NEW JERSEY COMMISSION ON BRAIN INJURY RESEARCH

Annual Report State Fiscal Year 2019

NJ Health
New Jersey Department of Health

NEW JERSEY COMMISSION ON BRAIN INJURY RESEARCH

2019 ANNUAL REPORT

January 30, 2020

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 2019.

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,

Meiling Chin
Chairperson


NEW JERSEY COMMISSION ON
BRAIN INJURY
RESEARCH

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2019 ANNUAL REPORT


NEW JERSEY COMMISSION ON
BRAIN INJURY
RESEARCH

New Jersey Commission on Brain Injury Research
Members of the Commission

Meiling Chin, MBA, Chairperson
Daniel Keating, Ph.D.
Richard Boergers, Ph.D., ATC
Shonola Da-Silva, M.D., MBA
Carolyn Daniels, D.H.Sc., M.Ed.
Nicholas Ponzio, Ph.D.
Dennie Todd

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

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NEW JERSEY COMMISSION ON BRAIN INJURY RESEARCH

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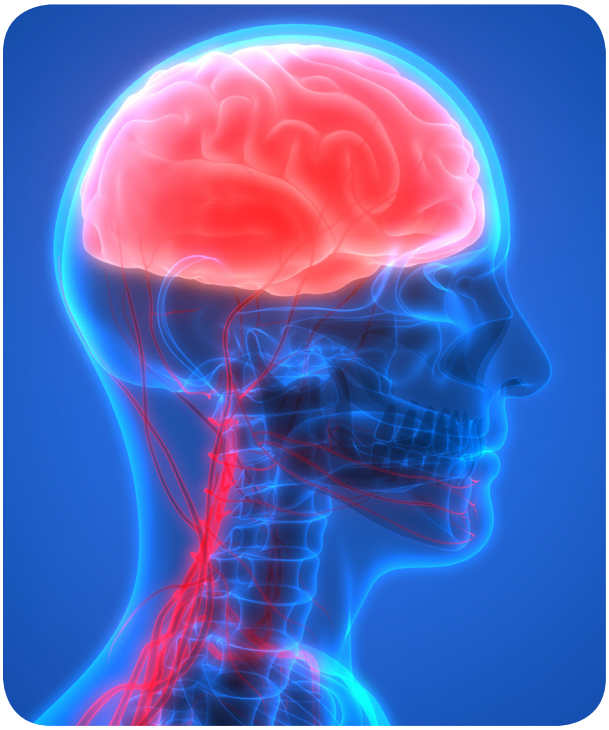
The New Jersey Commission on Brain Injury Research was established in 2004 to fund brain injury research projects in New Jersey.



Since 2007, the New Jersey Commission on Brain Injury Research (Commission) has awarded over $41 million to individual scientists at various academic and research institutions and approved 113 separate scientific research projects.

- Approximately 70 percent of the approved research projects have been completed.
- 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.

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

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 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]

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 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.

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 fifteenth year of operation, the Commission has funded 113 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 - 2019 SUMMARY AND PERFORMANCE RECORD

Since 2007, the Commission has funded 113 separate scientific research projects by scientists at New Jersey academic and research institutions. These awards represent an investment in brain injury research of over $41 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

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.

2019 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.

2019 Overview

The Commission has, in over fifteen 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.

2019 Applications

A total of 65 grant applications were received. Thirteen grants were awarded totaling $3,696,124. The grant awards included 5 Individual Research Grants, 5 Pilot Research Grants, and 3 Fellowship Research grants. Information on existing grant awards can be found within the Research Grant Directories located on the Commission's website.[10]

2019 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.

