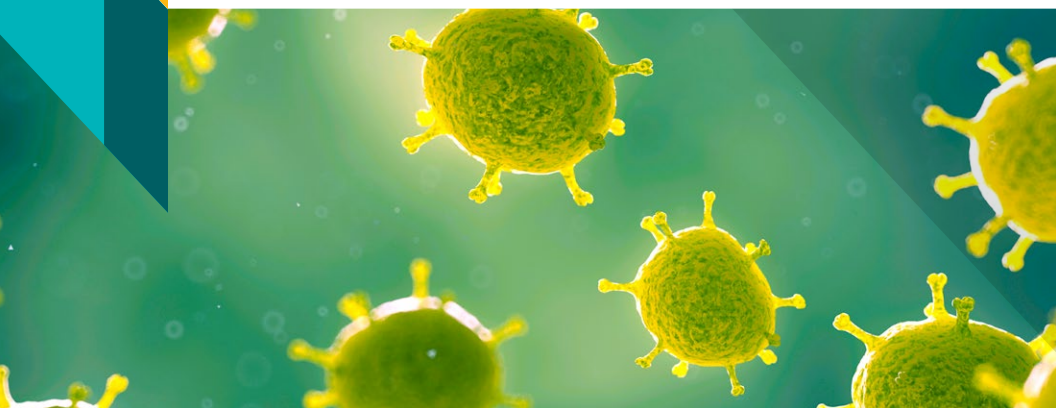
Chronic HIV and Aging in NeuroAIDS Center
Nebraska Center for Substance Abuse Research

Joint Colloquium on Emerging Issues in

NeuroHIV & Substance Abuse

October 23 – 24, 2018
Durham Research Center, Auditorium 1002



Program Sponsors

Chronic HIV Infection and Aging in NeuroAIDS (CHAIN) Center
(NIH P30MH062261)
MPI: Shilpa Buch, Ph.D. and Howard S. Fox, M.D., Ph.D.

Nebraska Center for Substance Abuse Research
Director, Shilpa Buch, Ph.D.

Vice Chancellor for Research Office, University of Nebraska Medical Center
Jennifer Larsen, M.D., Vice Chancellor for Research

Overview

Shilpa Buch, Ph.D.

Howard S. Fox, M.D, Ph.D.

The Chronic HIV and Aging in NeuroAIDS (CHAIN) Center and the Nebraska Center for Substance Abuse Research (NCSAR) thank you for joining the two-day NeuroHIV Emerging Issues and Substance Abuse colloquium. The goal of this event is to bring together leaders in the fields to discuss emerging topics, foster new ideas and collaborations, and educate new and established investigators. As in the past, in addition to the Omaha audience, the colloquium is presented as a webinar, available nationally and internationally.

The CHAIN Center, a NIMH Centers Program for Research on HIV/AIDS and Mental Health, is hosting the first day. This colloquium, the sixth in the series, will focus on "NeuroHIV – from bed to bench side." Research from the labs has progressed to the clinics; our next question is 'how can the work from the clinics now inform the basic scientists to continue this progress?' Leaders in the field will cover clinical manifestations of HIV infection in the brain.

NCSAR is hosting the second day. The NCSAR, established in 2015, recognizes the serious public health problem ravaged by abused substances globally and also the comorbidity of these substances in HIV-infected individuals. The focus will be on "Substance Abuse – Lessons learned and where are we going?" Nationally recognized speakers will address the topics of substance abuse and the underlying mechanisms of addiction.

This year the colloquium will include short talks on both days from early career investigators from the CHAIN Center and NCSAR providing them an opportunity to present their current work. Both days will end with an interactive panel discussion with the speakers.

Shilpa Buch, Ph.D.
Professor and Vice Chair for Research
Department of Pharmacology and Experimental Neuroscience
Director, Nebraska Center for Substance Abuse Research

Howard S. Fox, M.D., Ph.D.
Professor and Vice Chair
Department of Pharmacology and Experimental Neuroscience
Senior Associate Dean of Research and Development, College of Medicine

October 23, 2018

NeuroHIV – from bed to bench side

8 – 8:30 a.m.	**Welcome**
8 – 8:10 a.m.	**Shilpa Buch, Ph.D. and Howard S. Fox, M.D., Ph.D.** University of Nebraska Medical Center
8:10 – 8:20 a.m.	**Jennifer Larsen, M.D.** Vice Chancellor for Research University of Nebraska Medical Center
8:20 – 8:30 a.m.	**Jeymohan Joseph, Ph.D.** Program Office National Institute of Mental Health

SESSION 1

8:30 – 9 a.m.	**Kimberly K. Scarsi, Pharm.D.** University of Nebraska Medical Center **Current treatment guidelines: relevance to CNS disease and CNS-related side effects**
9:05 – 9:35 a.m.	**Robert K. Heaton, Ph.D.** HIV Neurobehavioral Research Center, University of California, San Diego **HAND in 2018: Status and research needs**
9:40 – 10:10 a.m.	**Leah Rubin, M.A., Ph.D., M.P.H.** Johns Hopkins University School of Medicine **Patterns and predictors of cognitive impairment among men and women living with HIV**
10:10 – 10:25 a.m.	**Morning break**

SESSION 2

10:25 – 10:55 a.m.	**Joan Berman, Ph.D.** Albert Einstein College of Medicine **Mechanisms of HIV neuropathogenesis and potential therapeutics to reduce viral seeding of the CNS**
11 – 11:30 a.m.	**Dana H. Gabuzda, M.D.** Dana Farber Institute **HIV persistence and escape in the CNS**
11:30 – 11:50 a.m.	**Break to get lunch** Short talks during lunch

SESSION 3 – Short Talks

11:50 a.m. – 12:15 p.m.
Susmita Sil, Ph.D.
University of Nebraska Medical Center
Role of astrocytes in HIV associated co-morbidity of Alzheimer's Disease

12:15 – 12:40 p.m.
Kelly Stauch, Ph.D.
University of Nebraska Medical Center
Effects of CNS-penetrant ARVs on synaptic mitochondrial bioenergetics

