.
- All fellowships include an annual stipend, research allowance and travel budget.
- Post-doctoral Fellowships are three-year awards based on years of relevant research experience since obtaining a doctoral degree and range from $64,550 to $83,376 a year.
- Graduate Fellowships are three-year awards with a total award of $33,500 per year.

PILOT RESEARCH GRANTS

- Enable independent investigators to pursue a new direction in brain injury research, or new investigators who want to gather preliminary data for larger research projects.
- Up to $180,000 for a two-year award ($90,000 per year).

PROGRAMMATIC MULTI-INVESTIGATOR RESEARCH GRANTS

- Support collaborative research from at least three investigators from different laboratories.
- Preference is given to proposals that demonstrate complementary approaches to addressing a research question through multi-disciplinary investigations.
- Collaborations are encouraged among independent laboratories within the same institution or among laboratories from different institutions.
- Up to $720,000 per year for up to three years with a maximum of $2.1 million.

BRAIN INJURY CORE FACILITIES GRANTS

- Brain Injury Core Facilities Grants make research more efficient and productive by providing services and technologies that cannot be readily reproduced in individual laboratories in an efficient, cost-effective manner.
- Provides state-of-the-art equipment along with highly skilled staffing to support researchers.
- Makes use of sophisticated technologies and equipment to provide researchers with access to centralized expertise and service.
- Provides education and training opportunities for aspiring researchers.
- Up to $1,500,000 is available to provide researchers with an opportunity to facilitate the establishment of new Brain Injury Core Facilities.

2007 - 2020 SUMMARY AND PERFORMANCE RECORD

Since 2007, the Commission has funded 124 separate scientific research projects by scientists at New Jersey academic and research institutions. These awards represent an investment in brain injury research of over $44 million.

Approximately 62 grant applications are received annually; approval of ten or more new grant awards totaling $3 to $4 million are made.

Due to its continued investment in brain injury research, the number of New Jersey researchers interested in the field is growing.

NEW JERSEY QUALIFIED RESEARCH INSTITUTIONS

Under the Brain Injury Research Act, funds may only go to researchers affiliated with "New Jersey Qualified Research Institutions." The following organizations have been designated as Qualified Research Institutions by the New Jersey Commission on Brain Injury Research.

- Rutgers, The State University of New Jersey
- Kessler Foundation
- Stevens Institute of Technology
- Princeton University
- Cooper University Hospital & Cooper Medical School of Rowan University
- Atlantic Health Systems Hospital Corporation
- St. Barnabas Medical Center
- Edge Therapeutics, Inc.
- The Center for Neurological & Neurodevelopment Health LLC, Clinical Research Center of NJ, & The Center for Neurological & Neurodevelopment Health II, Inc. – NeurAbilities
- Centra State Medical Center
- Montclair State University
- Coriell Institute for Medical Research
- New Jersey Institute of Technology
- Hackensack Meridian Health
- International Brain Research Foundation
- Englewood Hospital Research
- Hackensack Meridian Health JFK Medical Center – The Neuroscience Institute
- Hackensack Meridian School of Medicine at Seton Hall University
- Rowan University
- Morristown Medical Hospital & Medical Center
- Veterans Administration NJ Health Care System & Veterans Biomedical Research Institute
- The College of New Jersey
- Visikol, Inc.
- St. Joseph's University Medical Center
- William Paterson University of New Jersey
- Bright Cloud International Corporation

The Commission is committed to broadening its portfolio of institutional grantees and increasing the size and diversity of its funding activities. Through outreach activities, the Commission encourages participation by all research organizations with an interest in brain injury research.

2020 YEAR IN REVIEW

The Commission developed policy guidelines to accommodate what promises to be an exciting research agenda for the New Jersey science community.

Grant programs are designed to provide opportunities attractive to a wide range of researchers. Awarded grantees and grantee institutions have capitalized on the opportunities afforded by the availability of Commission funding through advancement of individual careers, increased institutional investment, and applying for additional outside funding.

2020 Overview

The Commission has, in over sixteen years of its operation, funded an impressive portfolio of brain injury research projects while supporting an expanding group of new and senior investigators in the field.

2020 Applications

A total of 66 grant applications were received. Eleven grants were awarded totaling $2,971,714. The grant awards included 4 Individual Research Grants, 3 Pilot Research Grants, and 4 Fellowship Research grants. Information on existing grant awards can be found within the Research Grant Directories located on the Commission's website.[10]

2020 Outreach and Development Efforts

The Commission maintains an ongoing interest in expanding brain injury research in New Jersey. Direct contacts, attendance at events and meetings, plus website and publication resources are some of the ways used to publicize grant opportunities throughout the state.

Publication of Grant Programs

Official Notices of Fund Availability advise interested parties of the Commission's grant programs. These notices are published annually on the Commission's website and in the New Jersey Department of Health's *Directory of Grant Programs*.[11]

10. https://nj.gov/health/njcbir/directories-outcomes/

11. NJ Department of Health Directory of Grant Programs: www.healthapps.state.nj.us/noticeofgrant/noticegrants.aspx.

RETURN ON COMMISSION INVESTMENTS

TOTAL AMOUNT OF RETURN ON INVESTMENT: $46,238,594

Work began in 2017 on the preparation of a retrospective analysis of Commission funded grants to learn what impact was made on brain injury research in the State of New Jersey.

Surveys were sent to all funded researchers to gain insight into the return on the investments made. Specifically, the Commission requested information on publications, professional development, departmental standing, promotions, advancements, awards, and on other funding received, as the Commission wanted to learn more about the impact the Commission investment had made within the department and institution of the awarded grantee.

Grantees have benefited from the opportunities afforded by the availability of Commission funding. The Commission has been a major factor in fostering interest and continued involvement in brain injury within the State of New Jersey. Commission grant programs have increased the importance of brain injury research, have brought new brain injury researchers into the State of New Jersey, and have laid the ground work for new research and leveraged additional grants and funding.

As of 2017, Commission funded research had been published in 72 well regarded peer reviewed journals and publications with multiple additional research projects pending publication at that time. Commission researchers presented their findings at over 117 scientific conferences, symposia and meetings; posters were presented at 41 scientific conferences, symposia and meetings.

