

FROM THE EXECUTIVE DIRECTOR'S DESK

MOST PEOPLE CRINGE WHEN THEY HEAR THE word "audit", however at Mission Connect we greet it with great anticipation. I am not speaking of an annual financial audit, but rather a scientific audit. Every two years, Mission Connect's external review panel convenes in Houston for a formal examination of currently funded research projects. Through presentations, reports, and oral interchange, Mission Connect research is analyzed, assessed, and scored. The members of our external review panel serve as indispensable arbitrators of the quality, soundness, and value of our research investments. It is through their diverse and collective knowledge that we identify and fund research that is novel, relevant, and productive. This is especially important in the changing and challenging economy in which we exist.

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Leveraging donor dollars for the greatest scientific gain is paramount. At TIRR Foundation we are deeply grateful for our donors who invest in Mission Connect research, and for the tenacity of the scientists who have taken on medical sciences' greatest challenge—the discovery of preventions, treatments, and cures for neurological injury and disease.

The members of Mission Connect's external review panel are internationally acknowledged experts in the field of neurobiology. The 2010 -2011 panel members are:

- W. Dalton Dietrich, Ph.D. University of Miami
- C. Edward Dixon, Ph.D., University of Pittsburgh
- Itzhak Fischer, Ph.D., Drexel University College of Medicine
- David Hovda, Ph.D., UCLA School of Medicine
- Timothy Kennedy, Ph.D., McGill University
- Linda L. Phillips, Ph.D., Medical College of Virginia
- Stephen W. Scheff, Ph.D., University of Kentucky
- Stephen G. Waxman, M.D., Ph.D., Yale University School of Medicine
- Alison E. Willing, Ph.D., University of South Florida

Cynthia Adkins
TIRR Foundation Executive Director

Project Victory Sets Sail to Therapy

THE MILITARY PERSONNEL AND veterans in Project Victory's brain injury rehabilitation program are benefiting from a unique program that is literally setting sail to their therapy. More than 40 clients of Project Victory have participated in a day sailing therapy program through the Heart of Sailing located in nearby Kemah, Texas. The Heart of Sailing is a national nonprofit organization powered by volunteers who provide recreational therapy through sailing for individuals with cognitive and motor deficits. Christine Wiegman, Project Victory Social Worker, and Michael Furtado, Physical Therapist, have accompanied Project Victory clients on numerous outings with the Heart of Sailing Houston/Galveston Chapter Director, Captain Dave McCabe. Day sailing excursions with Captain McCabe have proven highly beneficial for the men and women participants in Project Victory. Christine

Wiegman said, "The experience of sailing helps our clients practice relaxation strategies that decrease their stress response and anxiety. The rhythmical movement of the boat and reduced noise create a calm environment that is difficult to replicate in an activity filled rehabilitation center. The sensory stimuli created by a boat

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as it moves through the waves and changes course with the wind also helps mediate balance deficits

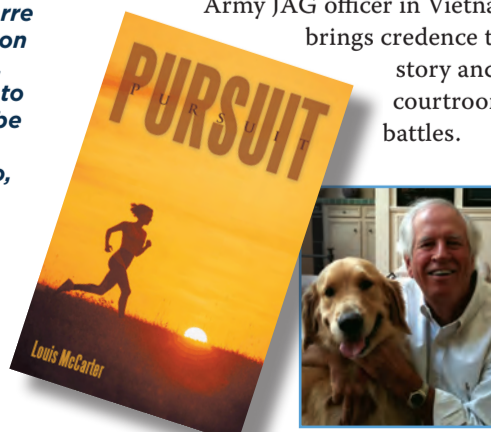
often experienced by individuals who have sustained a brain injury. When our clients ambulate around the boat, hoist a sail or take the helm, they're integrating their visual field with their physical environment to remain balanced." The benefits of sailing as a recreational therapy go beyond balance, coordination, and relaxation. There is a lot of teamwork, communication, and social interaction involved in sailing. Dave McCabe, a retired IBM executive, has been sailing for more than 60 years and was recognized as the 2008 Heart of Sailing Captain of the Year.



Louis McCarter Pens Novel

On the eve of her eighteenth birthday, Danielle Hoad's obsession to avenge her father's abandonment of her and her mother in Vietnam leads to the bizarre death of a United States senator's son in a posh New York City hotel room. Danielle did not intend for the man to die, but she must escape—and maybe she would someday find her father. Relentlessly pursued by Julian Bono, a retired New York City detective, Danielle catapults down a twisted path of terror and romance from the Bronx slums to Louisiana's Gulf Coast to the college town of Austin, Texas, to Houston's upper-crust society where she is confronted with a decision that will forever alter her life.

