

Jonathan Lifshitz, Ph.D.
Translational Neurotrauma Research
Phoenix Children's Hospital
University of Arizona, College of Medicine, Phoenix, AZ
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EDUCATION:

- 2004-2006 **Virginia Commonwealth University, Medical College of Virginia Campus**
Post-Doctoral Fellowship, Department of Anatomy & Neurobiology
Research: *Thalamic Circuit Disruption after Diffuse Traumatic Brain Injury*
Advisor: John T. Povlishock, Ph.D.
- 2002-2004 **University of Pennsylvania**
Post-Doctoral Fellowship, Department of Neurosurgery
Research: *Amygdala Response to Experimental TBI in the Mouse*
Advisor: M. Sean Grady, M.D.
- 1995-2002 **University of Pennsylvania**
Ph.D. Neuroscience, Department of Neurosurgery
Dissertation Title: *Pathologic Alterations in Mitochondrial Populations Following Experimental Brain Injury*
Dissertation Advisor: Tracy K. McIntosh, Ph.D.
- 1991-1995 **University of California, Los Angeles**
B.S. Neuroscience, *magna cum laude*, department highest honors, Phi Beta Kappa
Senior Thesis Title: *Dynamic Regional Mismatch between Cerebral Blood Flow and Glucose Utilization in Degenerating Cortical Areas Following a Lateral Cortical Contusion*
Senior Thesis Advisor: David A. Hovda, Ph.D.

ACADEMIC APPOINTMENTS:

- 2012 - Health Scientist
Phoenix VA Healthcare System
- 2012- Associate Professor, Research Scholar Track
Department of Child Health
University of Arizona, College of Medicine – Phoenix
- 2012- Director, Translational Neurotrauma Research
Barrow Neurological Institute at Phoenix Children's Hospital
- 2012 Associate Professor, with Tenure (declined)
Spinal Cord and Brain Injury Research Center (SCoBIRC)
Department of Anatomy & Neurobiology
University of Kentucky Chandler Medical Center
- 2007-2012 Assistant Professor, Tenure Track
Spinal Cord and Brain Injury Research Center (SCoBIRC)

Department of Anatomy & Neurobiology
University of Kentucky Chandler Medical Center

2007-2012 Assistant Professor, Secondary Appointment
Department of Physical Medicine & Rehabilitation
University of Kentucky Chandler Medical Center

PROFESSIONAL EXPERIENCE:

2007 Second-by-Second Electrochemical Measurements in Biological Systems Course, Center for Microelectrode Technology, University of Kentucky

2005 Medical Rehabilitation Research Training Workshop. National Center for Medical Rehabilitation Research (NCMRR). Rockville, MD.

2005-2006 Senior Fellow, Virginia Commonwealth University Reanimation Engineering Shock Center (VCURES)

1998 Visiting Scholar & Researcher, Laboratory for Experimental Brain Research, Wallenberg Neuroscience Center, Lund University, Sweden

RESEARCH INTERESTS

- Circuit dismantling and reorganization resulting from diffuse brain injury that underlies post-traumatic morbidities.
- To investigate the cellular and behavioral development of sensory sensitivity in the whisker barrel circuit and rational therapeutic interventions to mitigate the morbidity.
- To demonstrate that the forearm posturing associated with the fencing response can be used as an acute indicator of moderate and repeated traumatic brain injury, in addition to a predictor of chronic vestibulomotor deficits.
- To implement glutamate-sensitive microelectrode arrays to understand injury-induced alterations in glutamate signaling.
- Explore over the counter anti-inflammatory treatment for mild diffuse brain injury.

TEACHING EXPERIENCE:

2009-2012 Mentor, *F-Series Grant Writing Workshop*, Depts. Anatomy & Neurobiology and Physiology, University of Kentucky
22.5 lecture hours

2009 Lecturer, *Mechanisms of Neurologic Disease* (ANA780), Dept. Anatomy & Neurobiology, University of Kentucky
2 lecture hours

2009 Lecturer, *Introduction to Cognitive Sciences* (CGS500), Department of Computer Science, University of Kentucky
1 lecture hour

2008-2011 Course Lecturer, *Neuroanatomy for Physical Therapy Students* (ANA802), Dept. Anatomy & Neurobiology, University of Kentucky
12 lecture hours

- 2008, 2009 Lecturer, *Medical and Psychosocial Aspects of Disability* (RC516), Rehabilitation Counseling, University of Kentucky
2 lecture hours
- 2008 Lecturer, Health Researchers Youth Academy, University of Kentucky
2 lecture hours
- 2008 Faculty Participant, *Seminar in Anatomy* (ANA600), Dept. Anatomy & Neurobiology, University of Kentucky
- 2007-2011 Course Lecturer, *CNS Injury*, Dept. Anatomy & Neurobiology, University of Kentucky
2 lecture hours
- 2006 Course Lecturer, *Neuroanatomy*, Dept. Anatomy & Neurobiology, Virginia Commonwealth University
4 lecture hours
- 2005 Course Lecturer, *Scientific Writing and Grantsmanship*, Dept. Anatomy & Neurobiology, Virginia Commonwealth University
4 lecture hours
- 2001 Head Teaching Assistant: *Molecular and Cell Biology*, Department of Bioengineering, University of Pennsylvania
- 1999-2002 Upward Bound Teaching Program, *Sensory Systems*, Institute for Neurological Sciences, University of Pennsylvania
- 1998-2002 Co-Director, *Introduction to the Brain*, Wallingford Elementary School, Wallingford, PA
- 1998 Head Teaching Assistant: *Introduction to Brain and Behavior*, Biological Basis of Behavior, University of Pennsylvania
- 1997 Teaching Assistant: *Introduction to Brain and Behavior*, Biological Basis of Behavior, University of Pennsylvania

ACADEMIC MENTORING:

Post-Doctoral Fellows:

- 2012 - Katharine Eakin, *Connection in Age Related Development Seizure*
- 2011- Jenna Ziebell, *Rod Microglia in the Diffuse Injured Brain*
National Neurotrauma Society Travel Award, 2013
1st Place Michael Goldberger Award at NNS 2013
- 2010-2011 Pooja M. Talauliker, *Sensory-motor Dysfunction in the Whisker Pattern Generator after Experimental Diffuse Brain Injury*
Current Position: Gatton MBA Program, University of Kentucky
- 2008-2012 Theresa C. Thomas, *Functional Evaluation of the Whisker-Barrel Circuit after Diffuse Brain Injury*
Funding: NIH/NIA T32 AG000242
National Neurotrauma Society Travel Award 2009, 2011
1st Place, 3rd Annual Postdoctoral Poster Session, UK College of Medicine
Outstanding Poster, Bluegrass Chapter of the Society for Neuroscience 2010
1st Place, Louisville Chapter of the Society for Neuroscience 2011

1st Place, 4th Annual Postdoctoral Poster Session, UK College of Medicine
 Current Position: Assistant Professor, Child Health, University of AZ,
 Phoenix

Primary Graduate Dissertation Advisor:

- 2012 - Jordan Harrison, *Lipid derived neuroprotectants after brain injury*, Arizona State University
- 2010- Rachel K. Rowe, *Post-Traumatic Sleep as an Indicator and Treatment for Brain Injury*, Anatomy & Neurobiology, College of Medicine, University of Kentucky (Advisor: J. Lifshitz)
 National Neurotrauma Society 2013 Poster selected for Excellence
 National Neurotrauma Society 2013 Travel Award
- 2009-2011 Ellen E. Magee, *Neurorehabilitation of the Brain-Injured Whisker Barrel Circuit*, Physical Therapy, College of Health Sciences, University of Kentucky (Advisor: J. Lifshitz)
 National Neurotrauma Society Travel Award 2010
 Current Position: Physical Therapist, Colorado
- 2007-2012 Jason M. Hinzman, *Alterations in Glutamate Neurotransmission after Experimental Brain Injury*, Anatomy & Neurobiology, College of Medicine, University of Kentucky (Advisor: G.A. Gerhardt)
 National Neurotrauma Society Travel Award 2009
 Murray Goldstein Award of Excellence, National Neurotrauma Society 2010
 Individual Pre-doctoral National Research Service Award 7/2010-6/2012
Alterations in Glutamate Neurotransmission after Experimental Brain Injury [F31 NS067899](#)
 Current Position: Post-Doc Fellow, University of Cincinnati

Graduate Thesis Committees

- 2013 Caroline Addington, School of Biological and Health Engineering, Arizona State University (Advisor: S. Stabenfeldt)
- 2009- Ranjana Singh, Anatomy & Neurobiology, College of Medicine, University of Kentucky (Advisor: J.W. Geddes)
- 2009 Lesley Gilmer, Anatomy & Neurobiology, College of Medicine, University of Kentucky (Advisor: S.W. Scheff)
- 2008-2012 Dexter Reneer, Anatomy & Neurobiology, College of Medicine, University of Kentucky (Advisor: J.W. Geddes)
- 2008- Daniel Liput, Pharmaceutical Sciences, College of Pharmacy, University of Kentucky (Advisor: K. Nixon)
- 2008 Lamin H. Mbye, Anatomy & Neurobiology, College of Medicine, University of Kentucky (Advisor: E.D. Hall)
- 2007-2011 Ryan Reednower, Anatomy & Neurobiology, College of Medicine, University of Kentucky (Advisor: P.G. Sullivan)

Undergraduate Research Mentor

- 2013 - Anika Perdok, "TBD", University of Bath, United Kingdom
- 2013 - Benjamin Rumney, "TBD", University of Bath, United Kingdom
- 2013 - Taylor Colburn, *Juvenile Brain Injury*, Scottsdale Community College
- 2012 - Kendal Smith, "*Cerebellar neuropathology after diffuse TBI*", Scholarly Project, College of Medicine, University of Arizona, Phoenix
- 2012 - Eric Casella, "*Hippocampal neuron morphology after focal injury in juvenile rat*" Biology, University of Miami
- 2012 - Tim Ellis, "*Age influences rod microglia after diffuse TBI*" Biological Science, Midwestern University
- 2012 - Aida Khododad, "*Arc expression as a molecular indication of circuit reorganization*" M.Sc., Neuroscience, University of Strasbourg (France)
- 2012 Helen Ray-Jones, "*Dismyelination and NOGO influence on microglia*" University of Bath, United Kingdom
1st Place Translational Science Award, VISN 18 Research Forum, 8/2013
- 2011-2012 Lindsey E. Smith, *Thrombospondin Gene Expression after Diffuse Brain Injury*, Nutritional Sciences, University of Kentucky
- 2011-2012 Sam Marples, *Rod Microglia in Diffuse Brain Injury; Injury-Induced Synaptogenic Gene Expression*, University of Bath, United Kingdom
Current Position: PhD Student, Kings College, United Kingdom
- 2010-2011 Katelyn C.S. McNamara, *Experimental diffuse traumatic brain injury exacerbates spontaneous inflammatory pain, but not thermal hypersensitivity, in the ipsilateral hindpaw*, Neuroscience Independent Department Program, University of Kentucky
2012 Posters-at-the-Capitol, Frankfort, KY
2011 National Conference on Undergraduate Research, Ithaca, NY
2012 National Conference on Undergraduate Research, Weber State University
- 2010-2011 Anastazia E. Learoyd, *Comparison of Behavioral Tests to Evaluate Somatosensory Whisker Function*, University of Bath, United Kingdom
Current Position: Graduate Student, University of Nottingham, UK
- 2009-2011 Jahan D. Miremami, *Histopathology in the Sensorimotor Brainstem Relay of the Whisker Barrel Circuit*, University of Kentucky
AMMSTEM Research Fellowship 2009-2011
Current Position: Medical Student, University of Kentucky
- 2009-2010 Daniel van Bregt, *Susceptibility of the Substantia Nigra to Diffuse Brain Injury*, University of Bath, United Kingdom
- 2008-2010 Tuoxin Cao, *Neuroinflammatory & Neuroplastic Response to Diffuse Brain Injury*, University of Kentucky
eUreKa! Research and Travel Funds 2009-2011
University of Kentucky Undergraduate Summer Research Grant
National Neurotrauma Society Travel Award 2010