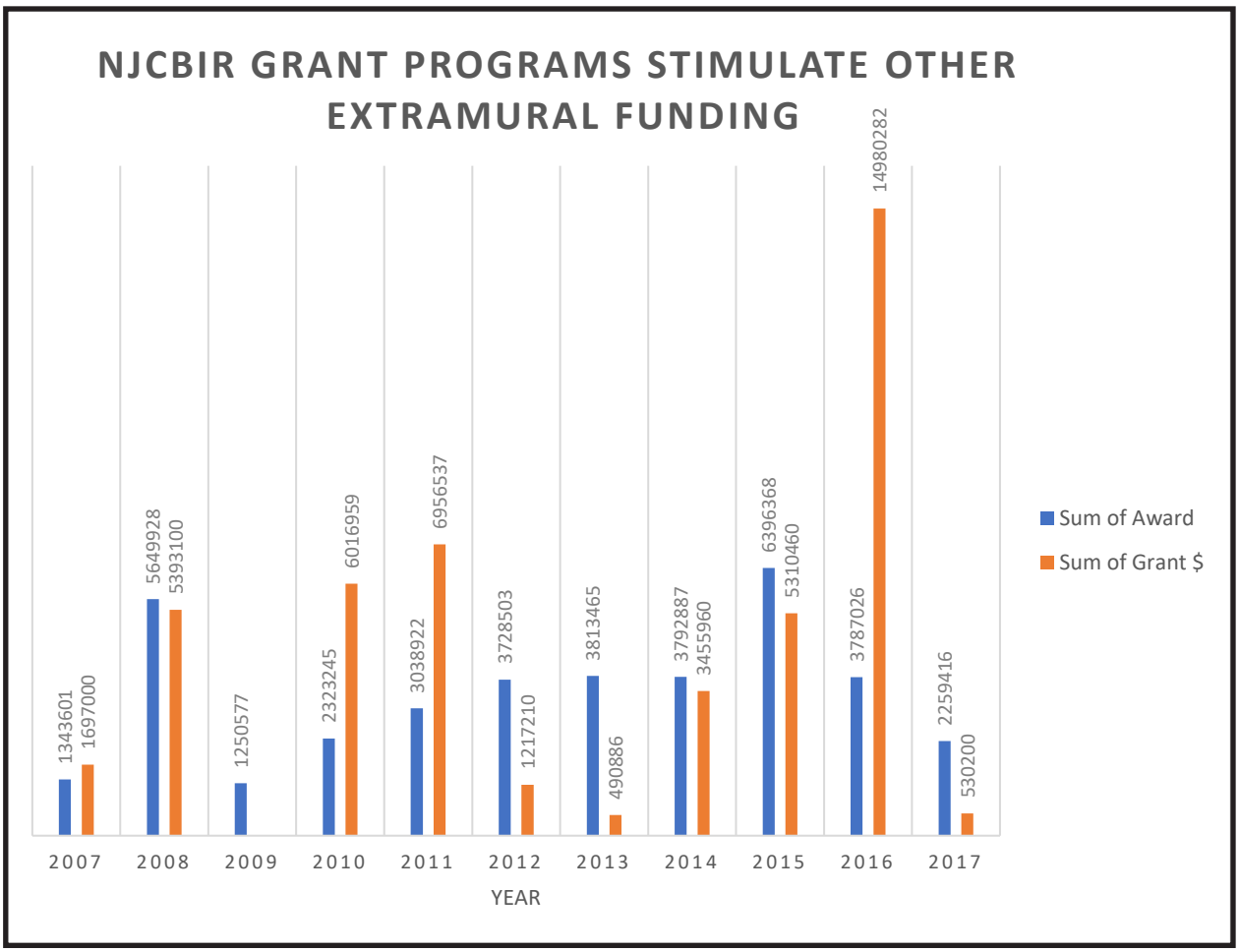
Commission programs have facilitated scientific interaction and research collaborations in New Jersey, as well as out-of-state. 17 active scientific collaborations had been formed both nationally, internationally and within the State of New Jersey. Success in achieving Commission funding has resulted in academic and career advancement for New Jersey researchers.

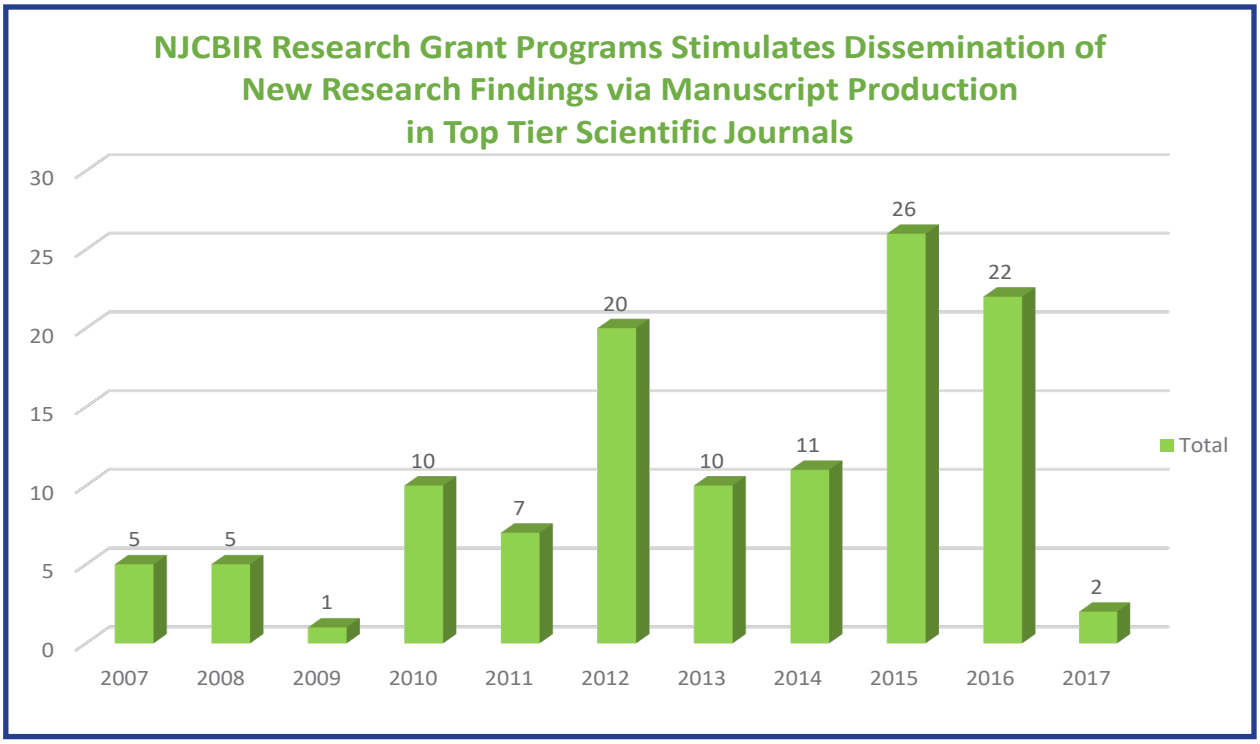
Commission funded researchers submitted 138 grant applications to the National Institutes of Health, the National Science Foundation and other funding organizations. 73 of those grant applications were approved in the amount of $46,238,594; several more applications were still pending during that time. Commission funded researchers submitted and received five patents for their brain injury research work.

Support for researchers funded by the Commission by other organizations validates the Commission grant process, and the standing of its researchers within the scientific community.

Commission grants attract talented senior researchers and engage students and young researchers to the field of brain injury research all while stimulating additional investments.

