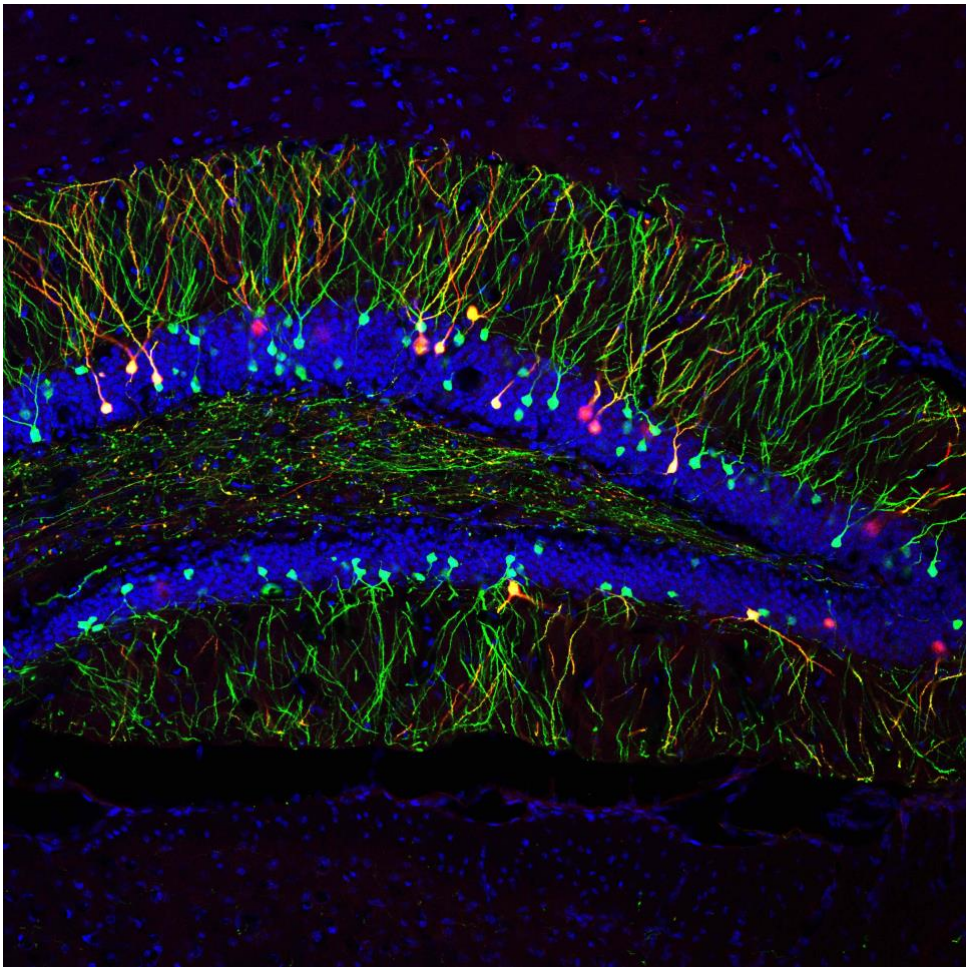
UTHSC NEUROSCIENCE INSTITUTE

THEC Neuroscience Center of Excellence

Annual Report to the

Tennessee Higher Education Commission (THEC)

Fiscal year 2021 (7/1/2020-6/30/2021)



I. MISSION STATEMENT

The Neuroscience Institute (NI) at the University of Tennessee Health Science Center (UTHSC) is supported by the Neuroscience Center of Excellence, one of several Centers of Excellence established by the Tennessee Higher Education Commission in 1985. Our mission is to develop and support multidisciplinary research and training in neuroscience. We feature basic science and clinical members spanning 13 departments and three colleges, and foster neuroscience research through support of neuroscience track graduate students and postdocs, the Neuroscience Imaging Center and Behavioral Core, a robust seminar series, and start-up packages for new faculty. The brain is the final frontier of biology. Scientific inquiry has produced remarkably detailed knowledge of the physical world and much of the life sciences, including details of the human genome. However, our knowledge of the brain is far from complete. The nature and mechanisms of consciousness, thought, perception, learning, memory and many diseases of the nervous system are poorly understood. Neuroscience is now at an exciting threshold of discovery and unprecedented growth. The resulting explosion of information is rapidly increasing our understanding of the basic mechanisms of brain structure and function. This emerging knowledge is helping us discover effective treatments and even cures for some neurological diseases. More information concerning the NI is available at: https://www.uthsc.edu/neuroscience-institute/

II. EXECUTIVE SUMMARY

In FY 2021 the NI/Center of Excellence continued the start-up fund support of (1) Dr. Tauheed Ishrat, an R01-funded associate professor and stroke/Alzheimer's neurobiologist recruited into the Anatomy and Neurobiology Department in 2017; (2) Dr. Il Hwan Kim, an R01-funded assistant professor and social behavior neurobiologist recruited from Duke University into the Anatomy and Neurobiology Department in 2019; and (3) Dr. Jianyang Du, an R01-funded associate professor and social behavior neurobiologist in the Anatomy and Neurobiology Department in January 2020. We provided stipend support to 5 graduate students and had 20 students in the Neuroscience Track of the Integrated Biomedical Sciences Ph.D. program, after accepting 6 new students. We supported 10 postdocs in the Departments of Anatomy and Neurobiology, Ophthalmology and Physiology, although 2 left early. We promoted neuroscience research by providing the Neuroscience Seminar series, mixing outside with UTHSC and affiliated faculty. Due to the impact of Covid seminars were offered by Zoom, which offered the advantage of participation of international speakers. The undergraduate summer Neuroscience Merit Fellowship program, cancelled in summer of 2020 due to Covid, resumed in summer 2021 with 3 students. We supported the Neuroscience Imaging Center, a cost-recovery facility providing the only transmission electron microscope (JEOL 2000) on campus, a state of the art Zeiss 800 Aryscan laser-line confocal microscope (upgraded from a Zeiss 710), and a Neurolucida 3-dimensional reconstruction workstation, and the Neuroscience Behavioral Core. We purchased new software to expand the image analysis capabilities of the Imaging Center, and also purchased new computer workstations and histology equipment to replace non-functional items. We supplemented the service contracts of these instruments and software to keep user fees low. We supported the Imaging Center's technical director, Esther Marquez Wilkins, Ph.D. Matthew Ennis, Ph.D., Chair of the Department of Anatomy and Neurobiology, was appointed as Interim Director upon the retirement of the longstanding Director of NI, William Armstrong, Ph.D. in August 2020.

III. TABLE OF CONTENTS

IV. ADMINISTRATIVE STRUCTURE

Interim Director: Matthew Ennis, Ph.D.
Department of Anatomy and Neurobiology

Co-Director: Professor Tony Reiner, Ph.D.
Department of Anatomy and Neurobiology

Administrative Specialist: Mistie Brewer

Program Coordinator/IT Specialist: Brandy Fleming, M.S.

Neuroscience Executive Committee:

Matthew Ennis, Ph.D., Professor and Chair, Department of Anatomy and Neurobiology

John Boughter, Ph.D., Professor, Department of Anatomy and Neurobiology

Jon Jaggar, Ph.D., Professor, Department of Physiology

Shalini Narayana, Ph.D., Associate Professor, Pediatric Neurology, Le Bonheur Hospital/UTHSC

Tony Reiner, Ph.D., Professor and NI Co-Director, Department of Anatomy and Neurobiology

Jeff Steketee, Ph.D., Professor, Department of Pharmacology

Steven Tavalin Ph.D., Associate Professor, Department of Pharmacology

Jim Wheless, M.D., Professor, Chief of Pediatric Neurology and LeBonheur Chair, Le Bonheur Hospital/UTHSC

Center Address:

University of Tennessee Health Science Center
875 Monroe Ave., Suite 426, Wittenborg Building
Memphis TN 38163
(901) 448-5960
https://www.uthsc.edu/neuroscience-institute/

V. FACULTY OF THE NEUROSCIENCE INSTITUTE

The Neuroscience Institute is currently comprised of 71 faculty members in several different departments on the UTHSC campus, including those with primary appointments at St. Jude Children's Research Hospital and one faculty member at UT Knoxville. Faculty are listed by department; those with primary appointments outside UTHSC or UTK are so indicated. We added 2 new members (*), and 2 members left UTHSC as indicated, this past FY.

Department of Anatomy and Neurobiology

William E. Armstrong, Ph.D., Professor Emeritus
Alessandra d'Azzo, Ph.D., Affiliated Professor (St. Jude)
John D. Boughter, Jr., Ph.D. Professor
Joseph C. Callaway, Ph.D., Associate Professor
Viktor Chizhikov, Ph.D., Associate Professorr
Jianyang Du, Ph.D., Associate Professorr
Michael A. Dyer, Ph.D., Affiliated Professor (St. Jude)
Matthew Ennis, Ph.D., Simon R. Breusch Professor and Chair; Interim NI Director
Max Fletcher, Ph.D., Associate Professor
Robert C. Foehring, Ph.D., Professor
Kristin Hamre, Ph.D., Associate Professor
Detlef Heck, Ph.D., Professor
Marcia G. Honig, Ph.D., Professor Emeritus
Tauheed Ishrat, Ph.D., Associate Professor
Il Hwan Kim, Ph.D., Assistant Professor
Hitoshi Kita, Ph.D., Professor Emeritus
Peter J. McKinnon, Ph.D., Affiliated Professor (St. Jude)
James I. Morgan, Ph.D., Affiliated Professor (St. Jude)
Anton J. Reiner, Ph.D., Methodist Professor and NI Co-Director
Lindsay Schwarz, Ph.D., Affiliated Assistant Professor (St. Jude)
J. Paul Taylor, M.D., Ph.D., Affiliated Professor (St. Jude)
Robert S. Waters, Ph.D., Professor
Steven L. Youngentob, Ph.D., Professor
Stanislav Zahkarenko, Ph.D. Affiliated Professor (St. Jude)

Department of Biochemistry and Cellular and Molecular Biology, UT Knoxville

Rebecca A. Prosser, Ph.D., Professor

Department of Genetics, Genomics and Informatics

Robert W. Williams, Ph.D., UT-Oak Ridge National Laboratory Governor's Chair in Computational Genomics, Professor and Chair; Director, Center for Integrative and Translational Genomics

Byron Jones, Ph.D., Professor

Lu Lu, Ph.D., Professor

Megan Mulligan, Ph.D., Assistant Professor

Burt Sharp, M.D., Van Fleet Professor

Department of Medicine/Cardiology

Syamal Bhattacharya, Ph.D., Professor

Department of Psychiatry

*Ronald Cowan, M.D., Ph.D., Professor and Chair

Department of Neurology

Michael McDonald, Ph.D., Professor

Mohammad Khan, Ph.D., Assistant Professor

Thaddeus S. Nowak, Ph.D., Professor

Lawrence T. Reiter, Ph.D., Professor

Jack Tsao, M.D., Ph.D., Professor

Department of Neurosurgery

Frederick Boop, M.D., Professor and Chair

Department of Ophthalmology

Rajashekhar Gangaraju, Ph.D., Assistant Professor

Monica M. Jablonski, Ph.D., Professor

Nawajes Mandal, Ph.D., Associate Professor

Department of Pediatrics, Pediatric Neurology and LeBonheur Children's Hospital

Abbas Babajani-Feremi, Ph.D., Assistant Professor, Pediatrics, Le Bonheur (left UTHSC 12/2020)

Joan Han, M.D., Associate Professor, Pediatrics, LeBonheur (left UTHSC 12/2020)

Amy McGregor, M.D., Associate Professor, Pediatric Neurology, Le Bonheur

Shalini Narayana, Ph.D., Associate Professor, Pediatric Neurology, Le Bonheur

Massroor Pourcyrous, M.D., Professor, Pediatrics

James W. Wheless, M.D., Professor and Chief of Pediatric Neurology, Le Bonheur

Department of Pharmaceutical Sciences

Duane D. Miller, Ph.D., Van Fleet Professor and Chair

Bob Moore, Ph.D., Professor

Jianxiong Jiang, Ph.D., Associate Professor

Department of Pharmacology

Alex M. Dopico, M.D., Ph.D., Professor and Chair

Suleiman W. Bahouth, Ph.D., Professor

Anna Bukiya, Ph.D. Associate Professor

Hao Chen, Ph.D., Associate Professor

Chang Hoon Jee, Ph.D., Assistant Professor

Francesca-Fang Liao, Ph.D., Professor

Kafait U. Malik, Ph.D., Professor

Kazuko Sakata, Ph.D., Associate Professor

Jeffery Steketee, Ph.D., Professor

Steven J. Tavalin, Ph.D., Associate Professor

*Brendan Turnstall, PhD., Assistant Professor

Thirumalini Vaithianathan, Ph.D., Assistant Professor

Fu-Ming Zhou, M.D., Ph.D., Professor

Department of Physiology

Julio Cordero-Morales, Ph.D., Associate Professor

Ioannis Dragatsis, Ph.D., Professor

Jonathan Jaggar, Ph.D., Maury Bronstein Professor

Charles W. Leffler, Ph.D., Professor Emeritus

Helena Parfenova, Ph.D., Professor

Valeria Vásquez, Ph.D., Associate Professor

Paula Dietrich, Ph.D., Assistant Professor

Department of Preventive Medicine

Khyobeni Mozhui, Ph.D., Assistant Professor

College of Nursing

Ansley Stanfill, Ph.D., Associate Professor

St. Jude Children's Hospital (see Departments Above for Affiliated Appointments)

Michael Dyer, Ph.D., Professor

Alessandra D'Azzo, Ph.D., Professor

Peter McKinnon, Ph.D., Professor

James Morgan, Ph.D., Professor

Lindsay Schwarz, Ph.D., Assistant Professor

J. Paul Taylor, M.D., Ph.D., Professor

Stanislav Zakharenko, Ph.D., Professor

VI. GRADUATE STUDENTS & POSTDOCTORAL STUDENTS

***Graduate Students*:** The NI supports the Neuroscience Graduate Program, which is a division of the Integrated Biomedical Sciences program at UTHSC. A description of the Neuroscience program can be found at: https://www.uthsc.edu/anatomy-neurobiology/neuroscience_graduate_program.php. This program is directed by NI members Dr. Max Fletcher (Track Director) and Dr. Matthew Ennis (Program head and Chair of Anatomy and Neurobiology). Students in this track take Functional Neuroanatomy, and 2 of 3 additional Core courses (Cellular Neuroscience, Behavioral Neuroscience, Developmental and Molecular Neuroscience), in addition to Statistics and Ethics. In addition, all graduate students must take the Neuroscience Seminar Class each year until they pass their qualifying exam, and all students participate in the student Neuroscience Symposium class every year, where they present their research. Both the Seminar and Symposium courses are coordinated and supported by NI. All students in good standing in the program are awarded matching stipends for at least 2 years (typically, years 3 and 4) of their Ph.D. research phase with the exception of students working at St. Jude Children's Hospital, which provides their complete stipend. Currently the program has 17 students (after 3 students graduated in FY2021), 4 of whom are at St. Jude's (faculty mentors have affiliate faculty appointments in Anatomy & Neurobiology), the others of whom are placed with faculty mentors at UTHSC in Anatomy & Neurobiology, Pediatrics (Division of Neurology), Neurology, Pharmacology and the College of Nursing.

In the last 6 years, four NI supported students have been awarded nationally competitive NIH F31 predoctoral fellowships during their graduate tenure: Sarah Neuner, Jordan Ross, Jessica Baker and Angela Taylor. Drs. Neuner and Ross graduated and left for postdocs several years ago, and Jessica Baker and Angela Taylor graduated in FY2021. These are the *only* UTHSC students from the larger IBS program to have F31 fellowships.

***Postdoctoral Fellows**:* The NI supports matching postdoctoral fellowships to some extent every calendar year, and successful postdocs can receive support for a maximum of 2 years. In December of 2020, we solicited applications for postdoctoral support **(see Appendix 4)**. Applications were reviewed by the Neuroscience Executive Committee based on productivity and promise in neuroscience research and awards were made on a competitive basis to the following 5 candidates with Neuroscience Institute faculty mentors: Jungsoo Lee (Physiology, Dr. Valeria Vasquez), Kaushik Mondal (Ophthalmology, Dr. Nawajes Mandal), Alejandro Mata (Physiology, Dr. Jon Jagger), Pratheepa Rasiah (Ophthalmology, Raja Gangaraju), and Rong Zhang (Physiology, Dr. Helena Parfenova). We also continued (and completed) support of 3 postdoctoral fellow awards made in FY20-21. Further information on postdoctoral awards is available at https://www.uthsc.edu/neuroscience-institute/education/postdoc-awards.php

VII. PROGRAM OVERVIEW AND ACCOMPLISHMENTS

OVERVIEW

***Organizational Structure*:** The Tennessee Higher Education Commission Neuroscience Center of Excellence comprises the administrative core and financial engine of the University of Tennessee Health Science Center's (UTHSC) Neuroscience Institute (NI), which is located within UTHSC's College of Medicine in Memphis, TN. Prof. Matthew Ennis is the Interim Director, and Prof. Tony Reiner is the Co-Director. The Director reports to the Executive Dean of the UTHSC College of Medicine, Scott Strome, M.D., and the UTHSC Vice Chancellor of Research, Steven Goodman, Ph.D. Physically the NI is housed within 13 different departments in 3 colleges (Medicine, Pharmacy, Nursing) with an administrative suite in Rm 426 Wittenborg Building at UTHSC. Affiliated members reside at UT Knoxville, St. Jude Children's Hospital, and LeBonheur Children's Hospital.

Dr. Ennis supervises Ms. Brandy Fleming, M.S., who is our Program Coordinator and also functions as our IT specialist. Ms. Fleming and Dr. Ennis supervise our administrative assistant, Mistie Brewer. With Ms. Fleming's help, the administrative assistant organizes the seminar series including all travel arrangements, assists in ordering and billing, and handles NI official correspondence. The Neuroscience Imaging Center is managed by Dr. Esther Marquez Wilkins, Ph.D., who reports directly to NI Director Ennis.

History: The Neuroscience Center of Excellence at UTHSC was established in 1985 and designated an accomplished Center of Excellence by the Tennessee Higher Education Commission in 1988. In 1998, the Neuroscience Center of Excellence was designated as the University of Tennessee Neuroscience Institute, with dedicated space in the Wittenborg, Link and Johnson buildings. The Neuroscience Center of Excellence award was designed to support graduate and postdoctoral education, to recruit and provide initial support to new neuroscience faculty, to renovate laboratory facilities, to purchase research equipment, to host symposia, a weekly seminar series, and to support community outreach programs such as those associated with Brain Awareness Week. The Director from 1985-2002 was Dr. Steven T. Kitai (retired, 2002; deceased 2019). Dr. David Smith was named director from 2002-2006 (deceased, Sept. 2006). Dr. William Armstrong was director from 2006-2020. Dr. Matthew Ennis, Chair of the Department of Anatomy and Neurobiology, was selected as NI Interim Director by UTHSC administration in 2020 upon Dr. Armstrong's retirement.

The program brings together neuroscience faculty members from the Departments of Anatomy and Neurobiology, Genomics, Medicine, Neurology, Neurosurgery, Nursing, Ophthalmology, Pediatrics, Pharmaceutical Sciences, Pharmacology, Physiology, Preventive Medicine, Psychiatry, and the Department of Biochemistry and Cellular and Molecular Biology at the University of Tennessee, Knoxville. Strong affiliations exist with Methodist University Hospital, Le Bonheur Children's Hospital, St. Jude's Children Hospital, the University of Memphis, Rhodes College, and Christian Brother's University. The interdepartmental nature of the program and the collaborations it fosters provide the cross-disciplinary environment necessary for high quality neuroscience research.

***Neuroscience Administrative Suite and Conference Rooms*:** The NI maintains an administrative suite with offices for the Director, Program Coordinator, and Administrative Assistant in the Wittenborg Building, 4th floor (Room 426).

This suite also contains 2 conference rooms, one large room for classes, lab meetings, and large committee meetings, and a smaller room for small meetings. We also maintain a breakroom for the NI staff, graduate students, postdocs as well as for staff from the animal vivarium located in the basement of the Wittenborg building, which houses animals for Anatomy and Neurology, Physiology, and Neurology faculty.

Neuroscience Imaging Core: The NI maintains a full-service Imaging Center (https://www.uthsc.edu/neuroscience-institute/facilities/imaging-center.php) housing confocal and electron microscopes, 3-dimensional reconstruction workstations, microtomy facility and lab and office space for the Director of the Imaging Core, Dr. Esther Marquez Wilkins, located on the 3rd floor of the Link Building. This is a cost recovery facility that NI supports in order to keep costs low. Scheduling is on-line.

Neuroscience Behavioral Core: This core is located on the 3rd floor of Wittenborg building (https://www.uthsc.edu/neuroscience-institute/facilities/behavioral-core.php), and is managed by Dr. Mike McDonald of Neurology. NI helped recruit Dr. McDonald. Dr. McDonald personally trains users in the great variety of testing equipment available in this core; nearly all equipment in the core was generously donated by NI faculty. This core is free of use to any UTHSC faculty, but NI occasionally supplies equipment and software on an as-needs basis. Scheduling is on-line.

Neuroscience Institute Web Site: Our Program Coordinator, Ms. Brandy Fleming, maintains the NI website with assistance from IT at UTHSC (https://www.uthsc.edu/neuroscience-institute/). This site contains information about our cores, the graduate and postdoctoral support programs, undergraduate fellowships, conference room and core on-line scheduling, faculty funding, spotlights on new faculty, seminars and symposia, and a full list of participating departments and NI faculty members. Ms. Fleming maintains 2 servers for NI members. One server is for file exchange for users of the Imaging Center. All images are digitally acquired from our confocal and electron microscopes, and these can be uploaded to this site by users, stored for a month, and downloaded at their convenience during that period. We also maintain a second server for archiving all NI business.

Areas of Neuroscience Research

Neurological and Neurodegenerative Disorders

Neurological diseases include disorders of the nervous system arising from nervous system malfunction or degeneration. Current areas of focus within NI include: cellular and network physiology of basal ganglia in the context of Parkinson's disease, traumatic brain and eye injury, stroke, seizures/epilepsy, neuronal dysfunction and death in Huntington's disease, the molecular biology of synaptogenesis in dystonia, and animal models of Alzheimer's disease.

Faculty	**Department**	**Faculty**	**Department**
A. Babajani-Feremi	Ped. Neurology	I. Dragatsis	Physiology
D. Heck	Anatomy & Neurobiology	B. Jones	Genetics, Gen. Inform.
H. Kita	Anatomy & Neurobiology	F.-F. Liao	Pharmacology
L. Reiter	Neurology	T. Nowak	Neurology

T. Ishrat	Anatomy & Neurobiology	A. Reiner	Anat. & Neurobiology
J. Tsao	Neurology	J. Wheless	Pediatric Neurology
J. Jiang	Pharmaceutical Sciences	S. Narayana	Pediatric Neurology
M. McDonald	Neurology	M. Mulligan	Genetics, Gen. Inform.
F. Zhou	Pharmacology	J. Taylor	Anatomy & Neurobiology
B. Moore	Pharmaceutical Sciences	J. Stanfill	Nursing
R. Gangaruju	Ophthalmology	P. Dietrich	Physiology

Excitable Properties of Neurons

Behavior, mentation and physiological homeostasis are all a function of neuronal activity in the nervous system. This activity can be encoded by membrane polarity or in the rates and patterns of neuronal action potentials. Information is passed among neurons through synaptic transmission.