- Daniel R. Reedy Quality Achievement Award 2011 (*declined*)
2011 2nd Place, Oswald Research and Creativity Program, Biological Sciences
Current Position: Graduate Student, Virginia Commonwealth University
- 2007-2009 Ario H. Hosseini, *The Fencing Response as an Indicator of Brain Injury Severity*, Vanderbilt University
Current Position: Medical Student, University of Louisville
- 2003-2005 Lorriann D. Tran, *Contralateral Hippocampal Cell Loss after Lateral Fluid Percussion*, University of Pennsylvania
Current Position: Psychiatry Attending, University of Maryland

High School Student Mentor

- 2009-2011 Rory D. Young, *Biomechanical Analysis of Fluid Percussion Brain Injury*, Math Science and Technology Center, P.L. Dunbar High School
Current Position: Undergraduate, Tufts University
- 2007-2009 Katelyn C.S. McNamara, *The Whisker Nuisance Task*, Experience Based Career Education, P.L. Dunbar High School, Lexington, KY
Current Position: University of Kentucky, Honors Program
10th Annual Posters-at-the-Capital Selection, Frankfort, KY
2011 1st Place, Oswald Research and Creativity Program, Biological Sciences

DEPARTMENTAL/COLLEGE COMMITTEES OR SERVICE:

- 2012- Research Senate for the University of Arizona, College of Medicine – Phoenix
- 2011-2012 Program Committee, 18th Annual Kentucky Spinal Cord & Head Injury Research Trust Symposium, University of Kentucky
- 2011 Poster Judge, Fourth Annual Post-Doctoral Poster Session, University of Kentucky College of Medicine
- 2011 Strategic Planning Committee, Goal 3: Resources, University of Kentucky College of Medicine
- 2010 Poster Judge, Third Annual Post-Doctoral Poster Session, University of Kentucky College of Medicine
- 2010 Co-Founder, University of Kentucky HealthCare Concussion Clinic
- 2010 Interviewer, MD-PhD Candidates, University of Kentucky College of Medicine
- 2009 Poster Judge, Second Annual Post-Doctoral Poster Session, University of Kentucky College of Medicine
- 2009 SCoBIRC 10th Anniversary Celebration Committee, University of Kentucky College of Medicine
- 2008-2010 Chair, SCoBIRC Employee of the Quarter Award
- 2008-2009 Search Committee, SCoBIRC-Neurosurgery TBI Recruitment
- 2007, 2008 Faculty Speaker, Integrated Biomedical Sciences orientation, University of Kentucky

- 2007-2008 Chair, SCoBIRC Invited Lecture Opportunity for Post-Doctoral Fellows or Senior Graduate Students
- 2008 Program Committee, 14th Annual Kentucky Spinal Cord & Head Injury Research Trust Symposium, University of Kentucky
- 2007-2010 Public Relations Director, Spinal Cord & Brain Injury Research Center, University of Kentucky
- 2006 Organizer, TBI Journal Club, Virginia Commonwealth University
- 2005-2006 Co-Organizer, Commonwealth Center for TBI Seminar Series
- 1996-1997 Curriculum Committee, Neuroscience Graduate Group, University of Pennsylvania
- 1996-1997 Co-chair Neuroscience Graduate Student Journal Club
- 1996 Admissions Committee, Neuroscience Graduate Group, University of Pennsylvania
- 1994-2008 Organizer & participant in Society for Neuroscience Brain Awareness Week activities, UCLA, UPENN, Phila. Soc. Neurosci.

UNIVERSITY COMMITTEES OR SERVICE:

- 2013 Judge, University Of Arizona College Of Medicine-Phoenix, 17th Academic Excellence Day
- 2010-2012 Member, Science Inquiry General Education Reviewers Panel, General Education Oversight Committee (GEOC), University of Kentucky
- 2010 Member, External Review Committee for the Department of Rehabilitation Sciences, College of Health Sciences, University of Kentucky
- 2009 Grant Review, Pilot and Collaborative Clinical and Translational Studies, Center for Clinical and Translational Science, University of Kentucky
- 2009 Faculty Curricular Team for Learning Outcome IA: *The Nature of Inquiry in the Natural, Physical and Mathematical Sciences*, General Education Curriculum Reform
- 2008 Session Organizer, Clinical and Translational Science 2008 Fall Conference, University of Kentucky, *Advances in Pharmacological Treatment of Brain and Spinal Cord Injury: Translational Science in Academia*

REGIONAL COMMITTEES OR SERVICE:

- 2013 Arizona Traumatic Brain Injury Research Group
- 2013 Cactus Foundation Science Advisory Board
- 2013- Appointed Member of Advisory Council on Spinal and Head Injuries, State of Arizona
- 2011-2012 President-Elect, Bluegrass Chapter of the Society for Neuroscience
- 2011 Moderator, Faculty, Co-Organizer, 2nd Annual Lexington Sports Concussion Summit, Lexington, KY
- 2010-2012 Career Speaker, International Baccalaureate Programme, Fayette County School System, Kentucky

- 2010 Founding member, Kentucky Concussion Alert Network
- 2010 Grant Reviewer, Indiana Alzheimer Disease Center
- 2010 Conference Planning Committee, 21st Annual Brain Injury Summit, Brain Injury Alliance of Kentucky, Lexington, KY
- 2009 Chair, *Childhood Neurological Conditions*, Brain Awareness Week Town Hall Meeting, Bluegrass Chapter of the Society for Neuroscience, Lexington, KY
- 2008 Chair, *Bench to Bedside Successes in Neuroscience Research at UK*, Brain Awareness Week Town Hall Meeting, Bluegrass Chapter of the Society for Neuroscience, Lexington, KY
- 2007-2011 Experience Based Career Education (EBCE) mentor for high school students, Fayette County Public Schools
- 2007-2009 Outreach Coordinator, Bluegrass Chapter of Society for Neuroscience
- 2007 Poster Judge, Neuroscience Day, Society for Neuroscience Bluegrass Chapter
- 2006 Co-organizer, *Emerging Treatments in Neurological Disease: Genetics and Stem Cells*, Central Virginia Chapter of the Society for Neuroscience, Richmond, VA
- 2005-2006 Post-Doctoral Representative, Central Virginia Chapter of the Society for Neuroscience
- 2000-2003 Philadelphia Regional Brain Bee, Institute for Neurological Sciences, University of Pennsylvania

NATIONAL COMMITTEES OR SERVICE:

- 2013 National Neurotrauma Meeting
Chair, Microglia in Neurological Injury,
Workshop Leader, Work-Life Balance: Can anyone Really Do it All?,
- 2013 Chair, DOD Study Section, Washington, DC
- 2012 Poster Judge, 30th Annual National Neurotrauma Symposium, Phoenix, AZ
- 2012- Grant Reviewer, Congressionally Directed Medical Research Programs, Psychological Health and Traumatic Brain Injury Research Program, Applied Neurotrauma Research – Applied/Clinical Science - 1, ANR-ACS-1
- 2011-2014 Scientific Merit Review Board Member, RRD1 Brain Injury: TBI and Stroke Research Panel, Rehabilitation Research & Development, Veterans Administration
- 2011-2012 Chair, Transition Planning Committee, National Neurotrauma Society
- 2011-2013 Scientific Program Planning Committee, 30th National Neurotrauma Symposium, National Neurotrauma Society
- 2010 Chair, Strategic Planning Committee, National Neurotrauma Society
- 2010 Grant Reviewer, ZRG1 BDCN-A, Recovery Act Limited Competition: NIH Director's Opportunity for Research in Five Thematic Areas (RC4): Neuroscience, Mental Diseases, and Aging, National Institutes of Health
- 2010-2011 Ad Hoc Member, RRD1 Brain Injury: TBI and Stroke Research Panel, Rehabilitation Research & Development, Scientific Merit Review Board, Veterans Administration

- 2009 Grant Reviewer, FY10 Defense Medical Research and Development Program, Intramural Blast Injury Panel
- 2009- Board Member, American Association of Multi-Sensory Environments, www.aamse.us
- 2009 Grant Reviewer, Congressionally Directed Medical Research Programs, Psychological Health and Traumatic Brain Injury Research, Concepts-Biology & Neuroscience Panel
- 2009-2010 Secretary/Treasurer, National Neurotrauma Society, www.neurotraumasociety.org
- 2008 Grant Reviewer, Department of Defense, Intramural War Supplemental Program, *Moderate-Severe Traumatic Brain Injury Panel*
- 2008 Grant Reviewer, Congressionally Directed Medical Research Programs, Deployment-Related Medical Research Program, Hypothesis Development Award, *Psychological Health/Traumatic Brain Injury #5 Panel*, Drug Development and Therapeutic Focus
- 2008 Grant Reviewer, Congressionally Directed Medical Research Programs, Deployment-Related Medical Research Program, Advanced Technology-Therapeutic Development Award, *Psychological Health/Traumatic Brain Injury #3 Panel*
- 2008 Session Co-Chair, *Mild Traumatic Brain Injury*, 26th Annual National Neurotrauma Symposium
- 2008 Workshop on Combination Therapies for Traumatic Brain Injury, NINDS, NIH
PMID: [19331514](https://pubmed.ncbi.nlm.nih.gov/19331514/)
- 2008 Program Committee, 26th National Neurotrauma Symposium, National Neurotrauma Society
- 2007 Grant Reviewer, Congressionally Directed Medical Research Programs, Post-Traumatic Stress Disorder/Traumatic Brain Injury, Investigator-Initiated Award, *Clinical Elucidation Panel*
- 2007-2009 Website Coordinator & International Liaison, Women in Neurotrauma Research
- 2007 National Neurotrauma Society Abstract Judging Committee
- 2007 National Neurotrauma Society Officer Nominating Committee
- 2006-2009 Chair, Women in Neurotrauma Research Visiting International Scholar Award (WiNTR-VISA) committee
- 2006 Session Co-Chair, *New Approaches to Discovery in CNS Injury*, 24th Annual National Neurotrauma Symposium
- 2004-2005 Program Committee, National Neurotrauma Society Annual Meeting

ACADEMIC HONORS & AWARDS:

- 2010-11 Charles T. Wethington Research Award, University of Kentucky College of Medicine
- 2008 Best Oral Presentation, 20th Annual Physical Medicine & Rehabilitation Research Day, University of Kentucky
- 2007 Young Investigator Award, Brain Injury Association of America

2005	Michael Goldberger Award of Excellence, 23 rd Annual National Neurotrauma Society Symposium, Washington, DC
2004	Outstanding Exhibit, 1 st Annual Kids Judge! Neuroscience Fair, UPenn
2003	Murray Goldstein Award of Excellence, 21 st Annual National Neurotrauma Society Symposium, Biloxi, Mississippi
2001	Poster Excellence Award, 19 th Annual National Neurotrauma Society Symposium, San Diego, California
2000	Student Competition Award, 18 th Annual National Neurotrauma Society Symposium, New Orleans, Louisiana
2000	Travel Award Recipient, National Neurotrauma Society
1996	Honorable Mention, Graduate Research Fellowship, National Science Foundation
1996	Honorable Mention, National Defense Science & Engineering Graduate Fellowship Program, Department of Defense
1995	Phi Beta Kappa
1995	Highest Department Honors, Neuroscience, UCLA
1995	Outstanding Exhibit, 1 st Annual Kids Judge! Neuroscience Fair, UCLA
1992-1995	Deans Honor Roll, UCLA
1995	University Grant, UCLA
1994	Poster Excellence Award, 12 th Annual National Neurotrauma Society Symposium, Miami Beach, Florida
1994	Howard Hughes Honors Undergraduate Research Program, Center for Academic and Research Excellence, UCLA
1994	Psi Chi – Psychology National Honor Society
1993	Golden Key National Honor Society
1992	Cal Grant, UCLA

CURRENT FUNDED PROJECTS:

Leadership Circle Grant Phoenix Children's Hospital Foundation	2013	\$ 54,544 total
Experimental Equipment for Recording Neurotransmission in the Brain \$54,544 Role: Dual PI (Thomas)		
BNI at PCH & SBHSE at ASU Collaborative Seed Grant <i>Extracellular Matrix as a Biomarker Source for Acute Neurological Injury</i> This proposal tests the hypothesis that the extracellular matrix serves as a biomarker source specific to brain injury mode and severity, with predictive value for neurological outcome. Role: Dual PI (Stabenfeldt)	01/31/2013 – 01/31/2014	\$ 30,000 total
R01 NS065052 (Lifshitz) NIH/NINDS <i>Neural Circuit Disruption by Diffuse Brain Injury: Basis for Morbidity & Therapy</i>	02/01/2010 – 1/31/2015	\$1,653,573 total

The proposal explores the behavioral, anatomical and molecular bases of the observed aberrant responses to whisker stimulation in diffuse brain injured rats.

