

# South Carolina Spinal Cord Injury Research Fund Fiscal Year 2019 (FY19) Annual Report Executive Summary

Spinal cord injury (SCI) is a serious and usually irreversible cause of disability. The consequences of SCI are often severe and include paralysis, loss of sensation, loss of control over movement and bodily functions, chronic pain, metabolic disorders, and complications such as uncontrolled blood pressure and frequent infections. People with SCI may face extraordinary demands due to the costs of medical care and rehabilitation and the absence of environmental support. Family members of people with SCI are also affected.

The South Carolina Spinal Cord Injury Research Fund (SCIRF) was established by Amendment (Bill S54 44-38-510) of the SC Code ratified on July 20, 2000. The SCIRF is provided from a \$100 surcharge on each Driving Under the Influence (DUI) conviction throughout the state. The monies collected are used to finance SCI research in South Carolina as well as cover the basic operation costs. The SCIRF is governed by a seven member Board of Directors (BOD) appointed by the Governor upon recommendation of the President of the Medical University of South Carolina (MUSC) and is attached to MUSC for administrative purposes.



The long-term goal of the SCIRF is to minimize the risk and incidence of SCI, interrupt or reverse the process of such injuries, and improve the health and quality of life for residents of South Carolina who have an SCI.

The SCIRF BOD is charged with promoting research to develop better understanding of causes and effective treatment strategies for paralysis, sensory loss and other consequences of spinal cord injury and disease with the primary objective of advancing knowledge of SCI repair and regeneration within the South Carolina research community by encouraging physicians and scientists to apply expertise to the SCI field.

The BOD includes 2 medical doctors from MUSC, 2 medical doctors specializing or significantly engaged in the treatment of SCI, 2 people with an SCI or a family member with an SCI and 1 medical doctor at large who is a member of the South Carolina Medical Association. The SCIRF has a full time Executive Director, part time Scientific Director and part time Associate Scientific Director. Board meetings are held at least two times per year in various locations throughout South Carolina.

The SCIRF BOD had seven open Requests for Proposals (RFPs) in order to solicit proposals from physicians, scientists and researchers throughout the state related to Primary Research, Care/Access/Delivery, Career Development, Pilot Projects, Research Result Dissemination, Student Research Internship, Bridge Funding, Recruitment/Seed Funding, Postdoctoral Research, and Conference/Education/Training. All RFP details can be found on the website.

The SCIRF made two awards in FY18 that started in FY19, five awards in FY19 that began work in FY19. The SCIRF made 1 No Cost Extension. Six of our grantees concluded their work in FY19. As of the end of FY19 we have 15 active grantees including our Administrative and Research Cores.

The SCIRF supports a variety of research activities that include basic science, clinical, epidemiologic, rehabilitative, and translational studies. Examples of the range of research include: 1) “bench science” to identify injury and recovery mechanisms 2) animal interventions that can be translated into 3) clinical trials in humans. Before clinical trials in humans 4) participant identification must occur as well as 5) a more complete understanding of health care access and health outcomes after SCI.

SCIRF supported activities have increased the number of clinicians and scientists in South Carolina that are focused on SCI research. Surveillance and outcome research projects are currently underway that enhance our understanding of the nature and scope of issues impacting the health of those with SCI. Key findings from studies have been presented at national and international conferences, and have been widely published in scientific journals where they may be used to promote better outcomes. SCIRF funded activities have also seeded federal research grants, bringing in millions of dollars to the state of South Carolina.

The SCIRF income derived from the DUI surcharge is collected on a monthly basis. The total collections for FY19 were \$490,863.49 with an average monthly collection of \$40,905.29 which is a 14% decrease from the previous fiscal year.

We look forward to the upcoming year and are pleased to present this FY19 Annual Report.