RETURN ON COMMISSION INVESTMENTS




NJCBIR Research Grant Programs Stimulates Dissemination of New Research Findings via Manuscript Production in Top Tier Scientific Journals
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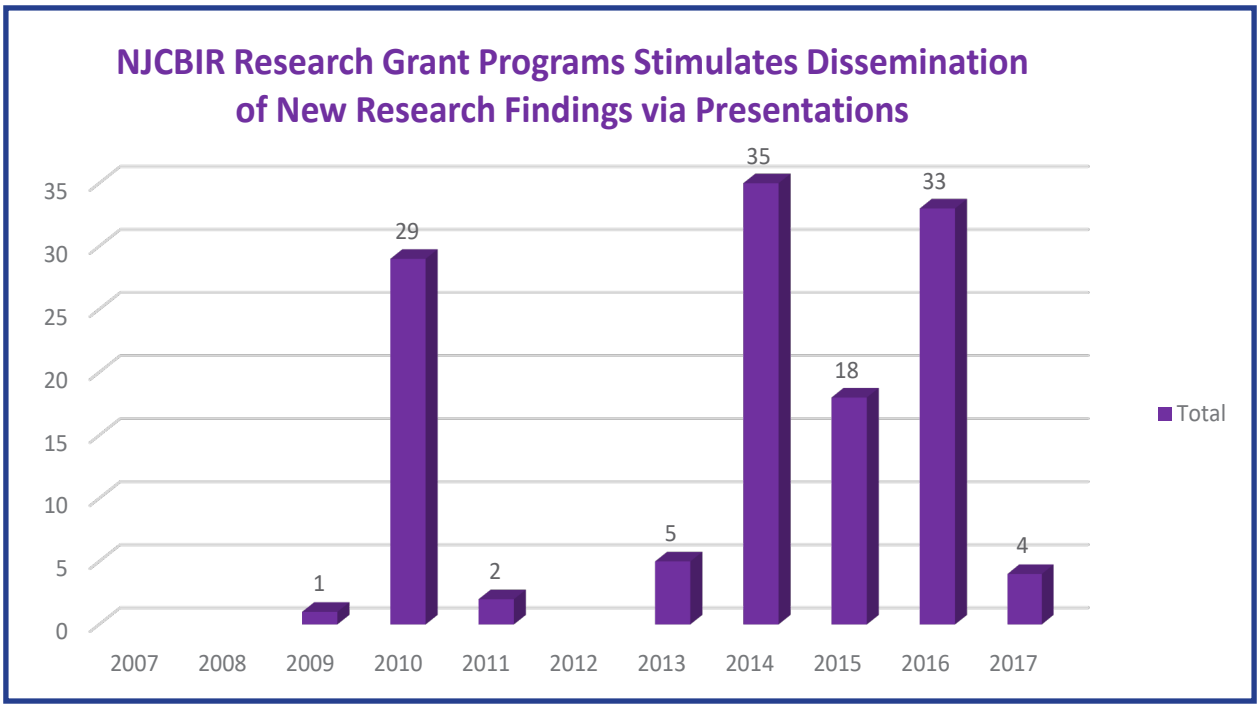
NJCBIR Research Grant Programs Stimulates Dissemination of New Research Findings via Presentations
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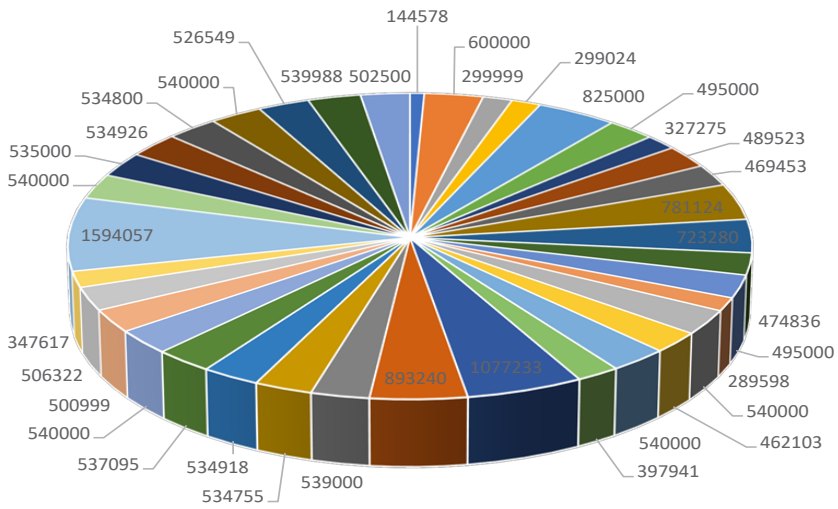
RETURN ON COMMISSION INVESTMENTS

NJ Organizations Supported by NJCBIR Individual Research Grants



- 2007 NJIT IRG
- 2007 RU BHS RWJMS IRG
- 2007 RU Dept Bio Sci IRG
- 2007 RU Dept Genetics IRG
- 2008 RU BHS RWJMS IRG
- 2008 RU Dept Bio Sci IRG
- 2008 RU Dept Biomed Eng IRG
- 2008 Veterans Biomed Research IRG
- 2009 Kessler IRG
- 2009 RU BHS RWJMS IRG
- 2010 Kessler IRG
- 2010 Princeton IRG
- 2010 RU Biomed Engineering IRG
- 2011 Kessler IRG
- 2011 RU Dept Biological Sci IRG
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- 2013 RU BHS NJMS IRG
- 2013 RU BHS RWJMS IRG
- 2013 RU Biomed Engineering IRG
- 2013 RU Center Alcohol Studies IRG
- 2014 RU BHS NJMS IRG
- 2014 RU Center Alcohol Studies IRG
- 2014 RU Dept Biological Sci IRG
- 2014 RU Dept Cell Bio Neuro IRG
- 2015 Kessler IRG
- 2015 NJIT IRG
- 2015 RU BHS NJMS IRG
- 2015 RU Biological Sciences IRG
- 2015 RU Dept of Genetics IRG
- 2016 Kessler IRG
- 2016 RU BHS NJMS IRG
- 2016 RU Cell Biology and Neuro IRG
- 2016 Seton Hall IRG
- 2017 RU BHS NJMS IRG
- 2017 RU Cell Biology and Neuro IRG

GRANTS PROGRAM FOR 2020

For Fiscal Year 2020, an estimated $4.3 million has been allocated for brain injury research projects. The Commission authorized one grant cycle for Fiscal Year 2020 offering Individual Research Grants, Fellowship Research Grants and Pilot Research Grants.

2020 Grant Cycle Information
Grant Application Deadline: **October 1, 2019**
Award Notification Date: **March 31, 2020**

GRANTS PROGRAM FOR 2021

Due to the State of Emergency declared by Governor Phil Murphy to combat the Coronavirus pandemic, and the resulting financial impact to the New Jersey Commission on Brain Injury Research's Fund, the Fiscal Year 2021 grant cycle was cancelled.