Role: PI

[NIH RePORT](#)

R01 NS065052-S1 (Lifshitz) 02/01/2010 – 1/31/2015

NIH/NINDS

\$ 110,658 total

Research Supplements to Promote Diversity in Health-Related Research Program

This supplement supports Rachel Rowe as a graduate student in pursuit of her Ph.D.

Role: PI

[NIH RePORT](#)

R21 NS072611 7/01/2011 – 6/30/2013

NIH/NINDS

\$398,773 total

Post-Traumatic Sleep: An Individualized Indicator of Severity and Recovery

The major goals of this project are to quantify parameters of diffuse brain injury induced sleep and the effects of sleep disruption on behavioral, physiological and histopathological outcomes.

Role: Dual PI (O'Hara)

[NIH Report](#)

11-2A (Bing) 01/15/2012 – 01/14/2015

Kentucky Spinal Cord and Head Injury Research Trust

\$299,991 total

Neuroinflammation mediates delayed nigrostriatal dopaminergic neurodegeneration after diffuse brain injury

The present proposal tests the hypothesis that diffuse TBI may cause axonal injury and neuroinflammation in the nigrostriatal dopaminergic system, which contributes to selective degeneration of dopaminergic neurons in the SN.

Role: Co-Investigator

R03 NS077098 (Lifshitz) 07/01/2012 – 06/30/2014

NIH/NINDS

\$148,500 total

Inhibition of synaptogenesis mitigates late-onset post-traumatic morbidity in rat

The proposal gathers preliminary data on the time course of post-traumatic degenerative and regenerative phases by quantifying synaptogenic and thrombospondin expression. Then the hypothesis that synaptogenesis is necessary for circuit dysfunction is evaluated by chronic administration of gabapentin to inhibit synaptogenesis.

Role: PI

NIH Report

PROJECTS SUBMITTED FOR FUNDING AS PRINCIPAL INVESTIGATOR:

R01 NS081169 (Lifshitz) 10/01/2012 – 09/30/2017

NIH/NINDS

\$1,893,750 total

Role of rod microglia in circuit disruption after diffuse brain injury in the rat

The proposal investigates rod microglia in diffuse brain injury. Rod microglia have been largely neglected since the beginning of last century. We propose rod microglia are active participants in circuit reorganization responsible for maladaptive plasticity after diffuse brain injury.

Role: PI

2012-Q-15096 01/01/2012 - 12/31/2014 \$3,500,000 total
 CDC
 "CDC Denfinition of TBI"
 Note/Description
 Role: Site PI

COMPLETED FUNDED PROJECTS:

11-9A (Lifshitz) 01/15/2012 – 01/14/2014 \$200,000 total
 Kentucky Spinal Cord and Head Injury Research Trust
Diffuse traumatic brain injury induces synaptogenesis and consequent adverse incidents
 The proposal explores the role of synaptogenesis as the climax to injury-induced cascades that result in behavioral morbidity. It is proposed that thrombospondins and their cognate $\alpha 2\delta 1$ receptor mediate the synaptogenesis following circuit reorganization.
 Role: PI Returned upon recruitment to Univ of Arizona

10-5A (Lifshitz) 01/15/2011 – 01/14/2014 \$300,000 total
 Kentucky Spinal Cord and Head Injury Research Trust
Post-Traumatic Sleep: An Individualized Indicator of Severity and Recovery
 In conjunction with NIH R21 funds, this proposal explores the influence of post-traumatic sleep on novel object recognition and multivariate concentric square test. Additionally, we investigate the role of anti-inflammatory (ibuprofen, acetaminophen and aspirin), wake promoting (caffeine) and sleep promoting (melatonin, benzodiazepines and barbiturates) pharmacological interventions to influence outcome from brain injury.
 Role: Dual PI (O'Hara) Returned upon recruitment to Univ of Arizona

R01 HD061996 (Pauly) 08/05/2009 – 06/30/2012 \$844,446 total
 NIH/NICHHD
Combination of Cyclosporin and Choline Optimizes Outcomes In Focal and Diffuse Rat Models of TBI
 The central hypothesis of this proposal is that functional, neurochemical and histological outcome following experimental brain injury can be optimized through the combined use of cyclosporin A and choline.
 Role: Investigator [NIH RePORT](#)

T32 AG000242 (Gerhardt) 09/30/1994 – 04/30/2014 \$234,660 total
 NIH/NIA
Cellular and Molecular Basis of Brain Aging
 The goal of this Training Program is to prepare promising graduate students and postdoctoral fellows for successful careers in the neurobiology of aging.
 Role: Training Faculty [NIH RePORT](#)

7-11 (Lifshitz) 01/15/2008 – 01/14/2011 \$299,688 total
 Kentucky Spinal Cord and Head Injury Research Trust
Somatosensory Circuit Disruption and Rehabilitation after Diffuse Brain Injury

The proposal focuses on implementing enzyme-based microelectrode arrays for the quantification of extracellular glutamate dynamics in the rodent somatosensory whisker barrel circuit following diffuse traumatic brain injury.

Role: PI

No cost extension through 2012

(Pauly)

06/07/2010 – 06/07/2011

Martek Biosciences Corporation (Royal DSM N.V.)

\$75,000 total

Neuroprotective Actions of Dietary Supplementation with Docosahexaenoic Acid in a Rat Model of Traumatic Brain Injury

The aim of this collaborative agreement is to evaluate the efficacy of prophylactic and persistent treatment of diffuse brain injured rats with docosahexaenoic acid.

Role: Co-Investigator

F32 HD049343 (Lifshitz)

09/01/2004 – 08/31/2006

NIH/NICHD NCMRR

[NIH RePORT](#)

Amygdala Response to Experimental Traumatic Brain Injury

This post-doctoral NRSA supports Dr. Lifshitz to train in experimental brain injury models and the impact on symptoms of post-concussion syndrome.