Faculty	**Department**	**Faculty**	**Department**
R. Foehring	Anatomy & Neurobiology	H. Kita	Anatomy & Neurobiology
W. Armstrong	Anatomy & Neurobiology	J. Du	Anatomy & Neurobiology
J. Callaway	Anatomy & Neurobiology	S. Tavalin	Pharmacology
J. Cordero-Morales	Physiology	R. Waters	Anatomy & Neurobiology
A. Dopico	Pharmacology	V. Vásquez	Physiology
M. Ennis	Anatomy & Neurobiology	D. Heck	Anatomy & Neurobiology
F. Zhou	Pharmacology	A. Bukiya	Pharmacology
S. Zahkarenko	Anatomy & Neurobiology	T. Vaithianathan	Pharmacology

Sensory Information Processing

Sensory systems extract information from the environment and provide the nervous system an interface with the outside world. Understanding the way in which this information is represented in neuronal activity is the focus of this research group, which includes the study of olfaction, taste, pain, and vision.

Faculty	**Department**	**Faculty**	**Department**
M. Ennis	Anatomy & Neurobiology	R. Waters	Anatomy & Neurobiology
J. Boughter	Anatomy & Neurobiology	J. Du	Anatomy & Neurobiology
J. Cordero-Morales	Physiology	V. Vásquez	Physiology
M. Fletcher	Physiology	I. Kim	Anatomy & Neurobiology
D. Heck	Anatomy & Neurobiology	S. Youngentob	Anatomy & Neurobiology

Vision and Retina

Understanding the normal function of the eye and the way this process is affected by disease is the primary interest of this group. Researchers are addressing the normal development of the eye as well as the genetic basis of function and disease.

Faculty	**Department**	**Faculty**	**Department**
M. Dyer	Anatomy & Neurobiology	A. Reiner	Anatomy & Neurobiology
M. Jablonski	Ophthalmology	R. Williams	Genetics, Gen. Inform.
N. Mandal	Ophthalmology		

Neurogenetics and Development

This group is interested in gaining a deeper understanding of the origins of the impressive structural and functional complexity, diversity, and plasticity of the nervous system. Experimental and technical expertise of this group is broad, ranging from genetic and molecular analysis of the early stages of central and peripheral nervous system development to sophisticated functional assays of neuronal plasticity in response to environmental manipulations.

Faculty	Department	Faculty	Department
R. Williams	Genetics, Gen. Inform.	L. Lu	Genetics, Gen. Inform.
J. Boughter	Anatomy & Neurobiology	P. McKinnon	Anatomy & Neurobiology
V. Chizhikov	Anatomy & Neurobiology	J. Morgan	Anatomy & Neurobiology
A. d'Azzo	Anatomy & Neurobiology	K. Mozui	Preventive Medicine
I. Dragatsis	Physiology	A. Reiner	Anatomy & Neurobiology
K. Hamre	Anatomy & Neurobiology	L. Reiter	Neurology
J. Han	Pediatrics	M. Honig	Anatomy & Neurobiology
M. Mulligan	Genetics, Gen. Inform.	B. Jones	Genetics, Gen. Inform.

Mental and Addictive Disorders

Mental and addictive disorders are due to changes in normal brain function. This research group collaboratively explores changes in brain function that might explain mental disorders, such as depression, schizophrenia, ADHD, anxiety, post-traumatic stress disorder and addiction, and drug-induced changes in brain function that may be responsible for relieving mental disorders or producing addiction.

Faculty	Department	Faculty	Department
H. Chen	Pharmacology	B. Sharp	Pharmacology
A. Dopico	Pharmacology	J. Steketee	Pharmacology
K. Hamre	Anatomy & Neurobiology	S. Tavalin	Pharmacology
K. Sakata	Pharmacology	F. Zhou	Pharmacology
I. Kim	Anatomy & Neurobiology	B. Turnstall	Anatomy & Neurobiology
A. Reiner	Anatomy & Neurobiology	S. Youngentob	Anatomy & Neurobiology
M. Mulligan	Genetics, Gen. Inform.	L. Schwarcz	Anatomy & Neurobiology
J. Du	Anatomy & Neurobiology	R. Cowan	Psychiatry

ACCOMPLISHMENTS

Faculty support and recruitment: NI is currently disseminating funds to Dr. Tauheed Ishrat ($150,000). Dr. Ishrat, started drawing on his funds in February of 2018 and will have until February 2023 to spend the $150,000. Dr. Ishrat was recruited in 2017 into Anatomy and Neurobiology as an associate professor with an R01. He has submitted a second R01 which is pending review. He is a stroke neurobiologist and is interested in factors that mitigate or exacerbate stroke susceptibility in a focal ischemia model. NI also awarded Dr. Il Hwan Kim $150,000 to be spent over 5 years. Dr. Kim was recruited in 2019 into Anatomy and Neurobiology as an assistant professor; his R01 funded research area is social behavior and schizophrenia. He is working towards a second R01. In 2020, we recruited Dr. Jianyang Du into Anatomy and Neurobiology as associate professor; his R01-funded research investigates social behavior and autism and he is working towards a second R01 in this area. NI awarded him $100,000 toward his start-up fund package, to be spent over

5 years.

NI provided bridge research funding to NI member Dr. Khan (Assistant Professor of Neurology) to maintain his animal colony until his new research grant is awarded. We partnered with the Chair of Neurology to provide 50% ($3,461) of the $6,922 requested to maintain the colony, with the other 50% coming from Neurology.

Acquisition of Equipment for Cores: In the past, NI has contributed matching funds for multi-user pieces of equipment, including those obtained from NIH for an electron microscope, for two confocal microscopes and a computerized light microscope for three-dimensional neuronal reconstructions. In addition NI partnered with UTHSC Research to obtain a high resolution digital camera attachment for the electron microscope and to upgrade the Zeiss 710 to a Zeiss 800 Airyscan confocal microscope. All are located in the Neuroscience Imaging Core and are maintained and supervised by a dedicated Technical Manager (Dr. Esther Marquez Wilkins) provided by the NI. This past year we renewed our service agreements for this imaging equipment. In FY21, in response to a survey of imaging needs of NI faculty, we purchased two new additions to our Imaris software suite: (1) the Tracking XT Package which provides interactive processing, visualization and analysis software for 3D and 4D microscopic images; and (2) the ClearView Deconvolution 9.5 module for confocal image deconvolution. Additionally, we purchased a new ultramicrotome (Leica EM UC7) as our longstanding unit was broken beyond usefulness, a new glass knifemaker (Leica EM KMR3) for similar reasons, and new computers for the Zen workstation and the Microbrightfield Neurolucida system as the software on the existing computers could no longer be upgraded due to hardware incompatibility. The web site for the Imaging Center is: (https://www.uthsc.edu/neuroscience-institute/facilities/imaging-center.php) and features on-line scheduling for equipment use.

Graduate Student Support and Recruiting: Our interdisciplinary Graduate Neuroscience Track attracts outstanding applicants from around the country, with an emphasis on those in the Mid-South. The NI pays 50% of their stipend for 2 years (years 3 and 4), the remainder is paid by their mentor. For FY21 we spent $69,069 on matching stipends for 5 students and another $200 on travel support. Note that the impact of Covid since March 2020 cancelled travel to many meetings that otherwise would have been supported by NI. During FY21 we had 20 Neuroscience students, including 6 new students who entered in the Fall 2020; 3 students graduated. In Fall 2021 we recruited 4 new graduate students; however, Visa approval for two international students have been delayed. Our recruiting flyer can be found at the end of **Appendix 4**, but through querying students, we find that most discover the program based on the NI Web site.

Postdoctoral Research Awards. The NI provided matching funds on a competitive basis for 10 postdoctoral fellows or research associates for FY2021 (this includes 5 awarded in the previous calendar year with 2 leaving early). These awards range from $10,000-$15,000 each and totaled $50,539. The 5 postdocs newly awarded in 2020 were located in the Departments of Ophthalmology and Physiology. Their names are listed above under item VI.

***NI Neuroscience Seminar Series and Symposia*:** This series is a major mechanism for interaction among neuroscience faculty and students and brings outstanding neuroscientists from around the world to the UTHSC campus. During the 2020-2021 academic year, the NI sponsored the weekly Neuroscience Seminar Series, hosted 13 speakers, 5 internal, 1 from St. Jude, and 7 from outside UTHSC. Due to the continuing impact of Covid, the number of seminars was less than the typical 17 annually and was done via Zoom. The NI seminar series serves as the basis for a graduate course, Neuroscience Seminar (ANAT 821), which is attended by all neuroscience track IBS graduate students and within which they read papers by and meet with the visiting scientists (course director Dr. Sakata, Pharmacology, co-director Dr. Du, Anatomy and Neurobiology). This seminar program is vital to the Neuroscience Track of the Graduate Program and to the entire UT neuroscience community, serving to keep our faculty and students abreast of recent developments and, perhaps even more important, to showcase our strengths to national and international leaders in neuroscience research visiting our campus. NI also assists in the Spring Student Seminar course (course director Dr. Fletcher), where students give seminars and receive critical feedback from their colleagues. A complete list of the seminar speakers and their topics are provided in **Appendix 3**.

NI Sponsored Workshop: NI sponsors or co-sponsored imaging and neuroanatomy workshops, last in FY18-19. No workshops or symposia were scheduled in the current reporting period due to Covid. Several NI faculty including Drs. Cowan (Psychiatry), Williams (Genomics, Genetics and Bioinformatics), Chen (Pharmacology) and Hamre (Anatomy and Neurobiology) were featured speakers at the UTHSC Addiction Symposium (May 4, 2021; see **Appendix 4**).

***Undergraduate Neuroscience Merit Scholarships*:** These are given to outstanding undergraduates at Rhodes College, Christian Brothers University (CBU) and University of Memphis. The Rhodes and CBU scholars work on independent projects for their undergraduate thesis. New scholars are picked every Spring but UTHSC imposed a moratorium on undergraduate student research on campus in the summer of 2020 due to Covid. The previous year (summer 2019), NI supported 4 merit students working with UTHSC faculty mentors. We spent $16,232 supporting these and 4 additional scholarships in the summer of 2019 (after July 1, 2019, so part of FY2020). Fortunately, the Covid restriction was lifted for summer 2021 and we accepted 3 undergraduate students who began their research with NI faculty in June and July.

VIII. GOALS AND FUTURE PLANS

***Faculty Support and Recruitment*:** We were given permission in 2017 by Interim College of Medicine Dean Steven Schwab, and continued approval in 2018 under the new College of Medicine Dean Dr. Strome, to recruit two mid-level neuroscientists into the Department of Anatomy and Neurobiology. Chair of Anatomy and Neurobiology, Dr. Ennis, and Dr. Armstrong co-chaired the search committees for these recruitments. This resulted in the recruitments of Dr. Il Hwan Kim of Duke University in 2019, and Dr. Jianyang Du from University of Toledo in 2020. NI partnered on both of their

start-up funds. NI will continue to partner on neuroscience faculty recruitments in consultation with UTHSC administration.

***Core Support**:* NI will continue to support the Imaging Center (including the microtomy facility), and Behavioral Core. This requires collecting and processing user fees, paying service contracts, and repairing/replacing equipment. Further Details are found in the budget for FY21 below. We anticipate replacing a cryostat that is beyond its lifespan and can no longer be repaired.

***Graduate Student Support and Recruiting**:* We expect to recruit 2-4 new students into the Neuroscience Track for Fall 2022. We will support matching stipends of 5 students during the next fiscal year beginning July 1, 2021. Dr. Fletcher will run the Neuroscience Student Symposium class with Drs. Ennis and Heck assisting, and Dr. Du will run the Neuroscience Seminar Series class for graduate students. The NI offers travel stipends ($500 per trip) to any Neuroscience student or supported postdoc for a national meeting if they are the first or presenting author of a talk or poster.

***Postdoctoral Research Awards*.** We will continue ongoing support to 5 postdocs. Requests for applications of support in 2022 will be sent out in November 2021 for a January 2022 start date. These applications are competitive, and ranked by the NI Executive Committee. See Budget for FY21 for further details.

***NI Neuroscience Seminar Series and Symposia**:* We will continue to run the Neuroscience Seminar Series, which due to the continued impact of Covid, will be held on-line by Zoom. It is likely this will continue for the foreseeable future until health and travel issues caused by the pandemic are mitigated. Likewise, a similar situation applied to symposia and workshops normally sponsored or co-sponsored by NI.

***Undergraduate Research Fellows*:** We will support up to 4 undergraduate research fellows from Rhodes College, Christian Brothers University, or University of Memphis. The restrictions on undergraduate research on the campus imposed by Covid were lifted, allowing the resumption of this program for summer 2021. Applications were processed in the Spring 2021 and 3 students were accepted for summer research.

IX. BUDGET (see Schedule 7, page 21)

A. FY2021 The FY 2021 THEC appropriated budget for the UTNI was $628,367. We carried forward $369,004 from the previous year for a total budget of $997,341. This carryover reflects amounts encumbered but unspent for Graduate Stipends that were picked up previously by NI and are now picked up by UTHSC for the student's first 18 months, monies encumbered to support our new faculty hires for whom we provided seed packages (Drs. Ishrat, Du, and Kim) and any unspent funds from research award accounts. Additionally, the carry forward reflects funds for seminar

arrangements (travel, per diem, hotel and honorarium) that were not expended due to Covid. Also, catering for the Student Symposium series did not occur due to similar Covid restrictions on group gathering on campus.

This past FY, we expended $419,839 total personnel costs (including salaries and fringe). Personnel costs include administrative supplements for the NI Director (who also directs the NI Imaging Center), the NI Co-Director, a full-time Program Coordinator/ IT specialist, a ¾ time Administrative Specialist, and a full time Technical Manager of Imaging Center as well as the students and postdocs mentioned below**.**

Students: We awarded matching or partial funds for 5 graduate stipends to NI faculty mentors with Neuroscience track graduate students for a total $69,069. The mentors were located in the department of Anatomy and Neurobiology and in the College of Nursing.

Postdoctoral Support*:* We provided matching funds for 10 postdoctoral fellows, (2 left early) for a total $50,539. The NI faculty mentors are located in the departments of Anatomy and Neurobiology, Neurology, Ophthalmology, and Physiology; their names are listed above under item VI.

Neuroscience Imaging Center**:** Currently the NI Imaging Center is run by Dr. Esther Marquez Wilkins. We supplement our cost-recovery program to keep user fees low, helping to pay the service contracts on our JEOL 2000 Electron Microscope, the Zeiss 710/800 confocal microscope, the Microbrightfield Neurolucida workstation, and the Imaris software suite (including the new modules purchased this past year as noted above). This year our cost-recovery program took in $30,615 which was used against the fees needed to pay the service contracts on the Zeiss 710/Airyscan ($22,690) and the JEOL 2000 ($16,800). The cost recovery this FY was much less than previous years due to the restricted research operations during Covid-19. As noted above, to replace non-functional equipment, we purchased (1) a ultramicrotome (Leica EM UC7, $54,880), (2) a glass knifemaker (Leica EM KMR3, $9,989), (3) two Imaris image analysis software modules ($13,461), and (4) computer workstations ($5,896) for the Microbrightfield Neurolucida and Zen systems as the software on the existing computer could no longer be upgraded due to hardware incompatibility. The equipment available for use can be viewed at: https://www.uthsc.edu/neuroscience-institute/facilities/imaging-center.php.

Neuroscience Behavioral Core: The procedures for use and available equipment can be viewed at: https://www.uthsc.edu/neuroscience-institute/facilities/behavioral-core.php. Due to the generally low cost of maintenance (Dr. McDonald generously trains new users at no charge and faculty provide their own research personnel to use the equipment), NI has not yet instituted fees for services in this facility.

Seminars and Symposia**:** No funds went to support travel/lodging/meals this year due to Covid. We did pay honoraria ($1200), for the Neuroscience Seminar series (see **Appendix 3**).

Faculty and Research Project Support*:* We provided startup funds for Drs. Ishrat, Du, and Kim, who were awarded $150,000, $100,000 and $150,000, respectively. Dr. Ishrat's began in February of 2018 and Drs. Du and Kim's began in April 2020. These can be spread over the next 3-5 years. We also sent out a request in February 2020 for research support grants. We awarded 5 of those grants between $25,000-$50,000. Those receiving the awards were: Drs. Heck (Anatomy and Neurobiology, $50,000), Chizhikov (Anatomy and Neurobiology, $30,000), Cordero-Morales/Vasquez (Physiology, $35,700) and Gangaraju (Ophthalmology, $25,695). Drs. Heck, Chizhikov, and Gangaraju carried forward funds into FY21 which is reflected in our carryover.

Undergraduate Fellowships: Undergraduate research on campus was cancelled in FY21 due to Covid. As noted above, the program resumed in summer 2021.

Travel Awards: Most national and international research meeting were cancelled in the past year due to Covid and thus our expenditures in this area were down from normal levels. $200 in travel awards for graduate students and postdoctoral fellows were awarded.

B. <u>FY2022</u>. We will carryover $295,371 to the coming fiscal year, and have been appropriated $649,841 for a total of $945,212. In addition to providing support for all the NI staff (Program Coordinator, Administrative Assistant, and Imaging Center Manager), here is a breakdown of the major anticipated projects for FY2022:

Students: For the coming year, we have awarded matching, or partial support, funds for 5 graduate stipends to NI faculty mentors with Neuroscience track graduate students. Mentors are located in Anatomy and Neurobiology, Pediatrics and the College of Nursing. The NI match is ~$14,500 each for 5 of these making an expected total of ~$72,500.

Postdoctoral Support*:* We continued to provide funds for 5 postdoctoral fellows ($10,000-15,000 each for a total of ~$35,000 for the coming year). Some can be given to awardees from last year assuming good progress, with a maximum of 2 year's support. In addition, we have allotted another $40,000 for 5 new postdoctoral fellows, bringing the total expected postdoctoral expenditures to $75,000 during FY 2021.

Neuroscience Imaging Center**:** We will pay/renew the service contracts on the: (1) JEOL 2000 ($16,800), (2) Zeiss 710/800 Confocal ($22,690), (3) Microbrightfield Neurolucida system ($4,000); (5) Imaris software suite ($4,346), (6) Leica Glass Knife Maker ($585), and (7) Leica Ultramicrotome ($5,876). We have budgeted $55,000 to replace Leica cryostat in the Microtomy core as it is broken beyond repair.

***Neuroscience Behavioral Core**:* We will continue to support the Behavioral Core in FY2021, but expenditures are expected to be minimal. However, should a need arise for additional equipment, or for a part-time assistant to help run behavioral studies, NI would consider additional funding assuming a fee for service program were approved and initiated.

***NI Faculty*:** We will provide administrative supplements to Drs. Ennis and Reiner. We are currently providing startup funds as follows: (1) $150,000 over 3-5 years to Dr. Ishrat (2/01//2018-1/31/2023); (2) $150,000 over 3-5 years to Dr. Kim, or until ~2024 should he choose to spread it over the full 5 years; and (3) $100,000 over 3-5 years to Dr. Du, or until 2025 should he choose to spread it over the full 5 years. We limit NI expenditures for each faculty at no more than $50,000/year, and request that they use at least $30,000 per year should they wish to extend the full five years. UTHSC administration intends to open a national search for the next NI director with the goal of recruiting a marquis neuroscience researcher from outside UTHSC. The specific timeframe of the search has not been specified at this time but in the case of a successful search, NI would likely be asked to partner on startup funds from the unobligated budget balance.

Research Projects and Bridge Funding: We can provide small amounts of bridge assistance, but this will be limited by our commitments to start-up fund packages noted above for Drs. Ishrat, Kim, and Du.

Seminar Series and Community Outreach: We will offer our weekly Neuroscience Seminar series, currently offered on-line and featuring local speakers. If conditions permit, we will continue to fund summer Undergraduate Neuroscience Merit Fellowships to Rhodes and Christian Brothers University students who are doing research projects in Neuroscience towards fulfilling their degree requirements (from 3-4 awards, depending on qualifications).

Impact of Covid. As the Covid Pandemic continues, we anticipate that funds allocated to the Seminar Series and Student Symposium (catering) may not be expended or fully expended in the upcoming fiscal period. Unspent funds in these categories will allow us to fully fund 50,000/year in faculty start-up packages and also to repair or replace core equipment in the Imaging Center.