FINANCIAL STATEMENT

The activities and programs of the Commission are supported by the New Jersey Brain Injury Research Fund as established by the Brain Injury Research Act. A one-dollar surcharge is imposed on all fines or penalties from motor vehicle or traffic violations. This revenue surcharge is collected and forwarded to the New Jersey State Treasurer. The funds are then deposited annually in an interest-bearing account designated as the New Jersey Brain Injury Research Fund.

State Fiscal Year 2020 Fund Balance Statement:

FUND BALANCE STATEMENT:

	SFY 2020 *Projected*	SFY 2020 Actual	SFY 2021 *Projected*
Opening Fund Balance (July 1)	*$1,071,916*	$1,109,437	*$1,190,486*
Revenues			
Assessments[1]	*$3,720,000*	$2,930,752	*$1,750,000*
Investments Earnings - Interest[2]	*$100,000*	$195,744	*$100,000*
Total Revenue:	*$3,820,000*	$3,126,496	*$1,850,000*
Total Funds Available	*$4,891,916*	$4,235,933	*$3,040,486*
Disbursements and Expenses			
Spending Plan Reduction	*$140,000*	$0	*$1,184,094*
Disbursements to Grantees[3]	*$3,800,000*	$2,971,714	*$0*
Total disbursements	*$3,940,000*	$2,971,714	*$1,184,094*
Expenses			
Administrative & Office expense	*$118,000*	$25,273	*$100,000*
Professional Review Panel	*$50,000*	$48,460	*$0*
NJCBIR Registry		$0	*$0*
Total expenses	*$168,000*	$73,733	*$100,000*
Total Disbursements and Expenses	*$4,108,000*	$3,045,447	*$1,284,094*
Closing Fund Balance (June 30)	*$783,916*	$1,190,486	*$1,756,392*

[1] Net revenue variance

[2] Funds plus interest deposited annually in Jan.

[3] Funds for Multi-year grants

INDIVIDUAL RESEARCH GRANT RECIPIENT:

CBIR20IRG007
Peter Dowling, M.D.
Veterans Biomedical Research Institute
$540,000

Erythropoietin-Derived Therapy for a Mouse Model of Chronic Traumatic Encephalopathy

We will treat chronic traumatic encephalopathy in a mouse model with our potent candidate drug JM4 that modulates the immune system and reduces inflammation, as a step towards treatment in humans.

Chronic traumatic encephalopathy (CTE) is a progressive neurodegenerative disease affecting individuals who have received repeated mild traumatic brain injury. The link between post-traumatic sequelae in professional football players and CTE is now well known. However, CTE may be caused by any repetitive head injuries within the general population of New Jersey. This includes injuries seen in youth-sports participants, victims of domestic violence or military service members. Symptoms may include depression, anxiety, aggression, and other behavioral problems, as well as memory loss and deficits in executive function. No treatment exists for this devastating disorder, and there is a critical need for continued investment in research aimed at developing breakthrough discoveries for the treatment of CTE.

We hypothesize that chronic neuroinflammation drives the development of CTE. We have developed a new drug (JM4) that has profound and long-term modulatory effects on the immune system and inflammation.

In this proposal, we will investigate the extent that JM4 reduces neurological deficits and abnormal inflammatory changes in the brain of a CTE mouse model. JM4 was recently approved by the FDA as an investigational new drug (IND) for the treatment of acute multiple sclerosis, if our experiments are successful then the findings are likely to move rapidly towards developing the first treatment for CTE in humans.

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INDIVIDUAL RESEARCH GRANT RECIPIENT:

CBIR20IRG020
Smita Thakker-Varia, Ph.D.
Rutgers University BHS
$540,000

Intranasal Administration of Therapeutic to Improve Outcomes in Mice with Specific Genetic Polymorphisms Following Repeated Mild Traumatic Brain Injury

Using a mouse model, we are studying how genetic variations in single nucleotide base pair of BDNF gene may affect recovery from TBI and if novel intranasal therapeutic strategies are beneficial.

Traumatic Brain Injury (TBI) often results in lifelong cognitive and motor disabilities. It is estimated that 15,000 TBIs occur in NJ alone. Currently, 175,000 NJ residents live with disability due to TBI. Clinicians have long noticed that certain patients recover better than others after TBI and determining what makes some patients more susceptible is critical. One way to better manage treatment of TBI would be to stratify patients into risk categories and even tailor treatments based on genetic makeup. One specific DNA single base pair variation that has been suggested to confer higher risk for poor recovery following TBI in preliminary clinical studies is brain-derived neurotrophic factor (BDNF). A specific base pair change in this gene results in the alteration in amino acid Val66Val to Val66Met. However, studies in humans have not resolved as to which BDNF variant is vulnerable, it is therefore important to use experimental mouse models to further explore this question.

Our study will investigate the effect of the Val66Met variation in genetically engineered mice on recovery following a repeated mild TBI, which mimics the pattern that is shown in human sports injuries. We will look at cellular and behavioral outcomes following the TBI in order to determine if the Val66Met genetic mice show worse recovery than the Val66Val variants. We will also examine biomarkers in serum and cerebrospinal fluid and use magnetic resonance imaging. The biomarkers we identify will allow physicians to monitor the injury and recovery process to improve diagnosis and decisions about return to regular activity. Finally, we will investigate the use of intranasal administration of compounds, which promotes the generation of a protective mechanism shown to be beneficial in seizures and strokes but has not been tested in repeated mild TBI. This study will explore how to best manage and treat at-risk patients to reduce the burden that NJ and its citizens currently suffer due to TBI.

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INDIVIDUAL RESEARCH GRANT RECIPIENT:

CBIR20IRG027
Joshua Sandry, Ph.D.
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$459,313

Cognitive and Neural Mediators of Working and Long-Term Memory Impairment in TBI

We apply updated models from cognitive neuroscience and cognitive psychology to clarify the relationship between the medial temporal lobe, working memory and long-term memory impairment in TBI.

Traumatic brain injury (TBI) can result in considerable difficulty learning and remembering new information and long-term memory impairment is one of the most common negative cognitive consequences of injury. Thus, there is a strong need to develop new clinical treatments to alleviate symptoms of impaired long-term memory. Unfortunately, effective treatments for memory problems are limited. This shortcoming may be partially a result of inadequate knowledge about the underlying cognitive and neural processes that contribute to memory loss following injury. It is crucial to clarify the dysfunctional neural and cognitive processes that underlie memory impairment in TBI to develop a strong foundation for treatment.

Recently we reported that inefficient processing in working memory may partially underlie acquisition deficits observed in TBI. This study builds on these findings and aims to translate updated methodological approaches and theoretical views from cognitive neuroscience and cognitive psychology to understand memory problems in TBI. The investigation uses magnetic resonance imaging and behavioral experimentation to (1) investigate the behavioral working memory - long-term memory relationship in TBI, and (2) identify how patterns of neural activation and neural connectivity during on-going working memory processing differs as a function of long-term memory. This investigation is a foundational first step in the development of innovative treatment strategies directed at process-specific remediation of the cognitive and neural mechanisms that underlie long-term memory impairment in TBI. This knowledge will potentially improve the quality of life for individuals suffering from TBI-related cognitive disability, both within and outside of New Jersey.