T32 NS043126 (Grady)

07/01/2003 – 06/30/2004

NIH/NINDS

[NIH RePORT](#)

Brain Injury Training Grant

The proposed program will train M.D., Ph.D. and medical student investigators in state-of-the-art techniques to investigate the molecular and cellular mechanisms underlying central nervous system (CNS) injury.

T32 AG000255 (Lee)

08/01/2000 – 04/30/2002

NIH/NIA

[NIH RePORT](#)

Training in Age-Related Neurodegenerative Diseases

The proposed training program will mentor and educate young investigators to conduct research in age-related neurodegenerative diseases so that they can develop into independent investigators who will pursue careers to further our understanding of the etiology, pathogenesis, diagnosis and treatment of these diseases.

Dissertation Research Support (Lifshitz) 09/01/1999 – 05/01/2002

NIH/NIA

Mitochondrial Damage after TBI Resembles Age-Related Mitochondrial Damage

The major goals of this project were to compare mitochondria isolated from brain-injured and aged animals to demonstrate a link between injury and aging processes.

T32 GM007517 (Nusbaum)

09/01/1995 – 8/31/1997

NIH/NIGMS

[NIH RePORT](#)

Graduate Training in Systems and Integrative Biology

The proposed training program continues flexible interdisciplinary Graduate Training Program that is designed to prepare exceptional students for productive independent research careers in Systems and Integrative Biology.

PROFESSIONAL MEMBERSHIP:

Bluegrass Chapter of the Society for Neuroscience
 Brain Injury Association of Kentucky
 International Stereological Society
 Kentucky Academy of Science
 National Neurotrauma Society
 Phi Beta Kappa
 Society for Neuroscience
 Women in Neurotrauma Research

EDITORIAL SERVICE:**Editorial Board**

2007 – present Brain Injury
 2010 – present Frontiers in Neurodegeneration

Ad Hoc Reviewer

Brain Injury
 Brain Research
 Cytology
 Experimental Neurology
 Journal of Cerebral Blood Flow & Metabolism
 Journal of Neurochemistry
 Journal of Neuroscience Methods
 Journal of Neurotrauma
 Journal of Trauma
 2010 Supplement: Advanced Technology Applications for Combat Casualty Care
 (ATACCC)
 Neurotherapeutics
 Neuroscience

MANUSCRIPTS SUBMITTED OR IN PREPARATION:

Fenn AM, JC Gensel, Y Huang, PG. Popovich, **J Lifshitz**, JP Godbout (*in preparation*)
 Immune activation promotes depression one month after diffuse brain injury: a role for
 primed and immune-reactive microglia. *Biological Psychiatry*

Miremami, JD, PM Talauliker, J Harrison, **J Lifshitz**. (*in revision*) Neurodegeneration in
 Sensory, but not Motor, Brainstem Nuclei of the Rat Whisker Circuit after Diffuse Brain
 Injury. *Exp. Brain Res.*

Thomas TC, EE Magee, **J Lifshitz**. (*in preparation*) Interaction Between Intervention Timing
 and Modality to Rehabilitate the Whisker Barrel Circuit of Diffuse Brain Injured Rats.
Restorative Neurology & Neurosci

Casella E, TC Thomas, DL Vanino, WF Mayle, **J Lifshitz**, JP Card, PD Adelson (*in
 preparation*) Traumatic Brain Injury Alters Long-Term Hippocampal Neuron
 Morphology in Juvenile, but not Immature, Rats. *Journal of Neurotrauma*

- Bell JD, TC Thomas, EH Lass, J Ai, H Wan, **J Lifshitz**, AJ Baker, RL Macdonald (*in preparation*) Platelet-mediated changes in neuronal glutamate receptor expression at sites of micro thrombosis following experimental subarachnoid hemorrhage. *Journal of Neurosurgery*
- Eakin K, JM Ziebell, **J Lifshitz** (*in preparation*) Quantitative vascular morphology after experimental diffuse traumatic brain injury the rat.
- Harrison JL, RK Rowe, BF O'Hara, **J Lifshitz** (*in preparation*) Over-the-counter pharmacological intervention does not adversely affect outcome following diffuse traumatic brain injury in mouse.
- Rowe RK, MS Striz, AD Bachstetter, LJ Van Eldik, KD Donohue, BF O'Hara, **J Lifshitz**. (*in review*) Diffuse brain injury induces acute post-traumatic sleep. *Sleep*
- Ellis GI, RK Rowe, AD Bachstetter, GF Corder, BK Taylor, LLJ Van Eldik, **J Lifshitz**, F Marti (*in preparation*) Diffuse traumatic brain injury increases peripheral inflammatory hyperalgesia and prime systemic regulatory T Cell dysfunction.
- Rowe RK, JL Harrison, BJ O'Hara, **J Lifshitz** (*in preparation*) Diffuse brain injury does not affect chronic sleep patterns in the mouse.
- Rowe RK, JL Harrison, BJ O'Hara, **J Lifshitz** (*in review*) Recovery of neurological function despite immediate sleep disruption following diffuse brain injury in the mouse: clinical relevance to the medical untreated concussion. *Sleep*
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Le, HM, **J Lifshitz**, ML Smith, P Pinanong, SM Lee, DP Becker, DA Hovda. (1994) “Uncoupling of glucose metabolism and blood flow in degenerating cortical and hippocampal areas following a unilateral cortical contusion.” *Soc. Neurosci. Abstracts*, 24:85.13.

****Lifshitz, J.**, P. Pinanong, H.M. Le, S.M. Lee, D.A. Hovda, D.P. Becker. “Regional uncoupling of cerebral blood flow and metabolism in degenerating cortical areas following a lateral cortical contusion.” *J. Neurotrauma*, 12:129, 1994.

Hovda, DA, HM Le, **J Lifshitz**, JA Berry, H Badie, A Yoshino, SM Lee. (1994) “Long term changes in metabolic rates for glucose following mild, moderate and severe concussive head injuries in adult rats.” *Soc. Neurosci. Abstracts*, 24:353.10.

