Craig Hospital Research Summary – 2017

Mission Statement:
“To conduct high-quality research to promote optimal health, independence, and life quality for people affected by spinal cord injury and traumatic brain injury.”

Core Values:
- Advance the state of the science of disability and rehabilitation research.
- Adhere to ethical and legal principles governing research activities.
- Conduct research and dissemination that is meaningful to our constituents.
- Involve individuals with disabilities and their families, the interdisciplinary treatment team, other professionals and community members, in the research and dissemination process.
- Integrate research in clinical practice, education and evaluation.
- Foster a research culture throughout Craig Hospital.
- Promote scientific enquiry that will contribute to evidence-based practice.
- Lead and participate in spinal cord injury and traumatic brain injury collaborative research.
- Participate in setting the national disability research agenda.

Introduction:
The Craig Hospital Research Department currently has a staff of 22 with an annual budget of $3.6 million in federal, state, and foundation-sponsored grants, devoted to conducting a wide variety of applied spinal cord injury (SCI) and traumatic brain injury (TBI) rehabilitation research. In addition, funds raised from the annual PUSH Dinner support basic and clinical research.

The Research Department was established in 1974 when Craig Hospital was first awarded a Spinal Cord Injury Model System grant from the US Department of Health and Human Services, National Institute on Disability, Independent Living and Rehabilitation Research (NIDILRR). In 1998, Craig’s brain injury program received a similar designation when it was first named a TBI Model System. Each Model System project consists of a three-pronged research effort: contributing to a national longitudinal database, conducting local research projects that are of interest and importance to Craig, and collaborating with other Model Systems in research of common interest.

In 2006, Craig was named the TBI Model Systems National Data and Statistical Center, managing the TBI National Database and coordinating research among all TBI Model Systems. Perhaps the greatest benefit of the Model Systems programs is the research climate they have spawned here at Craig Hospital, giving us the expertise and confidence to successfully compete for and obtain funding from other sources as well.

Craig currently receives research funding not only from NIDILRR, but also from the Colorado TBI Trust Fund, the Congressionally Directed Medical Research Program (CDMRP) which is part of the Department of Defense, other research organizations via subcontracts, and foundations. As research has become more important to the mission and reputation of Craig, the Research Department has increased collaboration with other institutions by leading and participating in multi-center research and becoming a national data coordinating center. Below is a list of Craig Hospital’s currently funded research projects.
### GENERAL CLINICAL RESEARCH FUNDS

<table>
<thead>
<tr>
<th>PUSH dinner proceeds</th>
<th>2013 - ongoing</th>
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<td>$50,000/year</td>
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The purpose of Craig Hospital’s Clinical Research Fund is to provide funding for clinical research projects. This includes startup funding to cover the clinician’s time to design research projects, equipment if necessary, consultations, and costs to conduct the actual studies.

Contact:  Kimberley Monden  303-789-8562

### Spinal Cord Injury (SCI) Research

<table>
<thead>
<tr>
<th>ROCKY MOUNTAIN REGIONAL SPINAL INJURY SYSTEM (SCI MODEL SYSTEM)</th>
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<tr>
<td>National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)</td>
<td>2016 – 2021</td>
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<tr>
<td>Grant #90SI5015-01-00</td>
<td>PI(s): Charlifue, Morse</td>
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**Simvastatin to Improve Bone Health in SCI: A Double-Blind, Randomized, Placebo-Controlled Clinical Trial**

This clinical trial led by Craig Hospital will determine whether a 12-month course of daily simvastatin 1) prevents bone loss in the paralyzed lower extremity, 2) promotes neurological recovery after SCI, and 3) reduces neuropathic pain after SCI.

Contact:  Susie Charlifue  303-789-8306

**LEAD Module Project: Utilization of Complementary and Integrative Healthcare to Treat Pain in Persons with Spinal Cord Injury**

The goal of this module project is to provide comprehensive information regarding utilization of complementary and integrative healthcare (CIH) to treat pain in people with SCI, and barriers and facilitators to utilization for people with SCI.