12:40 – 12:55 p.m.
Break before afternoon session

SESSION 4

12:55 – 1:25 p.m.
Robert Paul, Ph.D., ABCN
Missouri Institute of Mental Health
Learning from machines: neuroHIV phenotyping and predictive modeling in the era of big data

1:30 – 2 p.m.
Tony Wilson, Ph.D.
University of Nebraska Medical Center
Abnormal brain dynamics in HIV: the impact of aging and cannabis use

2 – 2:15 p.m.
Break before panel discussion

2:15 – 3 p.m.
Panel Discussion

3 – 3:15 p.m.
Summary

October 24, 2018
Substance Abuse – Lessons learned and where are we going

8 – 8:05 a.m.
Welcome
Shilpa Buch, Ph.D.
University of Nebraska Medical Center

8:05 – 8:15 a.m.
John Satterlee, Ph.D.
Division of Neuroscience and Behavior
National Institute on Drug Abuse/NIH

8:15 – 8:40 a.m.
Kamel Khalili, Ph.D.
Comprehensive NeuroAIDS Center, Temple University
HIV Eradication

SESSION 1

8:40 – 9:15 a.m.
Rick Bevins, Ph.D.
University of Nebraska - Lincoln
Bio-behavioral factors affecting the abuse liability of nicotine

9:15 – 9:50 a.m.
Klaus Miczek, Ph.D.
Tufts University
CRF-Dopamine interactions in animal models of social stress and escalated drug abuse

9:50 – 10:25 a.m.
Mohan Sopori, Ph.D.
Lovelace Respiratory Research Institute
Interaction between HIV and cigarette smoke in the development of chronic lung diseases

10:25 – 10:35 a.m.
Morning Break

SESSION 2

10:35 – 11 a.m.
Subhash C. Pandey, Ph.D.
University of Illinois at Chicago
Epigenetic regulation of alcohol addiction

11 – 11:35 a.m.
Tariq Rana, Ph.D.
University of California-San Diego Health Sciences
Methamphetamine and lncRNA

11:30 a.m. – 12:05 p.m.
Sabita Roy, Ph.D.
University of Miami
Microbial dysbiosis observed in morphine tolerant animals is attenuated in germ free mice and reversed in probiotic treated WT

12:05 – 12:20 p.m.
Break to get lunch
Short talks during lunch

SESSION 3 – Short Talks

12:20 – 12:45 p.m.
Minglei Guo, M.D., Ph.D.
University of Nebraska Medical Center
Microglial and cocaine addiction

12:45 – 1:10 p.m
Guoku Hu, Ph.D.
University of Nebraska Medical Center
Extracellular vesicle-induced-lincRNA-Cox2 impairs microglial function in opioid users

1:10 – 1:20 p.m.
Break before afternoon session

SESSION 4

1:20 – 1:55 p.m.	**Pietro Sanna, M.D.** The Scripps Research Institute **HIV infection and drug abuse – animal models and gene network studies**
1:55 – 2:30 p.m.	**Olivier George, Ph.D.** The Scripps Research Institute **Identification of novel targets for cocaine and opioid use disorders using heterogeneous stock rats**
2:30 – 2:45 p.m.	**Break before panel discussion**
3 – 3:30 p.m.	**Panel Discussion**
3:30 – 3:45 p.m.	**Summary**

Joan Berman, Ph.D.
Professor and Irving D. Karpas Endowed Chair for Excellence in Medical Research
Albert Einstein College of Medicine

Joan W. Berman received her B.S. from Brown University and her Ph.D. in pathology from the Graduate Program of NYU School of Medicine. After postdoctoral training in molecular biology, she joined the faculty of Albert Einstein College of Medicine in the departments of pathology, and of microbiology and immunology, where she is now a professor. Dr. Berman holds the Irving D. Karpas Endowed Chair for Excellence in Medical Research. She is the Faculty Advisor to Einstein's Graduate Program, Director of Experimental Pathology, and Director of Translational Research for Medical Students. She has mentored over 70 trainees at Einstein, received its Faculty Mentoring Award, and was also elected to the Alpha Omega Alpha Honor Society. Dr. Berman is the Director of the Advanced Technologies and Biomarkers Core of the Einstein/Rockefeller/CUNY Center for AIDS Research. She is on the Editorial Board of the Journal of Neurovirology, a member of the Executive Board of the International Society of Neurovirology, and gave the ISNV 2012 Women in Neurobiology lecture. Dr. Berman has several NIH funded programs, is a reviewer for many high impact journals, served on several study sections, and is a consultant to the NIMH-funded National NeuroAIDS Tissue Consortium.

Dr. Berman's laboratory examines mechanisms that mediate the pathogenesis of neuroAIDS. She studies human monocyte and T cell transmigration across the BBB, and factors that mediate this process. These studies address the initial and ongoing seeding of the CNS with HIV despite successful ART, and the subsequent inflammation and neuronal damage that causes HIV-associated neurocognitive disorders (HAND) in > 50% of HIV+ people. She examines tissues, cells, and fluids from HIV-infected people for biomarkers, junctional proteins, inflammatory factors, functional properties, HIV DNA/RNA, and predictors of HAND. She correlates her findings with neuroimaging studies, neurocognitive testing, and clinical data from these subjects. She studies the impact of substance abuse and ART on HIV CNS disease, the BBB, and macrophages, as well as mechanisms by which buprenorphine, a therapy for opioid addiction, mitigates HIV-mediated neuroinflammation, and cognitive deficits. Her goal is to characterize mechanisms of CNS HIV infection and damage to develop effective interventional therapeutic strategies.

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Rick Bevins, Ph.D.
Chancellor's Professor and Chair of Psychology
University of Nebraska-Lincoln

Dr. Rick Bevins did his Ph.D. work at the University of Massachusetts at Amherst in neuroscience and behavior (1989-93) and then moved to a post-doctoral position at the University of Kentucky (1993-96). In 1996, he joined the faculty of the psychology department at the University of Nebraska-Lincoln as an assistant professor and established the Behavioral Neuropharmacology Laboratory. Fast forward 22 years, he is now the Chancellor's Professor and Chair of Psychology.