INVITED LECTURES:

** Denotes award

National/International Symposia**VISN 18 Research Forum, Albuquerque NM (8/29/2013)***Treatment and Rehabilitation from Neuropsychological Disease***Spring Brain Conference, Sedona, AZ (3/20-22/2013)***“Neurological dysfunction emerges when the injured brain rebuilds itself”***13th Annual Neuroscience of Brain Injury Conference, Napa, CA (11/9-10/2012)***“All you need is Inflammation to Disrupt Function After Diffuse Brain Injury”***3rd Annual Australian Neurotrauma Symposium, Hobart Tasmania (10/25-26/2012)***The injured brain is a new brain: Neuropathology dismantles circuits, which then reorganize and produce new neurological functions***2012 VISN 18 Research Forum, Phoenix, AZ (8/23/2012)***Animal Models of Treatment and Rehabilitation from Neuropsychological Disease***Brain Injury Summit: A Meeting of the Minds (1/9/2012)***Brain Injury Forces of Moderate Magnitude Elicit the Fencing Response***Brain Injury Summit: A Meeting of the Minds (1/9/2012)***Effects of Diffuse Brain Injury on Sleep in the Mouse***2nd Joint Symposium of the International and National Neurotrauma Societies (9/9/2009)***Assessment of Mild TBI in Animal Models***41st Annual Winter Conference on Brain Research, Snowbird UT (1/27/2008)***The Challenge of Modeling and Therapeutic Development for Mild TBI***23rd Annual National Neurotrauma Society Symposium, Washington, DC (11/11/2005)***Perisomatic Thalamic Axotomy after Traumatic Brain Injury (TBI)***29th Annual Society for Neuroscience, Workshop, San Diego, CA (10/23/2004)***Hands-On Neuroscience Activities. Food for Thought: Discovering Brain-Body-Behavior Relationships***Regional Symposia****Café Science Series, Phoenix AZ (2/6/2013)***Traumatic Brain Injury***1st Annual Sport Concussion Summit, Lexington KY (7/9/2010)***Basic Science and Biomechanics of Concussion***12th Annual UK Sports Medicine Symposium (5/15/2010)***The Fencing Response: Tonic Posturing to Indicate Sport-Related Concussion***Bluegrass Chapter of the Society for Neuroscience Town Hall Meeting (5/3/2010)***A Discussion of Sports-Related Concussion – Basic Science of Concussion***21st Annual Brain Injury Summit, Brain Injury Alliance of Kentucky (4/9/2010)***State of the State: Research and Education***Northern Kentucky TBI Conference (3/26/2009)**

Experimental Traumatic Brain Injury for the Identification of Neuropathology, Behavioral Morbidity and Therapeutic Intervention

Epilepsy Foundation of Kentuckiana (11/21/2008)

Traumatic Brain Injury and Epilepsy: Pathophysiology and Prevention

Brain Injury Association of Kentucky Annual Summit (4/18/2008)

Innovative Brain Research in the State of Kentucky

Systems in Biology Annual Retreat, University of Pennsylvania (5/14/2001)

Mitochondrial vulnerability following in vivo traumatic brain injury

University of Kentucky: 2007 - 2012

Department of Anatomy & Neurobiology (9/15/2011)

Stäbchenzellen: A Brain Injury-Induced Microglial Phenotype Largely Overlooked Since Nissl, Spielmeyer and Cajal Nearly a Century Ago

Department of Psychology (9/2/2011)

The New Brain: Circuit dysfunction and reorganization after diffuse brain injury

Center for Clinical and Translational Science Spring Conference, University of Kentucky (3/23/2010)

Glutamate Neurotransmission Recorded on a Sub-Second Timescale in a Diffuse Brain-injured Circuit Reveal Injury-Induced Deficits that Parallel the Development of Behavioral Morbidity in Rats

Presented by: Theresa C. Thomas, Ph.D., post-doctoral trainee

UK Sports Medicine, University of Kentucky (5/7/2009)

Immediate Determination of Brain Injury Force Magnitude by the Fencing Response

Department of Anatomy & Neurobiology, University of Kentucky (2/23/2009)

Diffuse Traumatic Brain Injury: Can Rats Teach Us Anything?

Department of Exercise Science, University of Kentucky (12/5/2008)

Determining Injury Severity, Enduring Morbidity and Effective Rehabilitation Paradigms in a Rodent Model of Concussion

****Department of Physical Medicine & Rehabilitation Research Day, University of Kentucky (6/5/2008)**

Fencing Response: An Indicator of Traumatic Brain Injury Severity

Department of Physical Medicine & Rehabilitation, University of Kentucky (3/14/2008)

Neuropathology Underlying Enduring Behavioral Morbidity after Diffuse Traumatic Brain Injury

Center for Biomedical Engineering, Wenner-Gren Research Laboratory, University of Kentucky (2/22/2008)

Severity Dependent Behavioral Morbidity after Diffuse Traumatic Brain Injury

Department of Anatomy & Neurobiology, University of Kentucky (2/26/2007)

Somatosensory Circuit Disruption after Diffuse Traumatic Brain Injury

Academic Institutions**Phoenix Veterans Administration Research Week, (5/14/2013)***Translational Sensory and Neuroendocrine Dysfunction after Brain Injury***University of Washington, Seattle, Sleep medicine (4/19/2013)***Effects of Diffuse Brain Injury on Sleep in the Mouse***University of Washington, Seattle, Anesthesiology Grand Rounds (4/18/2013)***Neurological Dysfunction Emerges when the injured brain rebuilds itself***Arizona State University - Monthly Seminar, Phoenix, AZ (11/16/2012)***Rods, Tracks and Trains: Microglia in the diffuse-injured brain align and couple to influence circuit reorganization.***Head, Experimental & Regenerative Neurosciences, University of Western Australia (10/22/2012)***Circuit disruption after diffuse brain injury: a case for dismantling and reorganization before neurological consequences***Brain & Mind Research Institute, University of Sydney (10/19/2012)***Rods, Tracks and Trains: Microglia in the diffuse-injured brain align and couple to influence circuit reorganization***Department of Neurosurgery, Thomas Jefferson University (3/20/2012)***Circuit Reorganization is Responsible for Behavioral Morbidity Associated with Experimental Diffuse Brain Injury***Department of Basic Medical Sciences, University of Arizona – Phoenix (5/09/2011)***Early & Late Onset Neurological Impairment after Experimental Diffuse Brain Injury***Military Brain Injury Rehabilitation Research Consortium, Department of Orthopedics & Rehabilitation, Brooke Army Medical Center (2/08/2011)***Modeling Clinically Relevant Vestibular & Sensory Deficits after Diffuse Brain Injury***Department of Anatomy, Wayne State University (12/01/2010)***Ten Past Ten: The new face of experimental diffuse brain injury***Department of Neurological Surgery & Kentucky Spinal Cord Research Center, University of Louisville. (9/18/2009)***Whisker Sensory Sensitivity as a Rodent Model of Post-Traumatic Morbidity***UPMC Sports Medicine Concussion Program, Pittsburgh PA (7/31/2009)***Immediate Determination of Brain Injury Force Magnitude by the Fencing Response***Department of Neurosurgery, University of California, Los Angeles (6/13/2007)***Somatosensory Whisker-Barrel Circuit Disruption: An Experimental Model of Post-Traumatic Morbidity***Department of Anatomy & Neurobiology, Virginia Commonwealth University (8/1/2006)***Somatosensory Circuit Disruption and Rehabilitation after Diffuse Brain Injury***Spinal Cord and Brain Injury Research Center (SCoBIRC), University of Kentucky (6/29/2006)**