THE ITALICIZED SYNOPSIS describes TIRR Foundation Board member, Louis McCarter's recently self published action/adventure novel, "Pursuit." Louie's experience as a Vinson & Elkins trial lawyer and Army JAG officer in Vietnam brings credence to the story and its courtroom battles.



"Pursuit" is an excellent read and a book with an exceptional purpose. The son of Louie and Janet McCarter, Scott, sustained a spinal cord injury on October 23, 1999. If the book is purchased directly from Louie, the entire proceeds go to TIRR Foundation's Mission Connect for medical research to reverse the consequences of spinal cord injury, traumatic brain injury, and stroke. To date, thousands of dollars have been raised as many readers have donated amounts in excess of the purchase price.

To purchase a copy of "Pursuit," contact Louis McCarter at lmccarter@velaw.com. The book is also available at www.iuniverse.com in soft cover and e-book format at www.amazon.com.

Q&A: With a Mission Connect Scientist



Michelle Hook, Ph.D.
Texas A&M University

Dr. Hook specializes in behavioral neuroscience and is a recent recipient of a Mission Connect grant for her research on the recovery of function in the injured spinal cord.

Where did you complete your undergraduate and graduate studies?

Both completed at the University of New England, Armidale, Australia. My PhD thesis focused on 'Hemispheric lateralization in the common marmoset (*Callithrix jacchus*), a small monkey species native to Brazil.

How would you describe your area of research?

My current research is focused on recovery of function after a spinal cord injury. In particular, our lab is looking at the effects of commonly used analgesics (i.e., morphine) on recovery. Unfortunately, we have found that morphine, one of the most commonly trialed pain medications, can have detrimental secondary consequences for recovery reducing locomotor function and increasing symptoms of paradoxical pain in the chronic phases of injury.

Other studies in our lab are focused on the effects of exercise (and behavioral training) on recovery of function. We have shown that exercise initiated in the acute phase of injury facilitates recovery. My collaborator, Dr. James Grau, has shown that the spinal cord is inherently plastic- it is able to learn. We hope to, by understanding how the spinal cord learns, use behavioral training to facilitate recovery after injury.

What motivated you to study this specific area?

Two things motivate my research: 1) a strong interest in understanding neural plasticity and the inherent capacity of the nervous system to spontaneously recover function after injury, and 2) a desire to contribute to the clinical treatment of SCI, by helping to develop effective therapies for pain management and recovery of function.

What motivated you to join Mission Connect and how does Mission Connect help you in your research effort?

Mission Connect offers the opportunity to collaborate and share ideas with renowned researchers in the fields of both spinal cord and traumatic brain injury. This



MISSION CONNECT Annual Symposium Focuses on Blast Injuries

THE ELEVATED RATE OF traumatic brain injury and co-occurring traumatic stress experienced by our military personnel returning from Iraq and Afghanistan has garnered the attention of our nation, including neurotrauma specialists and research scientists. To contribute to the growing discussion of this critical issue, Mission Connect's annual Neurotrauma Research Symposium focused on blast wave induced brain injury and traumatic stress.

Keynote speakers, Colonel Geoffrey Ling, M.D., Ph.D. and Alan Peterson, Ph.D., shared their insights into the epidemiology of these combat related injuries. Colonel Ling, program manager at the Defense Advanced Research Projects Agency, and a neurological care specialist by training, reported on the progress of his extensive research on brain injuries sustained by deployed military personnel. Dr. Peterson, professor at The University of Texas Health Science Center at San Antonio, and



principal investigator of a \$33 million research project called STRONG STAR, spoke on combat related traumatic stress. Dr. Peterson is developing early interventions for soldiers who experience multiple traumatic episodes while deployed.

Despite the snow storm that hit Houston early that morning, more than 100 scientists, physicians, graduate students, and post doctoral fellows attended Mission Connect's symposium. In addition to the presentations by the distinguished keynote speakers, there was a juried presentation of 49 research posters submitted by graduate students and post doctoral fellows, followed by podium presentations and an open panel discussion on blast injury.