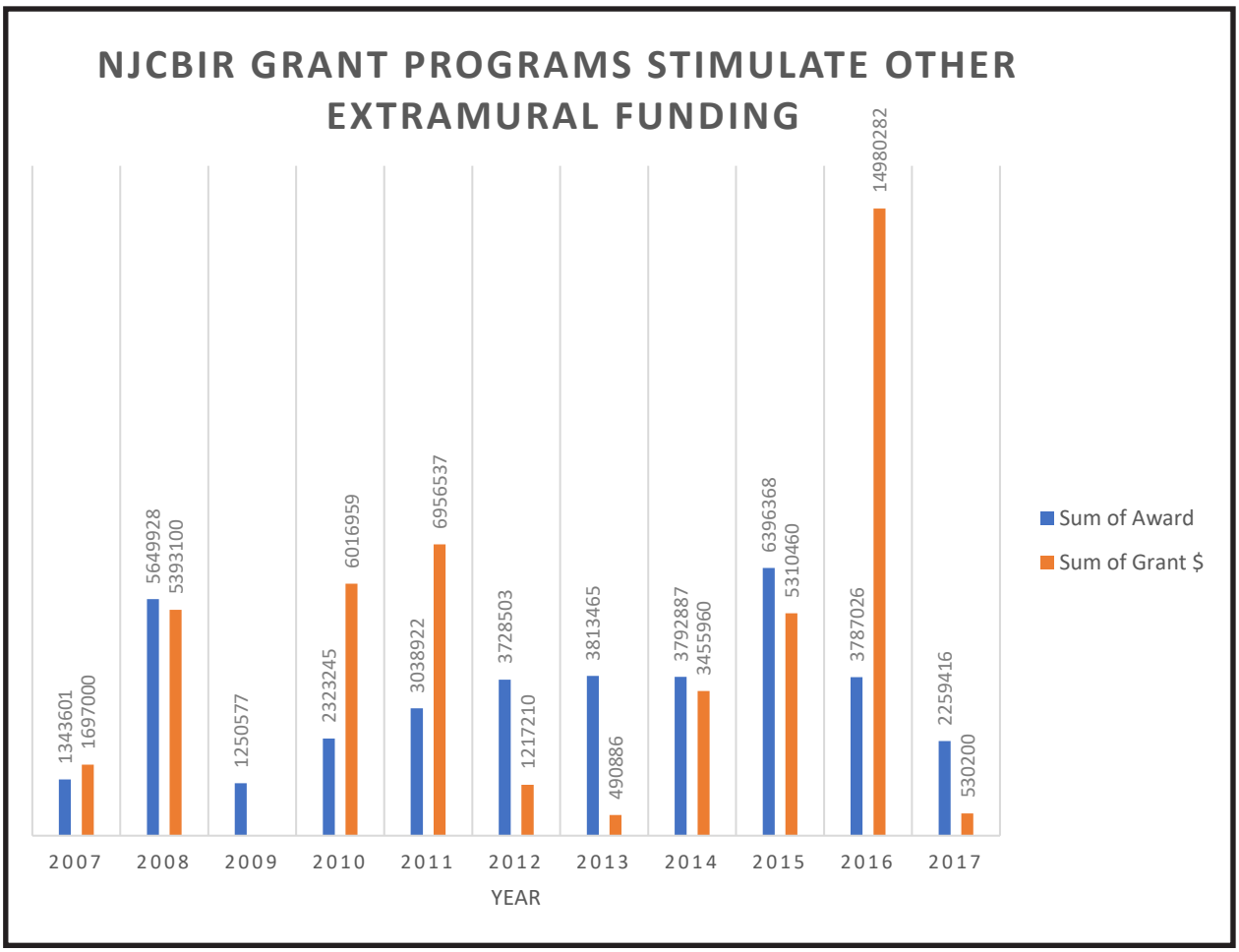
Commission programs have facilitated scientific interaction and research collaborations in New Jersey, as well as out-of-state. 17 active scientific collaborations had been formed both nationally, internationally and within the State of New Jersey. Success in achieving Commission funding has resulted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