Contact:  Jennifer Coker  303-789-8229

**Module Project: Using a Health Technology Assessment Framework for Evaluating the Utilization and Efficiency of Wearable Exoskeletons for SCI Rehabilitation**

This collaborative SCI module led by the Rehabilitation Institute of Chicago will obtain evidence that informs consumers, clinicians, insurers, and manufacturers about the utilization and cost-effectiveness of RT-exo in inpatient, outpatient, and community settings.

Contact:  Susie Charlifue  303-789-8306

**Module Project: Residential Instability in Chronic SCI: An Investigation of Patterns and Consequences**

This collaborative SCI module led by Northern New Jersey Spinal Cord Injury Model System (Kessler). The main objective of this exploratory project is to better understand residential instability among people with SCI and generate new knowledge on this potentially important and unexplored challenge to health, healthcare utilization, and independent living.

Contact:  Susie Charlifue  303-789-8306
### Module Project: Impact of pain at follow-up in individuals with SCI

This collaborative module, led by University of Miami will characterize the type of pain in individuals with SCI, its location in the body, its intensity, and its interference with mood, sleep, work and daily function using the International SCI Pain Basic Data Set 2, as well as assess the pain treatment(s) used by individuals with pain and SCI.

Contact: **Susie Charlifue** 303-789-8306

### A SELF-DETERMINATION PERSPECTIVE ON BARRIERS TO AND FACILITATORS OF TRAVEL AFTER SCI

Craig H. Neilsen Foundation grant to the Trustees of Indiana University (subcontract to Craig Hospital) 4/1/2015 – 3/30/17

| PI(s): Whiteneck | $38,030 total |

The purpose of this study is to understand the barriers that people with SCI encounter when traveling within and outside of their communities. The study also intends to find out ways to enhance the travel experience of people living with SCI.

Contact: **Gale Whiteneck** 303-789-8204

### LIFESTYLE INTERVENTION TARGETING ENHANCED HEALTH AND FUNCTION FOR PERSONS WITH CHRONIC SCI IN CAREGIVER/CARE-RECEIVER RELATIONSHIPS: EFFECTS OF CAREGIVER CO-TREATMENT

National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) 2015 - 2020

| PI(s): Charlifue | $763,695 |

Lead Center: University of Miami – Randomized Clinical Trial to determine the efficacy of a lifestyle intervention to improve health and function of individuals with SCI.

Contact: **Susie Charlifue** 303-789-8306

### AGING STUDY ANALYSIS

James E Burns and Kris Burns Research Fund 1990 – ongoing

| PI(s): Charlifue | $50,000 total |


Contact: **Susie Charlifue** 303-789-8306

### FAMILY CAREGIVERS FOR VETERANS WITH SCI: EXPLORING THE STRESSES AND BENEFITS

CDMRP / Department of Defense 2011 - 2017

| Grant # W81XWH-11-2-0213 | PI(s): Charlifue | $378,900 total |

The project will use focus group methodology to identify areas of concern for family members providing assistance to a loved one with SCI who is a veteran of the US armed services. From this information, a modified measure to assess distress and benefit in SCI caregiving among civilians and veteran’s will be developed. Collaborators include the Veterans facilities in Denver, Colorado, Richmond, Virginia and Seattle, Washington.

Contact: **Susie Charlifue** 303-789-8306
Activity based therapy involves using intense practice and repetition of task specific mobility activities with the goal of improving walking ability and functional independence in individuals with paralysis. The purpose of the national database is to identify demographic variables and quantify mobility outcomes as well as quality of life outcomes associated with participation in this activity based therapy program. The database is also analyzed to track individual treatment program performance compared to network-wide aggregate data.