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INDIVIDUAL RESEARCH GRANT RECIPIENT:

CBIR20IRG003
Bonnie L. Firestein, Ph.D.
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$510,000

Cypin Activators as Treatments for Traumatic Brain Injury

We will optimize treatment with activators of the protein cypin to promote neurocognitive function after TBI.

Traumatic brain injury (TBI) is the leading cause of death in people under 45 years of age in the United States and continues to have an enormous impact on public health. Although some progress has been made in reducing the annual incidence of TBI, a majority of this progress is in brain injury prevention, and there remains a tremendous need to develop therapeutics for TBI to improve outcome and lower the morbidity associated with the disease. With previous funding, we identified two small molecule compounds that protect neurons from injury, promote nerve cell function, and protect learning and memory in animals with TBI.

In this proposal, we aim to optimize treatment with these two compounds for eventual development for use in humans. We will determine the optimal timing for administration and study how the drugs work to change specific compounds in the body. These studies will yield important results to inform strategies for improvement of outcomes after TBI.

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FELLOWSHIP RESEARCH GRANT RECIPIENT:

CBIR20PIL008
Miloni S. Dala
Rutgers University BHS
$100,500

Chronic Role of Myeloid Panx1 Channel's Activation in Traumatic Brain Injury

Investigating the role of myeloid panx1 channel's activation in long term after TBI.

Traumatic brain injury (TBI) has various neurobehavioral and neurological consequences such as seizures, neurodegenerative diseases, and psychiatric problems in chronic phase. This is a crucial problem because there are no promising treatments.

Our lab has been studying the role of pannexin-1 proteins in TBI because these proteins have been implicated to play a role in neuroinflammation through release of ATP leading to more tissue damage. Attenuation of the neuroinflammatory response after TBI might contribute to increase neuronal survival and improved behavioral outcomes. We will establish the specific role of myeloid pannexin-1 in chronic phases of TBI.

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FELLOWSHIP RESEARCH GRANT RECIPIENT:

CBIR20FEL009
Srinivasa Gandu
Rutgers University
$100,500

The Role of the Ubiquitin-Proteasome System in Neuronal Recovery after TBI

This proposal will assess the role of the ubiquitin-proteasome system in neuronal recovery after traumatic brain injury (TBI).

Traumatic brain injury (TBI) can be caused by either direct impact or indirect acceleration-deceleration/blast injury to the head and leads to neuronal damage. Primary injury is mechanical, and secondary injury results from over-activation of receptors by excess glutamate that is released by damaged brain cells. TBI affects the interactions between neurons, and neuronal communication is crucial for neuronal survival. Accumulation of insults from primary injury over time can lead to neurodegeneration, affecting cognitive function, and repeated TBI is implicated in multiple neurodegenerative disorders, such as Parkinson's and Alzheimer's disease. After an injury, neurons need to maintain proper polarity and do so by degrading damaged proteins to counteract the stress caused by trauma.

In this proposal, we will assess the role of protein degradation systems in recovery after TBI and how they are regulated at different stages after the injury. The ubiquitin-proteasome system (UPS) is a major protein degradation pathway and plays a crucial role in maintaining cellular homeostasis and neuronal interactions. Our study will use both cellular and animal models of TBI to determine how the UPS is regulated at different phases after TBI and the effects on neuronal survival and functional recovery by manipulating the UPS with pharmacological tools. We will also study the effects of overexpression of one key regulator of this pathway, cytosolic PSD-95 interactor (cypin), shown to have a neuroprotective function after a TBI. Our study will aid us in identifying potential therapeutic targets in both the early, or mechanical, and late, or chemical, stages of TBI.

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FELLOWSHIP RESEARCH GRANT RECIPIENT:

CBIR20FEL007
Jamie Zhan
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$100,500

The Role of Immune Proteins on Synapse Loss after Traumatic Brain Injury

We are investigating how immune proteins contribute to synapse loss after traumatic brain injury, with the ultimate goal of developing treatments that prevent neuronal connections from being damaged.

About 2.9 million people in the United States suffered from a traumatic brain injury (TBI) in 2014 alone, and about 5.3 million US residents currently live with a TBI-related disability. Despite the significant economic and human costs of TBI, there are currently no approved treatments. Traumatic brain injury causes loss of neuronal connections, called synapses, in the hippocampus, a part of the brain that is responsible for many kinds of learning and memory. While many therapies in development focus on stimulating growth of new synapses, an alternative approach is to prevent synapses from being lost after TBI.

We propose to investigate an unexpected mechanism that might contribute to synapse loss after TBI: upregulation of specific immune proteins, members of the major histocompatibility complex class I (MHCI). MHCI is a central component of the immune response, and MHCI levels increase after injury, enhancing protection from infection. However, we and others have found that these same MHCI proteins play completely different roles in the nervous system, where they help eliminate excess synapses during development. However, when MHCI levels rise beyond normal levels—as they do during aging—essential synapses can be eliminated, impairing brain function. Our preliminary data suggest that MHCI levels rise in the brain after TBI. Therefore, our specific hypothesis is that TBI causes MHCI levels to rise, which in turn triggers synapse loss. We will directly test this hypothesis by "knocking out" MHCI genetically, and then assessing if this protects the animals against synapse loss after TBI. We will also attempt to block synapse loss in normal, non-mutant mice using a small peptide that can cross cell membranes and may block the non-immune functions of MHCI in the brain.

These studies, if successful, will clarify the role of immune proteins in synapse loss after TBI, and will provide valuable information about the mechanisms by which synapse number is regulated, information that is crucial to developing new TBI treatments. These studies will also provide the first tests of a novel peptide reagent that has the potential to reduce or even prevent synapse loss after TBI and improve clinical outcomes in patients.

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FELLOWSHIP RESEARCH GRANT RECIPIENT:

CBIR20FEL019
Erika J. Davidoff
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$100,500

Self-Healing Electrode Coatings for Improving Treatment of TBI Secondary Injury

We hope to improve treatment of chronic TBI-induced conditions by making the devices used to treat those conditions more biocompatible, using two types of specialized gel coatings.

Severe TBI is associated with several long-term chronic conditions. For example, post-traumatic epilepsy (PTE) often arises after a serious TBI. People with PTE suffer seizures due to neuron signaling abnormalities caused by TBI-induced brain damage. PTE can be chronically treated via the implantation of electrodes into the brain that deliver electric current to counteract these abnormalities. However, friction between the stiff metal implant and surrounding brain tissue triggers a foreign body response (FBR), causing inflammation, which can lead to further tissue damage, and gliosis, the formation of scar tissue around the electrode. Many researchers have suggested using soft coatings made of hydrogels—water-rich networks of chain-like polymer molecules—to lessen the FBR. Existing coatings, however, are made from gels held together by covalent bonds, which irreversibly break under high strain.