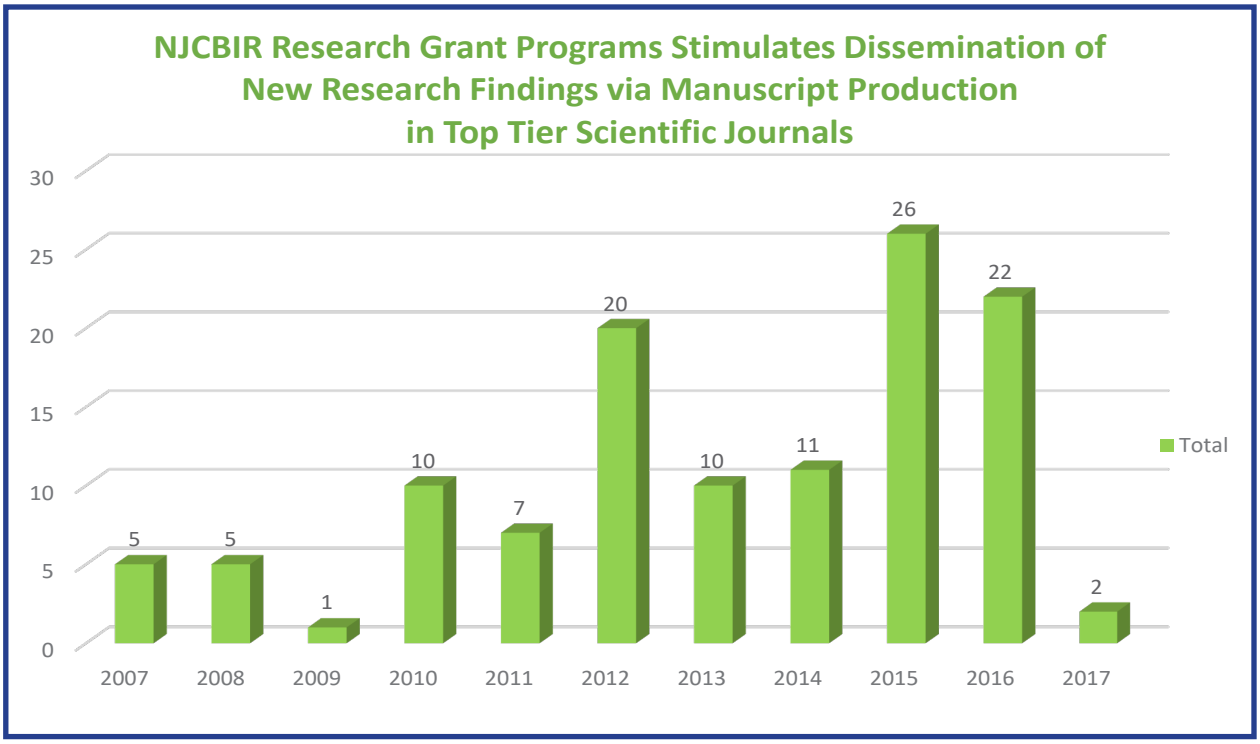
Commission funded researchers submitted 138 grant applications to the National Institutes of Health, the National Science Foundation and other funding organizations. 73 of those grant applications were approved in the amount of $46,238,594; several more applications were still pending during that time. 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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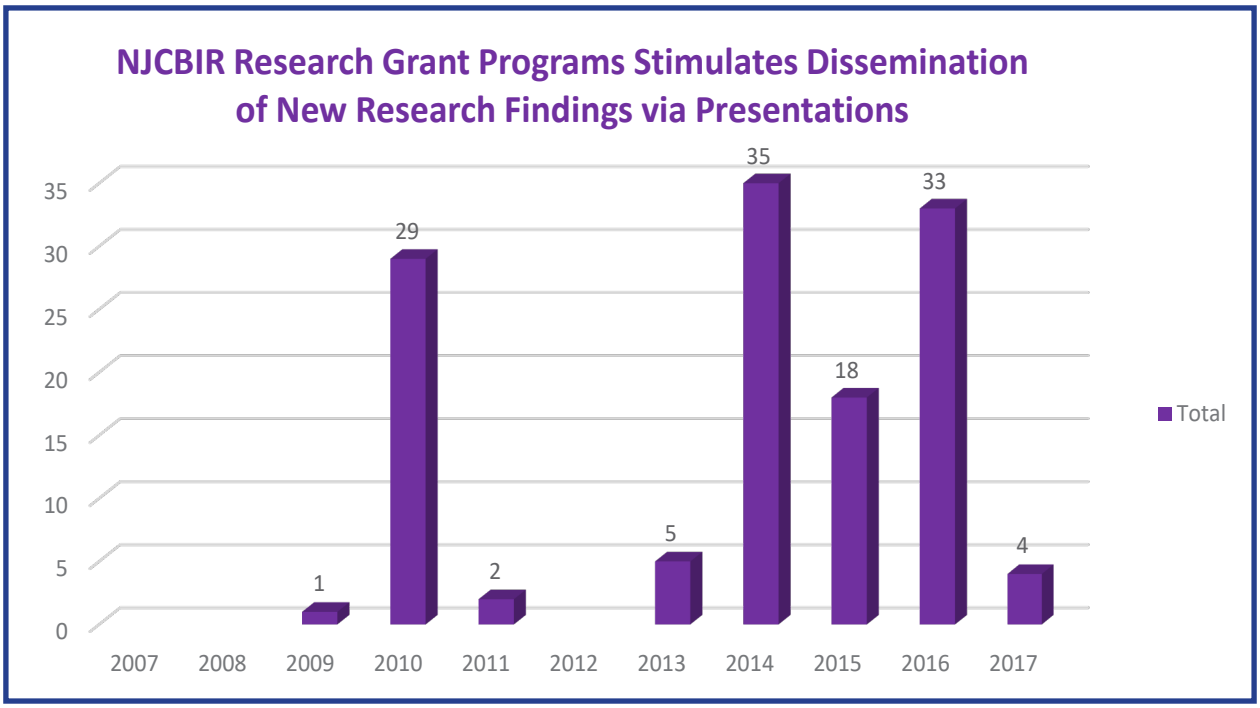
NJCBIR Research Grant Programs Stimulates Dissemination of New Research Findings via Presentations
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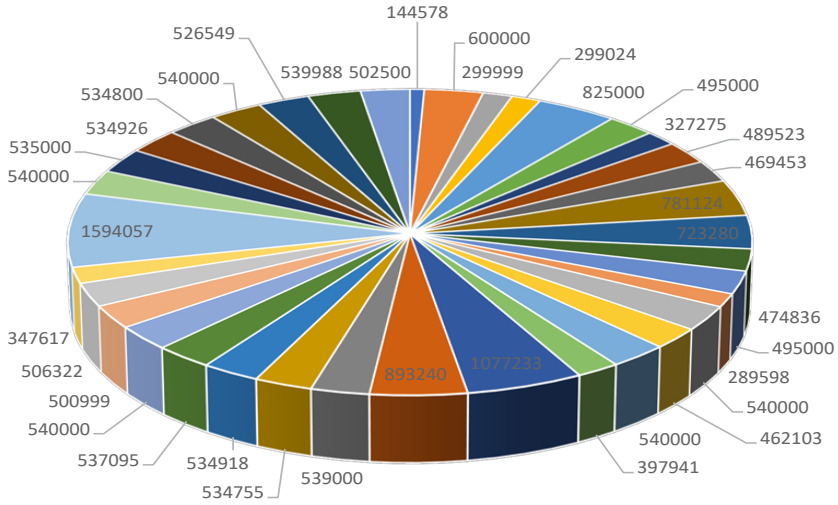
RETURN ON COMMISSION INVESTMENTS