Contact: Candy Tefertiller 303-789-8251

Individuals participating in the Neurorecovery Network (NRN) Locomotor Training (LT) will be invited to participate in this project. The purpose of this study is to look at health improvements related to LT. Specifically, this study seeks to determine how LT impacts the cardiovascular health (heart rate and blood pressure), cardio-metabolic health (levels of substances in the blood), and respiratory health (breathing tests) of participants. About 80 people who are enrolled in the seven NRN clinics across the country will be asked to participate in this study. As one of the NRN clinics, Craig Hospital will enroll 15 participants.

Contact: Candy Tefertiller 303-789-8251

The goal of this randomized controlled trial is to determine the efficacy of a treatment to improve resilience to stress for individuals with SCI who are transitioning from inpatient rehabilitation to home. The overarching hypothesis is that individuals who participate in an intervention that presents positive psychotherapy topics in an interactive, structured, cognitive-behaviorally-based group intervention that stresses restructuring maladaptive thought processes and provides experiential opportunities to reinforce behavioral change will demonstrate increased self-efficacy.

Contact: Jennifer Coker 303-789-8229

This is a pilot randomized controlled trial to examine the potential benefit of manual therapy to treat shoulder pain in persons with paraplegia that are manual wheelchair dependent for mobility.

Contact: Jennifer Coker 303-789-8229
### SCI CAREGIVER REINVENTION

**Craig H. Neilsen Foundation**

| PI(s): Charlifue | $299,292 |

The goal of this randomized controlled trial is to determine the efficacy of a treatment to improve self-efficacy skills and reduce stress for family caregivers of individuals with SCI. The overarching hypothesis is that individuals who participate in an intervention that presents positive psychotherapy topics in an interactive, structured, cognitive-behaviorally-based group intervention that stresses restructuring maladaptive thought processes and provides experiential opportunities to reinforce behavioral change will demonstrate increased self-efficacy.

**Contact:** Clare Morey  303-789-8621

### THE PSYCHOLOGICAL BENEFITS OF OPEN WATER SCUBA DIVING IN A CNS IMPAIRED ENVIRONMENT

**PUSH Dinner Proceeds**

| PI(s): Huserik, Carr | $4,500 |

This is an observational study of the safety and psychological effect of an approximately 45 minute introductory Discover SCUBA diving experience. The aim of this project is to examine the risks and benefits for individuals with SCI during their participation.

**Contact:** Don Gerber  303-789-8478

### STEM CELL RESEARCH

**The Karolinska Institute, PUSH Dinner proceeds**

| PI(s): Falci |

The objectives are the development of human stem cell lines specific for the surgical treatment of traumatic spinal cord injury to improve neurological function, and the development of human stem cell lines specific for the surgical treatment of posttraumatic syringomyelia via biological cyst obliteration.

**Contact:** Scott Falci  303-761-5281

### TRANSLATIONAL RESEARCH ON NEUROPATHIC PAIN IN SCI

**PUSH Dinner proceeds**

| PI(s): Falci |

The objective of this study is drug target discovery for spinal cord injury neuropathic pain via human spinal cord tissue analysis in patients undergoing DREZ microcoagulation for SCI neuropathic pain; collaborator Larry Gold PhD, SomaLogic and University of Colorado.

**Contact:** Scott Falci  303-761-5281

### BRAIN- AND SPINAL CORD-TO-MACHINE INTERFACE TECHNOLOGY

| PI(s): Falci |

The goal of this project is to develop brain and spinal cord-to-machine interface technology to enhance mobility of SCI individuals; collaborating with the U.S. Air Force Academy, Colorado Springs, Air Force Research Laboratory at Wright Patterson Air Force Base, FalconWorks-Colorado Springs, and Furniture Row Warehouse NASCAR race team-Denver, Colorado.

**Contact:** Scott Falci  303-761-5281
### VALIDATION OF AN ESTABLISHED PARTICIPATION MEASURE IN A DIFFERENT POPULATION: SPINAL CORD INJURY

| Craig H. Neilsen Foundation | 2016 - 2018 | PI(s): Whiteneck | $297,004 total |

To address the research need for a more practical and psychometrically sound, objective measure of participation after SCI, this proposed research is designed to evaluate an excellent measure of participation developed and validated for persons with TBI - PART-O - for use after SCI.