We are working with self-healing non-covalently linked gels, which use other types of molecular interactions to form and can regenerate after high stresses. One of the gels is made of a system of molecules that link together like Velcro based on interactions between a "host" part of one molecule and a "guest" part of the other. The second gel is made from a customized sequence of peptides, the building blocks of proteins, that naturally assembles into an accordion-like layered structure which makes up the gel. Coatings made of these gels are more effective and more durable. We are also developing a custom bioreactor to test the effectiveness of these coatings in cultured cells, reducing the number of expensive and lengthy animal studies needed to evaluate different coatings. We aim to develop coatings that more effectively protect brain tissue from the negative effects of the implant, enabling the implant to work longer and more efficiently.

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PILOT RESEARCH GRANT RECIPIENT:

CBIR20PIL021
Jean Lengenfelder, Ph.D.
Kessler Foundation
$168,001

The Application and Modification of an Emotional Processing Intervention in Pediatric TBI

The current proposal will modify an existing treatment for emotional processing deficits for children and then apply the treatment in pediatric TBI.

Following a Traumatic Brain Injury (TBI), children often experience a number of symptoms which are both physical and cognitive. Children with TBI often have difficulty with social interaction and relationships even years after their injury. Difficulty in emotional processing may contribute to such social problems. Specifically, some individuals with TBI have difficulty correctly identifying emotions from facial expressions. Deficits in emotional processing can have a significantly negative impact on social interactions, mood, and quality of life. While there has been much research on emotional processing problems in adults with TBI there has been much less research examining emotional processing deficits in children with TBI. Developing and applying treatments to improve emotional processing in critical to improve these functions in children with TBI.

The current study will examine an emotional processing treatment in children with TBI. A 12-session treatment that teach children how to correctly recognize emotions of faces. First, the existing treatment, which is used in adults, will be changed so that it is suitable for children. Next, the treatment will be examined in children with TBI so test whether it is effective in improving emotional processing problems.

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PILOT RESEARCH GRANT RECIPIENT:

CBIR20PIL017
Joshua Berlin, Ph.D.
Rutgers University
$172,400

Development of a Novel Mouse TBI Model for Real Time Imaging of Neuronal Activity in the visual Cortex

We propose to develop a unique TBI model that permits real-time in vivo imaging of neuronal activity in the visual cortex of mice subjected to fluid percussion injury.

Traumatic brain injuries (TBI) can result in a variety of acute visual problems that are particularly problematic because they interfere with ability to perform daily living and work activities, therefore degrading quality of life. Adolescents patients with concussion seem particularly prone to suffering vision problems. Visual disturbances after TBI can be triggered at any level of the visual system from the eye to the occipital lobe of the brain. Even so, a common finding is that visual problems after TBI are associated with the lesion in the occipital lobe, where the visual cortex is located. These clinical findings point to the visual cortex as a possible site of injury in a significant population of patients following TBI. Given the frequency of acute vision problems after TBI attributable to lesions in the occipital lobe, even after mild TBIs such as concussion, it is then surprising that no experimental models focus on the visual cortex in TBI.

Thus, this pilot grant application seeks to remedy that gap in investigation by developing a novel TBI model that will allow real-time imaging of neuronal function in the visual cortex of mice during TBI. To achieve this goal, a team of investigators propose to combine their expertise in TBI models, in vivo measurements of neuronal function in the visual cortex and analysis neuronal network function to design, build and test the proposed TBI model. Once this model is operational, the investigators will be in a unique position to study the evolution of acute TBI-induced pathophysiological changes in neuronal function in real time, whether in the visual cortex or in other cortical regions. As a result, they can advance their on-going research projects aimed at defining mechanisms underlying the acute injury process and possible therapeutic interventions to reduce or abolish acute TBI effects.

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PILOT RESEARCH GRANT RECIPIENT:

CBIR20PIL004
Rachel Navarra, Ph.D.
Rowan University
$180,000

Negative Impact of Mild Traumatic Brain Injuries on Risk-Based Decision Making and Potential Therapeutic Strategies

The proposed project will describe the effects of multiple mild traumatic brain injuries, often referred to as concussions, on risky behavior in male and female subjects and suggest atomoxetine, an ADHD drug, as a treatment option.

Mild TBIs occur commonly and cause both acute and chronic neurological impairments that affect daily behavioral functions. Many individuals, particularly young adult athletes, experience multiple mild TBIs in the form of sports-related concussions. Higher order executive functions, including complex decision making under conditions of uncertainty, are particularly susceptible to injury-induced disruption following head trauma. Executive functions are governed within the prefrontal cortex (PFC), but regulated by neuromodulatory systems, such as the locus coeruleus (LC)-norepinephrine (NE) system. Decision making and cost/benefit choice behaviors that involve risk and reward seeking are often negatively impacted following mild TBIs.

Risky decision-making following head trauma is a major public health concern as it is a self-defeating characteristic associated with addiction, psychopathological behavior, and compulsive gambling. After experiencing a single concussion individuals are more vulnerable to future head injury and may likely experience more severe and/or more prolonged symptoms following repeated head trauma. Although many studies have focused on the consequences of single, moderate to severe brain injuries, fewer investigations have examined outcomes following repeated instances of mild TBI. In addition, the impact of single versus repeated concussions on females is often neglected despite reports that females suffer worse outcomes for longer periods of time following head injury.

The results of these studies will advance our understanding of the effects of repetitive head injury on a specific dimension of cognitive function, link these effects to a CNS transmitter network that is very likely to be vulnerable to repetitive mild TBI, and establish a platform for evaluating the efficacy of potential drug therapies for TBI. The proposed project represents a new direction for the Navarra laboratory but a significant opportunity to partner with established senior investigators in the fields of TBI research, noradrenergic system biology, and executive functions as a means of developing and testing targeted drug treatments for mild head injury.

PILOT RESEARCH GRANT RECIPIENT:

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ATTACHMENT A

Brain Injury Research Act

An Act establishing a New Jersey Commission on Brain Injury Research, supplementing Title 52 of the Revised Statutes and amending R.S.39:5-41.

Be It Enacted by the Senate and General Assembly of the State of New Jersey:

C.52:9EE-1 Short title.

1. This act shall be known and may be cited as the "Brain Injury Research Act."

C.52:9EE-2 Definitions relative to brain injury research.

2. As used in this act:

"Approved research project" means a scientific research project, which is approved by the commission and which focuses on the treatment and cure of brain injuries.

"Commission" means the New Jersey State Commission on Brain Injury Research established pursuant to this act.

"Institutional support services" means all services, facilities, equipment, personnel and expenditures associated with the creation and maintenance of approved research projects.

"Qualifying research institution" means the University of Medicine and Dentistry of New Jersey and Rutgers, The State University of New Jersey and any other institution approved by the commission, which is conducting an approved research project.

C.52:9EE-3 New Jersey State Commission on Brain Injury Research.