The annual Mission Connect Symposium was created to initiate a dialogue among the members of Mission Connect and the larger scientific community, and continue that dialogue within the institutions, labs, and classrooms of the attendees. The 2010 Mission Connect Symposium is scheduled to take place on December 3rd. If you would like to receive early notification of the 2010 symposium, or register to attend, please contact TIRR Foundation Mission Connect Coordinator, Sandra Jochen at jochens@tirrfoundation.org.



DEAR FRIENDS AND COLLEAGUES:

First, I would like to offer my sincere appreciation to all of our donors for their continued support of the vision of Mission Connect.

In particular, I am deeply grateful for the support and tireless effort of the Conner Family, without whom Mission Connect would not exist. I would also like to acknowledge the hard work put forth by the Board of Directors and the administrative staff of TIRR Foundation and for providing an environment in which the members of Mission Connect are able to collaborate on these important scientific projects. Since its inception in 1997, Mission Connect has grown from three founding members to over 50 scientists and clinicians from twelve different institutions across southeast Texas. Because of your support, these researchers have been able to make a number of important discoveries towards finding cures for persons with spinal cord injury and brain injury.

Scientists at Mission Connect have discovered that spinal cord injury (SCI) is not a static disease, but continues to progress and evolve over a longer time period than originally thought. Our researchers have shown that pathological conditions, thought to be restricted to the acute phase of SCI, can be found at robust levels far into the chronic phase of injury. For example, Mission Connect scientists have shown that chronic inflammation is a major contributor to neuropathic pain. Agents have been identified that can counteract specific proteins produced by cells that contribute to inflammation. In SCI rodent models these agents have been effective in markedly reducing this condition. In addition to contributing to chronic disturbance of function, specific proteins, along with the excitatory chemicals that carry nerve signals, have been shown by our researchers to damage the spinal cord in the acute phase of injury. This data suggests that treatments aimed at blocking the action of these proteins may have benefit in both the acute and chronic phases of SCI. Our researchers have also been on the forefront of stem cell therapy, and

have shown that transplantation of primed stem cells can be used to improve motor function in SCI rodents. We are working with our clinical colleagues to translate these laboratory discoveries to the clinic in order to provide treatments for persons with SCI.

Traumatic brain injury (TBI) is a major cause of death and disability among young adults. Furthermore, TBI has emerged as the "signature wound" for our military personnel involved in current conflicts. According to a recent report entitled "Invisible Wounds of War", the RAND Corporation concluded that one in five combat veterans have experienced post-traumatic stress disorder (PTSD), traumatic brain injury (TBI), or both. Our researchers have shown that brain injury can change the molecular makeup of an axon's initial segment. As these molecules are critical for generation of electrical signals (action potentials) in brain cells, these changes can alter how brains communicate with each other. In addition, Mission Connect scientists have discovered that specific neurotransmitter receptors can be targeted in order to improve memory functions in injured animals. In particular, it has been found that neurotransmitter imbalances are responsible for dysfunction of the prefrontal cortex, a structure responsible for judgment, reason, and other high level cognitive functions. As a fruit of our collaborative efforts, Mission Connect was recently awarded a \$37 million grant from the Department of Defense to study the pathophysiology of, and to develop treatments for, mild traumatic brain injury.

We are excited about the growth of Mission Connect and the number of important discoveries that have been made since its inception. I anticipate that we will achieve many more exciting breakthroughs in the future that will be translated into treatments that can facilitate recovery of function and improve the quality of life of persons with TBI or SCI. Thank you again for your continued support.

Pramod K. Dash, The University of Texas Health Science Center at Houston, Scientific Director of Mission Connect

Junior VolunTIRRs "TV thru Time" Benefit Brings Out the Characters

THE JUNIOR VOLUNTIRRS HELD their annual fundraising benefit at the House of Blues where they and their guests rock-n-rolled throughout the night to tunes of Molly and the Ringwalds. The "TV thru Time" theme brought out more than 250 hilarious partiers depicting past and present TV series characters. Revelers dressed as Richard Simmons, Lady Gaga, Suzanne Somers and many more boogied through the doors to enjoy an evening like no other. Chairs of this third annual charity event, Michel Miller, Lauren Stephens, and Lindsey Thomas came as the famous threesome Charlie's Angels. And angels they were when the benefit raised more than \$30,000. TIRR Foundation especially thanks our generous \$2,500 event underwriters, T.C. Lupton, Jr. Family Foundation and LINN Energy, and our \$1,000 underwriters: The Andrews Foundation,



Michel Miller, Lauren Stephens, and Lindsey Thomas came as the famous threesome Charlie's Angels. And angels they were when the benefit raised more than \$30,000.