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
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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**

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 2019 Fund Balance Statement:

FUND BALANCE STATEMENT:

	SFY 2019 *Projected*	SFY 2019 Actual	SFY 2020 *Projected*
Opening Fund Balance (July 1)	*$1,187,363*	$1,059,392	*$1,071,916*
Revenues			
Assessments[1]	*$3,720,000*	$3,869,862	*$3,720,000*
Investments Earnings - Interest[2]	*$100,000*	$232,387	*$100,000*
Total Revenue:	*$3,820,000*	$4,102,249	*$3,820,000*
Total Funds Available	*$5,007,363*	$5,161,640	*$4,891,916*
Disbursements and Expenses			
Spending Plan Reduction	*$140,000*	$0	*$140,000*
Disbursements to Grantees[3]	*$3,347,496*	$4,043,620	*$3,800,000*
Total Disbursements:	*$3,487,496*	$4,043,620	*$3,940,000*
Expenses			
Administrative & Office expense	*$118,000*	$9,779	*$118,000*
Professional Review Panel	*$50,000*	$36,325	*$50,000*
NJCBIR Registry		$0	*$0*
Total Expenses:	*$168,000*	$46,104	*$168,000*
Total Disbursements and Expenses	*$3,655,496*	$4,089,724	*$4,108,000*
Closing Fund Balance (June 30)	*$1,351,867*	$1,071,916	*$783,916*

[1] *Net revenue variance*
[2] *Funds plus interest deposited annually in Jan.*
[3] *Funds for Multi-year grants*

INDIVIDUAL RESEARCH GRANT RECIPIENT:

CBIR19IRG033
Rakesh Pilkar, Ph.D.
Kessler Foundation - $534,045

Improving Anticipatory and Compensatory Postural Responses to Avoid Falls after TBI

This study assesses the roles of anticipatory and compensatory balance strategies and evaluates if a novel, perturbation-based training will improve these strategies and avoid falls after TBI.

Trauma to the brain impairs the ability to determine the body-position in relation to self and the environment. This accompanied by muscle weakness significantly affects TBI survivor's ability to achieve balance during environmental disturbances (slippery floor, standing in a moving bus etc.). In general, humans generate either anticipatory (proactive) or compensatory (reactive) balance strategies before and after the occurrence of such disturbances, respectively. However, populations with balance dysfunction (BDF) have shown to have impaired ability to generate such responses. BDF after TBI is the major contributing factor to falls. Assessing and treating BDF has always been the major focus of post-TBI rehabilitation. However, no study has reported how TBI specifically affects the generation of these essential anticipatory and compensatory responses during standing. For the first time, we propose a study with an objective to specifically enhance these responses to improve balance function and reduce the risk of falls in a dynamic environment. We will provide balance training using a computerized platform along with visual help for anticipating and reacting to upcoming perturbations. We will determine if this training can improve balance and reduce fear of falling after TBI. BDF post TBI and weakened ability to generate aforementioned balance strategies may result in fatal falls. The significance of this study is that it will provide novel information on how TBI affects these in-built balance strategies that are based on anticipation and compensation. It will also provide a strong reasoning to include anticipation-based training along with reactive response strengthening in clinical setting. This study strongly aligns with one of NJCBIR's primary objectives to develop novel interventions that could lead to improved treatment and function after TBI.

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INDIVIDUAL RESEARCH GRANT RECIPIENT:

CBIR19IRG037
Denise Krch, Ph.D.
Kessler Foundation - $490,379

Life Reentry to Improve Grief and Fear in Partner Caregivers of Individuals with TBI

The goal of this project is to examine whether a web-based grief-counseling program will help partner caregivers of individuals with TBI process feelings of grief and overcome fears of the future.

The occurrence of a traumatic brain injury (TBI) is a life-changing event for people with TBI and their caregivers. Partners of people with TBI often report feelings of grief and fear as they experience the loss of their former life, face changes in their relationship as they take on a caregiver role and juggle multiple new responsibilities. Traditional support groups for caregivers of people with TBI may help them feel less alone in their experience. However, they usually do not help them move past their grief, address fears about the future, and create a new vision for life after TBI.