Schedule 7

CENTERS OF EXCELLENCE ACTUAL, PROPOSED, AND REQUESTED BUDGET

Institution: UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER **Center:** NEUROSCIENCE-In Total

	FY 2020-21 Actual			FY 2021-22 Proposed			FY 2022-23 Requested		
	Matching	Appropr.	Total	Matching	Appropr.	Total	Matching	Appropr.	Total
Expenditures									
Salaries									
Faculty	$520,265	$54,226	**$574,491**	$485,765	$55,304	**$541,069**	$500,338	$56,963	**$557,301**
Other Professional	$35,634	$160,025	**$195,659**	$36,416	$167,280	**$203,696**	$37,508	$172,298	**$209,807**
Clerical/ Supporting	$0	$37,280	**$37,280**	$0	$49,788	**$49,788**	$0	$37,449	**$37,449**
Assistantships	$200,444	$121,428	**$321,872**	$200,700	$150,455	**$351,155**	$206,721	$129,219	**$335,940**
Total Salaries	**$756,343**	**$372,959**	**$1,129,302**	**$722,881**	**$422,827**	**$1,145,708**	**$744,567**	**$395,929**	**$1,140,496**
Longevity (Excluded from Salaries)	$3,193	$2,017	**$5,210**	$3,693	$2,934	**$6,627**	$3,804	$3,022	**$6,826**
Fringe Benefits	$205,897	$90,324	**$296,221**	$195,858	$84,232	**$280,090**	$201,734	$82,433	**$284,167**
Total Personnel	**$965,433**	**$465,301**	**$1,430,734**	**$922,432**	**$509,993**	**$1,432,425**	**$950,105**	**$481,384**	**$1,431,489**
Non-Personnel									
Travel	$0	$0	**$0**	$0	$14,000	**$14,000**	$0	$14,420	**$14,420**
Software	$0	$13,718	**$13,718**	$0	$5,000	**$5,000**	$0	$5,150	**$5,150**
Other Supplies	$0	$67,313	**$67,313**	$0	$273,250	**$273,250**	$0	$130,240	**$130,240**
Equipment	$20,050	$150,740	**$170,790**	$0	$85,000	**$85,000**	$0	$0	**$0**
Maintenance	$0	$41,359	**$41,359**	$0	$70,800	**$70,800**	$0	$72,924	**$72,924**
Other (Specify):									
Media Processing	$0	$75	**$75**	$0	$100	**$100**	$0	$103	**$103**
Communication	$0	$2,669	**$2,669**	$0	$2,550	**$2,550**	$0	$2,627	**$2,627**
Rentals & Insurance	$0	$10,296	**$10,296**	$0	$7,525	**$7,525**	$0	$0	**$0**
Insurance & Interest	$0	$956	**$956**	$0	$3,000	**$3,000**	$0	$3,090	**$3,090**
Contractual & Special Services	$0	$956	**$956**	$0	$3,000	**$3,000**	$0	$3,090	**$3,090**
Other Services & Expenditures	$0	$0	**$0**	$0	$2,250	**$2,250**	$0	$2,318	**$2,318**
Other Expenses	$0	($36,508)	**($36,508)**	$0	($29,206)	**($29,206)**	$0	($30,900)	**($30,900)**
Total Non-Personnel	**$20,050**	**$251,573**	**$271,623**	**$0**	**$437,269**	**$437,269**	**$0**	**$203,061**	**$203,061**
GRAND TOTAL	**$985,483**	**$716,874**	**$1,702,357**	**$922,432**	**$947,262**	**$1,869,694**	**$950,105**	**$684,445**	**$1,634,550**
Revenue									
New State Appropriation	$0	$628,367	**$628,367**	$0	$649,841	**$649,841**	$0	$682,333	**$682,333**
Carryover State Appropriation	$0	$369,004	**$369,004**	$0	$295,371	**$295,371**	$0	$0	**$0**
New Matching Funds	$985,483	$0	**$985,483**	$922,432	$0	**$922,432**	$950,105	$0	**$950,105**
Carryover from Previous Matching Funds	$0	$0	**$0**	$0	$0	**$0**	$0	$0	**$0**
Total Revenue	**$985,483**	**$997,371**	**$1,982,854**	**$922,432**	**$945,212**	**$1,867,644**	**$950,105**	**$682,333**	**$1,632,438**

X. FACULTY PUBLICATIONS

The Neuroscience faculty at UTHSC is consistently productive, both in terms of peer-reviewed publications and participation in the national neuroscience community. Lists of peer-reviewed journal publications during the last academic year, as cited in PubMed are presented in **Appendix 2**. These PubMed-cited publications do not include the many chapters, reviews and other articles written by NI faculty. NI faculty members are indicated in **bold** in **Appendix 2. NI members published 242 papers.**

XI. EXTRAMURAL FUNDING OF NEUROSCIENCE FACULTY

The UT Neuroscience Institute is a concentrated, interdepartmental Neuroscience program. For FY2020-2021, Anatomy and Neurobiology (11 funded Neuroscientists) was ranked ***25th in the category of Neuroscience departments among public university medical schools in NIH funding (38th overall), and 32nd among public university Anatomy and Cell Biology Departments (48th overall)***. (Statistics from Blue Ridge Institute for Medical Research (http://www.brimr.org/NIH_Awards/2020/default.htm). The total annual grant dollars (total costs) currently held by faculty associated with the NI at UTHSC (*i.e.,* excluding affiliate members, such as St. Jude, and excluding grants in no cost extensions) is **$20,291,627, an increase of 1.4 million from the $18,858,802 reported last year!** The research grants (current year total costs) currently held by individual faculty of the NI are listed by Principal Investigator in **Appendix 1**. These values are reported to us by Research Administration at UTHSC. **Appendix 4** includes some highlights of grants recently awarded to NI faculty.

APPENDIX 1

External Funding of Neuroscience Institute Faculty

FY 2020-2021

Lead PI	Department	Project Title	Sponsor	Award Number	Begin Date	End Date	Total Amount
Adebiyi, Adebowale	Physiology	Control of microvascular function by ion channels	HHS - NIH - NHLBI - National Heart, Lung, and Blood Institute	1R01HL151735-01 S1	12/22/2020	3/31/2021	$23,408
Boughter, John	Anatomy and Neurobiology	Spatial taste coding in mouse gustatory cortex	HHS - NIH - NIDCD - National Institute on Deafness and Other Communication Disorders	5R01DC016833-04	5/1/2021	4/30/2022	$386,694
Boughter, John	Anatomy and Neurobiology	Spatial taste coding in mouse gustatory cortex	HHS - NIH - NIDCD - National Institute on Deafness and Other Communication Disorders	1R01DC016833-04	5/1/2021	4/30/2022	$386,694
Boughter, John	Anatomy and Neurobiology	Spatial taste coding in mouse gustatory cortex	HHS - NIH - NIDCD - National Institute on Deafness and Other Communication Disorders	1R01DC016833-04	5/1/2021	4/30/2022	$386,694
Bukiya, Anna	Pharmacology	Fatty acid and alcohol modulation of cerebral artery diameter	HHS - NIH - NIAAA - National Institute on Alcohol Abuse and Alcoholism	5R03AA028380-02	5/1/2021	4/30/2022	$76,000
Chen, Hao	Pharmacology	System genetics of menthol and nicotine addiction	HHS - NIH - NIDA - National Institute on Drug Abuse	5U01DA047638-03	1/1/2021	12/31/2021	$67,754
Chen, Hao	Pharmacology	Reduced complexity mapping of oxycodone self-administrationand stress responsiveness in rats	HHS - NIH - NIDA - National Institute on Drug Abuse	1R01DA048017-02	3/1/2021	2/28/2022	$347,315
Chen, Hao	Pharmacology	System genetics of menthol and nicotine addiction	HHS - NIH - NIDA - National Institute on Drug Abuse	1U01DA047638-03	1/1/2021	12/31/2021	$609,786
Cordero-Morales, Julio	Physiology	Spectroscopic analyses of TRPV1 during gating	HHS - NIH - NINDS - National Institute of Neurological Disorders and Stroke	1R21NS117873-01	7/15/2020	6/30/2021	$432,218
Cordero-Morales, Julio	Physiology	The Role of Bioactive Lipids in Transient Receptor Potential Channels Gating	HHS - NIH - NIGMS - National Institute of General Medical	5R01GM125629-04	1/1/2021	12/31/2021	$30,400
Cowan, Ronald	Psychiatry	Sex differences in pain reports and brain activation in older adults with Alzheimers disease	Ohio State University (OSU)	SPC-1000005106 / GR121413	7/1/2020	5/31/2021	$60,643
Cowan, Ronald	Psychiatry	Pain Sensitivity and Unpleasantness in People with Alzheimer's Disease and Cancer	HHS - NIH - NIA - National Institute on Aging	7R01AG061325-03	4/1/2021	5/31/2022	$912,460
Dopico, Alejandro	Pharmacology	Regulation of arterial diameter through specific sensing of endogenous steroids and novel nonsteroidal analogs by BK channel subunits.	HHS - NIH - NHLBI - National Heart, Lung, and Blood Institute	5R01HL147315-03	2/1/2021	1/31/2022	$607,625
Dopico, Alejandro	Pharmacology	Cholesterol regulation of smooth muscle BK channel proteins and consequent control of cerebral artery diameter	HHS - NIH - NHLBI - National Heart, Lung, and Blood Institute	1R01HL148941-01A1	7/1/2020	6/30/2021	$646,023
Du, Jianyang	Anatomy and Neurobiology	CO2 inhalation enhances the lability of fear memory.	HHS - NIH - NIMH - National Institute of Mental Health	7R01MH113986-04	5/1/2021	4/30/2022	$372,825
Foehring, Robert	Anatomy and Neurobiology	Dynamics of Kv channel function in identified populations of pyramidal neurons in neocortex	HHS - NIH - NINDS - National Institute of Neurological Disorders and Stroke	2R01NS044163-17	2/1/2021	1/31/2022	$466,986
Gangaraju, Raja Shekhar	Ophthalmology	Adipose-Derived Stem Cells Alleviate Visual Deficits in Blast Injury	DOD - Department of Defense	W81XWH-16-1-0778	9/30/2020	3/31/2021	$61,259
Heck, Detlef	Anatomy and Neurobiology	Engrailed genes and cerebellum morphology, spatial gene expression and circuitry	Memorial Sloan Kettering Cancer Center	BD525235B	12/1/2020	11/30/2021	$34,200
Heck, Detlef	Anatomy and Neurobiology	Neuronal mechanisms of cerebellar cognitive function	HHS - NIH - NIMH - National Institute of Mental Health	1R01MH112143-04	1/1/2021	12/31/2021	$356,711
Jablonski, Monica	Ophthalmology	Novel Extended Release Glaucoma Therapy for Once Daily Dosing	HHS - NIH - NEI - National Eye Institute	1R24EY029950-02	3/1/2021	2/28/2022	$1,031,691
Jablonski, Monica	Ophthalmology	Genetic Modulation of Glaucoma	HHS - NIH - NEI - National Eye Institute	2R01EY021200-07	2/1/2021	1/31/2022	$382,976
Jablonski, Monica	Ophthalmology	Genetic Modulation of Glaucoma	HHS - NIH - NEI - National Eye Institute	5R01EY021200-07	2/1/2021	1/31/2022	$371,486
Jaggar, Jonathan	Physiology	PKD proteins in endothelial cells	HHS - NIH - NHLBI - National Heart, Lung, and Blood Institute	1R01HL155180-01	2/15/2021	1/31/2022	$542,105
Jaggar, Jonathan	Physiology	Endothelial cell potassium channels	HHS - NIH - NHLBI - National Heart, Lung, and Blood Institute	1R01HL137745-04	7/1/2020	6/30/2021	$490,268
Jee, Chang Hoon	Pharmacology	Center for Genetic Studies of Drug Abuse in Outbred Rats - Pilot: Cross-species functional validation of overlapping GWAS candidates between tobacco smoking in human and socially acquired nicotine IVSA in rats	University of California, San Diego (UCSD)	127276513 (S9002502)	5/1/2020	4/30/2021	$25,000
Jiang, Jianxiong	Pharmaceutical Sciences	Inflammatory regulation of neurotrophin signaling in epileptogenesis	HHS - NIH - NINDS - National Institute of Neurological Disorders and Stroke	7R01NS100947-05	12/1/2020	11/30/2021	$33,250
Jones, Byron	Genetics, Genomics & Informatics	Genetics of epigenetic response to high circulating glucocorticoids and organophosphorus compounds	HHS - NIH - NIEHS - National Institute of Environmental Health Sciences	1R01ES031656-05A1	2/1/2025	1/31/2026	$523,991
Khan, Mohammad Moshahid	Neurology	Examining Progression of a Neurodegenerative Disorder	HHS - NIH - NINDS - National Institute of Neurological Disorders and Stroke	1R03NS114616-01A1	9/15/2020	8/31/2021	$76,000
Kim, Il Hwan	Anatomy and Neurobiology	Genes, Neural Circuits and Behavior	HHS - NIH - NIMH - National Institute of Mental Health	1R01MH117429-03	5/1/2021	4/30/2022	$380,837
Liao, Francesca-Fang	Pharmacology	Novel mechanistic link between metabolic changes and dementia potential role of miRNA21	HHS - NIH - NIA - National Institute on Aging	1RF1AG058467-04	6/1/2021	5/31/2022	$547,034
Liao, Francesca-Fang	Pharmacology	Blood-brain-barrier and white matter mechanisms underlying dementia	HHS - NIH - NINDS - National Institute of Neurological Disorders and Stroke	1RF1NS120327-01	2/1/2021	1/31/2023	$1,967,005
Malik, Kafait	Pharmacology	Angiotensins, Prostaglandins, Adrenergic Interactions	HHS - NIH - NHLBI - National Heart, Lung, and Blood Institute	2R01HL019134-46	6/1/2021	5/31/2022	$643,123
Mandal, Nawajes	Ophthalmology	Sphingolipids and their Impact in Corneal Wound Healing	HHS - NIH - NEI - National Eye Institute	3R01EY031316-01S1	12/1/2020	11/30/2021	$61,505
Mandal, Nawajes	Ophthalmology	Therapeutic Potential of n-3 PUFAs TBI Mediated Visual Dysfunction	DOD - Department of Defense	W81XWH2010900	9/30/2020	9/29/2021	$192,666
Nowak Jr, Thaddeus S	Neurology	Genetics of stroke vulnerability in C57BL/6 mouse substrains	HHS - NIH - NINDS - National Institute of Neurological Disorders and Stroke	1R01NS113957-01A1	7/15/2020	6/30/2021	$357,200

Lead PI	Department	Project Title	Sponsor	Award Number	Begin Date	End Date	Total Amount
Parfenova, Elena	Physiology	Endothelial Vasoprotection by Hypothermia	HHS - NIH - NINDS - National Institute of Neurological Disorders and Stroke	1R01NS105655-03	7/1/2020	6/30/2021	$424,069
Parfenova, Elena	Physiology	Astrocyte functions in neonatal brain	HHS - NIH - NINDS - National Institute of Neurological Disorders and Stroke	1R01NS101717-04	7/1/2020	6/30/2021	$332,500
Reiner, Anton	Anatomy and Neurobiology	Progression of Cortical and Basal Ganglia Pathology in Human Huntington's disease and Q175 Huntington's disease Mice	CHDI, Inc.		10/1/2020	9/30/2021	$10,475
Reiter, Larry	Neurology	The role of UBE3A in gliopathic seizures.	HHS - NIH - NINDS - National Institute of Neurological	1R01NS115776-01A1	9/30/2020	7/31/2021	$418,384
Reiter, Lawrence	Neurology	Rapid-onset Obesity with Hypothalamic dysfunction, Hypoventilation, & Autonomic Dysregulation (ROHHAD): Dental Pulp Stem Cell-Derived Models to Investigate Cause & Consequences	Ann and Robert H. Lurie Children's Hospital of Chicago	A20-0041-S002	1/1/2021	12/31/2021	$34,548
Sharp, Burt	Genetics, Genomics & Informatics	Genetics of oxycodone intake in a hybrid rat diversity panel	HHS - NIH - NIDA - National Institute on Drug Abuse	1U01DA053672-01	4/15/2021	1/31/2022	$676,136
Singh, Nikhlesh	Physiology	Cellular Mechanisms of Pathological Retinal Neovascularization	HHS - NIH - NEI - National Eye Institute	1R01EY029709-03	5/1/2021	4/30/2022	$380,000
Stanfill, Ansley	Nursing-Research Programs	A multivariate predictive model for long-term disability post subarachnoid hemorrhage in Caucasian and African American populations	HHS - NIH - NINR - National Institute of Nursing Research	1R01NR017407-03	8/1/2020	7/31/2021	$280,374
Taylor, Angela	Anatomy and Neurobiology	Role of cerebro-cerebellar circuits in cognition	HHS - NIH - NIMH - National Institute of Mental Health	1F31MH122068-02	1/1/2021	12/31/2021	$45,016
Tsao, Jack	Neurology	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAIInstitutional Animal Care and Use committee Memorandum of Understanding	Icahn School of Medicine at Mount Sinai (ISMMS)		1/1/2021	6/30/2021	$57,975
Tsao, Jack	Neurology	Does Military Traumatic Brain Injury Increase the Risk for Developing Early Onset Dementia and Mild Cognitive Impairment?	DOD - Department of Defense	W81XWH1910868	9/30/2020	9/29/2021	$283,459
Tsao, Jack	Neurology	Headache Treatment Outcomes Following Conversion From Botox To Dysport	Allergan, Inc.		5/3/2021	5/2/2022	$16,580
Tsao, Jack	Neurology	Investigations into the Etiology of Phantom Limb Sensations and Phantom Limb Pain	HHS - NIH - NICHD - Eunice Kennedy Shriver National Institute of Child Health and Human Development	1R01HD094588-03	1/1/2021	12/31/2021	$572,938
Vaithianathan, Thirumalini	Pharmacology	Dynamics of calcium signals control neurotransmitter release in retinal ribbon synapses	HHS - NIH - NEI - National Eye Institute	1R01EY030863-01	1/1/2021	12/31/2021	$380,000
Vasquez, Valeria	Physiology	Regulation of mechanosensitive ion channels by membrane lipids.	HHS - NIH - NIGMS - National Institute of General Medical	1R01GM133845-02	7/1/2020	6/30/2021	$326,800
Vasquez, Valeria	Physiology	Studying prolonged nociceptors sensitization by TRPV1 combining a spider toxin and C. elegans	US-Israel Binational Science Foundation	2019254	10/1/2020	11/30/2021	$40,000
Williams, Robert	Genetics, Genomics & Informatics	NIDA Core	HHS - NIH - NIDA - National Institute on Drug Abuse	1P30DA044223-05	6/1/2021	5/31/2022	$744,955
Williams, Robert	Microbiology, Immunology & Biochemistry	R.Williams_Helmholtz Centre for Infection Research	Helmholtz Centre for Infection Research	Williams 21-3784	4/1/2021	8/31/2021	$90,000
Williams, Robert	Genetics, Genomics & Informatics	Imaging Genetics of Brain Structure and Cognitive Aging in Murine Models of Alzheimer's Disease	HHS - NIH - NIA - National Institute on Aging	1R01AG070913-01	2/1/2021	1/31/2022	$1,285,586
TOTAL							**$20,291,627**

APPENDIX 2

Faculty Publications (PubMed)

FY 2020-2021

Peer-reviewed publications for 2020-2021 (cited in PubMed):

Abidi, A. H., Alghamdi, S. S., Dabbous, M. K., Tipton, D. A., Mustafa, S. M., & **Moore, B. M.** (2020). Cannabinoid type-2 receptor agonist, inverse agonist, and anandamide regulation of inflammatory responses in IL-1beta stimulated primary human periodontal ligament fibroblasts. *J Periodontal Res, 55*(5), 762-783. doi:10.1111/jre.12765

Ahmad, A., Patel, V., Xiao, J., & **Khan, M. M.** (2020). The Role of Neurovascular System in Neurodegenerative Diseases. *Mol Neurobiol, 57*(11), 4373-4393. doi:10.1007/s12035-020-02023-z

Ahmed, H. A., & **Ishrat, T.** (2020). The Brain AT2R-a Potential Target for Therapy in Alzheimer's Disease and Vascular Cognitive Impairment: a Comprehensive Review of Clinical and Experimental Therapeutics. *Mol Neurobiol, 57*(8), 3458-3484. doi:10.1007/s12035-020-01964-9

Ahmed, H. A., Ismael, S., Mirzahosseini, G., & **Ishrat, T.** (2021). Verapamil Prevents Development of Cognitive Impairment in an Aged Mouse Model of Sporadic Alzheimer's Disease. *Mol Neurobiol, 58*(7), 3374-3387. doi:10.1007/s12035-021-02350-9

Albadari, N., Deng, S., **Chen, H.**, Zhao, G., Yue, J., Zhang, S., **Miller, D. D**., Wu, Z., & Li, W. (2021). Synthesis and biological evaluation of selective survivin inhibitors derived from the MX-106 hydroxyquinoline scaffold. *Eur J Med Chem, 224*, 113719. doi:10.1016/j.ejmech.2021.113719

Allen, R. P., Earley, C. J., **Jones, B. C**., & Unger, E. L. (2020). Iron-deficiency and dopaminergic treatment effects on RLS-Like behaviors of an animal model with the brain iron deficiency pattern of the restless legs syndrome. *Sleep Med, 71*, 141-148. doi:10.1016/j.sleep.2020.01.024

Anderson, A. R., Iversen, W. L., Carter, M. A., Moss, K. O., **Cowan, R. L**., & Monroe, T. B. (2021). Experimentally evoked pain in Alzheimer's disease. *J Am Assoc Nurse Pract*. doi:10.1097/JXX.0000000000000580

Anderson, K. R., Harris, J. A., Ng, L., Prins, P., Memar, S., Ljungquist, B., Furth, D., **Williams, R. W**., Ascoli, G. A., & Dumitriu, D. (2021). Highlights from the Era of Open Source Web-Based Tools. *J Neurosci, 41*(5), 927-936. doi:10.1523/JNEUROSCI.1657-20.2020

Ashbrook, D. G., Arends, D., Prins, P., **Mulligan, M. K**., Roy, S., Williams, E. G., Lutz, C. M., Valenzuela, A., Bohl, C. J., Ingels, J. F., McCarty, M. S., Centeno, A. G., Hager, R., Auwerx, J., **Lu, L.**, & **Williams, R. W.** (2021). A platform for experimental precision medicine: The extended BXD mouse family. *Cell Syst, 12*(3), 235-247 e239. doi:10.1016/j.cels.2020.12.002

Banerjee, S., Mahmud, F., Deng, S., Ma, L., Yun, M. K., Fakayode, S. O., Arnst, K. E., Yang, L., **Chen, H**., Wu, Z., Lukka, P. B., Parmar, K., Meibohm, B., White, S. W., Wang, Y., Li, W., & **Miller, D. D**. (2021). X-ray Crystallography-Guided Design, Antitumor Efficacy, and QSAR Analysis of Metabolically Stable Cyclopenta-Pyrimidinyl Dihydroquinoxalinone as a Potent Tubulin Polymerization Inhibitor. *J Med Chem, 64*(17), 13072-13095. doi:10.1021/acs.jmedchem.1c01202

Banerjee, S., Norman, D. D., Deng, S., Fakayode, S. O., Lee, S. C., Parrill, A. L., Li, W., **Miller, D. D**., & Tigyi, G. J. (2020). Molecular modelling guided design, synthesis and QSAR analysis of new small molecule non-lipid autotaxin inhibitors. *Bioorg Chem, 103*, 104188. doi:10.1016/j.bioorg.2020.104188

Bartoli, A., Soleman, J., Berger, A., Wisoff, J. H., Hidalgo, E. T., Mangano, F. T., Keating, R. F., Thomale, U. W., **Boop, F**., Roth, J., & Constantini, S. (2020). Treatment Options for Hydrocephalus Following Foramen Magnum Decompression for Chiari I Malformation: A Multicenter Study. *Neurosurgery, 86*(4), 500-508. doi:10.1093/neuros/nyz211

Basma, J., Guley, N., Michael Ii, L. M., Arnautovic, K., **Boop, F**., & Sorenson, J. (2020). The Evolutionary Development of the Brain As It Pertains to Neurosurgery. *Cureus, 12*(1), e6748. doi:10.7759/cureus.6748

Ben Hamida, S., Lecourtier, L., Loureiro, M., Cosquer, B., Tracqui, A., Simmoneaux, V., Nehlig, A., **Jones, B. C.**, Pereira de Vasconcelos, A., & Cassel, J. C. (2021). Ventral striatum regulates behavioral response to ethanol and MDMA combination. *Addict Biol, 26*(2), e12938. doi:10.1111/adb.12938

Bou Sleiman, M., Jha, P., Houtkooper, R., **Williams, R. W**., Wang, X., & Auwerx, J. (2020). The Gene-Regulatory Footprint of Aging Highlights Conserved Central Regulators. *Cell Rep, 32*(13), 108203.