With the talent and energy of undergraduate students, graduate students, and post-docs, Dr. Bevins' research team uses preclinical animal models to elucidate the behavioral, neural, and pharmacological factors involved in the etiology of drug abuse. One arm of this research program investigates how behavioral and neuropharmacological processes involved in the perceptibility of a drug stimulus and the behavior it controls changes with learning history. Other empirical efforts focus on novel pharmaco-therapeutic approaches for nicotine and methamphetamine addiction, understanding the reward-enhancing effects of drugs using behavioral economics, and development of more translationally relevant animal models to inform FDA tobacco regulatory policy. The research has been extended to include sex differences and nicotine-alcohol interaction. Dr. Bevins has over 140 publications in these areas, as well as two edited volumes on drug abuse. These research efforts have been funded by the University of Nebraska-Lincoln, Nebraska Department of Health, and the National Institute of Health for over 20 years.

https://psychology.unl.edu/psychoneuropharm/home

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Lab Twitter: @UNLBehavNeuro

My Twitter: @RBevins

Shilpa Buch, Ph.D.

Professor & Vice Chair for Research
Department of Pharmacology and Experimental Neuroscience
Director, NE Center for Substance Abuse Research

Dr. Shilpa Buch is a professor and vice chair in the department of pharmacology and experimental Neuroscience at the University of Nebraska Medical Center. She is also the Director of the Nebraska Center for Substance Abuse Research at UNMC. In 2016, she graduated from the Executive Leadership for Academic Medicine Program that fosters the growth and career trajectories of women leaders nationally.

Her primary research focus is aimed at understanding the molecular mechanism(s) by which drugs of abuse, such as cocaine and morphine, co-operate with HIV-1/HIV proteins to enhance progression of HIV-associated neurological disorders (HAND). Specifically, her research involves a multipronged approach comprising of *in vitro* model systems, complementary rodent models, the higher more relevant macaque model of SIV pathogenesis, and archival human tissue, to dissect the signaling pathways crucial in CNS pathogenesis that is triggered by the host-virus interplay. More recently, her research is centered on exploring the molecular pathways by which microRNAs, small noncoding RNAs that shuttle in extracellular vesicle cargos, regulate gene expression and cellular cross-talk. Work from her group has also shed light on novel therapeutic strategies, such as delivery of platelet-derived growth factor in mitigating neuroinflammation and associated synaptodendritic injury observed in HAND.

Dr. Buch, along with Howard Fox, M.D., Ph.D., directs the Chronic HIV Infection and Aging in NeuroAIDS (CHAIN) Center (P30, NIMH).

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www.unmc.edu/pharmacology/research/centers/chain/index.html

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Howard S. Fox, M.D., Ph.D.

Professor and Vice Chair
Department of Pharmacology and Experimental Neuroscience
Senior Associate Dean of Research and Development, College of Medicine
University of Nebraska Medical Center

Dr. Howard Fox received his B.A. and M.A. in biophysics from The Johns Hopkins University and his M.D. and Ph.D. from the University of California, San Francisco (UCSF). Following post-doctoral work at Cold Spring Harbor Labs, anatomic pathology residency and surgical pathology residency at UCSF, he began his independent research career in 1990 at The Scripps Research Institute Department of Immunology at, moving to the department of neuropharmacology to pursue his work on the effects of HIV on the brain. In 2008, he moved to the department of pharmacology and experimental neuroscience (PEN) at the University of Nebraska Medical Center (UNMC) to further expand the basic and translational aspects of this work.

He has served as long-term chair of the Center for Scientific Review Study Section on NeuroAIDS and Co-morbidity Factors in AIDS, numerous other NIH study sections, the University of California University-Wide Taskforce on AIDS, the Campbell Foundation for HIV/AIDS research, and on multiple extramural NIH grant external advisory boards. He is currently professor and executive vice-chair in the PEN department and is Senior Associate Dean for Research and Development for the College of Medicine, UNMC. He, along with Shilpa Buch, Ph.D., directs the Chronic HIV Infection and Aging in NeuroAIDS (CHAIN) Center (P30, NIMH). Dr. Fox is also director of the University of Nebraska Center for Integrative and Translational Neuroscience (CITN), is the principal investigator of the Data Coordinating Center and leads the Scientific Advisory Group for the National NeuroAIDS Tissue Consortium. His research is supported by grants from the NIH as well as the Michael J. Fox Foundation.

Dr. Fox's work has focused on knowledge learned from the SIV/nonhuman primate model of neuroAIDS. In addition to functional, neuropathologic and neuroimmune findings, he has integrated high-density data acquisition and analysis through transcriptomic, proteomic and metabolomic technologies with a systems biology approach. Recent findings have led to a new focus on brain mitochondria. His lab is now probing the role of mitochondria in normal physiological functions, neuroHIV, aging and neurodegenerative diseases.

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www.unmc.edu/pharmacology/research/centers/chain/index.html

Dana Gabuzda, M.D.

Professor, Neurology
Dana-Farber Cancer Institute and
Harvard Medical School

Dana Gabuzda is a professor of neurology with an affiliated appointment in microbiology and immunobiology at Harvard Medical School, and the department of cancer immunology and virology at Dana-Farber Cancer Institute. She received her M.D. from Harvard followed by an internship and neurology residency at Massachusetts General Hospital and postdoctoral training at Johns Hopkins and Dana-Farber. Subsequently, she joined the faculty at Dana-Farber and Harvard.

Dr. Gabuzda's early studies helped to define functions of the HIV Env, Vif, and Nef proteins in viral replication and pathogenesis. Her studies also helped to define the role of macrophages and microglia as reservoirs for HIV infection of brain, mechanisms involved in HIV neurotropism, and the importance of myeloid cell activation in driving viral replication, chronic inflammation, and pathologies in brain and other organ systems. More recently, her lab moved into systems biology and computational modeling to understand how HIV, immune cells, metabolism, substance abuse, and aging interact to impact health trajectories and neurocognitive outcomes in HIV-infected populations. Her scientific contributions have been recognized by awards including the Pediatric AIDS Foundation Elizabeth Glaser Scientist Award, NIH/NIDA Avant-Garde DP1 award for HIV/AIDS Research, and International Society for Neurovirology Women in Neuroscience Lectureship Award.