*South Carolina Spinal Cord Injury Research Fund*  
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## LETTER FROM THE EXECUTIVE DIRECTOR AND BOARD CHAIR

Dear Friends and Supporters:

On behalf of the Board of Directors, Scientific Directors and Executive Director, it is our pleasure to present the FY19 Report. This report highlights the progress and accomplishments in implementing the legislative mandate of promoting SCI research throughout South Carolina from July 1, 2018-June 30, 2019.

The SCIRF continues to receive monthly DUI collections and saw an annual decrease of 14% from FY18. The monthly average and yearly collections for FY19 were \$47,560.64 and \$570,727.69, respectively. The SCIRF is encouraged when DUI collections decrease in the hopes that it correlates to a decrease in drunk driving in South Carolina. We continue to judiciously award grants as funds allow, while working to promote SCI research and its translation within the state of South Carolina.

The SCIRF is as a source of research funding for any South Carolina entity that responds to the public RFP announcements. In the past year, the SCIRF promoted and supported SCI research through seven RFPs. Applications were reviewed for both scientific merit, often involving outside scientific reviewers knowledgeable with the topic, and for relevance to the mission of SCIRF.

The SCIRF had 7 grantees start their work in FY19 and had one no cost extension. Six awardees concluded their research in FY19. As of the end of FY19, the SCIRF had 15 active grantees including our Administrative and Research Cores.

We are pleased to provide this annual report for FY19.

Respectfully submitted,



Kevin W. Kopera, MD  
Board Chair



Catherine Leigh Graham, MEBME  
Executive Director

## LETTER FROM THE SCIENTIFIC DIRECTORS

As Scientific Directors, we are privileged to provide scientific leadership for the South Carolina Spinal Cord Injury Research Fund (SCIRF) using our experience in SCI research. The SCIRF is an important component of the resources for people with SCI in South Carolina. As people with SCI are identified through one of our grants (statewide SCI surveillance), they are contacted to participate in another of our grants (SCI outcomes database), at which time they receive a listing of SCI resources within the state.

We are excited about the continued development of SCI research within the state of South Carolina and the manner in which the research has continued to build and lead to improved outcomes for those with SCI. We are particularly proud of the balance of projects including basic science studies necessary to understand SCI, epidemiologic research on the events leading to SCI and problems experienced by those with SCI in South Carolina, and the development of new interventions to help improve outcomes.

To best promote SCI research in South Carolina, we have utilized a number of funding mechanisms that encourage investigators to develop SCI research, mentor the next generation of investigators, and perform the research necessary to improve SCI outcomes, particularly within the state of South Carolina. Our primary mechanism is to invite investigator-initiated proposals, where the investigator submits the innovative idea, design of the research, and develops the objectives. Each proposal is reviewed by peers to determine quality and appropriateness. This allows investigators to bring forward new and important ideas. We also have a pilot grant mechanism to help investigators collect preliminary data to establish the foundation for more detailed proposals. These are smaller grants reviewed by the Scientific Directors and, as always, with decisions made by the Board of Directors. We provide mechanisms for the training of postdoctoral fellows – those with advanced degrees who are developing their own lines of research yet still need mentorship – as well as through an undergraduate research mechanism. We provide some support for conference grants and provide support to the statewide SCI Association, which is essential for getting the word regarding research out to people with SCI in South Carolina. There are special initiatives for basic science research and the outcomes database. Lastly, we have a mechanism to bridge investigators who have temporary lapses in federal funding so they can maintain their line of research as they move forward.

As we review our currently funded projects, we see diversity and strength in the number of entities receiving funding and the scope of work of the projects. Each of the three primary research universities in the state of South Carolina (Clemson, Medical University of South Carolina, University of South Carolina) have currently funded projects. Current grantees also include projects at Furman University, Prisma Health (merger of Palmetto Health Hospitals and Greenville Health System), and the South Carolina SCI Association. We continue to support basic science projects that address: (1) Repair mechanisms of SCI using novel multifunctional nanotherapeutics in rodents, (2) Examining the therapeutic strategy of using neuronal NOS/peroxynitrite/calpain system as a target for SCI repair, (3) Development/establishment of a systemic protocol for assessing the effects of microbial infections in individuals with SCI, (4) determination of the role of axonal stress granules involvement in improvement of axonal regeneration, (5) The effects of Premarin as well as estrogen embedded nanoparticle gel patch in SCI repair in rodents, and (6) Master's students are now recruited to carry out the research in SCI by the Basic Science Research Initiative Program.