Contact: Gale Whiteneck  303-789-8204

### DETERMINING HOW THE TIMING OF CATHETER REMOVAL IN SCI PATIENTS EFFECTS INCIDENCE OF UTI

| PUSH Dinner Funds | 2016-2017 | PI(s): Brubaker | $27,000 |

This prospective observational study is to determine if the timing of indwelling urinary catheter removal in SCI patients effect incidence of UTIs.

Contact: Morgan Brubaker  303-789-8200

### SCI QOL VALIDATION

| Craig H. Neilsen Foundation | 2017-2020 | PI(s): Charlifue | $49,048 |

This study will assess the reliability and validity of the International SCI QoL Basic Data Set (SCI-QoLBDS), evaluating if there are differences in scores and understanding of items across languages and cultures.

Contact: Susan Charlifue  303-789-8306

### DENTAL PULP STEM CELLS

| Craig Foundation | 2017 | PI(s): Morse | $80,000 |

In the coming year preclinical work will be conducted to support a future IND and clinical trial development to first assess neurological improvement following dental pulp stem cell transplantation at 1 week after injury and continue observation. In addition to monitoring motor recovery, cord conduction volume, remyelination, and action potential conduction through the lesion over time, mortality, allodynia, transplant rejection, and tumorgenicity due to transplantation will also be assessed.

Contact: Leslie Morse  303-789-8970

### SOURCES OF INJUSTICE AMONG INDIVIDUALS FOLLOWING SPINAL CORD INJURY

| Craig Foundation | 2017 | PI(s): Monden | $18,359 |

The purpose of this study is to investigate the sources of perceived injustice among individuals following SCI with the goal of informing future development of a targeted intervention.

Contact: Kim Monden  303-789-8562
### Home-Based Virtual Reality (VR) Treatment for Chronic Balance Problems in Adults with TBI

**PI(s):** Tefertiller, Harrison-Felix, O'Dell

This study will evaluate a low-cost home-based physical therapy program that incorporates the use of a commercially available virtual reality system aimed at increasing balance and community mobility, enhancing overall balance system function, reducing the risk of falls, maximizing treatment adherence, and improving participation in life activities for individuals with TBI who have exhausted their formal physical rehabilitation opportunities.

**Contact:** Candy Tefertiller  
303-789-8251

### Extension study: Home-Based Virtual Reality (VR) Treatment for Chronic Balance Problems in Adults with TBI (funded by the Craig Hospital Foundation)

The purpose of this study is to extend the current VR research project (above) to include objective measures of balance control and postural stability using the SMART Equitest balance system. Four core tests from this system will be utilized for computerized measures of balance. These tests are used to qualify and quantify balance and postural deficits, to assess the underlying sensory and motor systems associated with these deficits, and to identify any maladaptive patterns of balance control. The data from the SMART Equitest core tests will be collected with the intent of examining the validity of the primary outcome measures of the VR study.

**Contact:** Candy Tefertiller  
303-789-8251

### Improving Well-Being after TBI through Structured Volunteer Activity

**PI(s):** Payne, Hawley

This study will evaluate the efficacy of a novel intervention to facilitate successful volunteer placement following TBI, and will examine the effect of structured altruistic volunteering upon well-being.

**Contact:** Lenny Hawley  
303-789-8570

### LEAD Module Project: Internet use and online social participation among individuals with TBI

**PI(s):** Baker-Sparr, Mellick, Whiteneck

The primary objective of this module is to determine the extent of online social participation among TBIMS participants with the following aims: 1) characterize internet use with a focus on communication and participation via social media, and 2) examine associations between patterns of internet use and demographics and functional and psychosocial outcomes collected concurrently at Form II, to identify any predictors of successful online participation.