Dr. Gabuzda's current research focuses on HIV infection and comorbidities in the CNS and peripheral tissues using clinical samples and data from longitudinal cohorts such as the National NeuroAIDS Tissue Consortium (NNTC), CHARTER (CNS HIV Antiretroviral Therapy Effects Research), and Multicenter AIDS Cohort Study. This work uses large datasets, systems biology, 'omics technologies, bioinformatics, and computational modeling to understand virus-host interactions, immune responses, and mechanisms that impact HIV persistence and escape in the CNS of ART-treated patients and neurocognitive function in older adults with HIV/AIDS.

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Olivier George, Ph.D.
Associate Professor
The Scripps Research Institute

Olivier George completed his undergraduate training and Ph.D. at the University of Bordeaux, France in the laboratory of Prof. Michel Le Moal and Dr. Pier-Vincenzo Piazza. His graduate research was focused on the neurobiological mechanisms of age-related sleep and memory impairments. His postdoctoral work in Prof. George Koob's laboratory at The Scripps Research Institute was focused on the role of the stress system and the prefrontal cortex in drug addiction.

Dr. George's laboratory at The Scripps Research Institute (TSRI) is focused on understanding how drugs affect your brain and how your brain controls your actions. A key emphasis of his research is to study individual differences in addiction-like behaviors and to understand why some individuals transition to addiction while others do not. His laboratory uses animal models of compulsive drug use with whole-brain imaging and opto/chemogenetic and genetic approaches to identify the neuronal networks, cellular types, molecular pathways, and gene variants that are responsible for compulsive drug use. Using these approaches, his research group has identified novel neuronal populations and neuronal pathways that can be manipulated to decrease or increase compulsive drug use and be targeted for medication development. A key outcome of this research is that it demonstrates that addiction is caused in part by the recruitment of a distributed brain stress system within the prefrontal cortex, amygdala, thalamus, and brainstem. Another important goal of his laboratory is to accelerate medication development by performing IND-enabling studies with highly standardized preclinical testing in animal models of addiction. His group has tested over 20 compounds and >3,000 animals for collaborators at TSRI, at UCSD, and in industry, with some compounds scheduled to be tested in humans in the next two years.

Dr. George's work has led to > 65 publications, > 30 invited lectures, and 19 grants (10 active).

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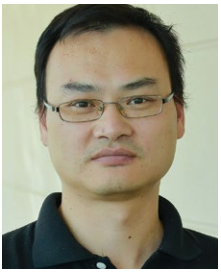

Minglei Guo, M.D., Ph.D.
Assistant Professor
Department of Pharmacology and Experimental Neuroscience
University of Nebraska Medical Center

Dr. Minglei Guo obtained his M.D. from Shanghai Medical University and in 2006, he received his Ph.D. from Fudan University. He moved to the USA for post-doctoral training first at the University of Kansas Medical Center and then at the University of Missouri-Kansas City. In 2013, he moved to the University of Nebraska Medical Center, Omaha, Nebraska joining Dr. Shilpa Buch's laboratory as an instructor in the department of pharmacology and experimental neuroscience. In 2017, he was promoted to assistant professor.

Dr. Guo's research has focused on the molecular mechanisms underlying the development of drug addiction with an emphasis on muscarinic receptors. He mainly investigated the effects of post-translation modifications on receptors on cocaine-mediated neuronal excitability and behavioral changes. In the last several years, he has been focusing on the combined effects of abused drugs and HIV proteins on the pathogenesis of HIV associated neurological disorders. Dr. Guo also has interests on the mechanisms responsible for cocaine-mediated microglial activation and the critical role of microglia on the development of drug addiction.

His research is supported by the National Institutes of Health.

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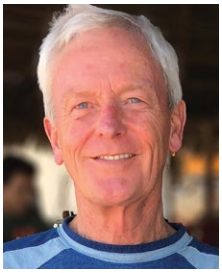

Robert K. Heaton, Ph.D.
Distinguished Professor of Psychiatry
HIV Neurobehavioral Research Center
University of California, San Diego

Dr. Heaton's research uses refined neuropsychological (NP) methods to characterize cognitive changes associated with numerous conditions, including focal brain lesions, Alzheimer's disease, multiple sclerosis, schizophrenia, substance use disorders, and HIV infection. He has published extensively on the neurobehavioral effects of HIV infection and comorbid conditions, as well as on the use of NP testing to document changes in brain functioning due to disease progression and treatment. This collaborative work has been done in the US and multiple international locations, including China, India, Brazil, Russia, Romania, South Africa, Zambia, and Cameroon. He also chaired the Algorithm Committee that operationalized the international "Frascati" criteria for research classification of HIV Associated Neurocognitive Disorders (HAND); these included criteria for classifying neurocognitive impairment, symptomatic status and three levels of comorbid conditions.

In more general NP work, he has demonstrated the importance of correcting for multiple demographic influences on the test performance of normal subjects and has published demographically corrected norms for many widely used tests. Within China, he developed and validated demographically corrected norms in multiple regions, including Yunnan and Anhui provinces, in addition to Hong Kong and large cities in mainland China (e.g., Beijing). Comprehensive, demographically-corrected norms also have been developed for multiple African countries, where his work with multiple US and international collaborators has documented similar rates of HAND as in the US. A longstanding interest has been to establish the clinical significance of NP test results. He has done so in numerous studies demonstrating strong associations between NP findings and disease prognosis, patient's capabilities and limitations in everyday functioning, and postmortem neuropathology findings.

Dr. Heaton has received the National Academy of Neuropsychology award for distinguished career contributions; he is past president of the Clinical Neuropsychology Division of the American Psychological Association and the International Neuropsychological Society.

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Guoku Hu, Ph.D.
Assistant Professor
Department of Pharmacology and Experimental Neuroscience
University of Nebraska Medical Center

Dr. Guoku Hu is an assistant professor in the department of pharmacology and experimental neuroscience at the University of Nebraska Medical Center. Dr. Hu received his undergraduate (1999) and doctorial (2006) degrees from Sichuan University, China. Dr. Hu has authored over 40 publications. His research is supported by several National Institutes of Health grants.