Anne and Tom Conner, Maker's Mark Kentucky Straight Bourbon Whisky, Sheridan & John Eddie Williams, and Silver Eagle Distributors, L.P. The proceeds from the evening are being used to support TIRR Hotwheels, a competitive basketball team for wheelchair dependent youth, and Camp Xtreme, an incredible overnight camp developed specifically for kids with physical disabilities. To become involved with Junior VolunTIRRs, or receive email notification of their next fabulous event, please contact TIRR Foundation Special Events Coordinator, Caroline Mark at markc@tirrfoundation.org or (713) 877-0490.

“The tenet for the evening was clear; no question is too simple or insignificant.”



THE ATMOSPHERE AT RIVER OAKS COUNTRY CLUB WAS SIMPLY **ELECTRIC** with brain activity on April 28 when TIRR Family held its fourth annual Connect the Docs event. Connect the Docs is a captivating evening dinner that seats some of our nation’s most gifted scientists and physicians at the tables of our guests. The attendees of this year’s Connect the Docs learned firsthand of the pioneering neurotrauma research taking place within the Texas Medical Center and surrounding region. The tenet for the evening was clear; no question is too simple or insignificant. The evening’s scientific and medical talent was drawn from the membership of Mission Connect. Mission Connect is a collaborative neurotrauma research project focused on improving the outcomes for individuals with spinal cord injuries, brain injuries and neurodegenerative diseases. Seated among the 220 guests were 33 Mission Connect scientists and physicians who have dedicated their lives to research and patient

SIMPLY ELECTRIC CONNECT THE DOCS 2010 TO BENEFIT MISSION CONNECT

care. TIRR Family founding member Janet McCarter and TIRR Family Executive Committee member Carolyn Robertson co-chaired the event ensuring its complete success. TIRR Family was pleased to name one of Houston’s most energetic volunteer and community advocates, Nancy Gordon, as the honoree for the 2010 dinner. The evening generated \$128,000 that will go in full, and directly, to support the most promising research projects within Mission Connect’s membership. TIRR Foundation extends our sincere appreciation to the James and Nancy Gordon family, Peggy Weaver, and Paul

Patton Trust, Bank of America, Co-Trustee along with C. Ted McCarter and William L. Evans, Jr., who were \$10,000 underwriters for the event. A heartfelt thanks also goes out to our generous \$7,500 underwriters, Maky and Carlos Abello, Anne and Tom Conner, and Sylvie and Gary Crum. If you would like to receive notification of Mission Connect’s 2011 Connect the Docs event, please contact TIRR Foundation Special Events Coordinator, Caroline Mark at markc@tirrffoundation.org.



Mission Connect
a project of TIRR Foundation

HOOK Q&A CONTINUED FROM PAGE 1

organization is comprised of scientists and clinicians all working toward a ‘cure,’ but in very different ways. Mission Connect bridges the gaps between these basic scientists and clinicians, molecular biologists and kinestheologists, etc. allowing us to evaluate and contemplate the validity of basic lab research in terms of clinical outcome, and vice versa. For my own research, understanding of critical clinical problems helps to focus my experiments. Also, it is likely that the cure for SCI and TBI will be comprised of a multifaceted therapeutic approach—stimulating regeneration in the nervous system, reducing loss of CNS tissue in the early phase of injury, and training the spinal cord/brain to recover function that has been lost as a consequence of the injury. This will only be achieved by the integrated efforts of a team of experts working on different aspects of the problem. Mission Connect has produced a team of experts.

There have been many encouraging discoveries made in neuroscience research. Of yours, which do you think is the most significant?
Don’t think I’m there yet.

Have you ever reached a scientific outcome that was unexpected that later led to a different yet promising path of discovery?

Yes, the detrimental effects of morphine on recovery after SCI were very unexpected. However, the finding that morphine triggers molecular changes that lead to the development of paradoxical pain symptoms may provide some insight into the cellular mechanisms that underlie spontaneous neuropathic pain symptoms. Neuropathic pain is described as severe and excruciating. It develops in approximately two-thirds of patients with a spinal cord injury. At present there is no cure, and current pain medications are only moderately effective. Understanding the effects of morphine may not only increase the clinical value of this analgesic, but may also provide insight into therapies that could prevent the ‘spontaneous’ development of neuropathic pain.