3. a. There is established in the Executive Branch of the State government, the New Jersey State Commission on Brain Injury Research. For the purposes of complying with the provisions of Article V, Section IV, paragraph 1 of the New Jersey Constitution, the commission is allocated within the Department of Health, but notwithstanding that allocation, the commission shall be independent of any supervision or control by the department or by any board or officer thereof.

b. The commission shall consist of 11 members, including the Commissioner of Health and Senior Services, or his designee, who shall serve ex officio; one representative of the University of Medicine and Dentistry of New Jersey; one representative of Rutgers, The State University of New Jersey; six public members, appointed by the Governor with the advice and consent of the Senate, one of whom shall be a licensed physician in this State and one of whom shall be a person with a brain injury; and two public members, one of whom shall be appointed by the President of the Senate and one of whom shall be appointed by the Speaker of the General Assembly. All public members shall be residents of the State or otherwise associated with the State, and shall be known for their knowledge, competence, experience or interest in brain injury medical research.

c. The term of office of each public member shall be three years, but of the members first appointed, three shall be appointed for terms of one year, three for terms of two years, and two for terms of three years. All vacancies shall be filled for the balances of the unexpired terms in the same manner as the original appointments. Appointed members are eligible for reappointment upon the expiration of their terms. A member shall continue to serve upon the expiration of his term until a successor is appointed.

The members of the commission shall not receive compensation for their services, but shall be reimbursed for the actual and necessary expenses incurred in the performance of their duties as members of the commission.

C.52:9EE-4 Duties of commission.

4. The commission shall:

a. Review and authorize approved research projects, emphasizing projects that study nerve regeneration as a means to a cure for brain injury, and may establish an independent scientific advisory panel composed of scientists and clinicians who are not members of the commission to review proposals submitted to the commission and make funding recommendations to the commission;

b. Apportion all available funds to qualifying research institutions to finance approved research projects and necessary institutional support services;

c. Ensure that funds so apportioned to approved research projects are not diverted to any other use;

d. Take steps necessary to encourage the development within the State of brain injury research projects;

e. Compile a directory of all brain injury research projects being conducted in the State; and

f. Provide the Governor and the Legislature with a report by January 30 of each year describing the status of the commission's activities and the results of its funded research efforts.

C.52:9EE-5 Authority of commission.

5. The commission is authorized to:

a. Adopt rules and regulations concerning the operation of the commission, the functions and responsibilities of its officers and employees, the use of moneys from the "New Jersey Brain Injury Research Fund" established pursuant to section 9 of P.L.2003, c.200 (C.52:9EE-9) to meet the operating expenses of the commission, and other matters as may be necessary to carry out the purposes of this act;

b. Maintain offices at such places within the State as it may designate;

c. Employ an executive director and other personnel as may be necessary, whose employment shall be in the unclassified service of the State, except that employees performing stenographic or clerical duties shall be appointed pursuant to Title 11A (Civil Service) of the New Jersey Statutes;

d. Design a fair and equitable system for the solicitation, evaluation and approval of proposals for brain injury research projects;

e. Apply for and accept any grant of money from the federal government, which may be available for programs relating to research on brain injury;

f. Enter into contracts with individuals, organizations and institutions necessary or incidental to the performance of its duties and the execution of its powers under this act; and

g Accept gifts, grants and bequests of funds from individuals, foundations, corporations, governmental agencies and other organizations and institutions.

C.52:9EE-6 Election of officers.

6. The commission shall annually elect a chairman and a vice-chairman from among its members. The chairman shall be the chief executive officer of the commission, shall preside at all meetings of the commission and shall perform other duties that the commission may prescribe.

The executive director shall serve as secretary to the commission and shall carry out its policies under the direction of the chairman.

C.52:9EE-7 Direct applications for funds.

7. Nothing in this act shall preclude a qualifying research institution or any other research facility in the State from directly applying for or receiving funds from any public or private agency to conduct brain injury research.

C.52:9EE-8 Central registry of persons who sustain brain injuries.

8. a. The commission shall establish and maintain, in conjunction with the Department of Health, a central registry of persons who sustain brain injuries other than through disease, whether or not the injury results in a permanent disability, in order to provide a database that indicates the incidence and prevalence of brain injuries and that will serve as a resource for research, evaluation and information on brain injuries and available services.

b. The commission shall require the reporting of all cases of brain injuries, except those caused through disease, and the submission of specified additional information on reported cases as it deems necessary and appropriate.

The commission shall, by regulation, specify the health care facilities and providers required to make the report of a brain injury to the registry, information that shall be included in the report to the registry, the method for making the report and the time period in which the report shall be made.

c. The reports made pursuant to this section are to be used only by the commission and the Department of Health and such other agencies as may be designated by the commission or the department and shall not otherwise be divulged or made public so as to disclose the identity of any person to whom they relate; and to that end, the reports shall not be included under materials available to public inspection pursuant to P.L.1963, c.73 (C.47:1A-1 et seq.) and P.L.2001, c.404 (C.47:1A-5 et al.).

d. No individual or organization providing information to the commission in accordance with this section shall be deemed to be, or held liable for, divulging confidential information. Nothing in this section shall be construed to compel any individual to submit to medical, commission or department examination or supervision.

e. A health care facility or health care provider who is required to report a brain injury to the commission and who fails to comply with the provisions of this section shall be liable to a penalty of up to $100 per unreported brain injury case. A penalty sued for under the provisions of this section shall be recovered by and in the name of the commission and shall be deposited in the "New Jersey Brain Injury Research Fund" established pursuant to this act.

C.52:9EE-9 "New Jersey Brain Injury Research Fund."

9. a. There is established in the Department of the Treasury a nonlapsing revolving fund to be known as the "New Jersey Brain Injury Research Fund." This fund shall be the repository for moneys provided pursuant to subsection f. of R.S.39:5-41. Moneys deposited in the fund, and any interest earned thereon, shall be used for the purpose of making grants for brain injury research projects at qualified research institutions approved by the New Jersey State Commission on Brain Injury Research, and for the purpose of meeting the operating expenses of the commission.

b. Any costs incurred by the department in the collection or administration of the fund may be deducted from the funds deposited therein, as determined by the Director of the Division of Budget and Accounting.

10. R.S.39:5-41 is amended to read as follows:

Fines, penalties, forfeitures, disposition of; exceptions.