The research conducted in Dr. Hu's laboratory is focused on exploring the effects of noncoding RNAs, including lncRNA and miRNA and their dysregulation during neuropathogenesis associated with drugs, such as morphine and cocaine. He has also carried out extensive work on lncRNA/miRNA studies related to HIV associated CNS disorders using cell culture models and rodent and non-human primate model systems. Furthermore, Dr. Hu is also interested in establishing extracellular vesicle (EV)-based methodology of RNA drug delivery for the treatment of CNS complications in HIV infected drug users. His ultimate goal is to elucidate the functional aspects of EVs and ncRNAs in drug addiction and HIV infection as well as to identify novel therapeutic strategies that may enhance neuronal function and survival in these disorders.

His research on the role of ncRNAs and EVs in neuroHIV and drug abuse has been published in several high impact journals such as *Nature Communications*, *Journal of Immunology*, *Cell Death & Disease*, and *PLoS Pathogens*.

Dr. Hu has presented his work at several national and international meetings and has mentored many students and postdocs.

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Kamel Khalili, Ph.D.

Laura H. Carnell Professor and Chair of the Department of Neuroscience
Director of the Center for Neurovirology
Co-Director of the Center for Translational AIDS Research
Lewis Katz School of Medicine
Temple University

Dr. Kamel Khalili is the Laura H. Carnell Professor and chair of the department of neuroscience, director of the Center for Neurovirology, and co-director of the Center for Translational AIDS Research at the Lewis Katz School of Medicine at Temple University. He is also director of the Comprehensive NeuroAIDS Center and co-director of the Center for Translational AIDS Research. He received his Ph.D. from the University of Pennsylvania and was a Fogarty Scholarship recipient from the NIH National Cancer Institute. He joined Temple University in 1999 and became the founding chair of neuroscience in 2005. He has been studying neuropathogenesis of viruses, most notably HIV-1 and JCV, for more than thirty years. He has made several novel and important discoveries about how HIV-1 alters normal brain function and has identified several pathways that can suppress viral infection. Recently, he pioneered the use of the CRISPR gene editing system to eliminate HIV-1 from latently infected cells. He has used this system to excise the HIV-1 genome from chromosomes of various cells and organs, including the brain, in a small animal model. This was the first illustration of the permanent elimination of HIV-1 DNA from cell models, *ex vivo* patient samples, and *in vivo* animal models. Further, he has successfully adapted the CRISPR technology for elimination of several other human pathogenic viruses including HSV, JCV, HTLV-1, and VZV among others.

Dr. Khalili has published over 440 scientific papers in high quality, peer-reviewed journals. He has edited two textbooks related to viral oncology and human polyomaviruses, and has received more than $70 million in funding from the NIH during his career. He is the founder of the International Society of NeuroVirology and the editor-in-chief of the *Journal of NeuroVirology*. He has been the recipient of numerous awards for his scientific contributions, including the highly prestigious Pioneer in Neurovirology Award in 2010; a Lifetime Achievement Award in 2013 from Temple University School of Medicine; the Contribution of Research to Humanity from the High Tech for Peace Foundation (Lugano, Switzerland) in 2016, and the Wybran Award for Extraordinary Contributions to the Advancement of the Fields of Neuroimmunology, Drugs of Abuse, and Immunity to Infections from the Society on NeuroImmune Pharmacology (2017), and the President's Award for Outstanding Achievement in Translational Research from Temple University (2017).

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Klaus A. Miczek, Ph.D.

Moses Hunt Professor of Psychology, Psychiatry,
Pharmacology and Neuroscience
Neuroscience Research Center
Tufts University

Klaus A. Miczek is the Moses Hunt Professor of Psychology, Psychiatry, Pharmacology and Neuroscience, and serves as one of the directors of the Neuroscience Research Center at Tufts University. He published some 280 research journal articles, more than 50 reviews and edited 24 volumes on psychopharmacological research concerning brain mechanisms of aggression, anxiety, social stress and abuse of alcohol and other drugs. He has served on research review committees for the NIH and he was a member of the National Academy of Science panel on "Understanding and Preventing Violence" (1989-1992) as well as its ILAR/NRC panel on the "Psychological Well-being of Primates." He is the Coordinating and Principal Editor of Psychopharmacology since 1992. He was the president of the APA Division of Psychopharmacology, and of the Behavioral Pharmacology Society, and chaired the Committee on Animals in Research and Ethics of the American Psychology Association.

Dr. Miczek has received numerous prizes including the Solvay Duphar Award of the Division of Psychopharmacology and Substance Abuse of the American Psychological Association, a MERIT award from NIAAA, Silver Medals from the Charles University (Czech Republic). In 1997, the president of the Federal Republic of Germany bestowed the Knight's Cross of the Order of Merit on him. Dr. Miczek was named the Boerhaave professor at the medical faculty of Leiden University (Netherlands) and was twice the Japan International Science & Technology Fellow at the University of Tokyo and Tsukuba. He was visiting professor at La Sapienza University in Rome, the Charles University in Prague and at the University of Tübingen (Germany). In 2006, Tufts University recognized Dr. Miczek with the Distinguished Scholar Award, and he was elected fellow in the American Association for the Advancement of Science. In 2007, the European Behavioural Pharmacology Society presented him with the Distinguished Achievement Award. He is a member of the Faculty of 1000 Prime Behavioral Neuroscience. From 2013-2016 he served as Scientist without Borders for CNPq (Brazil).

He was originally educated in Berlin (Germany) and received his Ph.D. in biopsychology from the University of Chicago.