Applied research continues to support ongoing surveillance to identify new instances of SCI treated within the state of South Carolina and to identify their causes and demographics. This sets the stage

for more detailed research that includes a statewide outcomes database and the study of the indirect costs of SCI due to lost employment and earnings. This year, we funded new pilot projects directed at important issues that include the development of microbial infections that may be associated with high cost of care and diminished health and quality of life. Another pilot project links data from the surveillance database to that of administrative records to identify the incidence of opioid use. This project will open the door for much more detailed research that utilizes our unique abilities in South Carolina to link data from different projects to better understand the needs and problems of those with SCI in South Carolina. The research and activities funded by the SCIRF have wide sweeping implications for people with SCI. In addition to the many accomplishments of the SCIRF in developing our research agenda, we are proud to have funded projects that have led to the development of research programs resulting in significant federal funding for SCI research in the state of South Carolina. We continue to fund training and mentorship at multiple levels from undergraduate to postdoctoral fellows. We also continue to support scientific and stakeholder-based conferences to disseminate critical findings from research so that they may have a practical impact on the lives of people with SCI. Bringing in and supporting new investigators in South Carolina is of great importance, as is our ongoing relationship with the statewide SCI Association that is comprised of those with SCI.

We feel privileged to have the honor to serve as Scientific Directors of the SCIRF and continue our unwavering efforts to move SCI research in South Carolina forward. We each have over 30 years of experience with SCI research in the development, conduct, dissemination, and translation of knowledge from our research. We are grateful for the opportunity to provide leadership and vision to the SCIRF, and we look forward to the upcoming year. As we continue to build research in South Carolina, we are proud to see the accomplishments, and we are forever grateful to those individuals with SCI who participate in research, the clinicians and technicians who provide services, and the dedicated researchers who look to find solutions to improve the health, quality of life, and longevity of those with SCI.



James S. Krause, PhD  
Scientific Director



Naren L. Banik, PhD  
Associate Scientific Director

## **PART I: OVERVIEW**

### **PURPOSE/CHARGE**

Promoting research to develop better understanding of causes and effective treatment strategies for paralysis, sensory loss, and other consequences of SCI and disease.

### **NEED**

SCI is a serious and usually irreversible cause of disability. The consequences of SCI are often severe and include paralysis, loss of sensation, loss of control over movement and bodily functions, chronic pain, metabolic disorders, and complications such as uncontrolled blood pressure and frequent infections. People with SCI may face extraordinary demands due to the costs of medical care and rehabilitation and the absence of environmental support. Family members of people with SCI are also affected. The long-term goal of the SCIRF is to minimize the risk and incidence of SCI, interrupt or reverse the process of such injuries, and improve the health and quality of life for residents of South Carolina who have an SCI.

### **LEGISLATIVE BACKGROUND**

The South Carolina SCIRF was established by the South Carolina General Assembly in 2000 by amendment (Bill S54 44-38-510) to Section 2, Chapter 38, Title 44 of the 1976 S.C. Code as signed by the Governor on July 20, 2000. The legislation calls for a \$100 surcharge to be levied on every South Carolina "Driving Under the Influence" conviction. The proceeds from this surcharge go to the SCIRF and are used to finance SCI research in South Carolina as well as cover basic operation and administrative costs for the SCIRF.

### **GOVERNANCE**

The SCIRF is governed by a seven member Board of Directors (BOD) appointed by the Governor upon the recommendation of the President of the Medical University of South Carolina (MUSC). It is comprised of two medical doctors from MUSC; two medical doctors specializing or significantly engaged in the treatment of people with SCI in South Carolina; two members who have an SCI or have a family member with an SCI; and one at large medical doctor who is a member of the South Carolina Medical Association.