doi:10.1016/j.celrep.2020.108203

Boughter, J. D., Jr., & **Fletcher, M.** (2021). Rethinking the role of taste processing in insular cortex and forebrain circuits. *Curr Opin Physiol, 20*, 52-56. doi:10.1016/j.cophys.2020.12.009

Bourgault, A. M., Voss, J. G., **Stanfill, A. G**., McCarthy, A. M., Matthews, E. E., Talsma, A., Loerzel, V., Henderson, W. A., Kinser, P. A., & Hershberger, P. E. (2021). Strategies to enhance the success of mid-career nurse scientists. *Nurs Outlook*. doi:10.1016/j.outlook.2021.06.015

Bouw, M. R., Chung, S. S., Gidal, B., King, A., Tomasovic, J., **Wheless, J. W.**, & Van Ess, P. J. (2021). Clinical pharmacokinetic and pharmacodynamic profile of midazolam nasal spray. *Epilepsy Res, 171*, 106567. doi:10.1016/j.eplepsyres.2021.106567

Brown Lobbins, M. L., Scott, I. O., Slominski, A. T., Hasty, K. A., Zhang, S., **Miller, D. D**., Li, W., Kim, T. K., Janjetovic, Z., Patel, T. S., Myers, L. K., & Postlethwaite, A. E. (2021). 17,20S(OH)2pD Can Prevent the Development of Skin Fibrosis in the Bleomycin-Induced Scleroderma Mouse Model. *Int J Mol Sci, 22*(16). doi:10.3390/ijms22168926

Bryant, C. D., Smith, D. J., Kantak, K. M., **Nowak, T. S., Jr**., **Williams, R. W**., Damaj, M. I., Redei, E. E., **Chen, H**., & **Mulligan, M. K**. (2020). Facilitating Complex Trait Analysis via Reduced Complexity Crosses. *Trends Genet, 36*(8), 549-562. doi:10.1016/j.tig.2020.05.003

Buddington, R. K., Yakimkova, T., Adebiyi, A., **Chizhikov, V. V**., Iskusnykh, I. Y., & Buddington, K. K. (2021). Organ Growth and Intestinal Functions of Preterm Pigs Fed Low and High Protein Formulas With or Without Supplemental Leucine or Hydroxymethylbutyrate as Growth Promoters. *Front Nutr, 8*, 687703. doi:10.3389/fnut.2021.687703

Bukiya, A. N., & **Dopico, A. M**. (2021). Cholesterol antagonism of alcohol inhibition of smooth muscle BK channel requires cell integrity and involves a protein kinase C-dependent mechanism(s). *Biochim Biophys Acta Mol Cell Biol Lipids, 1866*(4), 158874. doi:10.1016/j.bbalip.2020.158874

Bukiya, A. N., Leo, M. D., **Jaggar, J. H.**, & **Dopico, A. M**. (2021). Cholesterol activates BK channels by increasing KCNMB1 protein levels in the plasmalemma. *J Biol Chem, 296*, 100381. doi:10.1016/j.jbc.2021.100381

Burrus, C. J., McKinstry, S. U., Kim, N., Ozlu, M. I., Santoki, A. V., Fang, F. Y., Ma, A., Karadeniz, Y. B., Worthington, A. K., **Dragatsis, I**., Zeitlin, S., Yin, H. H., & Eroglu, C. (2020). Striatal Projection Neurons Require Huntingtin for Synaptic Connectivity and Survival. *Cell Rep, 30*(3), 642-657 e646. doi:10.1016/j.celrep.2019.12.069

Cai, R., Tao, X., Chen, Y., Starlard-Davenport, A., **Jones, B. C**., Cook, M. N., & Lu, L. (2020). Pex3 is involved in the genetic regulation of Nr3c2 expression in the amygdala of mice. *Psychiatry Res, 285*, 112760. doi:10.1016/j.psychres.2020.112760

Caires, R., Bell, B., Lee, J., Romero, L. O., **Vasquez, V**., & **Cordero-Morales, J. F**. (2021). Deficiency of Inositol Monophosphatase Activity Decreases Phosphoinositide Lipids and Enhances TRPV1 Function In Vivo. *J Neurosci, 41*(3), 408-423. doi:10.1523/JNEUROSCI.0803-20.2020

Calame, D. J., Xiao, J., **Khan, M. M**., Hollingsworth, T. J., Xue, Y., Person, A. L., & LeDoux, M. S. (2020). Presynaptic PRRT2 Deficiency Causes Cerebellar Dysfunction and Paroxysmal Kinesigenic Dyskinesia. *Neuroscience, 448*, 272-286. doi:10.1016/j.neuroscience.2020.08.034

Cascino, G. D., Tarquinio, D., **Wheless, J. W**., Hogan, R. E., Sperling, M. R., Liow, K., Desai, J., Davis, C., Rabinowicz, A. L., Carrazana, E., & Group, D. S. (2021). Lack of observed tolerance to diazepam nasal spray (Valtoco(R)) after long-term rescue therapy in patients with epilepsy: Interim results from a phase 3, open-label, repeat-dose safety study. *Epilepsy Behav, 120*, 107983. doi:10.1016/j.yebeh.2021.107983

Chen, H., Deng, S., Albadari, N., Yun, M. K., Zhang, S., Li, Y., Ma, D., Parke, D. N., Yang, L., Seagroves, T. N., White, S. W., **Miller, D. D**., & Li, W. (2021). Design, Synthesis, and Biological Evaluation of Stable Colchicine-Binding Site Tubulin Inhibitors 6-Aryl-2-benzoyl-pyridines as Potential Anticancer Agents. *J Med Chem, 64*(16), 12049-12074. doi:10.1021/acs.jmedchem.1c00715

Chen, H., Deng, S., Wang, Y., Albadari, N., Kumar, G., Ma, D., Li, W., White, S. W., **Miller, D. D.**, & Li, W. (2020). Structure-Activity Relationship Study of Novel 6-Aryl-2-benzoyl-pyridines as Tubulin Polymerization Inhibitors with Potent Antiproliferative Properties. *J Med Chem, 63*(2), 827-846. doi:10.1021/acs.jmedchem.9b01815

Chen, H., Victor, A. K., Klein, J., Tacer, K. F., Tai, D. J., de Esch, C., Nuttle, A., Temirov, J., Burnett, L. C.,

Rosenbaum, M., Zhang, Y., Ding, L., Moresco, J. J., Diedrich, J. K., Yates, J. R., 3rd, Tillman, H. S., Leibel, R. L., Talkowski, M. E., Billadeau, D. D., **Reiter, L. T**., & Potts, P. R. (2020). Loss of MAGEL2 in Prader-Willi syndrome leads to decreased secretory granule and neuropeptide production. *JCI Insight, 5*(17). doi:10.1172/jci.insight.138576

Chen, Y., Xu, F., Munkhsaikhan, U., Boyle, C., Borcky, T., Zhao, W., Purevjav, E., **Towbin, J. A.**, **Liao, F**., **Williams, R. W**., **Bhattacharya, S. K**., **Lu, L**., & Sun, Y. (2020). Identifying modifier genes for hypertrophic cardiomyopathy. *J Mol Cell Cardiol, 144*, 119-126. doi:10.1016/j.yjmcc.2020.05.006

Chiang, J., Diaz, A. K., Makepeace, L., Li, X., Han, Y., Li, Y., Klimo, P., Jr., **Boop, F. A.,** Baker, S. J., Gajjar, A., Merchant, T. E., Ellison, D. W., Broniscer, A., Patay, Z., & Tinkle, C. L. (2020). Clinical, imaging, and molecular analysis of pediatric pontine tumors lacking characteristic imaging features of DIPG. *Acta Neuropathol Commun, 8*(1), 57. doi:10.1186/s40478-020-00930-9

Chizhikov, V. V., Iskusnykh, I. Y., Fattakhov, N., & Fritzsch, B. (2021). Lmx1a and Lmx1b are Redundantly Required for the Development of Multiple Components of the Mammalian Auditory System. *Neuroscience, 452*, 247-264. doi:10.1016/j.neuroscience.2020.11.013

Clark, R., & **Stanfill, A. G.** (2021). Lessons Learned From Pairing Education-Intensive and Research-Intensive Faculty to Increase Scholarship in Nursing. *Nurs Educ Perspect, 42*(5), 323-324. doi:10.1097/01.NEP.0000000000000822

Clark, R., Waters, B., & **Stanfill, A. G**. (2021). Elevated liver function tests in COVID-19: Causes, clinical evidence, and potential treatments. *Nurse Pract, 46*(1), 21-26. doi:10.1097/01.NPR.0000722316.63824.f9

Courtland, J. L., Bradshaw, T. W., Waitt, G., Soderblom, E. J., Ho, T., Rajab, A., Vancini, R., **Kim, I. H**., & Soderling, S. H. (2021). Genetic disruption of WASHC4 drives endo-lysosomal dysfunction and cognitive-movement impairments in mice and humans. *Elife, 10*. doi:10.7554/eLife.61590

Cui, H., Arnst, K., **Miller, D. D**., & Li, W. (2020). Recent Advances in Elucidating Paclitaxel Resistance Mechanisms in Non-small Cell Lung Cancer and Strategies to Overcome Drug Resistance. *Curr Med Chem, 27*(39), 6573-6595. doi:10.2174/0929867326666191016113631

Cui, H., Wang, Q., **Miller, D. D.**, & Li, W. (2021). The Tubulin Inhibitor VERU-111 in Combination With Vemurafenib Provides an Effective Treatment of Vemurafenib-Resistant A375 Melanoma. *Front Pharmacol, 12*, 637098. doi:10.3389/fphar.2021.637098

de Jong, T. V., Kim, P., Guryev, V., **Mulligan, M. K**., **Williams, R. W**., Redei, E. E., & **Chen, H**. (2021). Whole genome sequencing of nearly isogenic WMI and WLI inbred rats identifies genes potentially involved in depression and stress reactivity. *Sci Rep, 11*(1), 14774. doi:10.1038/s41598-021-92993-4

de Los Reyes, E., Lehwald, L., Augustine, E. F., Berry-Kravis, E., Butler, K., Cormier, N., Demarest, S., Lu, S., Madden, J., Olaya, J., See, S., Vierhile, A., **Wheless, J. W**., Yang, A., Cohen-Pfeffer, J., Chu, D., Leal-Pardinas, F., & Wang, R. Y. (2020). Intracerebroventricular Cerliponase Alfa for Neuronal Ceroid Lipofuscinosis Type 2 Disease: Clinical Practice Considerations From US Clinics. *Pediatr Neurol, 110*, 64-70. doi:10.1016/j.pediatrneurol.2020.04.018

DeCosta-Fortune, T. M., Ramshur, J. T., **Li, C. X**., de Jongh Curry, A., Pellicer-Morata, V., Wang, L., & **Waters, R. S**. (2020). Repetitive microstimulation in rat primary somatosensory cortex (SI) strengthens the connection between homotopic sites in the opposite SI and leads to expression of previously ineffective input from the ipsilateral forelimb. *Brain Res, 1732*, 146694. doi:10.1016/j.brainres.2020.146694

Deng, S., Krutilina, R. I., Wang, Q., Lin, Z., Parke, D. N., Playa, H. C., **Chen, H**., **Miller, D. D**., Seagroves, T. N., & Li, W. (2020). An Orally Available Tubulin Inhibitor, VERU-111, Suppresses Triple-Negative Breast Cancer Tumor Growth and Metastasis and Bypasses Taxane Resistance. *Mol Cancer Ther, 19*(2), 348-363. doi:10.1158/1535-7163.MCT-19-0536

Deng, Y., Wang, H., Joni, M., Sekhri, R., & **Reiner, A**. (2021). Progression of basal ganglia pathology in heterozygous Q175 knock-in Huntington's disease mice. *J Comp Neurol, 529*(7), 1327-1371. doi:10.1002/cne.25023

Devlin, P., Cao, X., & **Stanfill, A. G**. (2021). Genotype-expression interactions for BDNF across human brain regions. *BMC Genomics, 22*(1), 207. doi:10.1186/s12864-021-07525-1

DiStefano, C., Wilson, R. B., Hyde, C., Cook, E. H., Thibert, R. L., **Reiter, L. T**., Vogel-Farley, V., Hipp, J., &

Jeste, S. (2020). Behavioral characterization of dup15q syndrome: Toward meaningful endpoints for clinical trials. *Am J Med Genet A, 182*(1), 71-84. doi:10.1002/ajmg.a.61385

Dong, B. E., **Chen, H**., & **Sakata, K.** (2020). BDNF deficiency and enriched environment treatment affect neurotransmitter gene expression differently across ages. *J Neurochem, 154*(1), 41-55. doi:10.1111/jnc.15017

Dong, X., Tsang, C. C. S., Zhao, S., Browning, J. A., Wan, J. Y., Chisholm-Burns, M. A., Finch, C. K., **Tsao, J. W**., Hines, L. E., & Wang, J. (2021). Effects of the Medicare Part D comprehensive medication review on medication adherence among patients with Alzheimer's disease. *Curr Med Res Opin, 37*(9), 1581-1588. doi:10.1080/03007995.2021.1935224

Doremus-Fitzwater, T. L., **Youngentob, S. L**., Youngentob, L., Gano, A., Vore, A. S., & Deak, T. (2020). Lingering Effects of Prenatal Alcohol Exposure on Basal and Ethanol-Evoked Expression of Inflammatory-Related Genes in the CNS of Adolescent and Adult Rats. *Front Behav Neurosci, 14*, 82. doi:10.3389/fnbeh.2020.00082

Doxtater, K., Tripathi, M. K., & **Khan, M. M**. (2020). Recent advances on the role of long non-coding RNAs in Alzheimer's disease. *Neural Regen Res, 15*(12), 2253-2254. doi:10.4103/1673-5374.284990

Elliott, K. L., Pavlinkova, G., **Chizhikov, V. V**., Yamoah, E. N., & Fritzsch, B. (2021). Neurog1, Neurod1, and Atoh1 are essential for spiral ganglia, cochlear nuclei, and cochlear hair cell development. *Fac Rev, 10*, 47. doi:10.12703/r/10-47

Elliott, K. L., Pavlinkova, G., **Chizhikov, V. V.**, Yamoah, E. N., & Fritzsch, B. (2021). Development in the Mammalian Auditory System Depends on Transcription Factors. *Int J Mol Sci, 22*(8). doi:10.3390/ijms22084189

Even, A., Morelli, G., Turchetto, S., Shilian, M., Bail, R. L., Laguesse, S., Krusy, N., Brisker, A., Brandis, A., Inbar, S., Chariot, A., Saudou, F., **Dietrich, P**., **Dragatsis, I**., Brone, B., Broix, L., Rigo, J. M., Weil, M., & Nguyen, L. (2021). ATP-citrate lyase promotes axonal transport across species. *Nat Commun, 12*(1), 5878. doi:10.1038/s41467-021-25786-y

Fedinec, A. L., Liu, J., Zhang, R., Harsono, M., **Pourcyrous, M.**, & **Parfenova, H.** (2021). The cold receptor TRPM8 activation leads to attenuation of endothelium-dependent cerebral vascular functions during head cooling. *J Cereb Blood Flow Metab*, 271678X211018035. doi:10.1177/0271678X211018035

Ferrandi, P. J., **Khan, M. M**., Paez, H. G., Pitzer, C. R., Alway, S. E., & Mohamed, J. S. (2020). Transcriptome Analysis of Skeletal Muscle Reveals Altered Proteolytic and Neuromuscular Junction Associated Gene Expressions in a Mouse Model of Cerebral Ischemic Stroke. *Genes (Basel), 11*(7). doi:10.3390/genes11070726

Fox, L. M., Kim, K., Johnson, C. W., Chen, S., Croce, K. R., Victor, M. B., Eenjes, E., Bosco, J. R., Randolph, L. K., **Dragatsis, I**., Dragich, J. M., Yoo, A. S., & Yamamoto, A. (2020). Huntington's Disease Pathogenesis Is Modified In Vivo by Alfy/Wdfy3 and Selective Macroautophagy. *Neuron, 105*(5), 813-821 e816. doi:10.1016/j.neuron.2019.12.003

Gano, A., Prestia, L., Middleton, F. A., **Youngentob, S. L**., Ignacio, C., & Deak, T. (2020). Gene expression profiling reveals a lingering effect of prenatal alcohol exposure on inflammatory-related genes during adolescence and adulthood. *Cytokine, 133*, 155126. doi:10.1016/j.cyto.2020.155126

Gao, J., Xu, F., Starlard-Davenport, A., Miller, D. B., O'Callaghan, J. P., **Jones, B. C.**, & **Lu, L**. (2020). Exploring the Role of Chemokine Receptor 6 (Ccr6) in the BXD Mouse Model of Gulf War Illness. *Front Neurosci, 14*, 818. doi:10.3389/fnins.2020.00818

Geisert, E. E., & **Williams, R. W**. (2020). Using BXD mouse strains in vision research: A systems genetics approach. *Mol Vis, 26*, 173-187. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/32180682

Ghazwani, Y., Patay, Z., Sadighi, Z. S., Sparrow, J., Upadhyaya, S**., Boop, F.**, Gajjar, A., & Qaddoumi, I. (2021). Handedness switching as a presenting sign for pediatric low-grade gliomas: An insight into brain plasticity from a short case series. *J Pediatr Rehabil Med, 14*(1), 31-36. doi:10.3233/PRM-190637

Gong, Y., Zhi, K., Nagesh, P. K. B., Sinha, N., Chowdhury, P., **Chen, H**., Gorantla, S., Yallapu, M. M., & Kumar, S. (2020). An Elvitegravir Nanoformulation Crosses the Blood-Brain Barrier and Suppresses HIV-1 Replication in Microglia. *Viruses, 12*(5). doi:10.3390/v12050564

Griffin, S. C., Alphonso, A. L., Tung, M., Finn, S., Perry, B. N., Hill, W., O'Connell, C., Hanling, S. R., Goff, B. J., Pasquina, P. F., & **Tsao, J.** (2021). Characteristics of phantom limb pain in U.S. civilians and service

members. *Scand J Pain*. doi:10.1515/sjpain-2021-0139

Guden, D. S., Temiz-Resitoglu, M., Senol, S. P., Kibar, D., Yilmaz, S. N., Tunctan, B., **Malik, K. U**., & Sahan-Firat, S. (2021). mTOR inhibition as a possible pharmacological target in the management of systemic inflammatory response and associated neuroinflammation by lipopolysaccharide challenge in rats. *Can J Physiol Pharmacol, 99*(9), 921-934. doi:10.1139/cjpp-2020-0487

Gui, Y., Thomas, M. H., Garcia, P., Karout, M., Halder, R., Michelucci, A., Kollmus, H., Zhou, C., Melmed, S., Schughart, K., Balling, R., Mittelbronn, M., Nadeau, J. H., **Williams, R. W**., Sauter, T., Buttini, M., & Sinkkonen, L. (2020). Pituitary Tumor Transforming Gene 1 Orchestrates Gene Regulatory Variation in Mouse Ventral Midbrain During Aging. *Front Genet, 11*, 566734. doi:10.3389/fgene.2020.566734

Guo, H., Zhang, Q., Dai, R., Yu, B., Hoekzema, K., Tan, J., Tan, S., Jia, X., Chung, W. K., Hernan, R., Alkuraya, F. S., Alsulaiman, A., Al-Muhaizea, M. A., Lesca, G., Pons, L., Labalme, A., Laux, L., Bryant, E., Brown, N. J., Savva, E., Ayres, S., Eratne, D., Peeters, H., Bilan, F., Letienne-Cejudo, L., Gilbert-Dussardier, B., Ruiz-Arana, I. L., Merlini, J. M., Boizot, A., Bartoloni, L., Santoni, F., Karlowicz, D., **McDonald, M.,** Wu, H., Hu, Z., Chen, G., Ou, J., Brasch-Andersen, C., Fagerberg, C. R., Dreyer, I., Chun-Hui Tsai, A., Slegesky, V., McGee, R. B., Daniels, B., Sellars, E. A., Carpenter, L. A., Schaefer, B., Sacoto, M. J. G., Begtrup, A., Schnur, R. E., Punj, S., Wentzensen, I. M., Rhodes, L., Pan, Q., Bernier, R. A., Chen, C., Eichler, E. E., & Xia, K. (2020). NCKAP1 Disruptive Variants Lead to a Neurodevelopmental Disorder with Core Features of Autism. *Am J Hum Genet, 107*(5), 963-976. doi:10.1016/j.ajhg.2020.10.002

Hamilton, D. A., Mooney, S. M., Petrenko, C. L. M., & **Hamre, K. M.** (2020). Proceedings of the 2019 annual meeting of the Fetal Alcohol Spectrum Disorders Study Group. *Alcohol, 86*, 25-33. doi:10.1016/j.alcohol.2020.02.165

Haran, F. J., Handy, J. D., Servatius, R. J., Rhea, C. K., & **Tsao, J. W.** (2021). Acute neurocognitive deficits in active duty service members following subconcussive blast exposure. *Appl Neuropsychol Adult, 28*(3), 297-309. doi:10.1080/23279095.2019.1630627

Hargest, V., **Sharp, B**., Livingston, B., Cortez, V., & Schultz-Cherry, S. (2020). Astrovirus Replication Is Inhibited by Nitazoxanide In Vitro and In Vivo. *J Virol, 94*(5). doi:10.1128/JVI.01706-19

Haring, B., Liu, J., Rapp, S. R., Shimbo, D., Padula, C. B., **Mozhui, K**., Li, W., Espeland, M., & Wassertheil-Smoller, S. (2020). Heart Rate, Brain Imaging Biomarkers and Cognitive Impairment in Older (>/=63 years) Women. *Am J Cardiol, 129*, 102-108. doi:10.1016/j.amjcard.2020.05.030

Harsono, M., Yanishevski, D., & **Pourcyrous, M.** (2021). Congenital Perineal Groove Defect in Monozygotic Twin Infants: A Literature Review. *AJP Rep, 11*(1), e54-e57. doi:10.1055/s-0041-1727145

Hatcher-Martin, J. M., Adams, J. L., Anderson, E. R., Bove, R., Burrus, T. M., Chehrenama, M., Dolan O'Brien, M., Eliashiv, D. S., Erten-Lyons, D., Giesser, B. S., Moo, L. R., Narayanaswami, P., Rossi, M. A., Soni, M., Tariq, N., **Tsao, J. W.,** Vargas, B. B., Vota, S. A., Wessels, S. R., Planalp, H., & Govindarajan, R. (2020). Telemedicine in neurology: Telemedicine Work Group of the American Academy of Neurology update. *Neurology, 94*(1), 30-38. doi:10.1212/WNL.0000000000008708

Hawkins, N. A., Nomura, T., Duarte, S., Barse, L., **Williams, R. W**., Homanics, G. E., **Mulligan, M. K**., Contractor, A., & Kearney, J. A. (2021). Gabra2 is a genetic modifier of Dravet syndrome in mice. *Mamm Genome, 32*(5), 350-363. doi:10.1007/s00335-021-09877-1