In your area of research, major scientific breakthroughs take time. What keeps you motivated during this process?

I am a scientist- I love data. I enjoy trying to find the answer to my questions, putting the pieces of a puzzle together, and knowing that what I am doing significantly impacts the lives of many people. Also, reflection on the challenges that people with SCI face everyday is enough to maintain my motivation through the most difficult periods.

What is the one most important piece of information you would like the readers to know about you or your research?

I am committed to designing and developing experiments that help to significantly improve the treatment of spinal cord injury (and the long-term outcomes) in the clinical setting.

MILLIONS of Reasons to Study Neuroscience

The endeavor to understand the human central nervous system, how it functions, its response to injury, and how to restore it to health, is a daunting task. It is one of greatest challenges facing modern biology. TIRR Foundation has taken on this challenge through the neurotrauma research of Mission Connect—and there are **millions**

of reasons why the scientists and physician scientists we support are committed to this momentous effort.

Fifty million Americans have permanent, neurological disabilities that limit their ability to perform daily tasks.

There are currently **5.3 million** Americans living with a disability as a result of a traumatic brain injury, and **1.5 million** new cases of traumatic brain injury occur every year in the United States.

Four million incidences of stroke are reported each year and of those, one third of the patients die and another third are permanently disabled.

More than 250,000 Americans have spinal cord injuries. Of these, approximately 65% live with excruciating, chronic pain

despite their loss of normal sensation and function.

Each year within the United States, 11,000 new spinal cord injuries occur.

The economic impact on communities and the cost of care in the United States for spinal cord injured patients exceeds \$7.7 billion annually.

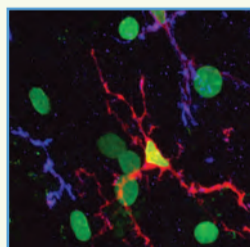
Globally, there are more than **2.5 million** people living with spinal cord injury paralysis.

Except for the Incomplete-Preserved motor (functional), no more than 0.9% spinal cord injured patients fully recover.

Four million Americans suffer from Alzheimer’s Disease and the cost to our society is approximately \$100 billion a year for treatment and care. The human toll is immeasurable.

One million Americans suffer from genetic disorders resulting in brain and nerve damage.

Two million people suffer from nerve and muscle disorders, such as Lou Gehrig’s disease and nerve damage associated with diabetes.



RETURN ADDRESS REQUESTED



Do You Feel Inspired?

TIRR FOUNDATION touches the lives of those with disabilities in many ways. It is our goal to provide individuals with spinal cord injuries, brain injuries, and neurodegenerative disease opportunities to engage in their life pursuits as fully as possible. We have many educational and activity based programs that help us achieve this goal. Through the research of Mission Connect, we offer these same individuals hope for new preventions, treatments, and cures for neurological injury and disease.

Do you feel inspired to help?—because there are many opportunities for you to support TIRR Foundation. There are two volunteer groups, TIRR Family and the Junior Volun-

TIRRs, and numerous events you can support as an underwriter or attendee.

Busy schedules do not always allow us the time to be as involved as much as we wish was possible, however support through donations is equally as important and appreciated. TIRR Foundation is a nonprofit 501(C)(3) organizations and all donations are tax deductible.

Please look for the “I Feel Inspired” envelope enclosed in this newsletter to join one of TIRR Foundation’s volunteer groups, receive advanced notice of events, or donate by mail or online.

Please look for the “I Feel Inspired” envelope enclosed in this newsletter.

Save the Date FOR THE 2010 GOLF TOURNAMENT!

**Tee it up with TIRR
October 21, 2010**

- **1:00 p.m. Shotgun start**
- **Scramble format**
- **Wildcat Golf Club- just moments from downtown**

Underwriter opportunities now available. Contact Caroline Mark, TIRR Foundation Special Events Coordinator, for details.
markc@tirrfoundation.org or
(713) 877-0490

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Looking Ahead →

TIRR Family Membership Drive
September 2010

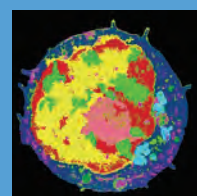
TIRR Foundation Golf Tournament
October 21, 2010

Mission Connect Annual Symposium
December 3, 2010

Junior VolunTIRRs
January 2011

Conect the Docs
April 2011

OUR MISSION



TIRR Foundation seeks to improve the quality of life for people who have sustained neurological damage by supporting pioneering research programs and advancements in rehabilitative medicine and educational programs.