**Contact:** Gale Whiteneck  
303-789-8204
### Module Project: Long-Term Medical Co-Morbidity And Functional Decline Following TBI
**Pl(s):** Hammond (Indiana TBIMS), Whiteneck (Site)

The long-term goal of this research is to gain knowledge about morbidity years following TBI to allow the development, implementation and testing of models for managing TBI as a chronic condition. The objective is to identify the medical and psychiatric issues occurring years after TBI that may contribute to functional decline over time after TBI. The rationale of the proposed research is that with such knowledge we can develop interventions aimed at the most prevalent and potentially manageable long-term conditions of TBI.

Contact: Gale Whiteneck 303-789-8204

### Module Project: Statins and Outcome After TBI: An Observational Study
**Pl(s):** Whyte (Moss TBIMS), Whiteneck (Site)

The objective of this study is to determine whether statin use and (for statin users) degree of statin adherence at the time of injury and/or after is associated with functional recovery from TBI.

Contact: Gale Whiteneck 303-789-8204

### Module Project: Cognitive Testing in the TBI Model Systems
**Pl(s):** Dams-O’Connor (Mt Sinai TBIMS), Whiteneck (Site)

This study will address two goals: (1) Provide data needed to make informed decisions about the appropriateness of each subtest of the Brief Test of Adult Cognition by Telephone (BTACT) for potential adoption in the TBIMS national database (NDB), and (2) Examine the relationship between health and cognitive functioning in TBIMS participants and compare this to a matched non-TBI sample.

Contact: Gale Whiteneck 303-789-8204

### Module Project: Development of an Extended Measure of Global Function to Support Clinical Trials Originating in Acute Rehabilitation
**Pl(s):** Whyte (Moss TBIMS), Whiteneck (Site)

The objective of this project is to develop an outcome measure whose items span a range suitable for clinical trials originating in acute rehabilitation (i.e., including patients with disorders of consciousness), and continuing to at least 1 year post-injury, and to examine candidate behaviors for marking the emergence from the minimally conscious state during this interval.

Contact: Gale Whiteneck 303-789-8204

### Module Project: Test-Retest Reliability of TBIMS Form 2 Measures with Persons with TBI
**Pl(s):** Bogner (Ohio TBIMS), Whiteneck (Site)

The purpose of this module study is to establish estimates of test-retest reliability for each of the items and instruments that comprise the TBIMS Form 2 interview (Aim 1). For any measures found to have problematic reliability, recommendations will be made to the TBIMS Data Committee to investigate means to improve reliability (Aim 2). Aim 3 of the study is to disseminate information about test-retest reliability to better inform not only TBIMS researchers, but also non-TBIMS researchers and clinicians.

Contact: Gale Whiteneck 303-789-8204
### Module Project: Resilience after Traumatic Brain Injury

**PI(s):** Kreutzer (Virginia TBIMS), Whiteneck (Site)

The purpose of this module is to: 1: Investigate the post-injury trajectory of resilience over time. 2(a): Identify the variables that are associated with resilience for individuals at 3, 6 and 12 months post-injury. 2(b): Identify the variables associated with differences in the post-injury resiliency profile over time.

*Contact:* Gale Whiteneck | 303-789-8204

### Module Project: Understanding Causes of Death in the TBI Model System (Verbal Autopsy)

**PI(s):** Dams-O’Connor (Mt. Sinai TBIMS), O’Neil-Pirozzi (Spaulding-Harvard TBIMS), Whiteneck (Site)

The goal of the proposed module is to better understand factors leading to death among individuals with a moderate-severe TBI.

*Contact:* Gale Whiteneck | 303-789-8204

### THE TRAUMATIC BRAIN INJURY MODEL SYSTEMS (TBIMS) NATIONAL DATA AND STATISTICAL CENTER (NDSC)

National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)

<table>
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<tr>
<th>Grant #90DP0084-01-00</th>
<th>PI(s): Harrison-Felix</th>
<th>$662,500/year</th>
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The TBIMS NDSC manages the TBI Model Systems National Database and provides technical assistance, training, and methodological consultation to 16 centers and 3 follow-up sites as they collect and analyze longitudinal data from people with TBI in their communities, and as they conduct research toward evidence-based TBI rehabilitation interventions.