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Subhash C. Pandey, Ph.D.
Professor & Director
Alcohol Research Center, Department of Psychiatry
University of Illinois at Chicago & Jesse Brown VA Medical

Dr. Pandey is professor of psychiatry, anatomy and cell biology, and director of the NIAAA funded Alcohol Research Center at the University of Illinois at Chicago. Dr. Pandey is also a senior research career scientist at the Jesse Brown VA Medical Center in Chicago. He is well known for his scientific contributions towards elucidating the molecular and cellular neuroscience of alcohol abuse and anxiety disorders as well as for his pioneering work on the epigenetic basis of alcoholism. Binge drinking is very common in the adolescent period, and his work has shown that adolescent alcohol exposure produces persistent effects on epigenetic processes in the brain that are responsible for the development of alcohol drinking and anxiety-like behaviors in adulthood. He has authored several peer-reviewed high impact research and review articles and book chapters in the fields of alcohol addiction.

The Department of Veterans Affairs and NIH-NIAAA have funded Dr. Pandey's research since 1996. He recently established the NIH-NIAAA funded Alcohol Research Center- entitled "Center for Alcohol Research in Epigenetics" (CARE) at The University of Illinois at Chicago. Dr. Pandey's laboratory is also the site carrying out epigenetic research for the national consortium on "Neurobiology of adolescent drinking in adulthood" funded by NIH-NIAAA.

Dr. Pandey has received various honors and awards; most notably the 2010 Bowles Lectureship Award in alcoholism research presented by The University of North Carolina at Chapel Hill. He was recognized as a notable biomedical VA researcher in 2014 and recipient of senior VA research career scientist award in 2015. He was honored by The University of Illinois, College of Medicine with the 2016 "Faculty of the Year" award for his outstanding body of academic work and as a world leader in the field of epigenetic research in alcoholism. He is an active member of several other scientific societies, including American College of Neuropsychopharmacology. Dr. Pandey has also been serving as a field editor for the journal, *Alcoholism Clinical and Experimental Research*.

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Robert Paul, Ph.D.

Executive Director
Missouri Institute of Mental Health, and Professor of Psychological Sciences
University of Missouri, St. Louis

Dr. Robert Paul serves as executive director of the Missouri Institute of Mental Health, and professor of Psychological Sciences at the University of Missouri, St. Louis. He received his Ph.D. in biological psychology from the University of Oklahoma Health Science Center and completed his internship and postdoctoral fellowship in neuropsychology at Brown Medical School. While at Brown, Dr. Paul received a K23 Career Development Award to investigate memory dysfunction among people living with HIV (PLWH) and a NIH ISTART to examine neuroimaging signatures of brain integrity in PLWH with problematic substance use.

Dr. Paul's research program has remained focused on the integration of biological, behavioral and cultural/societal signatures of brain integrity. He has particular interest in the application of novel technologies to advance science in resource-restricted settings. In South Africa, Dr. Paul's team revealed the clinical relevance of the Tat C31S polymorphism in HIV subtype C. His international work remains active in Thailand, where he leads a multi-modal neuroimaging study of acute HIV. Additional NIH grants in Myanmar and Cambodia target chemokine tropism and substance use/stress, respectively. Dr. Paul's most recent initiatives leverage innovative neuroinformatic models to identify latent, clinically relevant structure and meaning within large and complex data matrices.

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Tariq Rana, Ph.D.
Professor and Chair of Genetics
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Tariq Rana's laboratory has discovered fundamental structural and functional features of RNAs required for gene silencing and regulation of diseases. In addition, his laboratory has devised new strategies for developing drugs against RNA viruses, creating stem cell derived mini organs, delivering oligonucleotides for suppressing gene expressions and antagonizing micro RNAs *in vivo*.

Dr. Rana received his Ph.D. in chemistry from University of California, Davis, and he was an American Cancer Society fellow at the UC, Berkeley. He is a recipient of numerous awards including the Presidential Talent Award, a Research Career Award from the National Institutes of Health, Outstanding Scientific Achievement Award from Nature and Johnson & Johnson, and NIH Director's Award which is given to individual scientists of exceptional creativity with high-impact research that opens new areas of HIV/AIDS research and cure. Dr. Rana is an elected fellow of the American Association for the Advancement of Science.

In addition, Dr. Rana has co-founded and advised a number of biotechnology companies and participated in developing a number of drugs which are in clinical trials for a variety of diseases such as viral infections, immune and CNS disorders, neurodegeneration, wound healing, metabolic disorders, and cancer vaccines.

Dr. Rana has served as a member of several scientific advisory boards and boards of directors. He has delivered hundreds of lectures worldwide in scientific conferences and at major universities. Prior to joining the Sanford-Burnham Medical Research Institute in 2008, he was a professor of biochemistry and molecular pharmacology and founding director of the Program in Chemical Biology at the University of Massachusetts Medical School, Worcester, Massachusetts. He held the Sanford-Burnham Institute Professorship and served as the founding director for the RNA Biology Program from 2008 to 2014. Currently, he is a professor of pediatrics and genetics and V/C for Innovation in Therapeutics at the University of California San Diego School of Medicine, where his laboratory studies RNA regulation in infectious disease, regenerative medicine, and cancer.

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Sabita Roy, Ph.D.
Professor
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Dr. Sabita Roy is a professor and vice chair for career development in the department of surgery, University of Miami Health System. She has extensive administrative experience and more than 26 years of research experience in understanding the mechanisms underlying opioid induced co-morbidities and the impact of drug abuse on HIV disease progression. Dr. Sabita Roy obtained her Ph.D. in 1986 in neurobiology from the University of Kansas, Lawrence, followed by postdoctoral training at the University of California, San Francisco (1986-1988) and University of Minnesota, Minneapolis (1988-1990).

She is the past president of the Society on NeuroImmune Pharmacology (mission: neuroimmune immune consequence of HIV). She has served as a permanent member of several National Institutes of Health (NIH) study sections, chair of NIH program project review committee, and served on several special emphasis panels (SEPs). Additionally, she also serves on several non-NIH grant review committees (local, foundational grants, and Department of Defense) and is on the editorial board of *Scientific Reports*, *Journal of Neuroimmune Pharmacology*, *Plos One*, and the *Journal of NeuroVirology*.

Dr. Roy has an extensive track record in fostering collaborative and interdisciplinary research, mentoring of junior investigators (pre and post-doctoral trainees) and junior faculty. She is currently on the mentoring team of several junior faculty both at the departmental and university level. She was a recipient of Senior Scientist Research and Mentorship Award (K05) to provide mentoring of new investigators.