The proposed study will go beyond traditional support groups to improve quality of life for partner caregivers of people with TBI by examining the potential benefits of a web-based counseling program known as Life Reentry (LR). This 6-week program helps people who are dealing with a major life change to work through their feelings of loss and take actions that will help them live a happy and satisfying life. 92 partner caregivers of people with TBI will be enrolled and randomly assigned to either the LR program or an education series about health and function in people with TBI. Both programs will be delivered online and will be similar in all respects (e.g., time commitment) except for the content of the classes. This design will help determine what benefits the LR program may offer over traditional support groups.

Investing in the well-being of partner caregivers is expected to benefit both them and their loved one with TBI whom they support. In so doing, it is envisioned that the LR program will empower partner caregivers with strategies and skills to move forward with the business of living-truly living- after a great loss.

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INDIVIDUAL RESEARCH GRANT RECIPIENT:

CBIR19IRG025
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Rowan University - $533,061

Effects of Repetitive Mild TBI on Flexible Attention and the Norepinephrine Transmitter System

The proposed project will focus on effects of repetitive mild TBI on flexible attention and the functionality of the locus coeruleus-norepinephrine transmitter system.

The proposed project will focus on the effect of repeated concussive events on a specific dimension of cognitive function; flexible attention. The ability to engage and alternate between competing behavioral demands is critical to management of everyday tasks and workflow. Under normal conditions the norepinephrine (NE) transmitter system in the brain regulates attention and other cognitive functions. Following concussion, also referred to as a mild traumatic brain injury (TBI), many executive functions including attention can be compromised for days, weeks, or months following injury leading to poor performance in the classroom and workplace. 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 concussive events, fewer investigations have examined outcomes following repeated instances of concussion. Experimentally-induced mild TBI in rats serves as a useful model of single and repetitive concussion.

The proposed work will characterize the effects of repetitive mild TBI on a well-established rat model of flexible attention. Additional experiments will use anatomical and electrophysiological approaches to assess the functionality of the NE transmitter system after injury and examine the ability of methylphenidate (Ritalin®), a drug that elevates NE in brain, to attenuate the effects of repetitive mild TBI on flexible attending. As such the project will link concussion-induced deficits in cognitive function to a specific transmitter system in the brain and evaluate drugs that target this system for their efficacy in treating the consequences of repetitive head injury. This work is particularly relevant for treatment of NJ residents who experience multiple concussions as a result of participation in contact sports or military combat.

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INDIVIDUAL RESEARCH GRANT RECIPIENT:

CBIR19IRG029
Anthony Lequerica, Ph.D.
Kessler Foundation - $411,672

Investigation of Neural Mechanisms Associated with Sleep-Dependent Enhancement of Motor Learning after Brain Injury

This study will examine the neural mechanisms associated with sleep-dependent enhancement of motor learning among individuals with traumatic brain injury using functional neuroimaging.

Studies have shown that a period of sleep, even in the form of a daytime nap, after a period of training on a motor learning task can boost subsequent performance beyond that observed after an equal amount of time spent awake and resting. This leap in performance has been referred to as "off-line" motor learning because it occurs during a period of sleep in the absence of additional practice. Motor learning is an integral part of the physical and occupational therapy that patients receive after traumatic brain injury (TBI) in which various activities of daily living may need to be relearned. Targeted motor skills may include dressing (learning how to zip up a jacket or button a shirt), using a fork and knife to eat, or using technology (tapping touch screen on a cell phone or typing on a computer). Yet the potential of sleep in the form of a strategic nap as a therapeutic tool to maximize motor learning in rehabilitation therapies has not been fully realized. In addition, a growing body of research among healthy individuals has shown evidence of changes in the brain associated with enhanced performance among those who slept following training compared with those who spent the same amount of time awake.

The neural mechanisms of "off-line" motor learning have not been studied among individuals with TBI. Using functional neuroimaging and measurement of brain waves, the current study will examine the mechanisms underlying this sleep-related enhancement of motor learning among individuals with TBI and determine how brain physiology may influence the magnitude of the effect. By understanding how this treatment works and identifying the factors that modulate its effectiveness we can identify which individuals will be most likely to benefit from a nap after training to improve motor learning after TBI. This can provide a more person-centered approach to treatment delivery that can maximize the effectiveness of a simple, but potent behavioral intervention.

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INDIVIDUAL RESEARCH GRANT RECIPIENT:

CBIR19IRG014
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Rutgers University Biomedical & Health Sciences
New Jersey Medical School - $540,000

Role of Microglia/Monocyte Pannexin-1 in Blood-Brain Barrier Disruption and Leukocyte Infiltration after Traumatic Brain Injury

Microglia/monocyte pannexin-1 is a molecular target to attenuate neuroinflammation after TBI.