### **ADMINISTRATION/SCIENTIFIC DIRECTORS**

The SCIRF is attached to MUSC for administrative purposes. The SCIRF has a full time Executive Director, Catherine Leigh Graham, MEBME, a part time Scientific Director, James S. Krause, PhD, and a part time Associate Scientific Director, Naren L. Banik, PhD.

The Scientific Directors are involved in all aspects of all research development and implementation including setting goals, developing project invitations to meet goals, and making recommendations based on their reviews to the SCIRF BOD of all such projects received.

### **PRIMARY OBJECTIVES**

Advance knowledge of SCI repair and regeneration within the South Carolina research community by encouraging physicians and scientists to apply expertise to the SCI field.

Foster collaborative interdisciplinary approaches to SCI research among South Carolina hospitals, rehabilitative centers, research universities, and interested organizations.

Nurture next generation of SCI researchers through support of young scientists and post-doctoral fellows.

Improve the well-being and quality of life of individuals with SCI by research programs that prevent or treat the secondary conditions and consequences of SCI.

Set budgets and administer funds for SCI research as mandated by the South Carolina Legislative Act and assure highest quality of research and commitment by investigators.

## **PART II: NEW AWARDS/EXTENSIONS**

### **New awards made in FY18 but started in FY19**

#### ***2018 PD-01 Targeting axonal stress granules to improve axon regeneration***

Postdoctoral Research Award

Jeffery L. Twiss, MD, PhD, Professor – University of South Carolina

(7/1/2018-6/30/2019 for \$67,500)

#### ***2018 SpecReq-01 MUSC Research Laboratory***

Special Request Award

Naren L. Banik, PhD, Professor – Medical University of South Carolina

(7/1/2018-6/30/2019 for \$123,166)

### **New awards made in FY19 and started in FY19**

#### ***2017 SI-02 Measuring Outcomes after SCI throughout South Carolina: Statewide Outcomes Database***

James Krause, PhD, Associate Dean for Clinical Research College of Health Professions - Medical University of South Carolina

Special Initiative

(1/1/2019-12/31/2023 for \$799,127)

#### ***2018 P-01 Using the State Databases to Assess Opioid Use in Persons Living with Spinal Cord Injury in SC***

David E. Murday, PhD, Research Associate, Arnold School of Public Health – University of South Carolina

Pilot Research Award

(1/1/2019-12/31/2019 for \$26,601)

#### ***2018 I-01 Nanoparticle Delivery of ENOblock and Recovery of Function in SCI***

Azizul Haque, PhD, Associate Professor of Microbiology and Immunology - Medical University of South Carolina

Investigator Initiated Research Award

(1/1/2019-12/31/2020 for \$150,000)

#### ***2018 I-05 Harnessing the Teseenchymal Stem Cell Secretome for the Treatment of SCI***

Ehsan Jabbarzadeh, PhD, Associate Professor of Chemical and Biomedical Engineering - University of South Carolina

Investigator Initiated Research Award

(1/1/2019-12/31/2020 for \$150,000)

#### ***2019 P-01 Regulation of retrograde transport in adult neurons a role in nerve regeneration***

Deanna Smith, PhD, Associate Professor, Department of Biological Sciences - University of South Carolina

Pilot Research Award

(6/1/2019-5/31/2020 for \$26,843)

## No Cost Extensions in FY19

***2015 I-02 Establishment of cellular model systems to investigate and manipulate the hostile environment produced by thrombin following spinal cord injury***

Victoria L. Turgeon, PhD, Associate Professor – Furman University

Investigator Initiated Award

(2/1/2016-1/30/2018 for \$79,568, No Cost Extensions 1/30/2019, 1/30/2020)