*Contact:* Dave Mellick | 303-789-8563

### INCORPORATING TBIMS DATA INTO THE FEDERAL INTERAGENCY TBI RESEARCH (FITBIR) INFORMATICS SYSTEM

CDMRP / Department of Defense

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<th>PI(s): Harrison-Felix</th>
<th>$259,100</th>
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The aims of this project are to evaluate: 1) the compatibility of the data sharing policies and procedures between the TBIMS and FITBIR, 2) the exact crosswalk between the TBIMS NDB and the TBI Common Data Elements (CDEs) implemented by FITBIR, 3) the degree to which TBIMS variables can be converted to FITBIR CDEs, aliases, and new data elements, and these variables formatted in existing published or new FITBIR data forms, 4) the feasibility of downloading a de-identified version of the current TBIMS NDB to FITBIR, 5) the feasibility of adding the FITBIR Global Unique Identifier (GUID) over time as new and existing patients are contacted for data collection, and 6) the feasibility of prospectively collecting more CDEs that are not currently variables in the TBIMS NDB by a sample of current TBIMS.

*Contact:* Gale Whiteneck | 303-789-8204
### MULTICENTER EVALUATION OF MEMORY REMEDIATION AFTER TBI WITH DONEPEZIL

National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) to TIRR/Memorial Herman Rehabilitation and Research (subcontract to Craig Hospital)

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<th>2013 – 2018</th>
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<tr>
<td>PI(s): Harrison-Felix</td>
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<td>$376,596 total</td>
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This proposed study will establish whether, and to what extent, donepezil is an effective treatment for functionally important TBI-related memory deficit. The project is a four-site, randomized, parallel design, double-blind, placebo-controlled, 10-week trial of donepezil 10 mg daily for verbal memory problems among adults with TBI in the subacute or chronic recovery period. Craig Hospital will serve as the data coordinating center for the study.

Contact: Dave Mellick 303-789-8563

### AGING AND GLUTATHIONE ANTIOXIDANT STATUS AS MAJOR DETERMINANTS OF INJURY AND RECOVERY FROM TRAUMATIC BRAIN INJURY

Knoebel Center, University of Denver

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<tr>
<th>PI(s): Linseman and Gorgens from DU, Gerber, Monden</th>
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The purpose of this study is to determine if bolstering brain Glutathione levels with whey-based nutritional supplement (Immunocal®) will enhance resilience of aged mice to TBI; and to measure blood Glutathione levels and the extent of functional recovery from TBI in patients receiving treatment at Craig Hospital.

Contact: Kim Monden 303-789-8562

### OPTIMIZED SLEEP AFTER BRAIN INJURY: A PILOT STUDY

Colorado TBI Trust Fund

<table>
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<tr>
<th>Grant #16IHEA83450</th>
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<tr>
<td>PI(s): Makley, Gerber, Monden</td>
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<td>$300,000 + $35,287 from the Craig Hospital Foundation</td>
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This study will begin to address the gap in knowledge about the nature, incidence and effect of sleep disturbances on recovery from moderate-to-severe TBI during the early rehabilitation period. It will also pilot a sleep hygiene protocol to improve sleep for individuals in the early rehabilitation phase after TBI.

Contact: Kim Monden 303-789-8562

### NEUROANATOMIC PREDICTORS OF LONGER-TERM OUTCOME IN TRAUMATIC BRAIN INJURY

Colorado Neurological Institute

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<th>2015 - 2017</th>
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<tr>
<td>PI(s): Kowalski</td>
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<td>$3,800</td>
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The study proposes to acquire brain imaging data at multiple time points to assess associations between neuroanatomic characteristics and longer-term outcome in patients with moderate to severe traumatic brain injury (TBI). This will employ head computed tomography (CT) and brain magnetic resonance imaging (MRI) for patients enrolled in the Craig Hospital Traumatic Brain Injury Model Systems (TBIMS) database. It will create an enhanced body of radiologic data (modalities and timing) for this study population.