Damages to blood brain barrier and leukocyte infiltration to the parenchyma are common pathological events that occur in different brain pathologies, including traumatic brain injury. Yet adequate targeted therapies are lacking.

For example, anti-integrin antibodies were developed to reduce leukocyte infiltration via compromised blood brain barrier, but they showed off-target effects. Results from this proposal can potentially guide the development of a drug target that specifically inhibits pannexin-1 channel activity reducing BBB damage and leukocyte infiltration after traumatic brain injury

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FELLOWSHIP RESEARCH GRANT RECIPIENT:

CBIR19FEL018
Mr. Anton Omelchenko
Rutgers, The State University - $100,500

Exosome-Based Delivery of RNAi Therapeutics to Target Traumatic Brain Injury

This project will assess the therapeutic efficacy of exosome-based delivery of NCX1 RNAi in the treatment of Traumatic Brain Injury.

Traumatic brain injury (TBI) is the leading cause of death and disability in the world. While TBI refers to a change in brain function as a result of physical impact to the brain, it encompasses a series of different biological injury mechanisms, which ultimately lead to a multitude of symptoms. The calcium ion plays an important role in the biological mechanisms, which lead to extensive cell damage in the brain after TBI. The sodium/calcium exchanger (NCX) is a protein that regulates the amount of calcium present inside of brain cells (neurons) and the supporting cells (glial cells). Impaired function of NCX contributes significantly to the dysregulation of calcium balance in neurons and glial cells, leading to subsequent cell damage and death.

Targeting proteins, such as NCX, in the brain with standard pharmaceutical drugs is difficult due to the blood brain barrier, a biological system that prevents easy passage of molecules into the brain from the bloodstream. A novel system to introduce therapeutics into the brain is the use of exosomes, nanoscale biological vesicles naturally released by cells for intercellular communication. These vesicles can be harvested from cells, loaded with drugs or other therapeutic molecules, and injected into the bloodstream to deliver the intended therapy to the brain.

Here, we propose to develop such a system to use targeted exosomes to deliver a molecular therapy to reduce the amount of NCX protein in neurons in the brain. Our aim is to develop such a delivery system, test it in cell culture and mice, and ultimately assess the therapeutic potential of the system with respect to learning and memory deficits and cell damage, in an animal model of TBI. Our proposed work will provide key stepping stones for future therapeutic strategies involving novel delivery of therapeutics for TBI.

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FELLOWSHIP RESEARCH GRANT RECIPIENT:

CBIR19FEL014
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The Role of Adult-Born Neurons in Traumatic Brain Injury Induced Neuropathology

The proposed study will examine circuit connections of aberrant newly born neurons after brain injury to determine their role in neuropathology.

Traumatic brain injury (TBI) is currently a rising epidemic that is increasing in prevalence at an alarming rate. Victims of TBI can suffer from life changing symptoms, such as memory loss and post-traumatic seizures, that drastically hinder quality of life and accumulate unwanted healthcare bills. Throughout life, our brain is constantly producing new neurons, which serve to encode information perceived in the world around us. The phenomenon of the brain's ability to produce these new neurons is called neurogenesis. One of the most well-known sites of neurogenesis is in the hippocampus, which is thought to be mostly involved in specific types of memory function essential for daily navigation of the environment.

Following TBI, there is a massive burst of new-born neurons in the hippocampus, specifically in a sub-region called the dentate gyrus, and these neurons were originally thought to be reparative as injury causes damage to tissue and neuronal death. However, our lab has shown that if you inject a drug in to the brain that inhibits the ability for these neurons to be produced after injury, rats are less prone to developing seizures and experience reversal of abnormal excitability in the circuits where the new-born neurons integrate, ultimately reducing risk for post-traumatic epilepsy. Despite these exciting results, a limitation in our previous studies was the potential for non-specific effects of the drug used to suppress neurogenesis. Thus, in the proposed study, we will be able to label and manipulate the neurons specifically born in response to injury using transgenic mice to better understand how these neurons may be directly contributing to hyperexcitability and memory dysfunction. The proposed study will challenge the previously perceived notion that TBI-induced neurogenesis is a beneficial recovery process and may reveal a potential therapeutic target for the development of future treatment options.

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FELLOWSHIP RESEARCH GRANT RECIPIENT:

CBIR19FEL020
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New Jersey Institute of Technology - $100,500

Electrophysiological Monitoring of Cerebellar Injury Using Spontaneous Signals D

Investigation of different level of biological changes due to cerebellar injury and the cerebellum's role in movement for the purpose of using it to help patients with brain injury.