**PART III: ACTIVE AWARDS (as of the end of FY19)**

<b>Grant #</b>	<b>Title</b>	<b>PI</b>	<b>Institution</b>
Admin. Core	SCIRF Administrative Core Services	Graham	N/A
Research Core	SCIRF Research Core Services	Krause	N/A
2015 I-02	Establishment of cellular model systems to investigate & manipulate the hostile environment produced by thrombin following SCI	Turgeon	Furman
2016 SI-02	SC Traumatic SCI Surveillance & Registry	Selassie	MUSC
2016 SI-03	Basic Science Research Initiative	Banik	MUSC
2016 I-01	Lower-Limb (Ankle) Stretching Device via the Vittori Device	DuBose	Prisma
2016 I-04	Indirect Costs of SCI in SC due to lost earnings	Cao	MUSC
2017 SI-01	SCIA Cooperative Agreement	Rodriguez	SCIA
2017 B-01	Multifunctional nanotherapeutics for Spinal Cord Injury Repair	Lee	Clemson
2017 I-01	Targeting neuronal NOS/peroxynitrite/calpain system as a therapeutic strategy for the treatment of SCI	Khan	MUSC
2017 SI-02	Measuring Outcomes after SCI throughout South Carolina: Statewide Outcomes Database	Krause	MUSC
2018 P-01	Using the State Databases to Assess Opioid Use in Persons Living with Spinal Cord Injury in SC	Murday	USC
2018 I-01	Nanoparticle Delivery of ENOblock and Recovery of Function in SCI	Haque	MUSC
2018 I-05	Harnessing the Mesenchymal Stem Cell Secretome for the Treatment of SCI	Jabbarzadeh	USC
2019 P-01	Regulation of retrograde transport in adult neurons a role in nerve regeneration	Smith	USC

## **PART IV: REQUESTS FOR PROPOSALS (RFP)**

The SCIRF has maintained a focus on building research infrastructure, expertise and capacity throughout South Carolina. In order to accomplish this task, the SCIRF posted seven RFP's throughout FY19 which can be found on the website under [Request for Proposals](#). The name of each RFP includes the year that the RFP was last modified.

### **RFP 2017-P (Pilot)**

Status: Open

### **RFP 2017-S (Student Research Internship)**

Status: Open

### **RFP 2018-I (Investigator Initiated Research)**

Status: Recurring Deadlines of January 15<sup>th</sup> and August 15<sup>th</sup>

### **RFP 2017-B (Bridge Funding)**

Status: Open

### **RFP 2016-R (Recruitment/Seed Funding)**

Status: Open

### **RFP 2017-CET (Conference/Education/Training)**

Status: Open

### **RFP 2017 PD-Rev (Postdoctoral Research)**

Status: Open

## **PART V: AWARDS CLOSED in FY19 (In Order of Date Awarded)**

### ***09-001 Measuring Outcomes after SCI throughout SC: A System of Tracking, Research, & Referral***

James S. Krause, PhD – Associate Dean for Clinical Research, College of Health Professions, Medical University of South Carolina  
Special Initiative Grant  
(12/1/2009-11/30/2014 for \$975,000; \*extensions 11/30/2016, 12/31/2018)

### ***2014 R-01 Modulation of Stretch Reflexes during Walking in People after SCI***

Aiko Thompson, PhD – Associate Professor Department of Health Science and Research, Medical University of South Carolina  
Recruitment/Seed Grant  
(3/1/2015-2/28/2019 for \$117,559; \*extension 2/28/2019)

### ***2015 I-01 Novel combination therapy for neuroprotection in SCI***

Swapan K. Ray, PhD – Professor Department of Pathology, Microbiology and Immunology, University of South Carolina-School of Medicine  
Investigator Initiated Research Grant  
(7/1/2015-6/30/2017 for \$80,000, \*extensions 6/30/2018, 6/30/2019)

### ***2017 P-01 Retrospective Assessment of microbial infections in Traumatic SCI population***

Anindya Chanda, PhD – Assistant Professor, University of South Carolina  
Pilot Grant  
(4/15/2018-4/14/2019 for \$29,595)