Contact: Robert Kowalski 303-789-8028

### EFFECTS OF RHYTHMIC AUDITORY STIMULATION ON GAIT IN TBI

PUSH Dinner funds

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<th>2016-2017</th>
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<tr>
<td>PI(s): Thompson, Kowalski</td>
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<td>$31,560</td>
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This pilot feasibility study is to investigate the effect of Rhythmic Auditory Stimulation (RAS) on functional mobility for individuals with TBI.

Contact: Robert Kowalski 303-789-8028
### EpiBios4Rx PUBLIC ENGAGEMENT CORE REPRESENTING TBIMS

<table>
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<tr>
<th>National Institutes of Health (NIH) Centers</th>
<th>2016-2021</th>
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<tr>
<td><strong>PI(s):</strong> Kowalski</td>
<td>$5,000/year</td>
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Robert Kowalski representing TBIMS program in Epilepsy Bioinformatics Study for Antiepileptogenic Therapy (EpiBioS4Rx), a 5-year NIH-funded (U grant) study to identify relevant biomarkers of epileptogenesis following TBI. The goal is to design clinical trials for antiepileptogenic therapies for TBI survivors. Robert Kowalski and TBIMS will partake in the Public Engagement Core working group developing research methodology, recruitment and retention for the study. Other participants include the Brain Injury Association of America, the VA, NINDS, UCLA, American Epilepsy Society and the Epilepsy Study Consortium.

Contact: Robert Kowalski 303-789-8028

### TRACK-TBI

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<tr>
<th>NIH, National Institutes of Neurological Disorders and Stroke</th>
<th>2017-2019</th>
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<td><strong>PI(s):</strong> Harrison-Felix</td>
<td>$96,000</td>
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This is a collaboration with Denver Health in a longitudinal study of TBI that enrolls participants through Level 1 Trauma Centers across the US. Participants represent the entire spectrum of age, demographics, and injury severity. The overall goal of TRACK-TBI is to improve TBI classification/taxonomy for targeted clinical treatment trials, in order to improve TBI outcome assessments, such that the size and costs of clinical trials can be reduced, identify the health and economic impact of Mild TBI patient disposition, and create a legacy database with analytic tools and resources to support TBI research.

Contact: Cindy Harrison-Felix 303-789-8028

### COMPARISON OF SLEEP APNEA ASSESSMENT STRATEGIES TO MAXIMIZE TBI REHABILITATION PARTICIPATION AND OUTCOME

<table>
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<tr>
<th>Subawardee to Craig from Tampa VA Research and Education Foundation (TVAREF) in connection with TVAREF’s contract with Patient-Centered Outcomes Research Institute (PCORI)</th>
<th>2016-2019</th>
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<td><strong>PI(s):</strong> Gerber</td>
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This is a multi-site study to compare assessment strategies for sleep apnea in order to maximize TBI rehabilitation participation and outcome. Craig is a clinical site and the multi-site data coordinating center for this study.

Contact: Don Gerber 303-789-8478

### Spinal Cord Injury (SCI) and Traumatic Brain Injury (TBI) Research

### THE PREVALENCE AND INTENT OF CANNABIS USE IN INDIVIDUALS WITH SCI AND TBI IN COLORADO

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<tr>
<th>Craig Hospital Foundation</th>
<th>2016</th>
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<tr>
<td><strong>PI(s):</strong> Hawley</td>
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This proposed study seeks to gain information about the patterns of use and the effects of cannabis on the SCI and TBI populations that we serve. This data could inform care and treatment, and could be a basis for future research in this area.

Contact: Clare Morey 303-789-8621