Brain injury is a major cause of morbidity worldwide. Based on New Jersey Commission on Brain Injury Research report, nearly 175,000 New Jersey residents suffer from traumatic brain injury. The cerebellum, which is also known as little brain, is most of the time not affected from the direct injury toward the cerebellum thanks to its well protected anatomical location. However, studies highlight that indirect injury of the cerebellum due to traumatic brain injury is very common and occurs even in mild cases. In these cases, insult is towards the cerebral parts of the brain, but the event cascades in the long term, alter and damage the cerebellum. Cerebellar injury triggers both motor and cognitive deficits.

In the last years, brain injury studies increased, but cerebellar injury is still underappreciated. This study focuses on the cerebellar injury and the main significance of the study is to fulfill this gap in science. This study will investigate different level of biological changes due to cerebellar injury and the cerebellum's role in movement for the purpose of using it to help patients with brain injury. This multimodal project combines different research areas together and benefits from both engineering and life science tools to help brain injury patients.

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PILOT RESEARCH GRANT RECIPIENT:

CBIR19PIL014
Vikram Handiru, Ph.D.
Kessler Foundation - $176,233

Targeted Noninvasive Brain Stimulation for Upper-limb Motor Rehabilitation in Traumatic Brain Injury Patients

This study aims to investigate the combined benefits of non-invasive brain stimulation and MusicGlove exercises for recovery of hand functions and its effects on the brain networks in TBI patients.

Traumatic Brain Injury (TBI) is a serious medical and health problem in the US. Moderate and severe Traumatic Brain Injury (TBI) commonly causes upper extremity physical impairments that persist even after years of injury; these deficits are attributed to damage in brain structure and changes in structural and functional connectivity. Considering the fact that almost 85% of the TBI patients suffer from upper limb motor deficits, it is crucial to address the issue with better rehabilitation techniques. Although the conventional rehabilitation approaches are helpful in assisting the motor recovery, nearly half of the TBI survivors do not regain their ability to use their arms for daily activities.

The current therapeutic approaches involve intensive physical therapy training involving repetitive tasks which causes fatigue and lack of engagement in the patients. To address this issue, our proposed study aims to combine individually targeted non-invasive brain stimulation and music-assisted hand exercises to reorganize in a desired manner to achieve functional recovery. Further, the project will also investigate how the intervention modulates the brain activity (recorded using EEG) in terms of brain connectivity before-and after-intervention. In the end, this study will allow us to understand the cortical dynamics of TBI rehabilitation upon brain stimulation. Extending further, this could pave a way to advance the knowledge of behavioral and neural aspects of motor control in patients with different types of neuromuscular disorders.

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PILOT RESEARCH GRANT RECIPIENT:

CBIR19PIL021
Glenn Wylie, Ph.D.
Kessler Foundation - $174,199

An Investigation of the Interaction of Physical and Mental Fatigue in TBI

We aim to investigate the interaction of physical and mental fatigue on both behavior and brain function in individuals who have sustained a moderate to severe TBI.

Fatigue, which can be both mental and physical, is one of the most troubling and prevalent symptoms in a variety of neurological disorders including the damage sustained by the brain following a Traumatic Brain Injury (TBI). Although disabling and prevalent, TBI-related fatigue is poorly understood because until now there has been no good way to study it. Recently, we have demonstrated success in measuring mental fatigue using fMRI, and have identified a network of brain regions that are sensitive to mental fatigue.

In the current project, we propose to leverage what we have learned about mental fatigue to better understand how physical fatigue and mental fatigue are related to one another. We will do this by 1) inducing mental fatigue and testing subjects' ability to perform a physical task, and 2) inducing physical fatigue and testing subjects' ability to perform a mental task. In addition to recording subjects' behavior, we will also record brain activation and physiological measures.

Physical and mental fatigue have a severe negative impact on the quality of life of individuals who have sustained a TBI, and often impede an individual's ability to maintain employment, social relationships, leisure activities and activities of daily living. By better understanding the interplay of mental and physical fatigue, we will be in a better position to develop strategies to alleviate fatigue, which will enable individuals with TBI to return to their lives, and to enjoy a better quality of life.

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PILOT RESEARCH GRANT RECIPIENT:

CBIR19PIL007
Mark Zimering, M.D.
VA New Jersey Health Care System - $176,000

Cognitive Dysfunction following Traumatic Brain Injury in Older Adults: Interaction with Diabetes

The goal is to determine whether diabetes increases the risk of accelerated cognitive decline following mild traumatic brain injury in older adults.

Traumatic brain injury contributes to global disability and has been associated with major depressive disorder through unknown mechanisms. Diabetes increases in older adults and is a risk factor for traumatic brain injury. A recent study found increased autoantibodies in the bloodstream of older patients with diabetes and depression. The autoantibodies targeted a receptor on vascular cells and brain cells highly expressed in brain regions involved in normal mood and thinking.