### ***2018 PD-01 Targeting axonal stress granules to improve axon regeneration***

Jeffery L. Twiss, MD, PhD – Professor, University of South Carolina  
Post Doc Grant  
(7/1/2018-6/30/2019 for \$67,500)

### ***2018 SpecReq-01 MUSC SCI Basic Science Research Laboratory***

Naren L. Banik, PhD – Professor, Medical University of South Carolina  
Special Request Grant  
(7/1/2018-6/30/2019 for \$123,166)

## PART VI: INCOME

The income to the SCIRF comes exclusively from revenue attributed to a \$100 fee levied on every “Driving Under the Influence” (DUI) conviction in South Carolina. MUSC is the legislated administrator of these collected funds and is the state agency responsible for their oversight.

The \$100 per DUI surcharges are received monthly throughout each fiscal year. Below is the table of monthly collections for FY19. The total collected was \$490,863.49 with a monthly average of \$40,905.29. This amount is a decrease of 14% from the previous fiscal year.

<b>Month</b>	<b>2018-2019</b>
Jul	\$36,154.57
Aug	\$41,714.98
Sep	\$36,045.64
Oct	\$41,522.38
Nov	\$31,563.29
Dec	\$44,302.54
Jan	\$31,794.12
Feb	\$42,888.58
Mar	\$44,213.41
Apr	\$52,414.74
May	\$49,401.48
Jun	\$38,847.76
<b>FY19 TOTAL</b>	<b>\$490,863.49</b>
<b>Monthly Average</b>	<b>\$40,905.29</b>

**PART VII: CASH ANALYSIS (Life to Date)**  
**March 2001 - June 2019**

Income (DUI Surcharges)	\$ 13,686,295.05
Expenditures	\$(10,065,286.27)
Committed Funds	<u>\$ (2,807,506.46)</u>
BALANCE	\$ 813,502.32

## PART VIII: DIRECTORS (as of end of FY19)

### Board of Directors



**M. Noreen Herring, MD**

Charleston, SC

(Category A) – Medical Doctor from MUSC

Specialist in Physical Medicine & Rehabilitation, Assistant Professor at MUSC  
Neuroscience Department

W: 843-792-3221



**Kevin W. Kopera, MD, MPH - CHAIR**

Greenville, SC

(Category B) – Medical Doctor specializing in treatment of people with SCI

Board Certified in Physical Medicine and Rehabilitation. Medical Director Roger C.  
Peace Rehabilitation Hospital

W: 864-455-3754



**Stephen E. Rawe, MD, PhD**

Charleston, SC

(Category D) – At large medical doctor, member of the SC Medical Association  
Board Certified Neurosurgeon - Retired



**Sherwood L. Toatley**

Chapin, SC

(Category C) – Person with an SCI

911 Telecommunicator with the City of Columbia

Email: [toatley@musc.edu](mailto:toatley@musc.edu)



**Victoria L. Turgeon, PhD**

Greenville, SC

(Category C) – Family member with an SCI

Professor, Furman University



**Abhay K. Varma, MD, MBBS**

Mt. Pleasant, SC

(Category A) – Medical doctor from MUSC

Associate Professor of Neurosurgery at MUSC

W: 843-792-1308



**Heather W. Walker, MD**

Mount Pleasant, SC

(Category B) – Medical Doctor specializing in treatment of people with SCI

PM& R, SCI Medicine, Program Director of Neuroscience Services

Encompass Health Rehabilitation Hospital of Charleston

W: 843-820-7634

**Executive Director**



**Catherine Leigh Graham, MEBME**

***Executive Director***

W: 843-614-1756

Email: grahacat@musc.edu

**Scientific Directors**



**James S. Krause, PhD**

***Scientific Director***

Associate Dean for Clinical Research College of Health Professions, MUSC

W: 843-792-1337

Email: krause@musc.edu



**Naren L. Banik, PhD**

***Associate Scientific Director***

Professor, Department of Neurology and Neurosurgery, MUSC

W: 843-792-7594

Email: baniknl@musc.edu

## **Terms**

**Category A.** Two medical doctors from MUSC

**M. Noreen Herring, MD** – second term (2022)  
**Abhay K. Varma, MD** – second term (2023)

**Category B.** Two medical doctors at large specializing or significantly engaged in the treatment of people with an SCI