He, Y., Hwang, D. J., Ponnusamy, S., Thiyagarajan, T., Mohler, M. L., Narayanan, R., & **Miller, D. D**. (2020). Pyrazol-1-yl-propanamides as SARD and Pan-Antagonists for the Treatment of Enzalutamide-Resistant Prostate Cancer. *J Med Chem, 63*(21), 12642-12665. doi:10.1021/acs.jmedchem.0c00943

He, Y., Hwang, D. J., Ponnusamy, S., Thiyagarajan, T., Mohler, M. L., Narayanan, R., & **Miller, D. D.** (2021). Exploration and Biological Evaluation of Basic Heteromonocyclic Propanamide Derivatives as SARDs for the Treatment of Enzalutamide-Resistant Prostate Cancer. *J Med Chem, 64*(15), 11045-11062. doi:10.1021/acs.jmedchem.1c00439

Heuer, S. E., Neuner, S. M., Hadad, N., O'Connell, K. M. S., **Williams, R. W**., Philip, V. M., Gaiteri, C., & Kaczorowski, C. C. (2020). Identifying the molecular systems that influence cognitive resilience to Alzheimer's disease in genetically diverse mice. *Learn Mem, 27*(9), 355-371. doi:10.1101/lm.051839.120

Hitzemann, R., Bergeson, S. E., Berman, A. E., Bubier, J. A., Chesler, E. J., Finn, D. A., Hein, M., Hoffman, P., Holmes, A., Kisby, B. R., Lockwood, D., Lodowski, K. H., McManus, M., Owen, J. A., Ozburn, A. R.,

Panthagani, P., Ponomarev, I., Saba, L., Tabakoff, B., Walchale, A., **Williams, R. W**., & Phillips, T. J. (2021). Sex Differences in the Brain Transcriptome Related to Alcohol Effects and Alcohol Use Disorder. *Biol Psychiatry*. doi:10.1016/j.biopsych.2021.04.016

Hollingsworth, T. J., Hubbard, M. G., Levi, H. J., White, W., Wang, X., Simpson, R., **Jablonski, M. M**., & Gross, A. K. (2021). Proinflammatory Pathways Are Activated in the Human Q344X Rhodopsin Knock-In Mouse Model of Retinitis Pigmentosa. *Biomolecules, 11*(8). doi:10.3390/biom11081163

Honig, M. G., Dorian, C. C., Worthen, J. D., Micetich, A. C., Mulder, I. A., Sanchez, K. B., Pierce, W. F., Del Mar, N. A., & **Reiner, A**. (2021). Progressive long-term spatial memory loss following repeat concussive and subconcussive brain injury in mice, associated with dorsal hippocampal neuron loss, microglial phenotype shift, and vascular abnormalities. *Eur J Neurosci, 54*(5), 5844-5879. doi:10.1111/ejn.14711

Hope, K. A., Johnson, D., Miller, P. W., Lopez-Ferrer, D., Kakhniashvili, D., & **Reiter, L. T.** (2020). Transcriptomic and proteomic profiling of glial versus neuronal Dube3a overexpression reveals common molecular changes in gliopathic epilepsies. *Neurobiol Dis, 141*, 104879. doi:10.1016/j.nbd.2020.104879

Hou, R., Yu, Y., & Jiang, J. (2021). PGE2 receptors in detrusor muscle: Drugging the undruggable for urgency. *Biochem Pharmacol, 184*, 114363. doi:10.1016/j.bcp.2020.114363

Hu, Z., Tylavsky, F. A., Kocak, M., Fowke, J. H., **Han, J. C**., Davis, R. L., LeWinn, K. Z., Bush, N. R., Sathyanarayana, S., Karr, C. J., & Zhao, Q. (2020). Effects of Maternal Dietary Patterns during Pregnancy on Early Childhood Growth Trajectories and Obesity Risk: The CANDLE Study. *Nutrients, 12*(2). doi:10.3390/nu12020465

Ibrahim, M. M., Maria, D. N., Wang, X., Simpson, R. N., Hollingsworth, T. J., & **Jablonski, M. M**. (2020). Enhanced Corneal Penetration of a Poorly Permeable Drug Using Bioadhesive Multiple Microemulsion Technology. *Pharmaceutics, 12*(8). doi:10.3390/pharmaceutics12080704

Iskusnykh, I. Y., Fattakhov, N., Buddington, R. K., & **Chizhikov, V. V.** (2021). Intrauterine growth restriction compromises cerebellar development by affecting radial migration of granule cells via the JamC/Pard3a molecular pathway. *Exp Neurol, 336*, 113537. doi:10.1016/j.expneurol.2020.113537

Ismael, S., Ahmed, H. A., Adris, T., Parveen, K., Thakor, P., & **Ishrat, T.** (2021). The NLRP3 inflammasome: a potential therapeutic target for traumatic brain injury. *Neural Regen Res, 16*(1), 49-57. doi:10.4103/1673-5374.286951

Ismael, S., & **Ishrat, T**. (2021). Compound 21, a Direct AT2R Agonist, Induces IL-10 and Inhibits Inflammation in Mice Following Traumatic Brain Injury. *Neuromolecular Med*. doi:10.1007/s12017-021-08687-7

Ismael, S., **Moshahid Khan, M**., Kumar, P., Kodidela, S., Mirzahosseini, G., Kumar, S., & **Ishrat, T.** (2020). HIV Associated Risk Factors for Ischemic Stroke and Future Perspectives. *Int J Mol Sci, 21*(15). doi:10.3390/ijms21155306

Ismael, S., Nasoohi, S., Li, L., Aslam, K. S., Khan, M. M., El-Remessy, A. B., **McDonald, M. P**., **Liao, F. F**., & **Ishrat, T**. (2021). Thioredoxin interacting protein regulates age-associated neuroinflammation. *Neurobiol Dis, 156*, 105399. doi:10.1016/j.nbd.2021.105399

Ismael, S., Nasoohi, S., Yoo, A., Ahmed, H. A., & **Ishrat, T**. (2020). Tissue Plasminogen Activator Promotes TXNIP-NLRP3 Inflammasome Activation after Hyperglycemic Stroke in Mice. *Mol Neurobiol, 57*(6), 2495-2508. doi:10.1007/s12035-020-01893-7

Ismael, S., Nasoohi, S., Yoo, A., Mirzahosseini, G., Ahmed, H. A., & **Ishrat, T.** (2021). Verapamil as an Adjunct Therapy to Reduce tPA Toxicity in Hyperglycemic Stroke: Implication of TXNIP/NLRP3 Inflammasome. *Mol Neurobiol, 58*(8), 3792-3804. doi:10.1007/s12035-021-02384-z

Ismael, S., Wajidunnisa, Sakata, K., **McDonald, M. P**., **Liao, F. F**., & **Ishrat, T.** (2021). ER stress associated TXNIP-NLRP3 inflammasome activation in hippocampus of human Alzheimer's disease. *Neurochem Int, 148*, 105104. doi:10.1016/j.neuint.2021.105104

Iversen, W. L., **Cowan, R. L**., Atalla, S., Englehart, S. S., Gure, T. R., Moss, K. O., Ryan, C. M., Scharre, D. W., Wright, K. D., & Monroe, T. B. (2021). Treating the most vulnerable: A discursive review of experimental pain in Alzheimer's disease. *Nurs Open*. doi:10.1002/nop2.922

Javed, H., Thangavel, R., Selvakumar, G. P., Dubova, I., Schwartz, N., Ahmed, M. E., Zaheer, S., Kempuraj, D., Iyer, S., Zaheer, A., & **Khan, M. M**. (2020). NLRP3 inflammasome and glia maturation factor coordinately regulate neuroinflammation and neuronal loss in MPTP mouse model of Parkinson's

disease. *Int Immunopharmacol, 83*, 106441. doi:10.1016/j.intimp.2020.106441

Jha, K. A., Gentry, J., Del Mar, N. A., **Reiner, A**., Sohl, N., & Gangaraju, R. (2021). Adipose Tissue-Derived Mesenchymal Stem Cell Concentrated Conditioned Medium Alters the Expression Pattern of Glutamate Regulatory Proteins and Aquaporin-4 in the Retina after Mild Traumatic Brain Injury. *J Neurotrauma, 38*(12), 1702-1716. doi:10.1089/neu.2020.7309

Jiang, J., Dhakal, N. P., Guo, Y., Andre, C., Thompson, L., Skalli, O., & Peng, C. (2020). Controlled Dynamics of Neural Tumor Cells by Templated Liquid Crystalline Polymer Networks. *Adv Healthc Mater, 9*(12), e2000487. doi:10.1002/adhm.202000487

Jiang, J., & Yu, Y. (2021). Small molecules targeting cyclooxygenase/prostanoid cascade in experimental brain ischemia: Do they translate? *Med Res Rev, 41*(2), 828-857. doi:10.1002/med.21744

Jones, B. C., Erikson, K. M., **Mulligan, M. K**., Torres-Rojas, C., Zhao, W., Zhuang, D., **Lu, L**., & **Williams, R. W**. (2021). Genetic differences in ethanol consumption: effects on iron, copper, and zinc regulation in mouse hippocampus. *Biometals, 34*(5), 1059-1066. doi:10.1007/s10534-021-00327-8

Jones, B. C., Miller, D. B., Lu, L., Zhao, W., Ashbrook, D. G., Xu, F., **Mulligan, M. K**., **Williams, R. W**., Zhuang, D., Torres-Rojas, C., & O'Callaghan, J. P. (2020). Modeling the Genetic Basis of Individual Differences in Susceptibility to Gulf War Illness. *Brain Sci, 10*(3). doi:10.3390/brainsci10030143

Kashyap, V. K., Dan, N., Chauhan, N., Wang, Q., Setua, S., Nagesh, P. K. B., Malik, S., Batra, V., Yallapu, M. M., **Miller, D. D**., Li, W., Hafeez, B. B., Jaggi, M., & Chauhan, S. C. (2020). VERU-111 suppresses tumor growth and metastatic phenotypes of cervical cancer cells through the activation of p53 signaling pathway. *Cancer Lett, 470*, 64-74. doi:10.1016/j.canlet.2019.11.035

Keenan, C., Graham, R. T., Harreld, J. H., Lucas, J. T., Jr., Finkelstein, D., Wheeler, D., Li, X., Dalton, J., Upadhyaya, S. A., Raimondi, S. C., **Boop, F. A**., DeCuypere, M., Zhang, J., Vinitsky, A., Wang, L., & Chiang, J. (2020). Infratentorial C11orf95-fused gliomas share histologic, immunophenotypic, and molecular characteristics of supratentorial RELA-fused ependymoma. *Acta Neuropathol, 140*(6), 963-965. doi:10.1007/s00401-020-02238-3

Khan, R. B., Patay, Z., Klimo, P., Huang, J., Kumar, R., **Boop, F. A**., Raches, D., Conklin, H. M., Sharma, R., Simmons, A., Sadighi, Z. S., Onar-Thomas, A., Gajjar, A., & Robinson, G. W. (2021). Clinical features, neurologic recovery, and risk factors of postoperative posterior fossa syndrome and delayed recovery: a prospective study. *Neuro Oncol, 23*(9), 1586-1596. doi:10.1093/neuonc/noab030

Kim, I. H., Kim, N., Kim, S., Toda, K., Catavero, C. M., Courtland, J. L., Yin, H. H., & Soderling, S. H. (2020). Dysregulation of the Synaptic Cytoskeleton in the PFC Drives Neural Circuit Pathology, Leading to Social Dysfunction. *Cell Rep, 32*(4), 107965. doi:10.1016/j.celrep.2020.107965

King-Stephens, D., **Wheless, J**., Krogh, C., Bettles, M., Niemira, J., Stolper, R., Benitez, A., Fournier, M., Spalding, W., & Lu, M. (2020). Burden of disease in patients with a history of status epilepticus and their caregivers. *Epilepsy Behav, 112*, 107374. doi:10.1016/j.yebeh.2020.107374

Knopf, J. D., Kumar, R., Barats, M., Klimo, P., Jr., **Boop, F. A**., Michael, L. M., 2nd, Martin, J. E., Bookland, M., & Hersh, D. S. (2020). Neurosurgical Operative Videos: An Analysis of an Increasingly Popular Educational Resource. *World Neurosurg, 144*, e428-e437. doi:10.1016/j.wneu.2020.08.187

Kodali, M. C., **Chen, H**., & **Liao, F. F**. (2020). Temporal unsnarling of brain's acute neuroinflammatory transcriptional profiles reveals panendothelitis as the earliest event preceding microgliosis. *Mol Psychiatry*. doi:10.1038/s41380-020-00955-5

Koks, S., **Williams, R. W**., Quinn, J., Farzaneh, F., Conran, N., Tsai, S. J., Awandare, G., & Goodman, S. R. (2020). COVID-19: Time for precision epidemiology. *Exp Biol Med (Maywood), 245*(8), 677-679. doi:10.1177/1535370220919349

Konakanchi, D., de Jongh Curry, A. L., **Waters, R. S**., & **Narayana, S.** (2020). Focality of the Induced E-Field Is a Contributing Factor in the Choice of TMS Parameters: Evidence from a 3D Computational Model of the Human Brain. *Brain Sci, 10*(12). doi:10.3390/brainsci10121010

Kumar, A., Sinha, N., Haque, S., Kodidela, S., Wang, T., Martinez, A. G., **Chen, H**., & Kumar, S. (2021). Nicotine self-administration with menthol and audiovisual cue facilitates differential packaging of CYP2A6 and cytokines/chemokines in rat plasma extracellular vesicles. *Sci Rep, 11*(1), 17393. doi:10.1038/s41598-021-96807-5

Li, C., Fitzgerald, M. E. C., Del Mar, N., Wang, H., Haughey, C., **Honig, M. G**., & **Reiner, A**. (2021). Role of

the superior salivatory nucleus in parasympathetic control of choroidal blood flow and in maintenance of retinal health. *Exp Eye Res, 206*, 108541. doi:10.1016/j.exer.2021.108541

Li, H., Ibrahim, M. M., **Chen, H**., Li, W., & **Jablonski, M. M**. (2021). In Silico Screening and In Vivo Evaluation of Potential CACNA2D1 Antagonists as Intraocular Pressure-Reducing Agents in Glaucoma Therapy. *Pharmaceuticals (Basel), 14*(9). doi:10.3390/ph14090887

Li, K., Shen, Y., Miller, M. A., Stabenow, J., **Williams, R. W**., & **Lu, L**. (2021). Differing susceptibility of C57BL/6J and DBA/2J mice-parents of the murine BXD family, to severe acute respiratory syndrome coronavirus infection. *Cell Biosci, 11*(1), 137. doi:10.1186/s13578-021-00656-8

Li, L., Sluter, M. N., Yu, Y., & **Jiang, J.** (2021). Prostaglandin E receptors as targets for ischemic stroke: Novel evidence and molecular mechanisms of efficacy. *Pharmacol Res, 163*, 105238. doi:10.1016/j.phrs.2020.105238

Li, L., Yu, Y., Hou, R., Hao, J., & **Jiang, J**. (2020). Inhibiting the PGE2 Receptor EP2 Mitigates Excitotoxicity and Ischemic Injury. *ACS Pharmacol Transl Sci, 3*(4), 635-643. doi:10.1021/acsptsci.0c00040

Li, Q., Millard, K., Tetnowski, J., **Narayana, S**., & Cannito, M. (2021). Acoustic Analysis of Intonation in Persons With Parkinson's Disease Receiving Transcranial Magnetic Stimulation and Intensive Voice Treatment. *J Voice*. doi:10.1016/j.jvoice.2020.12.019

Liao, F. F., Lin, G., Chen, X., Chen, L., Zheng, W., Raghow, R., **Zhou, F. M**., Shih, A. Y., & Tan, X. L. (2021). Endothelial Nitric Oxide Synthase-Deficient Mice. *Am J Pathol*. doi:10.1016/j.ajpath.2021.02.022

Lin, B., Alganem, K., O'Donovan, S. M., Jin, Z., Naghavi, F., Miller, O. A., Ortyl, T. C., Ruan, Y. C., McCullumsmith, R. E., & **Du, J**. (2021). Activation of acid-sensing ion channels by carbon dioxide regulates amygdala synaptic protein degradation in memory reconsolidation. *Mol Brain, 14*(1), 78. doi:10.1186/s13041-021-00786-7

Lin, B., Launder, D., Bailey, D. Y., Assifuah, F. K., Miller, O. A., Conti, H. R., **Du, J**., & Koffman, B. M. (2020). Targeting macrophages by an aza-anthrapyrazole to ameliorate experimental autoimmune encephalomyelitis. *Mult Scler Relat Disord, 43*, 102190. doi:10.1016/j.msard.2020.102190

Liu, A. P. Y., Gudenas, B., Lin, T., Orr, B. A., Klimo, P., Jr., Kumar, R., Bouffet, E., Gururangan, S., Crawford, J. R., Kellie, S. J., Chintagumpala, M., Fisher, M. J., Bowers, D. C., Hassall, T., Indelicato, D. J., Onar-Thomas, A., Ellison, D. W**., Boop, F. A**., Merchant, T. E., Robinson, G. W., Northcott, P. A., & Gajjar, A. (2020). Correction to: Risk-adapted therapy and biological heterogeneity in pineoblastoma: integrated clinico-pathological analysis from the prospective, multi-center SJMB03 and SJYC07 trials. *Acta Neuropathol, 139*(2), 273-275. doi:10.1007/s00401-019-02115-8

Liu, A. P. Y., Gudenas, B., Lin, T., Orr, B. A., Klimo, P., Jr., Kumar, R., Bouffet, E., Gururangan, S., Crawford, J. R., Kellie, S. J., Chintagumpala, M., Fisher, M. J., Bowers, D. C., Hassall, T., Indelicato, D. J., Onar-Thomas, A., Ellison, D. W., **Boop, F. A.,** Merchant, T. E., Robinson, G. W., Northcott, P. A., & Gajjar, A. (2020). Risk-adapted therapy and biological heterogeneity in pineoblastoma: integrated clinico-pathological analysis from the prospective, multi-center SJMB03 and SJYC07 trials. *Acta Neuropathol, 139*(2), 259-271. doi:10.1007/s00401-019-02106-9

Liu, A. P. Y., Wu, G., Orr, B. A., Lin, T., Ashford, J. M., Bass, J. K., Bowers, D. C., Hassall, T., Fisher, P. G., Indelicato, D. J., Klimo, P., Jr., **Boop, F**., Conklin, H., Onar-Thomas, A., Merchant, T. E., Ellison, D. W., Gajjar, A., & Robinson, G. W. (2021). Outcome and molecular analysis of young children with choroid plexus carcinoma treated with non-myeloablative therapy: results from the SJYC07 trial. *Neurooncol Adv, 3*(1), vdaa168. doi:10.1093/noajnl/vdaa168

Liu, J., Chandaka, G. K., Zhang, R., & **Parfenova, H**. (2020). Acute antioxidant and cytoprotective effects of sulforaphane in brain endothelial cells and astrocytes during inflammation and excitotoxicity. *Pharmacol Res Perspect, 8*(4), e00630. doi:10.1002/prp2.630

Liu, Y., Qi, S., Thomas, F., Correia, B. L., Taylor, A. P., Sillitoe, R. V., & **Heck, D. H**. (2020). Loss of cerebellar function selectively affects intrinsic rhythmicity of eupneic breathing. *Biol Open, 9*(4). doi:10.1242/bio.048785

Loring, D. W., Meador, K. J., Shinnar, S., Gaillard, W. D., **Wheless, J. W**., Kessler, S. K., Conry, J. A., Berl, M. M., Burns, T. G., Glauser, T. A., Kinkead, B., & Cnaan, A. (2020). Differential antiseizure medication sensitivity of the Affective Reactivity Index: A randomized controlled trial in new-onset pediatric focal epilepsy. *Epilepsy Behav, 102*, 106687. doi:10.1016/j.yebeh.2019.106687

Lukka, P. B., Woods, M., Chhim, R., Phelps, S. J., **Wheless, J. W**., & Meibohm, B. (2021). Use of Real-World Data and Pharmacometric Modeling in Support of Lacosamide Dosing in Pediatric Patients Under 4 Years of Age. *J Clin Pharmacol, 61*(7), 881-888. doi:10.1002/jcph.1840

Madsen, J. R., Boyle, T. P., Neuman, M. I., Park, E. H., Tamber, M. S., Hickey, R. W., Heuer, G. G., Zorc, J. J., Leonard, J. R., Leonard, J. C., Keating, R., Chamberlain, J. M., Frim, D. M., Zakrzewski, P., Klinge, P., Merck, L. H., Piatt, J., Bennett, J. E., Sandberg, D. I., **Boop, F. A**., & Hameed, M. Q. (2020). Diagnostic Accuracy of Non-Invasive Thermal Evaluation of Ventriculoperitoneal Shunt Flow in Shunt Malfunction: A Prospective, Multi-Site, Operator-Blinded Study. *Neurosurgery, 87*(5), 939-948. doi:10.1093/neuros/nyaa128

Mahmud, F., Deng, S., **Chen, H**., **Miller, D. D**., & Li, W. (2020). Orally available tubulin inhibitor VERU-111 enhances antitumor efficacy in paclitaxel-resistant lung cancer. *Cancer Lett, 495*, 76-88. doi:10.1016/j.canlet.2020.09.004

Mangham, W. M., Elijovich, L., Lee-Diaz, J. A., Orr, B. A., Gienapp, A. J., & **Boop, F. A.** (2021). Pre-operative embolization for staged treatment of infantile choroid plexus papilloma. *Childs Nerv Syst*. doi:10.1007/s00381-021-05212-w

Miller, I., **Wheless, J. W**., Hogan, R. E., Dlugos, D., Biton, V., Cascino, G. D., Sperling, M. R., Liow, K., Vazquez, B., Segal, E. B., Tarquinio, D., Mauney, W., Desai, J., Rabinowicz, A. L., Carrazana, E., & Group, D. S. (2021). Consistent safety and tolerability of Valtoco((R)) (diazepam nasal spray) in relationship to usage frequency in patients with seizure clusters: Interim results from a phase 3, long-term, open-label, repeat-dose safety study. *Epilepsia Open, 6*(3), 504-512. doi:10.1002/epi4.12494

Mims, T. S., Abdallah, Q. A., Stewart, J. D., Watts, S. P., White, C. T., Rousselle, T. V., Gosain, A., Bajwa, A., Han, J. C., Willis, K. A., & Pierre, J. F. (2021). The gut mycobiome of healthy mice is shaped by the environment and correlates with metabolic outcomes in response to diet. *Commun Biol, 4*(1), 281. doi:10.1038/s42003-021-01820-z

Mirzahosseini, G., Ismael, S., Ahmed, H. A., & **Ishrat, T**. (2021). Manifestation of renin angiotensin system modulation in traumatic brain injury. *Metab Brain Dis, 36*(6), 1079-1086. doi:10.1007/s11011-021-00728-1