The proposed studies will test whether following traumatic brain injury, plasma serotonergic autoantibodies adversely affect mood and thinking in a genetic strain of diabetic fatty rats harboring serotonergic autoantibodies, and whether the effects can be prevented by administration of specific serotonin receptor antagonists. The proposed studies will also explore whether diabetes enhances the risk of depression and accelerated cognitive decline following traumatic brain injury. Aim 1 will investigate whether diabetic patients who experienced a prior mild traumatic brain injury suffer with accelerated cognitive dysfunction compared to age-matched adults without diabetes who experienced similar kinds of traumatic brain injury. Aim 2 will investigate whether the mechanism of cognitive decline following traumatic brain injury in diabetes involves autoantibodies which target specific brain neurons and vascular cells.

Understanding how diabetes contributes to worsening depression and cognitive dysfunction following traumatic brain injury is a key factor in preventing the late effects following TBI in all persons. The knowledge gained from the proposed studies could lead to the development of new techniques for identifying persons at high risk for depression and cognitive decline following TBI. The knowledge and techniques resulting from the study can benefit persons in New Jersey and throughout the United States.

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PILOT RESEARCH GRANT RECIPIENT:

CBIR19PIL018
Erica Weber, Ph.D.
Kessler Foundation - $179,035

Improving Time-Based Prospective Memory in Individuals with Traumatic Brain Injury using Computer-Based Cognitive Rehabilitation

This pilot study seeks to explore the ability of computer-based cognitive rehabilitation of strategic cognitive functions to improve time-based prospective memory in individuals with TBI.

Thousands of traumatic brain injuries (TBI) occur each year in New Jersey, resulting in approximately 9,000 hospitalizations and 900 deaths. Although it is becoming more common for those with TBI to survive their injuries due to advances in medicine, they must still rely on others for daily care due to significant brain damage and resulting cognitive difficulties. One specific cognitive problem is in the area of prospective memory, which is the ability to remember to do something in the future (or "remembering to remember.") Individuals with poor prospective memory often have problems remembering to take their medications, have difficulty staying employed, rely more so on loved ones for daily assistance, and tend to report a lower quality of life. Although researchers have demonstrated the importance of prospective memory, they have been less successful in finding effective ways to rehabilitate it.

This proposed study will test a new rehabilitation strategy for prospective memory (computer-based cognitive training), using principles from a well-established theory of prospective memory as a guide. By completing this pilot study, we will be able to a) determine if the intervention may be successful in improving time-based prospective memory, and b) determine the amount of treatment necessary to get the desired effect. These two components will be essential for securing grant funding for a planned larger-scale study with 1) a greater and more diverse group of individuals with TBI, 2) more detailed assessments to demonstrate how this training may improve participants' abilities to remember to perform tasks in their everyday lives (not just in the laboratory), and 3) longer follow-up, to see if study participants still benefit from training after they've completed the study. It is the goal of this line of research to improve everyday cognitive abilities so that New Jerseyans who have sustained a TBI may become more independent and experience greater quality of life.

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PILOT RESEARCH GRANT RECIPIENT:

CBIR19PIL010
Mohammed Abdul Muneer Peringady, Ph.D.
John F. Kennedy Medical Center - $180,000

Nrf2 Signaling as Therapeutic Target: A Novel Peptide Therapy for Traumatic Brain Injury

We will study the therapeutic significance of Nrf2 activator III TAT peptide, which can alleviate neurovascular impairments by the activation of Nrf2 transcription factor in mouse model of blunt TBI.

Traumatic brain injury (TBI) is characterized by physical brain injury that causes temporary or permanent disability or death. TBI causes approximately 1.7 million deaths and hospitalizations annually in the United States alone. Clinical and experimental reports have shown that TBI causes both short and long-term neuropathological changes, although the underlying biochemical mechanisms are not yet fully elucidated. Several clinical trials are being conducted for developing a better therapeutic strategy for TBI and for a variety of reasons, none of those found fully effective. Hence, newer vistas for developing therapeutic methods against TBI need to be explored. From the studies conducted by us and others it is evident that oxidative signaling is the central mechanism in TBI-associated neurovascular impairments and remediation of accumulating oxidative radicals is a straightforward approach when considering therapeutic approach against TBI.

This proposal will study a novel hypothesis that cerebral vascular injury and associated neuroinflammation and neurodegeneration caused by TBI-induced oxidative damage can be repaired by activating the anti-oxidant signaling Nrf2 (nuclear factor E2-related factor 2) pathway. The Nrf2 (nuclear factor E2-related factor 2) transcriptional system, an endogenous defense mechanism present within the cells, has the potential to develop a novel and clinically relevant therapeutic methods. We will treat the injured animals with Nrf2 Activator III TAT peptide (Nrf2 activating peptide, briefly called as Nrf2 peptide), a synthetic cell penetrating peptide and analyze its effect against TBI associated neurovascular complications. The effect of Nrf2 peptide on functional recovery from TBI-induced sensorimotor deficits and anxiety will be evaluated using behavioral tests including rotarod, grid walk, balance beam, and dark-light test.

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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.