39:5-41. a. All fines, penalties and forfeitures imposed and collected under authority of law for any violations of R.S.39:4-63 and R.S.39:4-64 shall be forwarded by the judge to whom the same have been paid to the proper financial officer of a county, if the violation occurred within the jurisdiction of that county's central municipal court, established pursuant to N.J.S.2B:12-1 et seq. or the municipality wherein the violation occurred, to be used by the county or municipality to help finance litter control activities in addition to or supplementing existing litter pickup and removal activities in the municipality.

b. Except as otherwise provided by subsection a. of this section, all fines, penalties and forfeitures imposed and collected under authority of law for any violations of the provisions of this Title, other than those violations in which the complaining witness is the director, a member of his staff, a member of the State Police, a member of a county police department and force or a county park police system in a county that has established a central municipal court, an inspector of the Board of Public Utilities, or a law enforcement officer of any other State agency, shall be forwarded by the judge to whom the same have been paid as follows: one-half of the total amount collected to the financial officer, as designated by the local governing body, of the respective municipalities wherein the violations occurred, to be used by the municipality for general municipal use and to defray the cost of operating the municipal court; and one-half of the total amount collected to the proper financial officer of the county wherein they were collected, to be used by the county as a fund for the construction, reconstruction, maintenance and repair of roads and bridges, snow removal, the acquisition and purchase of rights-of-way, and the purchase, replacement and repair of equipment for use on said roads and bridges therein. Up to 25% of the money received by a municipality pursuant to this subsection, but not more than the

actual amount budgeted for the municipal court, whichever is less, may be used to upgrade case processing.

All fines, penalties and forfeitures imposed and collected under authority of law for any violations of the provisions of this Title, in which the complaining witness is a member of a county police department and force or a county park police system in a county that has established a central municipal court, shall be forwarded by the judge to whom the same have been paid to the financial officer, designated by the governing body of the county, for all violations occurring within the jurisdiction of that court, to be used for general county use and to defray the cost of operating the central municipal court.

Whenever any county has deposited moneys collected pursuant to this section in a special trust fund in lieu of expending the same for the purposes authorized by this section, it may withdraw from said special trust fund in any year an amount which is not in excess of the amount expended by the county over the immediately preceding three-year period from general county revenues for said purposes. Such moneys withdrawn from the trust fund shall be accounted for and used as are other general county revenues.

c. (Deleted by amendment, P.L.1993, c.293.)

d. Notwithstanding the provisions of subsections a. and b. of this section, $1 shall be added to the amount of each fine and penalty imposed and collected through a court under authority of any law for any violation of the provisions of Title 39 of the Revised Statutes or any other motor vehicle or traffic violation in this State and shall be forwarded by the person to whom the same are paid to the State Treasurer. In addition, upon the forfeiture of bail, $1 of that forfeiture shall be forwarded to the State Treasurer. The State Treasurer shall annually deposit those moneys so forwarded in the "Body Armor Replacement" fund established pursuant to section 1 of P.L.1997, c.177 (C.52:17B-4.4). Beginning in the fiscal year next following the effective date of this act, the State Treasurer annually shall allocate from those moneys so forwarded an amount not to exceed $400,000 to the Department of Personnel to be expended exclusively for the purposes of funding the operation of the "Law Enforcement Officer Crisis Intervention Services" telephone hotline established and maintained under the provisions of P.L.1998, c.149 (C.11A:2-25 et al.).

e. Notwithstanding the provisions of subsections a. and b. of this section, $1 shall be added to the amount of each fine and penalty imposed and collected through a court under authority of any law for any violation of the provisions of Title 39 of the Revised Statutes or any other motor vehicle or traffic violation in this State and shall be forwarded by the person to whom the same are paid to the State Treasurer. The State Treasurer shall annually deposit those moneys so forwarded in the "New Jersey Spinal Cord Research Fund" established pursuant to section 9 of P.L.1999, c.201 (C.52:9E-9). In order to comply with the provisions of Article VIII, Section II,

paragraph 5 of the State Constitution, a municipal or county agency which forwards moneys to the State Treasurer pursuant to this subsection may retain an amount equal to 2% of the moneys which it collects pursuant to this subsection as compensation for its administrative costs associated with implementing the provisions of this subsection.

f. Notwithstanding the provisions of subsections a. and b. of this section, during the period beginning on the effective date of this act and ending five years thereafter, $1 shall be added to the amount of each fine and penalty imposed and collected through a court under authority of any law for any violation of the provisions of Title 39 of the Revised Statutes or any other motor vehicle or traffic violation in this State and shall be forwarded by the person to whom the same are paid to the State Treasurer. The State Treasurer shall annually deposit those moneys so forwarded in the "Autism Medical Research and Treatment Fund" established pursuant to section 1 of P.L.2003, c.144 (C.30:6D-62.2).

g. Notwithstanding the provisions of subsection a. and b. of this section, $2 shall be added to the amount of each fine and penalty imposed and collected by a court under authority of any law for any violation of the provisions of Title 39 of the Revised Statutes or any other motor vehicle or traffic violation in this State and shall be forwarded by the person to whom the same are paid to the State Treasurer. The State Treasurer shall annually deposit those moneys so forwarded in the "New Jersey Forensic DNA Laboratory Fund" established pursuant to P.L.2003, c.183. Prior to depositing the moneys into the fund, the State Treasurer shall forward to the Administrative Office of the Courts an amount not to exceed $475,000 from moneys initially collected pursuant to this subsection to be used exclusively to establish a collection mechanism and to provide funding to update the Automated Traffic System Fund created pursuant to N.J.S.2B:12-30 to implement the provisions of this subsection.

The authority to impose additional fines and penalties under this subsection shall take effect 90 days after the effective date of P.L.2003, c.183 and shall expire five years thereafter. Not later than the 180th day prior to such expiration, the Attorney General shall prepare and submit to the Governor and the Legislature a report on the collection and use of DNA samples under P.L.1994, c.136. The report shall cover the period beginning on that effective date and ending four years thereafter. The report shall indicate separately, for each one-year period during those four years that begins on that effective date or an anniversary thereof, the number of each type of biological sample taken and the total cost of taking that type of sample, and also the number of identifications and exonerations achieved through the use of the samples. In addition, the report shall evaluate the effectiveness, including cost effectiveness, of having the samples available to further police investigations and other forensic purposes.

h. Notwithstanding the provisions of subsections a. and b. of this section, $1 shall be added to the amount of each fine and penalty imposed and collected under authority of any law for

any violation of the provisions of Title 39 of the Revised Statutes or any other motor vehicle or traffic violation in this State and shall be forwarded by the person to whom the same are paid to the State Treasurer. The State Treasurer shall annually deposit those moneys so forwarded in the "New Jersey Brain Injury Research Fund" established pursuant to section 9 of P.L.2003, c.200 (C.52:9EE-9). The Administrative Office of the Courts may retain an amount equal to $475,000 from the moneys which it initially collects pursuant to this subsection, prior to depositing any moneys in the "New Jersey Brain Injury Research Fund," in order to meet the expenses associated with utilizing the Automated Traffic System Fund created pursuant to N.J.S.2B:12-30 to implement the provisions of this subsection and serve other statutory purposes.
C.52:9EE-10 Regulations.

11. The commission shall adopt regulations pursuant to the "Administrative Procedure Act," P.L.1968, c.410 (C.52:14B-1 et seq.) as are necessary to carry out the provisions of this act.

12. This act shall take effect on the 180thday following enactment.

Approved January 2, 2004.