**Heather W. Walker, MD** – first term (2021)  
**Kevin W. Kopera, MD, MPH** – second term (2021)

**Category C.** Two members who have an SCI or a family member with an SCI

**Victoria L. Turgeon, PhD** – first term (2022)  
**Sherwood L. Toatley** – first term (2023)

**Category D.** One at large medical doctor who is a member of the SC Medical Association

**Stephen E. Rawe, MD** – first term (2020)

## **Passing of the Gavel**

The SCIRF Board of Directors re-elected Dr. Kevin W. Kopera as the Board Chair at the fall Board meeting in 2018 and he began serving his fourth year as Chair in March of 2019.

## **Meetings**

The BOD holds in-person meetings, usually 2-3 per year, to address the organization of the SCIRF as well as directional goals. Meeting dates and locations are listed below. The BOD is responsible for approving all grants awarded as well as budgets for Administrative and Research Core functions.

**November 2, 2018 – University of South Carolina, Columbia**  
**April 4, 2019 – Furman University, Greenville**

## PART IX: RESEARCH OVERVIEW

Over the past year we have continued to fund activities that fall in the following general categories: (1) basic science research and infrastructure, (2) applied studies in epidemiology, outcomes, and (3) stakeholder involvement and dissemination.

MUSC has had a Basic Science Research Program on SCI since 1974. In order to maintain the laboratory for such research and to train interested junior faculty/students, the Board deemed it necessary to fund an infrastructure initiative under the leadership of Dr. Naren Banik. This initiative ensures the availability of key personnel in the areas of basic research. This basic science research program has projects, by different researchers from various institutions, including therapeutic effects of focal delivery of estrogen embedded nanoparticles and locomotor recovery in rodent SCI. Other studies included targeting axonal stress granules to promote axonal regeneration for functional recovery in SCI carried out by a postdoctoral fellow in the laboratory of Dr. Jeffery Twiss at USC. An investigator-initiated study by Dr. Mushfiquiddin Khan at MUSC has focused on targeting neuronal NOS/peroxynitrite/calpain system in a therapeutic strategy for the treatment of SCI. Bridge funding awarded to Dr. Jeoung Soo Lee has helped her maintain her research line on multifunctional nanotherapeutics for SCI repair while awaiting federal funding (NIH) which was received. The projects on fast release estrogen nanoparticle effect on SCI have helped secure VA renewal funding for Dr. Banik.

There are several important epidemiologic and applied research funded projects. These include the ongoing statewide SCI surveillance by Dr. Anbesaw Selassie, which identifies all new instances of SCI treated in South Carolina and establishes the foundation for sending resource information and for additional follow-up studies, including outcomes database by the SCIRF scientific director, Dr. James Krause. Dr. Yue Cao is investigating indirect costs of SCI. Additionally, researchers at USC under Dr. David Murday are investigating opioid use among those with SCI, which has become a national epidemic in the general population. Although a basic scientist by training, Dr. Anindya Chanda, at USC, has collected pilot data on microbial infections. Research continues at Prisma Health on the use of a stretching device to improve range of motion by Dr. Elizabeth DuBose.

We continue to support a cooperative agreement between the SCIRF and the South Carolina SCI Association, a statewide stakeholder group, to disseminate research findings so they are more readily available for use by people with SCI.

In summary, this has been another strong year with multiple opportunities created through SCIRF funding. We will continue to review and implement all possible means to promote the best possible outcomes for those with SCI in the state of South Carolina by supporting research, training, and knowledge translation.

***South Carolina Spinal Cord Injury Research Fund***  
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