Dr. Roy has more than 120 peer reviewed publications, 30 review articles, and eight book chapters. She has five active R01's, and is a co-director on a T32 training grant and an R25 undergraduate training grant.

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Leah H. Rubin, Ph.D., MPH

Associate Professor
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Leah H. Rubin, Ph.D., MPH, is an associate professor of neurology and epidemiology at Johns Hopkins University. Dr. Rubin received an MA in Clinical Psychology from Loyola University in Maryland in 2002 and a PhD in Cognitive Psychology from the University of Illinois at Chicago (UIC) in 2009. After completing her Ph.D., she accepted a faculty position in the Department of Psychiatry in UIC's College of Medicine and Women's Mental Health Research Program. As an early career investigator, she was supported by a Building Interdisciplinary Research Careers in Women's Health (BIRCWH) scholar award (K12) and NIMH-sponsored K01 and R21 awards. During this time, she also completed an MPH in epidemiology and biostatistics at UIC.

Dr. Rubin's current NIMH-funded research program is dedicated to improving the cognitive and mental health of women, especially those aging with HIV. Much of her work has focused on studying these women during transitional periods including pregnancy, the postpartum period, and the menopausal transition. Her work is highly interdisciplinary, and she works at both the epidemiological and mechanistic levels (e.g., pharmacological challenge studies, neuroimaging). Her work at the epidemiologic level has been within numerous cohorts including the Women's Interagency HIV Study (WIHS), Multicenter AIDS Cohort Study (MACS), Bipolar-Schizophrenia Network on Intermediate Phenotypes (B-SNIP), Avon Longitudinal Study of Parents and Children (ALSPAC), and Alzheimer's Disease Neuroimaging Initiative (ADNI). Working within these cohorts has led to her longstanding statistical experience addressing women's cognitive and mental issues as well as sex differences.

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Pietro Paolo Sanna, M.D.
Associate Professor
Department of Immunology and Microbiology
The Scripps Research Institute

Dr. Pietro Paolo Sanna obtained his M.D. degree and specialty in medical pharmacology with honors from the A. Gemelli Medical School in Rome, Italy. He is currently an associate professor in the department of immunology and microbiology at The Scripps Research Institute, La Jolla California.

Dr. Sanna's research aims at identifying molecular mechanisms of maladaptive plasticity induced by substance abuse and neuroHIV. To this end, the Sanna lab uses a multidisciplinary approach involving behavioral animal models, biochemical methods and high-throughput 'omics' strategies in a systems biology framework aimed at reconstructing the gene regulatory network — or interactome — to reveal the key genes driving the phenotype.

Dr. Sanna has worked extensively on the neurobiology of alcohol and drug abuse. His work highlighted several pathways and genes involved in excessive alcohol drinking and drug taking. As part of these studies, he contributed to the identification of drugs for repositioning for the therapy of alcohol abuse that are currently at different stages of clinical development.

Currently, a primary focus of the Sanna lab is the study of the neurobiological bases of HIV-associated cognitive impairment and vulnerability to drug abuse in HIV+ patients. This work aims to integrate neurobiological, transcriptional and virological strategies as well as high-throughput screening (HTS) for small molecule modulators of the candidate therapeutic targets identified through systems biology analyses of the disease states under study.

Dr. Sanna has served on numerous NIH study sections. Twice he was awarded the National Institute on Drug Abuse, Cutting-Edge Basic Research Award (CEBRA).

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Kimberly Scarsi, Pharm.D., M.S., FCCP
Associate Professor
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Kimberly Scarsi, Pharm.D., M.S., FCCP, is an associate professor at the University of Nebraska Medical Center's College of Pharmacy and College of Medicine. Dr. Scarsi received her doctor of pharmacy degree from Drake University and a master of science in Clinical Investigation from Northwestern University.

Dr. Scarsi's collaborative research program focuses on optimizing pharmacologic therapies for persons living with HIV, with an emphasis on global health and gender related issues. Her work is supported by the AIDS Clinical Trials Group, where she is a scientific member of the Women's Health Inter-Network Scientific Committee and the Tuberculosis Transformative Science Group. In addition, she leads an NIH-supported research program investigating the impact of antiretroviral therapy on the pharmacology of contraceptive hormones.

Locally, Dr. Scarsi maintains a clinical practice in the University of Nebraska Medical Center's HIV clinic. Nationally, she serves as a member of the U.S. Department of Health and Human Services (DHHS) Panel on Antiretroviral Guidelines for Adults and Adolescents, and as a member of the NIH Office of AIDS Research Advisory Council.

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Susmita Sil, Ph.D.
Postdoctoral Research Associate
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Dr. Susmita Sil is a postdoctoral research associate in the department of pharmacology and experimental neuroscience, University of Nebraska Medical Center. Her academic training and research experience have provided her with an excellent multi-disciplinary expertise mainly focusing on neuroscience.

As a predoctoral student with Prof. Tusharkanti Ghosh, University of Calcutta, India, her research focused on the cyclooxygenases mediated mechanism(s) of neurodegeneration and cognitive impairments in sporadic rat model of Alzheimer's Disease (AD). She gained proficiency in stereotaxis, behavioral study, neurodegeneration, blood-brain barrier permeability, and neuro-immune cross talk. She was the first author to show the involvement of the immune system in the process of neurodegeneration in the colchicine induced sporadic rat model of AD.

Her postdoctoral training continues to build on her previous training in behavioral studies and neurodegeneration in drug addicts and HIV associated neurocognitive disorders (HAND). Dr. Sil's mentor is Dr. Shilpa Buch, a well-known scientist in the field of drugs of abuse and HIV. With Dr. Buch's mentoring and continued support over the past two years, Dr. Sil published two research and one review article in peer reviewed journals as a primary author as well as co-authored research articles. Dr. Sil received the Early Career Investigation Travel Award in two consecutive years in the 23rd Scientific Conference, Society on NeuroImmune Pharmacology, Philadelphia, USA, March 29 – April 1, 2017 and Joint meeting of ISNV and SNIP, Chicago, USA, April 10-14, 2018. She has published 14 first authored articles in peer reviewed journals (doctoral and post-doctoral research) and one co-authored editorial. Dr. Sil received several academic and professional honors in her career. She has also served as an elected official- secretary for the UNMC post-doctoral association.