Mithani, K., Wong, S. M., Mikhail, M., Pourmotabbed, H., Pang, E., Sharma, R., Yau, I., Ochi, A., Otsubo, H., Snead, O. C., Donner, E., Go, C., Widjaja, E., **Babajani-Feremi, A**., & Ibrahim, G. M. (2020). Somatosensory evoked fields predict response to vagus nerve stimulation. *Neuroimage Clin, 26*, 102205. doi:10.1016/j.nicl.2020.102205

Mohler, M. L., Sikdar, A., Ponnusamy, S., Hwang, D. J., He, Y., **Miller, D. D**., & Narayanan, R. (2021). An Overview of Next-Generation Androgen Receptor-Targeted Therapeutics in Development for the Treatment of Prostate Cancer. *Int J Mol Sci, 22*(4). doi:10.3390/ijms22042124

Mondal, K., Takahashi, H., Cole, J., 2nd, Del Mar, N. A., Li, C., Stephenson, D. J., Allegood, J., Cowart, L. A., Chalfant, C. E., **Reiner, A**., & **Mandal, N**. (2021). Systemic Elevation of n-3 Polyunsaturated Fatty Acids (n-3-PUFA) Is Associated with Protection against Visual, Motor, and Emotional Deficits in Mice following Closed-Head Mild Traumatic Brain Injury. *Mol Neurobiol*. doi:10.1007/s12035-021-02501-y

Mudigoudar, B., & **Wheless, J.** (2020). Safety of adjunctive treatment with cenobamate in patients with uncontrolled focal seizures. *Lancet Neurol, 19*(4), 288. doi:10.1016/S1474-4422(20)30069-7

Mukherjee, K., Pingili, A. K., Singh, P., Dhodi, A. N., Dutta, S. R., Gonzalez, F. J., & **Malik, K. U**. (2021). Testosterone Metabolite 6beta-Hydroxytestosterone Contributes to Angiotensin II-Induced Abdominal Aortic Aneurysms in Apoe(-/-) Male Mice. *J Am Heart Assoc, 10*(7), e018536. doi:10.1161/JAHA.120.018536

Myers, M. H., Padmanabha, A., Bidelman, G. M., & **Wheless, J. W**. (2020). Seizure localization using EEG analytical signals. *Clin Neurophysiol, 131*(9), 2131-2139. doi:10.1016/j.clinph.2020.05.034

Nagib, M. M., Yu, Y., & **Jiang, J**. (2020). Targeting prostaglandin receptor EP2 for adjunctive treatment of status epilepticus. *Pharmacol Ther, 209*, 107504. doi:10.1016/j.pharmthera.2020.107504

Narayana, S., Embury, L. M., Shah, N., Weatherspoon, S., Choudhri, A. F., & **Boop, F. A**. (2020). Noninvasive Localization of Language Cortex in an Awake 4-Year-Old Child with Rasmussen Encephalitis: A Case Report. *Oper Neurosurg (Hagerstown), 18*(5), E175-E180. doi:10.1093/ons/opz202

Narayana, S., Gibbs, S. K., Fulton, S. P., **McGregor, A. L**., Mudigoudar, B., Weatherspoon, S. E., **Boop, F. A**.,

& **Wheless, J. W**. (2021). Clinical Utility of Transcranial Magnetic Stimulation (TMS) in the Presurgical Evaluation of Motor, Speech, and Language Functions in Young Children With Refractory Epilepsy or Brain Tumor: Preliminary Evidence. *Front Neurol, 12*, 650830. doi:10.3389/fneur.2021.650830

Narayana, S., Parsons, M. B., Zhang, W., Franklin, C., Schiller, K., Choudhri, A. F., Fox, P. T., LeDoux, M. S., & Cannito, M. (2020). Mapping typical and hypokinetic dysarthric speech production network using a connected speech paradigm in functional MRI. *Neuroimage Clin, 27*, 102285. doi:10.1016/j.nicl.2020.102285

Newkirk, G. S., Guan, D., Dembrow, N., **Armstrong, W. E**., **Foehring, R. C.**, & Spain, W. J. (2021). Kv2.1 Potassium Channels Regulate Repetitive Burst Firing in Extratelencephalic Neocortical Pyramidal Neurons. *Cereb Cortex*. doi:10.1093/cercor/bhab266

Nguyen, V. N., Motiwala, M., Ha, L., Boom, A. D., & **Boop, F. A.** (2021). C4-T3 Replacement Laminoplasty and Microsurgical Resection of Ependymoma: 2-Dimensional Operative Video. *Oper Neurosurg (Hagerstown), 21*(4), E359-E360. doi:10.1093/ons/opab241

North, K., Slayden, A., Mysiewicz, S., **Bukiya, A**., & **Dopico, A**. (2020). Celastrol Dilates and Counteracts Ethanol-Induced Constriction of Cerebral Arteries. *J Pharmacol Exp Ther, 375*(2), 247-257. doi:10.1124/jpet.120.000152

North, K. C., **Bukiya, A. N**., & **Dopico, A. M**. (2021). BK channel-forming slo1 proteins mediate the brain artery constriction evoked by the neurosteroid pregnenolone. *Neuropharmacology, 192*, 108603. doi:10.1016/j.neuropharm.2021.108603

Northrup, H., Aronow, M. E., Bebin, E. M., Bissler, J., Darling, T. N., de Vries, P. J., Frost, M. D., Fuchs, Z., Gosnell, E. S., Gupta, N., Jansen, A. C., Jozwiak, S., Kingswood, J. C., Knilans, T. K., McCormack, F. X., Pounders, A., Roberds, S. L., Rodriguez-Buritica, D. F., Roth, J., Sampson, J. R., Sparagana, S., Thiele, E. A., Weiner, H. L., **Wheless, J. W**., Towbin, A. J., Krueger, D. A., & International Tuberous Sclerosis Complex Consensus, G. (2021). Updated International Tuberous Sclerosis Complex Diagnostic Criteria and Surveillance and Management Recommendations. *Pediatr Neurol, 123*, 50-66. doi:10.1016/j.pediatrneurol.2021.07.011

Padula, A. E., Rinker, J. A., Lopez, M. F., **Mulligan, M. K**., **Williams, R. W.**, Becker, H. C., & Mulholland, P. J. (2020). Bioinformatics identification and pharmacological validation of Kcnn3/KCa2 channels as a mediator of negative affective behaviors and excessive alcohol drinking in mice. *Transl Psychiatry, 10*(1), 414. doi:10.1038/s41398-020-01099-4

Parfenova, H., Liu, J., Hoover, D. T., & Fedinec, A. L. (2020). Vasodilator effects of sulforaphane in cerebral circulation: A critical role of endogenously produced hydrogen sulfide and arteriolar smooth muscle KATP and BK channels in the brain. *J Cereb Blood Flow Metab, 40*(10), 1987-1996. doi:10.1177/0271678X19878284

Parks, C., **Jones, B. C**., **Moore, B. M**., & **Mulligan, M. K.** (2020). Sex and Strain Variation in Initial Sensitivity and Rapid Tolerance to Delta9-Tetrahydrocannabinol. *Cannabis Cannabinoid Res, 5*(3), 231-245. doi:10.1089/can.2019.0047

Parks, C., Rogers, C. M., Prins, P., **Williams, R. W**., **Chen, H**., **Jones, B. C**., **Moore, B. M**., 2nd, & **Mulligan, M. K**. (2021). Genetic Modulation of Initial Sensitivity to Delta9-Tetrahydrocannabinol (THC) Among the BXD Family of Mice. *Front Genet, 12*, 659012. doi:10.3389/fgene.2021.659012

Pellicer-Morata, V., Wang, L., de Jongh Curry, A., **Tsao, J. W**., & **Waters, R. S.** (2021). Structural and functional organization of the lower jaw barrel subfield in rat primary somatosensory cortex. *J Comp Neurol, 529*(8), 1895-1910. doi:10.1002/cne.25063

Penovich, P., **Wheless, J. W**., Hogan, R. E., Guerra, C., Cook, D. F., Carrazana, E., & Rabinowicz, A. L. (2021). Examining the patient and caregiver experience with diazepam nasal spray for seizure clusters: Results from an exit survey of a phase 3, open-label, repeat-dose safety study. *Epilepsy Behav, 121*(Pt A), 108013. doi:10.1016/j.yebeh.2021.108013

Pi, M., Xu, F., Ye, R., Nishimoto, S. K., Kesterson, R. A., **Williams, R. W**., **Lu, L**., & Quarles, L. D. (2020). Humanized GPRC6A(KGKY) is a gain-of-function polymorphism in mice. *Sci Rep, 10*(1), 11143. doi:10.1038/s41598-020-68113-z

Pi, M., Xu, F., Ye, R., Nishimoto, S. K., **Williams, R. W**., **Lu, L**., & Darryl Quarles, L. (2020). Role of GPRC6A in Regulating Hepatic Energy Metabolism in Mice. *Sci Rep, 10*(1), 7216. doi:10.1038/s41598-

020-64384-8

Pingili, A. K., Jennings, B. L., Mukherjee, K., Akroush, W., Gonzalez, F. J., & **Malik, K. U**. (2020). 6beta-Hydroxytestosterone, a metabolite of testosterone generated by CYP1B1, contributes to vascular changes in angiotensin II-induced hypertension in male mice. *Biol Sex Differ, 11*(1), 4. doi:10.1186/s13293-019-0280-4

Pojskic, M., Nguyen, V. N., **Boop, F. A**., & Arnautovic, K. I. (2020). Microsurgical Resection of the IV Ventricle Subependymoma: 2-Dimensional Operative Video. *Oper Neurosurg (Hagerstown), 19*(1), E66-E67. doi:10.1093/ons/opz387

Pollack, R., Rana, D., Purvis, J., Pollard, L., & **Pourcyrous, M**. (2021). Effect of prenatal marijuana exposure on sleep wake cycles and amplitude-integrated electroencephalogram (aEEG). *J Perinatol, 41*(6), 1355-1363. doi:10.1038/s41372-020-00911-9

Poplawski, G. H. D., Kawaguchi, R., Van Niekerk, E., Lu, P., Mehta, N., Canete, P., Lie, R., **Dragatsis, I**., Meves, J. M., Zheng, B., Coppola, G., & Tuszynski, M. H. (2020). Injured adult neurons regress to an embryonic transcriptional growth state. *Nature, 581*(7806), 77-82. doi:10.1038/s41586-020-2200-5

Postlethwaite, A. E., Tuckey, R. C., Kim, T. K., Li, W., **Bhattacharya, S. K**., Myers, L. K., Brand, D. D., & Slominski, A. T. (2021). 20S-Hydroxyvitamin D3, a Secosteroid Produced in Humans, Is Anti-Inflammatory and Inhibits Murine Autoimmune Arthritis. *Front Immunol, 12*, 678487. doi:10.3389/fimmu.2021.678487

Pourcyrous, M., Elabiad, M. T., Rana, D., Gaston, K. P., DeBaer, L., & Dhanireddy, R. (2021). Racial differences in opioid withdrawal syndrome among neonates with intrauterine opioid exposure. *Pediatr Res, 90*(2), 459-463. doi:10.1038/s41390-020-01279-4

Pourmotabbed, H., **Wheless, J. W**., & **Babajani-Feremi, A**. (2020). Lateralization of epilepsy using intra-hemispheric brain networks based on resting-state MEG data. *Hum Brain Mapp, 41*(11), 2964-2979. doi:10.1002/hbm.24990

Pryweller, J. R., Baughman, B. C., Frasier, S. D., O'Conor, E. C., Pandhi, A., Wang, J., Morrison, A. A., & **Tsao, J. W**. (2020). Performance on the DANA Brief Cognitive Test Correlates With MACE Cognitive Score and May Be a New Tool to Diagnose Concussion. *Front Neurol, 11*, 839. doi:10.3389/fneur.2020.00839

Puente-Espel, J., Kozusko, S. D., Konofaos, P., **Boop, F. A**., & Wallace, R. D. (2020). Isolated Frontosphenoidal Suture Craniosynostosis: Treatment Approaches and Literature Review for a Unique Condition. *J Craniofac Surg, 31*(4), e385-e388. doi:10.1097/SCS.0000000000006349

Quintana-Feliciano, R., Gobin, C., Kane, L., Sortman, B., Rakela, S., Genovese, A., **Tunstall, B**., Caprioli, D., Iniguez, S. D., & Warren, B. L. (2021). Food-Seeking Behavior Is Mediated by Fos-Expressing Neuronal Ensembles Formed at First Learning in Rats. *eNeuro, 8*(2). doi:10.1523/ENEURO.0373-20.2021

Rasiah, P. K., Geier, B., Jha, K. A., & **Gangaraju, R.** (2021). Visual deficits after traumatic brain injury. *Histol Histopathol, 36*(7), 711-724. doi:10.14670/HH-18-315

Rezaie, R., Schiller, K. K., Embury, L., **Boop, F. A**., **Wheless, J. W**., & **Narayana, S**. (2020). The Clinical Utility of Transcranial Magnetic Stimulation in Determining Hemispheric Dominance for Language: A Magnetoencephalography Comparison Study. *J Clin Neurophysiol, 37*(2), 90-103. doi:10.1097/WNP.0000000000000499

Robinson-Freeman, K. E., Collins, K. L., Garber, B., Terblanche, R., Risling, M., Vermetten, E., Besemann, M., Mistlin, A., & **Tsao, J. W**. (2020). A Decade of mTBI Experience: What Have We Learned? A Summary of Proceedings From a NATO Lecture Series on Military mTBI. *Front Neurol, 11*, 836. doi:10.3389/fneur.2020.00836

Romano, R. R., Carter, M. A., Dietrich, M. S., **Cowan, R. L**., Bruehl, S. P., & Monroe, T. B. (2021). Could Altered Evoked Pain Responsiveness Be a Phenotypic Biomarker for Alzheimer's Disease Risk? A Cross-Sectional Analysis of Cognitively Healthy Individuals. *J Alzheimers Dis, 79*(3), 1227-1233. doi:10.3233/JAD-201293

Romero, L. O., Caires, R., Nickolls, A. R., Chesler, A. T., **Cordero-Morales, J. F**., & **Vasquez, V.** (2020). Publisher Correction: A dietary fatty acid counteracts neuronal mechanical sensitization. *Nat Commun, 11*(1), 3938. doi:10.1038/s41467-020-17869-z

Rose, S. C., Anderson, W., Feinberg, D., Ganesh, A., Green, L., Jaffee, M., Kaplen, M., Lorincz, M., De Luigi, A., Patel, D., **Tsao, J. W**., Lee, E., & Webb, A. (2021). Quality Improvement in Neurology: Concussion

Quality Measurement Set. *Neurology, 97*(11), 537-542. doi:10.1212/WNL.0000000000012537

Roy, B., **Han, J**., Hope, K. A., Peters, T. L., Palmer, G., & **Reiter, L. T.** (2020). An Unbiased Drug Screen for Seizure Suppressors in Duplication 15q Syndrome Reveals 5-HT1A and Dopamine Pathway Activation as Potential Therapies. *Biol Psychiatry, 88*(9), 698-709. doi:10.1016/j.biopsych.2020.03.021

Roy, S., Sleiman, M. B., Jha, P., Ingels, J. F., Chapman, C. J., McCarty, M. S., Ziebarth, J. D., Hook, M., Sun, A., Zhao, W., Huang, J., Neuner, S. M., Wilmott, L. A., Shapaker, T. M., Centeno, A. G., Ashbrook, D. G., **Mulligan, M. K**., Kaczorowski, C. C., Makowski, L., Cui, Y., Read, R. W., Miller, R. A., **Mozhui, K**., Williams, E. G., Sen, S., **Lu, L**., Auwerx, J., & **Williams, R. W**. (2021). Gene-by-environment modulation of lifespan and weight gain in the murine BXD family. *Nat Metab, 3*(9), 1217-1227. doi:10.1038/s42255-021-00449-w

Saleheen, A., Acharyya, D., **Prosser, R. A**., & Baker, C. A. (2021). A microfluidic bubble perfusion device for brain slice culture. *Anal Methods, 13*(11), 1364-1373. doi:10.1039/d0ay02291h

Saleheen, A., Campbell, B. M., **Prosser, R. A**., & Baker, C. A. (2020). Estimation of available epinephrine dose in expired and discolored autoinjectors via quantitative smartphone imaging. *Anal Bioanal Chem, 412*(12), 2785-2793. doi:10.1007/s00216-020-02505-y

Sandoval-Sierra, J. V., Helbing, A. H. B., Williams, E. G., Ashbrook, D. G., Roy, S., **Williams, R. W**., & **Mozhui, K**. (2020). Body weight and high-fat diet are associated with epigenetic aging in female members of the BXD murine family. *Aging Cell, 19*(9), e13207. doi:10.1111/acel.13207

Sandoval-Sierra, J. V., Salgado Garcia, F. I., Brooks, J. H., Derefinko, K. J., & **Mozhui, K**. (2020). Effect of short-term prescription opioids on DNA methylation of the OPRM1 promoter. *Clin Epigenetics, 12*(1), 76. doi:10.1186/s13148-020-00868-8

Sankar, R., Kirkham, F. J., Holmes, G. L., Pina-Garza, J. E., **Wheless, J.**, Gama, H., Moreira, J., Cantu, D., Tosiello, R., Blum, D., & Grinnell, T. (2020). Long-term safety and tolerability of adjunctive eslicarbazepine acetate in children with focal seizures. *Epilepsy Behav, 112*, 107458. doi:10.1016/j.yebeh.2020.107458

Saravanapandian, V., Frohlich, J., Hipp, J. F., Hyde, C., Scheffler, A. W., Golshani, P., Cook, E. H., **Reiter, L. T**., Senturk, D., & Jeste, S. S. (2020). Properties of beta oscillations in Dup15q syndrome. *J Neurodev Disord, 12*(1), 22. doi:10.1186/s11689-020-09326-1

Sardarian, A., Liu, S., **Youngentob, S. L**., & Glendinning, J. I. (2020). Mixtures of Sweeteners and Maltodextrin Enhance Flavor and Intake of Alcohol in Adolescent Rats. *Chem Senses, 45*(8), 675-685. doi:10.1093/chemse/bjaa056

Schaffner, S. L., Lussier, A. A., Baker, J. A., Goldowitz, D., **Hamre, K. M**., & Kobor, M. S. (2020). Neonatal Alcohol Exposure in Mice Induces Select Differentiation- and Apoptosis-Related Chromatin Changes Both Independent of and Dependent on Sex. *Front Genet, 11*, 35. doi:10.3389/fgene.2020.00035

Schiller, K., Choudhri, A. F., Jones, T., Holder, C., **Wheless, J. W**., & **Narayana, S**. (2020). Concordance Between Transcranial Magnetic Stimulation and Functional Magnetic Resonance Imaging (MRI) Derived Localization of Language in a Clinical Cohort. *J Child Neurol, 35*(6), 363-379. doi:10.1177/0883073820901415

Segal, E. B., Tarquinio, D., Miller, I., **Wheless, J. W**., Dlugos, D., Biton, V., Cascino, G. D., Desai, J., Hogan, R. E., Liow, K., Sperling, M. R., Vazquez, B., Cook, D. F., Rabinowicz, A. L., Carrazana, E., & Group, D. S. (2021). Evaluation of diazepam nasal spray in patients with epilepsy concomitantly using maintenance benzodiazepines: An interim subgroup analysis from a phase 3, long-term, open-label safety study. *Epilepsia, 62*(6), 1442-1450. doi:10.1111/epi.16901

Seleverstov, O., North, K., Simakova, M., Bisen, S., Bickenbach, A., Bursac, Z., **Dopico, A. M**., & **Bukiya, A. N**. (2020). Temporal Requirement for the Protective Effect of Dietary Cholesterol against Alcohol-Induced Vasoconstriction. *J Drug Alcohol Res, 9*. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/33537157

Sharp, B. M., Fan, X., Redei, E. E., **Mulligan, M. K**., & **Chen, H**. (2021). Sex and heredity are determinants of drug intake in a novel model of rat oral oxycodone self-administration. *Genes Brain Behav*, e12770. doi:10.1111/gbb.12770

Sharp, B. M., Jiang, Q., Simeone, X., & Scholze, P. (2020). Allosteric Modulation of GABAA Receptors in Rat Basolateral Amygdala Blocks Stress-Enhanced Reacquisition of Nicotine Self-Administration. *ACS*

Pharmacol Transl Sci, 3(6), 1158-1164. doi:10.1021/acsptsci.0c00111

Shires, C. B., Beckmann, N., Klug, T., & **Boughter, J. D., Jr**. (2021). Quality of life in obese patients after thyroidectomy for goiter. *Gland Surg, 10*(4), 1339-1346. doi:10.21037/gs-20-441

Shuai, W., Wang, G., Zhang, Y., Bu, F., Zhang, S., **Miller, D. D**., Li, W., Ouyang, L., & Wang, Y. (2021). Recent Progress on Tubulin Inhibitors with Dual Targeting Capabilities for Cancer Therapy. *J Med Chem, 64*(12), 7963-7990. doi:10.1021/acs.jmedchem.1c00100

Shukla, P. K., Delotterie, D. F., Xiao, J., Pierre, J. F., Rao, R., **McDonald, M. P.**, & **Khan, M. M**. (2021). Alterations in the Gut-Microbial-Inflammasome-Brain Axis in a Mouse Model of Alzheimer's Disease. *Cells, 10*(4). doi:10.3390/cells10040779

Siddiqui, A., **McGregor, A. L**., **Wheless, J. W**., Klimo, P., **Boop, F. A**., & Khan, R. B. (2021). Utility of Epilepsy Surgery in Survivors of Childhood Cancer. *Neuropediatrics*. doi:10.1055/s-0041-1728653

Simon, M. V., Basu, S. K., Qaladize, B., Grambergs, R., Rotstein, N. P., & **Mandal, N**. (2021). Sphingolipids as critical players in retinal physiology and pathology. *J Lipid Res, 62*, 100037. doi:10.1194/jlr.TR120000972

Singh, P., Dutta, S. R., Song, C. Y., Oh, S., Gonzalez, F. J., & **Malik, K. U**. (2020). Brain Testosterone-CYP1B1 (Cytochrome P450 1B1) Generated Metabolite 6beta-Hydroxytestosterone Promotes Neurogenic Hypertension and Inflammation. *Hypertension, 76*(3), 1006-1018. doi:10.1161/HYPERTENSIONAHA.120.15567

Singh, P., Song, C. Y., Dutta, S. R., Gonzalez, F. J., & **Malik, K. U**. (2020). Central CYP1B1 (Cytochrome P450 1B1)-Estradiol Metabolite 2-Methoxyestradiol Protects From Hypertension and Neuroinflammation in Female Mice. *Hypertension, 75*(4), 1054-1062. doi:10.1161/HYPERTENSIONAHA.119.14548