Somatosensory Circuit Disruption and Rehabilitation after Diffuse Brain Injury

Spinal Cord and Brain Injury Research Center (SCoBIRC), University of Kentucky (3/30/2006)

Focal Neurodegeneration vs. Diffuse Neural Circuit Disruption: Impact on Post-Traumatic Morbidity

Department of Neurosurgery Grand Rounds, Medical College of Wisconsin (3/24/2006)

Focal Neurodegeneration vs. Diffuse Neural Circuit Disruption: Impact on Post-Traumatic Morbidity

Department of Anatomy & Neurobiology, Virginia Commonwealth University (2/18/2005)

Mitochondrial Pathology after TBI

Behavioral and Cognitive Neuroscience Student Research Symposium, University of Pennsylvania (3/19/2004)

Acute cognitive impairments recover in brain-injured mice

Traumatic Brain Injury Seminar Series, Virginia Commonwealth University (11/19/2003)

Limbic system damage and dysfunction after experimental TBI: Implications for post-concussion syndrome

Department of Neurosurgery Grand Rounds, University of Pennsylvania (10/30/2003)

Double Trouble? Hippocampus and Amygdala Alterations after Experimental Brain Injury

Department of Neurosurgery Grand Rounds, University of Pennsylvania (6/27/2002)

Pathologic alterations in mitochondrial populations following experimental brain injury

CNS Injury Conference, University of Pennsylvania (5/7/2001)

Mitochondrial vulnerability following in vivo traumatic brain injury

Corporate Institutions

CNS Centre for Neuroskills, Bakersfield, CA (4/11-12/2013)

Circuits and Inflammation after TBI

CNS Centre for Neuroskills, Medical Advisory Board

Martek Biosciences, Columbia MD (7/29/2010)

Clinically Relevant Modeling of Sensory & Vestibular Deficits after Diffuse Brain Injury

Booz | Allen | Hamilton Health Team, Bethesda, MD (3/2/2010)

Traumatic Brain Injury: From Impact to Psychological Health

PUBLIC AWARENESS & COMMUNITY INVOLVEMENT:

Changing Attitudes About Sports Injuries (9/6/2013)

KJZZ

<http://www.kjzz.org/content/1309/changing-attitudes-about-sports-injuries>

OTL: Football At A Crossroads: The Hit System (8/29/2012)

ESPN

http://espn.go.com/espn/otl/story/_/id/8311371/significant-advances-being-made-concussion-research-universities-nationwide

Scientist hopes Shaw's injury will raise concussion awareness (9/20/2011)

Tallahassee Democrat

<http://www.tallahassee.com/article/20110920/FSU03/110920008/Scientist-hopes-Shaw-s-injury-will-raise-concussion-awareness?odyssey=mod%7Cnewswell%7Ctext%7Cfrontpage%7Cp>

Fencing Response (July 2011)

Kentucky Living Magazine

<http://www.kentuckyliving.com/article.asp?articleid=3281&issueid=370>

Confronting concussions: Head injuries in football cause great concern (10/6/2010)

The Stanford Daily

<http://www.stanforddaily.com/2010/10/06/confronting-concussions-head-injuries-in-football-cause-great-concern/>

TBall Coach, South Lexington Youth Baseball (2009-2010)

TBall Indians

Team Manager, Destination Imagination, Rosa Parks Elementary School, Lexington KY (2009)

Rising Stars: The Green Brains

Evaluating Head Injuries in Athletes (August 18, 2009)

WTVQ ABC News Health Report

<http://www.wtvq.com/health/5976-evaluating-head-injuries-in-athletes.html>

Neurological Dysfunction After Brain Injury Arises From New Circuits Formed During Repair

Jockeys' Guild Newsletter, July-August 2009, Vol 2, Issue 4

<http://www.jockeysguild.com/images/files/newsletters/Newsletter-Vol-2-Iss-4.pdf>

WEKU National Public Radio Interview (May 2008)

Traumatic Brain Injury and ATVs

UK's Spinal Cord and Brain Injury Research Center (Summer 2007)

Feature article in the Brain Injury Association of Kentucky Newsletter

http://www.biak.us/pdf/BIAK%20NEWSLETTER_Summer%202007.pdf

WUKY National Public Radio Interview (4/11/2007)

Traumatic Brain Injury Incidence and Research Frontiers

The long road back after brain injury (3/12/2007)

Cited in MSNBC online article

<http://www.msnbc.msn.com/id/17508770/>

Special Issue Brain Injury Awareness License Plates (2007-08)

Brain Injury Association of Kentucky & SCoBIRC endeavor to raise awareness and funds

The Silent Epidemic: Traumatic brain injury's massive impact on sufferers and society

Cited in: Neurology Now, vol 2(5): 12-25, Sept/Oct 2006.

http://journals.lww.com/neurologynow/Fulltext/2006/02050/The_Silent_Epidemic_Traumatic_brain_injury_s.6.aspx

PATENTS AND TRADEMARKS:

Lifshitz, Jonathan and Wayne Lifshitz. 2013. *A child carrier for carrying a child in a standing position on the back of the wearer*. US Patent 8,424,731 B2, filed July 13, 2009 and issued April 23, 2013.