Her long-term goal is to contribute towards the therapeutics of neuroHIV, mainly targeting the protein-DNA-RNA complexes involved in the pathogenesis.

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Mohan L. Sopori, Ph.D.

Senior Scientist and Director, Respiratory Immunology
Lovelace Respiratory Research Institute

Mohan Sopori, Ph.D., is an immunologist and molecular biologist by training. He obtained his Ph.D. at the All India Institute of Medical Sciences; and completed postdoctoral work at Yale University and the University of Wisconsin, Madison.

For years, Dr. Sopori's laboratory has been interested in the pulmonary and immunological effects of xenobiotics, such as cigarette smoke/nicotine/viral infections. They were the first to show the immunosuppressive effects of cigarette smoke in an animal model. Subsequently, they identified nicotine as an antiinflammatory and an immunosuppressive factor in cigarette smoke. They also were the first to sequence and characterize the α7-nicotinic acetylcholine receptor (α7-nAChR) from T cells and demonstrate that α7-nAChR, although essentially identical to the neuronal α7-nAChR, signals through a second messenger system involving protein tyrosine kinases. Moreover, α7-nAChR interacts with the αβ-T cell receptor to induce calcium response in T cells.

Dr. Sopori's group was also the first to show that gestational exposure to secondhand cigarette smoke induces alveolar simplification (bronchopulmonary dysplasia) and higher susceptibility to allergic asthma in the progeny. They demonstrated that the proasthmatic effects of gestational cigarette smoke in F1 progeny were transmitted to F2 generation without exposure to cigarette smoke through epigenetic mechanisms. They showed that nicotine induces mucus formation in normal human bronchial epithelial (NHBE) cells via α7-nAChRs *in vitro* and *in vivo*.

Their studies have shown that SIV and HIV infections dysregulate mucus formation in the lung and gp120 per se induces mucus formation in normal human bronchial epithelial cells via CXCR4 and α7-nAChRs. In the era of combined antiretroviral therapy (cART), HIV infection has become manageable, but people living with HIV exhibit a number of comorbidities, including chronic lung diseases such as chronic bronchitis and chronic obstructive pulmonary disease. Recently, in a non-human primate model of HIV infection, Dr. Sopori's team has shown that HIV is an independent risk factor for the development of chronic bronchitis and in association with cigarette smoke exacerbates chronic bronchitis, proasthmatic responses, and decreases lung function. Moreover, lung epithelial cells are infected by HIV and HIV-gag is integrated in NHBE cell genome, suggesting that the airway epithelial cells are potential targets of HIV and the lung might serve as an HIV reservoir.

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Kelly L. Stauch, Ph.D.

Instructor
Department of Pharmacology and Experimental Neuroscience
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Kelly Stauch completed an undergraduate degree in agricultural biochemistry at Iowa State University and obtained a Ph.D. in biochemistry and molecular biology at the University of Nebraska Medical Center (UNMC). Following postdoctoral training in the department of pharmacology and experimental neuroscience (PEN) at UNMC, she joined the faculty in 2016 to further expand her work investigating the mechanisms underlying age-associated presynaptic mitochondrial impairment.

Dr. Stauch directs the UNMC Seahorse Core Facility and serves as a member of the UNMC Women's Mentoring Program Committee. She was recipient of the 2017 UNMC Skate-a-Thon for Parkinson's Award and the 2018 Vada Kinman Oldfield Alzheimer's Research Award. Dr. Stauch was selected to attend the 2018 National Institute on Aging (NIA) Summer Training Course in Experimental Aging Research at the Buck Institute. Her work is supported by the Chronic HIV infection and Aging In NeuroAIDS (CHAIN) Center Developmental Core grant program, the Michael J. Fox Foundation, and a NIH R01 grant from the NIA.

Dr. Stauch's research has focused on mitochondrial abnormalities and impaired bioenergetics in the context of neurodegenerative diseases and aging. In particular, her work focuses on the mechanisms leading to presynaptic mitochondrial dysfunction and the role this plays in modulating synaptic functions. Her recent findings have highlighted commonalities between presynaptic mitochondrial changes in different neurodegenerative disease states, providing a framework for future studies aimed to improve treatment of neurocognitive deficits in both age-related diseases and HIV.

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Tony W. Wilson, Ph.D.
Associate Professor
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Dr. Tony W. Wilson is an associate professor in the department of neurological sciences and the director of the Center for Magnetoencephalography (MEG) and the Center for Advanced MR Imaging (CAMRI) at the University of Nebraska Medical Center (UNMC). He completed his Ph.D. in cognitive neuroscience at the University of Minnesota as a NICHD predoctoral trainee under the direction of Dr. Apostolos Georgopoulos, and a NIMH postdoctoral fellowship in clinical cognitive neuroscience at the University of Colorado Health Sciences Center under the direction of Dr. Don Rojas. He joined UNMC in 2009 to lead its new Center for MEG, which is now one of the largest such centers in the United States.

Dr. Wilson's research program uses multimodal neuroimaging to investigate how HIV, aging, cannabis and/or alcohol use, and other health factors affect cognitive and brain function independently and interactively. In particular, his laboratory focuses on the oscillatory neural dynamics of attention and motor control, and how these dynamics predict cognitive performance in real time in persons living with HIV and uninfected healthy controls. Dr. Wilson currently leads four major NIH projects examining the neurological impact of HIV in the context of aging, substance abuse, and other factors, and a BRAIN Initiative project aimed at quantifying how electrical brain stimulation modulates neuronal activity in healthy adults and whether such stimulation can alter the impact of aging.

He has authored over 85 peer-reviewed journal articles, with recent papers in *Brain*, *Neurology*, *Cerebral Cortex*, and other top journals. His laboratory is currently supported by grants from the NIMH, NIDA, the National Science Foundation, and the American Heart Association.

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https://www.unmc.edu/neurologicalsciences/about/faculty/wilson.html

Notes

Acknowledgements

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