Singh, P., Song, C. Y., Dutta, S. R., Pingili, A., Shin, J. S., Gonzalez, F. J., Bonventre, J. V., & **Malik, K. U.** (2021). 6beta-Hydroxytestosterone Promotes Angiotensin II-Induced Hypertension via Enhanced Cytosolic Phospholipase A2alpha Activity. *Hypertension, 78*(4), 1053-1066. doi:10.1161/HYPERTENSIONAHA.121.17927

Slominski, A. T., Kim, T. K., Kleszczynski, K., Semak, I., Janjetovic, Z., Sweatman, T., Skobowiat, C., **Steketee, J. D**., Lin, Z., Postlethwaite, A., Li, W., Reiter, R. J., & Tobin, D. J. (2020). Characterization of serotonin and N-acetylserotonin systems in the human epidermis and skin cells. *J Pineal Res, 68*(2), e12626. doi:10.1111/jpi.12626

Smith, K. S., Xu, K., Mercer, K. S., **Boop, F**., Klimo, P., DeCupyere, M., Grenet, J., Robinson, S., Dunphy, P., Baker, S. J., Ellison, D. W., Merchant, T. E., Upadayaya, S. A., Gajjar, A., Wu, G., Orr, B. A., Robinson, G. W., Northcott, P. A., & Roussel, M. F. (2020). Patient-derived orthotopic xenografts of pediatric brain tumors: a St. Jude resource. *Acta Neuropathol, 140*(2), 209-225. doi:10.1007/s00401-020-02171-5

Smith, W. A., Gray, E., Jones, T. L., **Han, J. C**., & Burton, E. T. (2021). Waitlist management in a pediatric weight management clinic: implementing an orientation session. *BMC Pediatr, 21*(1), 416. doi:10.1186/s12887-021-02868-w

Soleman, J., Dvir, R., Ben-Sira, L., Yalon, M., **Boop, F**., Constantini, S., & Roth, J. (2021). MRI-based diagnosis and treatment of pediatric brain tumors: is tissue sample always needed? *Childs Nerv Syst, 37*(5), 1449-1459. doi:10.1007/s00381-021-05148-1

Spencer, D. C., Sinha, S. R., Choi, E. J., Cleveland, J. M., King, A., Meng, T. C., Pullman, W. E., Sequeira, D. J., Van Ess, P. J., & **Wheless, J. W**. (2020). Safety and efficacy of midazolam nasal spray for the treatment of intermittent bouts of increased seizure activity in the epilepsy monitoring unit: A double-blind, randomized, placebo-controlled trial. *Epilepsia, 61*(11), 2415-2425. doi:10.1111/epi.16704

Splavski, B., Rotim, K., **Boop, F. A**., Gienapp, A. J., & Arnautovic, K. I. (2020). Ambroise Pare: His Contribution to the Future Advancement of Neurosurgery and the Hardships of His Times Affecting His Life and Brilliant Career. *World Neurosurg, 134*, 233-239. doi:10.1016/j.wneu.2019.10.187

Stanfill, A. G., & Cao, X. (2020). Expression of Dopamine-Related Genes in Four Human Brain Regions. *Brain Sci, 10*(8). doi:10.3390/brainsci10080567

Stanfill, A. G., & Cao, X. (2021). Enhancing Research Through the Use of the Genotype-Tissue Expression (GTEx) Database. *Biol Res Nurs, 23*(3), 533-540. doi:10.1177/1099800421994186

Stanfill, A. G., Wynja, K., Cao, X., Prescott, D., Shore, S., Baughman, B., Oddo, A., & **Tsao, J. W**. (2020). Helmet use in equestrian athletes: opportunities for intervention. *Concussion, 6*(1), CNC85.

doi:10.2217/cnc-2020-0019

Staszko, S. M., **Boughter, J. D., Jr**., & **Fletcher, M. L**. (2020). Taste coding strategies in insular cortex. *Exp Biol Med (Maywood), 245*(5), 448-455. doi:10.1177/1535370220909096

Stiemke, A. B., Sah, E., Simpson, R. N., **Lu, L**., **Williams, R. W**., & **Jablonski, M. M**. (2020). Systems Genetics of Optic Nerve Axon Necrosis During Glaucoma. *Front Genet, 11*, 31. doi:10.3389/fgene.2020.00031

Sullivan, J., Perry, M. S., **Wheless, J. W**., Galer, B., & Gammaitoni, A. (2021). Fenfluramine responder analyses and numbers needed to treat: Translating epilepsy trial data into clinical practice. *Eur J Paediatr Neurol, 31*, 10-14. doi:10.1016/j.ejpn.2021.01.005

Tan, Q., Orsso, C. E., Deehan, E. C., Triador, L., Field, C. J., Tun, H. M., **Han, J. C**., Muller, T. D., & Haqq, A. M. (2020). Current and emerging therapies for managing hyperphagia and obesity in Prader-Willi syndrome: A narrative review. *Obes Rev, 21*(5), e12992. doi:10.1111/obr.12992

Thadathil, N., Delotterie, D. F., Xiao, J., Hori, R., **McDonald, M. P**., & **Khan, M. M**. (2021). DNA Double-Strand Break Accumulation in Alzheimer's Disease: Evidence from Experimental Models and Postmortem Human Brains. *Mol Neurobiol, 58*(1), 118-131. doi:10.1007/s12035-020-02109-8

Thadathil, N., Xiao, J., Hori, R., Alway, S. E., & **Khan, M. M**. (2021). Brain Selective Estrogen Treatment Protects Dopaminergic Neurons and Preserves Behavioral Function in MPTP-induced Mouse Model of Parkinson's Disease. *J Neuroimmune Pharmacol, 16*(3), 667-678. doi:10.1007/s11481-020-09972-1

Thomas, M. H., Gui, Y., Garcia, P., Karout, M., Gomez Ramos, B., Jaeger, C., Michelucci, A., Gaigneaux, A., Kollmus, H., Centeno, A., Schughart, K., Balling, R., Mittelbronn, M., Nadeau, J. H., Sauter, T., **Williams, R. W**., Sinkkonen, L., & Buttini, M. (2021). Quantitative trait locus mapping identifies a locus linked to striatal dopamine and points to collagen IV alpha-6 chain as a novel regulator of striatal axonal branching in mice. *Genes Brain Behav*, e12769. doi:10.1111/gbb.12769

Torres-Rojas, C., Zhuang, D., Jimenez-Carrion, P., Silva, I., O'Callaghan, J. P., **Lu, L**., Zhao, W., **Mulligan, M. K**., **Williams, R. W**., & **Jones, B. C.** (2020). Systems Genetics and Systems Biology Analysis of Paraquat Neurotoxicity in BXD Recombinant Inbred Mice. *Toxicol Sci, 176*(1), 137-146. doi:10.1093/toxsci/kfaa050

Trotter, C., Kim, H., Farage, G., Prins, P., **Williams, R. W**., Broman, K. W., & Sen, S. (2021). Speeding up eQTL scans in the BXD population using GPUs. *G3 (Bethesda)*. doi:10.1093/g3journal/jkab254

Tsao, J. W., & Counihan, T. J. (2021). Lessons From Disaster Medicine for the Neurologist in the COVID-19 Era: Going Viral. *Neurol Clin Pract, 11*(2), 91-92. doi:10.1212/CPJ.0000000000001058

Udell, M. E., Ni, J., Garcia Martinez, A., **Mulligan, M. K**., Redei, E. E., & **Chen, H**. (2021). TailTimer: A device for automating data collection in the rodent tail immersion assay. *PLoS One, 16*(8), e0256264. doi:10.1371/journal.pone.0256264

Uh, J., Merchant, T. E., Conklin, H. M., Ismael, Y., Li, Y., Han, Y., Sabin, N. D., **Babajani-Feremi, A**., Indelicato, D. J., & Hua, C. H. (2021). Diffusion Tensor Imaging-Based Analysis of Baseline Neurocognitive Function and Posttreatment White Matter Changes in Pediatric Patients With Craniopharyngioma Treated With Surgery and Proton Therapy. *Int J Radiat Oncol Biol Phys, 109*(2), 515-526. doi:10.1016/j.ijrobp.2020.08.060

Upadhyaya, S. A., Robinson, G. W., Onar-Thomas, A., Orr, B. A., Johann, P., Wu, G., Billups, C. A., Tatevossian, R. G., Dhanda, S. K., Srinivasan, A., Broniscer, A., Qaddoumi, I., Vinitsky, A., Armstrong, G. T., Bendel, A. E., Hassall, T., Partap, S., Fisher, P. G., Crawford, J. R., Chintagumpala, M., Bouffet, E., Gururangan, S., Mostafavi, R., Sanders, R. P., Klimo, P., Jr., Patay, Z., Indelicato, D. J., Nichols, K. E., **Boop, F. A**., Merchant, T. E., Kool, M., Ellison, D. W., & Gajjar, A. (2021). Relevance of Molecular Groups in Children with Newly Diagnosed Atypical Teratoid Rhabdoid Tumor: Results from Prospective St. Jude Multi-institutional Trials. *Clin Cancer Res, 27*(10), 2879-2889. doi:10.1158/1078-0432.CCR-20-4731

Vasquez, V. (2020). Using C. elegans to Study the Effects of Toxins in Sensory Ion Channels In Vivo. *Methods Mol Biol, 2068*, 225-238. doi:10.1007/978-1-4939-9845-6_12

Wallace, D., Taylor, D. R., Pan, H., Hwang, S., Lucas, J. T., Jr., Klimo, P., Jr., Upadhyaya, S. A., & **Boop, F. A.** (2020). Treatment-related calvarial lesions in pediatric brain tumor survivors. *Pediatr Blood Cancer, 67*(6), e28189. doi:10.1002/pbc.28189

Wang, H., Del Mar, N., Deng, Y., & **Reiner, A.** (2021). Rescue of BDNF expression by the thalamic parafascicular nucleus with chronic treatment with the mGluR2/3 agonist LY379268 may contribute to the LY379268 rescue of enkephalinergic striatal projection neurons in R6/2 Huntington's disease mice. *Neurosci Lett, 763*, 136180. doi:10.1016/j.neulet.2021.136180

Wang, J., Yoon, T. W., Read, R., Yi, A. K., **Williams, R. W**., & Fitzpatrick, E. A. (2020). Genetic variability of T cell responses in hypersensitivity pneumonitis identified using the BXD genetic reference panel. *Am J Physiol Lung Cell Mol Physiol, 318*(4), L631-L643. doi:10.1152/ajplung.00120.2019

Wang, M. C., **Boop, F. A**., Kondziolka, D., Resnick, D. K., Kalkanis, S. N., Koehnen, E., Selden, N. R., Heilman, C. B., Valadka, A. B., Cockroft, K. M., Wilson, J. A., Ellenbogen, R. G., Asher, A. L., Byrne, R. W., Camarata, P. J., Huang, J., Knightly, J. J., Levy, E. I., Lonser, R. R., Connolly, E. S., Meyer, F. B., & Liau, L. M. (2020). Continuous improvement in patient safety and quality in neurological surgery: the American Board of Neurological Surgery in the past, present, and future. *J Neurosurg*, 1-7. doi:10.3171/2020.6.JNS202066

Wang, N., Anderson, R. J., Ashbrook, D. G., Gopalakrishnan, V., Park, Y., Priebe, C. E., Qi, Y., Laoprasert, R., Vogelstein, J. T., **Williams, R. W**., & Johnson, G. A. (2020). Variability and heritability of mouse brain structure: Microscopic MRI atlases and connectomes for diverse strains. *Neuroimage, 222*, 117274. doi:10.1016/j.neuroimage.2020.117274

Wang, Y., Bouabid, S., Darvas, M., & **Zhou, F. M**. (2020). The antiparkinson drug ropinirole inhibits movement in a Parkinson's disease mouse model with residual dopamine neurons. *Exp Neurol, 333*, 113427. doi:10.1016/j.expneurol.2020.113427

Wang, Y., Yang, C. H., Schultz, A. P., Sims, M. M., **Miller, D. D**., & Pfeffer, L. M. (2021). Brahma-Related Gene-1 (BRG1) promotes the malignant phenotype of glioblastoma cells. *J Cell Mol Med, 25*(6), 2956-2966. doi:10.1111/jcmm.16330

Wheless, J., Wechsler, R. T., Lancman, M., Aboumatar, S., Patten, A., & Malhotra, M. (2021). Perampanel in real-world clinical care of patients with epilepsy: Interim analysis of a phase IV study. *Epilepsia Open, 6*(1), 79-89. doi:10.1002/epi4.12445

Wheless, J. W. (2020). Adjunctive cenobamate for the treatment of focal onset seizures in adults with epilepsy: a critical review. *Expert Rev Neurother, 20*(11), 1085-1098. doi:10.1080/14737175.2020.1834855

Wheless, J. W. (2021). A critical evaluation of midazolam nasal spray for the treatment of patients with seizure clusters. *Expert Rev Neurother*, 1-11. doi:10.1080/14737175.2021.1890033

Wheless, J. W., Fulton, S. P., & Mudigoudar, B. D. (2020). Dravet Syndrome: A Review of Current Management. *Pediatr Neurol, 107*, 28-40. doi:10.1016/j.pediatrneurol.2020.01.005

Wheless, J. W., Miller, I., Hogan, R. E., Dlugos, D., Biton, V., Cascino, G. D., Sperling, M. R., Liow, K., Vazquez, B., Segal, E. B., Tarquinio, D., Mauney, W., Desai, J., Rabinowicz, A. L., Carrazana, E., & Group, D. S. (2021). Final results from a Phase 3, long-term, open-label, repeat-dose safety study of diazepam nasal spray for seizure clusters in patients with epilepsy. *Epilepsia, 62*(10), 2485-2495. doi:10.1111/epi.17041

Willis, K. A., Gomes, C. K., Rao, P., Micic, D., Moran, E. R., 3rd, Stephenson, E., Puchowicz, M., Al Abdallah, Q., Mims, T. S., Gosain, A., Yin, D., Talati, A. J., Chang, E. B., **Han, J. C.,** & Pierre, J. F. (2020). TGR5 signaling mitigates parenteral nutrition-associated liver disease. *Am J Physiol Gastrointest Liver Physiol, 318*(2), G322-G335. doi:10.1152/ajpgi.00216.2019

Xu, F., Ashbrook, D. G., Gao, J., Starlard-Davenport, A., Zhao, W., Miller, D. B., O'Callaghan, J. P., **Williams, R. W**., **Jones, B. C**., & **Lu, L**. (2020). Genome-wide transcriptome architecture in a mouse model of Gulf War Illness. *Brain Behav Immun, 89*, 209-223. doi:10.1016/j.bbi.2020.06.018

Xu, F., Chen, Y., Tillman, K. A., Cui, Y., **Williams, R. W**., **Bhattacharya, S. K**., **Lu, L**., & Sun, Y. (2021). Characterizing modifier genes of cardiac fibrosis phenotype in hypertrophic cardiomyopathy. *Int J Cardiol, 330*, 135-141. doi:10.1016/j.ijcard.2021.01.047

Xu, F., Gao, J., Bergmann, S., Sims, A. C., Ashbrook, D. G., Baric, R. S., Cui, Y., Jonsson, C. B., Li, K., **Williams, R. W**., Schughart, K., & **Lu, L**. (2020). Genetic Dissection of the Regulatory Mechanisms of Ace2 in the Infected Mouse Lung. *Front Immunol, 11*, 607314. doi:10.3389/fimmu.2020.607314

Yamada, Y., & **Prosser, R. A**. (2020). Copper in the suprachiasmatic circadian clock: A possible link between multiple circadian oscillators. *Eur J Neurosci, 51*(1), 47-70. doi:10.1111/ejn.14181

Yang, C., Wang, Y., Sims, M. M., He, Y., **Miller, D. D**., & Pfeffer, L. M. (2021). Targeting the Bromodomain of BRG-1/BRM Subunit of the SWI/SNF Complex Increases the Anticancer Activity of Temozolomide in Glioblastoma. *Pharmaceuticals (Basel), 14*(9). doi:10.3390/ph14090904

Yao, E. J., Babbs, R. K., Kelliher, J. C., Luttik, K. P., Borrelli, K. N., Damaj, M. I., **Mulligan, M. K**., & Bryant, C. D. (2021). Systems genetic analysis of binge-like eating in a C57BL/6J x DBA/2J-F2 cross. *Genes Brain Behav*, e12751. doi:10.1111/gbb.12751

Yeomans, D. C., Hanson, L. R., Carson, D. S., **Tunstall, B. J**., Lee, M. R., Tzabazis, A. Z., Jacobs, D., & Frey, W. H., 2nd. (2021). Nasal oxytocin for the treatment of psychiatric disorders and pain: achieving meaningful brain concentrations. *Transl Psychiatry, 11*(1), 388. doi:10.1038/s41398-021-01511-7

Yu, Y., & **Jiang, J**. (2020). COX-2/PGE2 axis regulates hippocampal BDNF/TrkB signaling via EP2 receptor after prolonged seizures. *Epilepsia Open, 5*(3), 418-431. doi:10.1002/epi4.12409

Yu, Y., Li, L., Nguyen, D. T., Mustafa, S. M., **Moore, B. M**., & **Jiang, J**. (2020). Inverse Agonism of Cannabinoid Receptor Type 2 Confers Anti-inflammatory and Neuroprotective Effects Following Status Epileptics. *Mol Neurobiol, 57*(6), 2830-2845. doi:10.1007/s12035-020-01923-4

Yu, Z., Wang, G., Goldman, E., Zangerl, B., Xie, N., Cao, Y., Chen, J., Day, S. W., Howard, S. C., Maida, M., Ray, K., **Jablonski, M. M**., Ji, J., Postlethwaite, A., Gu, W., Sun, D., & Aleya, L. (2021). COVID-19 vaccine: Call for employees in international transportation industries and international travelers as the first priority in global distribution. *Open Med (Wars), 16*(1), 134-138. doi:10.1515/med-2021-0210

Zaso, M. J., **Youngentob, S. L**., & Park, A. (2021). Characterizing the role of early alcohol reexposure in associations of prenatal alcohol exposure with adolescent alcohol outcomes. *Alcohol Clin Exp Res, 45*(7), 1436-1447. doi:10.1111/acer.14632

Zhang, S**., Miller, D. D**., & Li, W. (2021). Non-Musculoskeletal Benefits of Vitamin D beyond the Musculoskeletal System. *Int J Mol Sci, 22*(4). doi:10.3390/ijms22042128

Zhang, S., Romero, L. O., Deng, S., Wang, J., Li, Y., Yang, L., Hamilton, D. J., **Miller, D. D**., **Liao, F. F**., **Cordero-Morales, J. F**., Wu, Z., & Li, W. (2021). Discovery of a Highly Selective and Potent TRPC3 Inhibitor with High Metabolic Stability and Low Toxicity. *ACS Med Chem Lett, 12*(4), 572-578. doi:10.1021/acsmedchemlett.0c00571

Zhao, Q., Hu, Z., Kocak, M., Liu, J., Fowke, J. H., **Han, J. C**., Kakhniashvili, D., Lewinn, K. Z., Bush, N. R., Mason, W. A., & Tylavsky, F. A. (2021). Associations of prenatal metabolomics profiles with early childhood growth trajectories and obesity risk in African Americans: the CANDLE study. *Int J Obes (Lond), 45*(7), 1439-1447. doi:10.1038/s41366-021-00808-3

Zhi, K., Raji, B., Nookala, A. R., **Khan, M. M**., Nguyen, X. H., Sakshi, S., Pourmotabbed, T., Yallapu, M. M., Kochat, H., Tadrous, E., Pernell, S., & Kumar, S. (2021). PLGA Nanoparticle-Based Formulations to Cross the Blood-Brain Barrier for Drug Delivery: From R&D to cGMP. *Pharmaceutics, 13*(4). doi:10.3390/pharmaceutics13040500

APPENDIX 3

Neuroscience Seminar Speakers

FY 2020-2021

NEUROSCIENCE SEMINAR SERIES SCHEDULE

Fall 2020

Max Fletcher, Ph.D. Zoom August 26, 2020
Associate Professor
Department Anatomy and Neurobiology
University of Tennessee Health Science Center

Title: "Divergent Olfactory Bulb Responses Based on Odor Valence"

Il Hwan Kim, Ph.D. Zoom September 23, 2020
Assistant Professor
Department of Anatomy and Neurobiology
University of Tennessee Health Science Center

Title: "Neural Circuit Pathology of Abnormal Social Behavior"

Ansley Stanfill, R.N., Ph.D. Zoom October 21, 2020
Associate Professor
Department of Acute and Tertiary Care
University of Tennessee Health Science Center

Title: "Crossing Boundaries in Clinical Neurogenetics"

Tauheed Ishrat, Ph.D. Zoom November 18, 2020
Associate Professor
Department of Anatomy and Neurobiology
University of Tennessee Health Science Center

Title: "TXNIP: A Potential Therapeutic Target for Brain Aging and Alzheimer's Disease"

NEUROSCIENCE SEMINAR SERIES SCHEDULE

Spring 2021

Andrew Kodani, Ph.D. Zoom March 16, 2021
Assistant Member, Cell & Molecular Biology
Center for Pediatric Neurological Disease Research
St. Jude Children's Research Hospital
Host: Matthew Ennis

Title: "Zika Virus Hijacks Centrosomes to Suppress Innate Immunity"

Raghu Vemuganti, Ph.D. Zoom March 23, 2021
Professor & Vice Chair for Basic Research
Department of Neurological Surgery
University of Wisconsin-Madison
Host: Tauheed Ishrat

Title: "Stroke Therapeutic Development Based on Noncoding RNA's, Epigenetics, & Epitranscriptomics"

Egidio D'Angelo M.D. Zoom March 30, 2021
Professor & Director of Neurophysiology
Department of Physiology
University of Piva, Italy
Host: Detlef Heck

Title: "Multiscale Recordings and Models of Cerebellar Activity and Plasticity"

Sarah M. Clinton Ph.D. Zoom April 6, 2021
Associate Professor & Associate Director
School of Neuroscience
Virginia Tech University
Host: Jianyang Du

Title: "Neurodevelopment & Behavioral Consequences of Early Life SSRI Exposure"

Chun-Li Zhang, Ph.D. Zoom April 13, 2021
Professor
Department of Molecular Biology
University of Texas Southwestern Dallas
Host: Fu-Ming Zhou

Title: "Cell Fate Reprogramming for Neural Degeneration & Regeneration"

Matthew Banks, Ph.D. Zoom April 20, 2021
Associate Professor
Department of Anesthesiology
University of Wisconsin
Host: Graduate Students

Title: "Explorations of the Neural Basis of Loss and Recovery of Consciousness"

Henry Yin, Ph.D. Zoom April 27, 2021
Professor
Department of Psychology & Neuroscience
Duke University
Host: Il Hwan Kim

Title: "The Basal Ganglia in Action"

Vittorio Porciatti, D.Sc. Zoom May 25, 2021
Professor
Department of Ophthalmology, Neuroscience & Biomedical Engineering
Director & Vice Chairman
Research of Evelyn F. & William L. McKnight Vision Research Center
Bascom Palmer Eye Institute
University of Miami
Host: Monica Jablonski

Title: "Quality of Life of Retinal Ganglion Cells in Glaucoma"

APPENDIX 4

Neuroscience News, Events and Graduate Training Flyer

FY 2020-2021

2021 Neuroscience Institute (NI) Postdoctoral Research Support

Purpose and Eligibility: The NI solicits proposals for supplementary funds for postdoctoral fellows or research associates whose mentors are active members of NI. Mentors should be currently funded or working on a no-cost extension of a competitively renewable grant. Faculty currently on NI seed support are ineligible for this award.

Although we try to rotate funding to new applicants, currently funded postdocs or research associates **with no more than one year of NI matching support** are also welcome to apply for one more year.

Support: The NI will provide $10,000-15,000 in matching funds to mentors who are NI members, to be used toward the salary/fringe of each awarded applicant. The precise amount given, and the number of postdocs funded, will be determined during the application evaluation, and depends on the number of quality applicants we receive.

Application:

1. New Applicants: The applicant should provide a cover letter requesting support with a brief overview of the proposed research project, **a 3 page research proposal**, a current CV, and two letters of reference (reference letters can also be emailed directly to NI), one of which must come from the mentor. These documents should be submitted electronically as PDF files. Mentors should provide an updated, brief, NIH-style biosketch attached to their support letter.

2. Renewal applicants: The applicant should submit a cover letter with a 2-page progress report covering the past year's activities (publications, research progress, presentations, etc.). Those applying for renewal must also include a support letter from the mentor commenting on the progress of the applicant, and the mentor should update the brief, NIH-style biosketch.

Review Process and Criteria: The NI Executive Committee will review applications. Criteria include evidence of productivity in neuroscience research, with particular value attached to first author publications.

Deadline: **Jan. 15, 2021**. Awards will run from Feb. 1, 2021-Jan. 31, 2022.

Submission: Please send all materials electronically to:
Brandy Fleming, Program Coordinator
Neuroscience Institute
bflemin3@uthsc.edu
Phone: 448-1286

UTHSC Researchers Awarded $2.4 Million for Study Prioritizing the Role of Cholesterol in Brain Artery Health

Written by Lee Ferguson | July 15, 2020

Alex Dopico, MD, PhD, professor and Van Vleet Chair of Excellence in the **Department of Pharmacology, Addiction Science, and Toxicology (https://www.uthsc.edu/pharmacology/)**, and Anna Bukiya, PhD, associate professor in the Department of Pharmacology, Addiction Science, and Toxicology, have been awarded $2.4 million from the National Heart, Lung, and Blood Institute (NHLBI) to explore how cholesterol interacts with the mechanisms that modulate blood vessel function in the brain.

Dr. Alex Dopico

Drs. Dopico and Bukiya have hypothesized from preliminary data that cholesterol may control the diameter of brain arteries via regulation of speciXc ion channels. The channels in question are called BK (or "big potassium") channels, which play a crucial role in a vast number of physiological and pathophysiological conditions. The researchers predict that by manipulating the way cholesterol interacts with channel-forming and regulatory subunits, they can control potassium currents that cause arteries either to contract and constrict, or to relax and dilate. They will test their predictions along three speciXc areas: the molecular level, the subcellular level, and the tissue and organ level.

The project is signiXcant for challenging the paradigm that cholesterol modulation of big potassium channels is secondary to disturbances affecting other molecules in the cell membrane, speciXcally the lipid bilayer. The team's study will yield information essential to developing drugs that will counteract cholesterol-associated cerebrovascular disease.

Dr. Anna Bukiya

"Although the regulation of BK channel activity in cells from vascular preparations dates back to the late Eighties, the molecular mechanisms and sites by which this lipid regulates BK activity remain unknown," said Dr. Dopico. "Covering this knowledge gap is essential to design novel therapeutic agents that could counteract BK-mediated, cholesterol-induced disruption of arterial function."

"Cholesterol modiXcation of BK channel function is expected to be complex, as to date, there is neither a universal model of cholesterol interaction with BK channels nor an agreement among published reports on whether cholesterol activates or inhibits BK activity," said Dr. Bukiya.

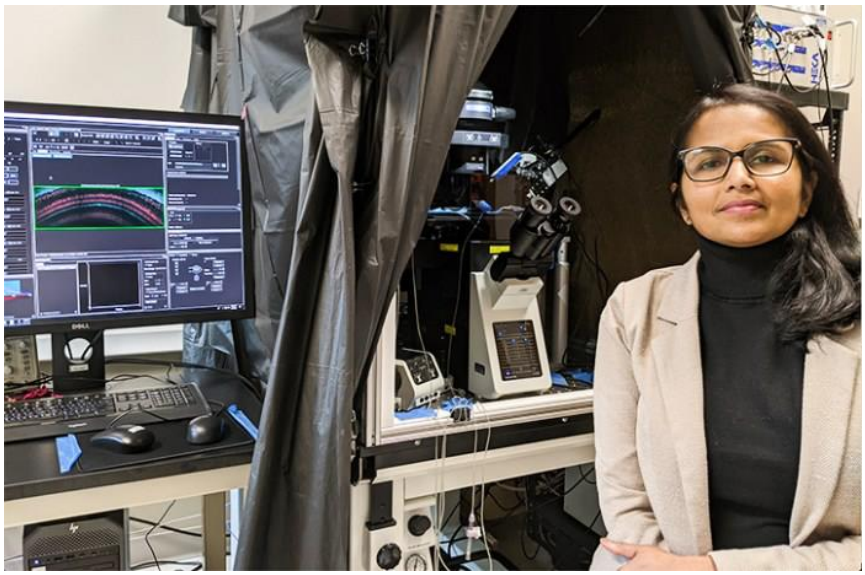
The project titled, "Cholesterol regulation of smooth muscle BK channel proteins and consequent control of cerebral artery diameter," is being funded for four years.

Contact

Communications and Marketing (https://uthsc.edu/communications-marketing/)
Email: **communications@uthsc.edu (mailto:communications@uthsc.edu)**

UTHSC's Vaithianathan Receives $1.9 Million Grant for Retinal Research

Written by Lee Ferguson | February 4, 2021



Dr. Thirumalini Vaithianathan received $1.9 million from the National Eye Institute for retinal research.

Thirumalini Vaithianathan, PhD, assistant professor in the Department of Pharmacology, Addiction Science, and Toxicology at the University of Tennessee Health Science Center, has spent a decade studying molecular signaling involved in vision. She has just received $1.9 million from the National Eye Institute for her project titled, "Dynamics of calcium signals control neurotransmitter release in retinal ribbon Synapses".

The goal of Dr. Vaithianathan's project is to provide a deeper understanding of calcium signaling controlling the release of chemical messengers at neural communication sites in the retina. Using animal models, she will study these submicron signals in living retinal ribbon synapses during development, normal adulthood, and disease. Dr. Vaithianathan will be using novel approaches combining state-of-the-art Xuorescence imaging and voltage-clamp electrophysiology (a technique to measure ion currents across the cell membrane) to directly monitor calcium signaling in neurotransmission.

"Calcium signaling is a key player in human health and disease," Dr. Vaithianathan said. "Our project will develop strategies to directly monitor calcium signaling in neurotransmission. We address this question particularly in the visual system for a deep and comprehensive investigation of how calcium signals control neurotransmission and encode what we 'see'. Full understanding of calcium signaling in visual system health and disease will allow for the eventual development of therapeutic interventions to prevent and counteract neurodegeneration."

Contact

Communications and Marketing (https://uthsc.edu/communications-marketing/)
Email: **communications@uthsc.edu (mailto:communications@uthsc.edu)**

Drs. Francesca-Fang Liao, Fu-Ming Zhou Receive $1.9 Million to Study Possible Dementia Causes

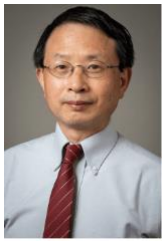
Written by Lee Ferguson | March 2, 2021

The National Institute of Neurological Disorders and Stroke has awarded two UTHSC researchers over $1.9 million to study the pathogenesis of white matter damage, a main contributing factor to dementia. Francesca-Fang Liao, PhD, and Fu-Ming Zhou, PhD, both professors in the **Department of Pharmacology, Addiction Science, and Toxicology, (https://www.uthsc.edu/pharmacology/)** are co-investigators on the project titled "Blood-brain-barrier and white matter mechanisms underlying dementia."

Dementia is an overall term that describes a group of symptoms associated with a decline in memory or other thinking skills severe enough to reduce a person's ability to perform everyday activities. Dr. Liao has spent over five years studying specific molecular and cellular events that cause insufficient blood flow to the brain. Based on previous findings, Dr. Liao hypothesizes that degeneration of the brain's capillary mural cells is the earliest pathological event in white matter disease, preceding blood-brain-barrier breakdown and neocortical neurodegeneration. Her findings point to a specific protein, pericyte-BMP4, as a critical initiating factor.

Dr. Francesca-Fang Liao

Dr. Liao's team will conduct microscopic tissue imaging of small vessels controlling brain blood flow to determine when and where pericyte losses happen. The team will also profile BMP4 changes in different cell types and verify BMP4 protein upregulation in white matter pericytes using human brain cortical samples from vascular dementia cases. Finally, Dr. Liao's lab will analyze RNA sequencing data on isolated micro vessels to identify new potential targets for treating white matter disease.



Dr. Fu-Ming Zhou

Dr. Zhou, who has spent two decades studying Parkinson's disease, will work from the physiological angle, examining nerve conduction and impaired neurotransmitter release in animal models. His findings may provide neurophysiological evidence for what causes vascular changes in white matter, problems in the cerebral cortex, and functional loss in neurodegenerative diseases.

"Dr. Liao is a visionary scientist on vascular dementia and Alzheimer's disease," Dr. Zhou said. "I am delighted that we are combining our expertise and skills to investigate some difficult, but important, questions about the pathogenesis of vascular dementia and Alzheimer's disease."

"Vascular dementia is the second most common form of dementia after Alzheimer's disease," said Dr. Liao. "With Dr. Zhou joining in force, we are embarking on a new research path to underpin early molecular and cellular mechanisms distinctive for and also shared by these two major types of dementia."

Share this:

Contact

Communications and Marketing (https://uthsc.edu/communications-marketing/)
Email: **communications@uthsc.edu (mailto:communications@uthsc.edu)**

Dr. Jonathan Jaggar Receives $2.3 Million For Blood Pressure Research

Written by Lee Ferguson | March 10, 2021

The National Heart, Lung, and Blood Institute recently awarded Jonathan H. Jaggar, PhD, Maury Bronstein Endowed Professor in the **Department of Physiology (https://uthsc.edu/physiology/)** at the University of Tennessee Health Science Center (UTHSC), a $2.3 million grant for his study titled "PKD proteins in endothelial cells." The proposal's goal is to provide a new understanding of how endothelial cells regulate blood pressure.

Dr. Jonathan Jaggar

Blood vessels provide all of our organs with oxygen and nutrients and determine blood pressure in the body. Endothelial cells, which line the inside of all blood vessels, can cause blood vessels to relax or contract, thus controlling the body's blood pressure. Endothelial cells stop working properly during vascular diseases such as stroke and high blood pressure (hypertension), but how this happens is not fully understood. Dr. Jaggar's project is focused on identifying the functions of two proteins in endothelial cells called PKD1 and PKD2. His lab has new evidence that PKD1 and PKD2 physically couple in endothelial cells to relax blood vessels and reduce blood pressure. His group also found that that PKD1/PKD2 signaling is altered during hypertension, which in turn inhibits their ability to relax blood vessels. In this proposal, Dr. Jaggar's team will test the hypothesis that physiological stimuli activate PKD1/PKD2 coupling in endothelial cells. They will investigate what causes this to happen and how it produces vasodilation. They will also study the relationship between hypertension and the breakdown in PKD1/PKD2 channel signaling and the vasodilation it makes possible.

This project, which is being funded for four years, will provide signiZcant new information about vasoregulation by endothelial cell PKD1 and PKD2 proteins. "We are excited to drive this new research direction to better understand how PKD1 and PKD2 control our body's blood pressure and determine what happens that prevents these proteins from lowering blood pressure during hypertension," said Dr. Jaggar.

Related

Contact

Communications and Marketing (https://uthsc.edu/communications-marketing/)

Email: **communications@uthsc.edu (mailto:communications@uthsc.edu)**

UTHSC to Host Addiction Symposium May 4

Written by Communications and Marketing | March 26, 2021

The University of Tennessee Health Science Center College of Medicine will host its second Addiction Symposium, designed as a concentrated update on key issues in drug misuse and addiction, on May 4.

The University of Tennessee Health Science Center's College of Medicine will host its second **Addiction Symposium (https://uthsc.edu/pharmacology/addiction-symposium.php)** May 4 from 12 to 2 p.m. CDT.

The online symposium is free and open to health care practitioners and the public. The symposium will be via Zoom and is accredited for 2 hours of Continuing Medical Education (CME) credits.

Drug misuse and addiction is a pressing and often unmet health problem throughout Tennessee and nationwide. Although it has attracted widespread attention in legislatures and the media, the epidemic of opioid abuse is only one dimension of drug abuse that afflicts individuals, families, and communities – with profound, long-standing, and often tragic medical and psychosocial outcomes.

The Addiction Symposium is designed as a concentrated update on key issues in drug misuse and addiction. Experts in addictive disorders will address a wide spectrum of basic and clinical topics from the genetics of addiction to nicotine and predictive indices of human addiction, as well as the clinical presentation and diagnosis of addictions.

"As the state's public College of Medicine, it is our responsibility to provide leadership through public education for physicians, health care personnel and the lay public that highlights advances, emerging trends, and standards in medicine," said Burt Sharp, MD, event organizer and Distinguished Professor in the Departments of Genetics, Genomics, and Informatics and Medicine in the UTHSC College of Medicine.

The agenda for the event is as follows:

12:00 – 12:12 p.m.
Introduction to the Misuse and Addiction to Opiates, Alcohol, and Nicotine and Synopsis of Opiate Addiction in Tennessee
Burt Sharp, MD
Distinguished Professor
Departments of Genetics, Genomics, and Informatics and Medicine
UTHSC College of Medicine

Contact

Communications and Marketing (https://uthsc.edu/communications-marketing/)
Email: **communications@uthsc.edu (mailto:communications@uthsc.edu)**

12:12 – 12:17 p.m.
The Severity of the Addiction Epidemic in Tennessee and the Leadership Needed by UTHSC in the Discovery of Novel Treatment
Randy Boyd
President, the University of Tennessee

12:17 – 12:35 p.m.
Building Strong Brains During a Pandemic
Rev. Charlie Caswell
Director, Legacy of Legends

12:35 – 12:53 p.m.
Approach to Diagnosing Addictive Disorders
Ronald L. Cowan, MD, PhD
Harrison Distinguished Professor and Chair
Department of Psychiatry
UTHSC College of Medicine

12:53 – 1:11 p.m.
Transmissible Liability for Addiction; a Developmental Perspective
Maureen Reynolds, PhD
Research Associate Professor, Pharmaceutical Science
University of Pittsburgh School of Pharmacy

1:11 – 1:16 p.m.
A National Center for Highly Replicable Animal Studies of Addiction
Robert Williams, PhD
Professor and Chair
Department of Genetics, Genomics, and Informatics
UTHSC College of Medicine

1:16 – 1:28 p.m.
Genetic Factors Influencing Socially-Acquired Voluntary Nicotine Intake in Rats
Hao Chen, MD, PhD
Associate Professor
Department of Pharmacology, Addiction Science, and Toxicology
UTHSC College of Medicine

1:28 – 1:40 p.m.
Factors that Influence the Severity of Ethanol's Effects in Fetal Alcohol Spectrum Disorder (FASD)
Kristin Hamre, PhD
Associate Professor
Department of Anatomy and Neurobiology
UTHSC College of Medicine

1:40 – 2:00 p.m.
Combating the Stigma of Substance Use Treatment Seeking in the African American Community
Karen Derefinko, PhD
Assistant Professor
Departments of Preventive Medicine and Pharmacology, Addiction Science, and Toxicology
UTHSC College of Medicine

For registration information, to watch the symposium, and to view the full recording after the event, visit the **event website (https://uthsc.edu/pharmacology/addiction-symposium.php)**.

AMA Credit Designation: *The University of Tennessee Health Science Center College of Medicine designates this live activity for a maximum of 2 AMA PRA Category 1 Credit(s)™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.*

UTHSC Team Receives $2 Million For Diabetes Pathophysiology Study

Written by Lee Ferguson | April 21, 2021

The National Institute of Diabetes and Digestive and Kidney Diseases recently awarded a team of UTHSC researchers $1.99 million for their work to advance understanding of the pathophysiology of prediabetes, diabetes, and related complications. Sam Dagogo-Jack, MD, professor of Medicine and director of the General Clinical Research Center, is a principal investigator, along with Nawajes Mandal, PhD, associate professor in the Departments of Ophthalmology, Anatomy and Neurobiology, and Pharmaceutical Sciences. Their project is titled “Ceramides and Sphingolipids as Predictors of Incident Dysglycemia.”

Dr. Samuel Dagogo-Jack

Dr. Dagogo-Jack is a leading clinical researcher and an expert on diabetes and prediabetes. Dr. Mandal is a basic scientist and a leading expert on the role of bioactive lipid signaling, like sphingolipids (SPLs) and ceramides, in human ocular, metabolic, neurodegeneration, and inZammatory diseases. Using their combined expert perspectives, the two hypothesize that ceramides and other SPLs are critical modulators affecting the progression from normal glucose regulation, through prediabetes, to type 2 diabetes and associated diabetic complications.

To test this hypothesis, they will utilize specimens from two studies in which Dr. Dagogo-Jack is the principal investigator: the Pathobiology of Prediabetes in a Biracial Cohort (POP-ABC), which involved participants with a normal concentration of glucose who had a parental history of type 2 diabetes; and the Diabetes Prevention Program/Diabetes Prevention Program Outcome Study (DPP/DPPOS), which followed participants already diagnosed with prediabetes for the development of type 2 diabetes. Additionally, samples from 200 individuals with normal glucose concentrations and no family history of diabetes will serve as normative controls.

The project will analyze, pro` le, and compare samples at baseline against various follow-up intervals to investigate several aims. Drs. Dagogo-Jack and Mandal hope to determine the role ceramide and SPLs play in prediabetes risk among people with normal glucose and a family history of type 2 diabetes, in preventive treatments for type 2 diabetes, and in the development of diabetic complications, particularly vascular disease. The project includes planned lipidomics analyses to ` nd new predictive, prognostic and speci` c biomarkers for prediabetes, type 2 diabetes, and vascular complications.

Dr. Nawajes Mandal

“I am delighted that my colleague, Dr. Mandal, and I were able to pool our expertise to launch this collaborative study,” said Dr. Dagogo-Jack, who is also director of the UTHSC Division of Endocrinology, Diabetes and Metabolism. “The award from the NIH not only endorses the scienti` c merits of our proposal, but also gives a nod to the idea of interdisciplinary collaborative research between clinical and basic science investigators.”

Contact

Communications and Marketing (https://uthsc.edu/communications-marketing/)
Email: **communications@uthsc.edu (mailto:communications@uthsc.edu)**

UTHSC's Byron Jones Receives $2.87 Million For Gulf War Illness Study

Written by Lee Ferguson | April 30, 2021

Dr. Byron Jones has received a $2.87 million grant to study genetic alterations associated with Gulf War illness among former military personnel.

The National Institute of Environmental Health Sciences has awarded Byron C. Jones, PhD, professor in the Department of Genetics, Genomics, and Informatics at the University of Tennessee Health Science Center, $2.87 million for his continuing study of genetic alterations associated with Gulf War illness among former military personnel.

During the 1990-91 Gulf War, 700,000 troops were sent to the Persian Gulf. Of those who returned, 25%-35% suffered from what became known as the Gulf War Illness, a multisymptomatic malady with complaints ranging from gastrointestinal problems to cognitive difficulties. Sickness behaviors were disabling, and neither cause nor treatment were known. Nearly 30 years later, most of those afflicted are still sick. Exposure to organophosphate compounds (nerve gas and insecticides), coupled with being in a high stress environment, have emerged as a possible cause of illness and a focus of study.

Dr. Jones' project will build upon past studies his lab has conducted to determine why some combatants became sick, while others did not. By duplicating exposure conditions in animal models, Dr. Jones' team has previously identified genes and biochemical pathways involved in individual differences to susceptibility.

Focusing on these systems, his team will now look for genetic-based individual differences in which genes are permanently altered in expression following the same exposure. Findings from this project will increase understanding of which biochemical processes are involved, and provide a basis for

Contact

Communications and Marketing (https://uthsc.edu/communications-marketing/)
Email: **communications@uthsc.edu (mailto:communications@uthsc.edu)**

developing treatment.

"Initial studies show acute changes in proinflammatory cytokine genes and changes in methylation of genes following the exposure regimen," Dr. Jones said. "We have seen significant differences in proinflammatory gene expression response to the treatment among animal models, and have been able to map to a region of DNA which mediates this effect. Our research takes the next steps to understand how genetics relate to the ongoing effects of Gulf War Illness."

The study, titled "Genetics of epigenetic response to high inflammatory reducing hormones and environmental compounds," is being funded for five years.

Related

(https://news.uthsc.edu/professor-byron-jones-awarded-2-6-million-to-study-toxicity-of-the-herbicide-paraquat-on-the-brain/)

Professor Byron Jones Awarded $2.6 Million to Study Toxicity of the Herbicide Paraquat on the Brain (https://news.uthsc.edu/professor-byron-jones-awarded-2-6-million-to-study-toxicity-of-the-herbicide-paraquat-on-the-brain/)
April 20, 2015
In "Research"

(https://news.uthsc.edu/uthscs-professor-robert-williams-part-of-global-enigma-consortium-effort-to-crack-brains-genetic-code/)

UTHSC's Professor Robert Williams Part of Global ENIGMA Consortium Effort to Crack Brain's Genetic Code (https://news.uthsc.edu/uthscs-professor-robert-williams-part-of-global-enigma-consortium-effort-to-crack-brains-genetic-code/)
March 2, 2015
In "Research"

(https://news.uthsc.edu/uthscs-kristin-hamre-phd-awarded-1-5-million-study-genetics-fetal-alcohol-syndrome/)

UTHSC's Kristin Hamre, PhD, Awarded $1.5 Million to Study Genetics in Fetal Alcohol Syndrome (https://news.uthsc.edu/uthscs-kristin-hamre-phd-awarded-1-5-million-study-genetics-fetal-alcohol-syndrome/)
June 13, 2016
In "Research"

Tags: **Byron C. Jones (https://news.uthsc.edu/tag/byron-c-jones/)**, **Research (https://news.uthsc.edu/tag/research/)**