

APRIL 2022

NeuroNEXT

from the Departments of Neurological Sciences & Neurosurgery

We turned our clocks forward,
Spring has arrived and changes
abound here and around the world.



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Professor, Department of
Neurological Sciences*



Aviva Abosch, MD, PhD
*Nancy A. Keegan & Donald R.
Voelte, Jr. Chair
Professor, Department of
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Howard Fox, MD, PhD
*Senior Associate Dean, Research &
Development, College of Medicine
Professor, Department of
Neurological Sciences*

As COVID-19 recedes, we still need to be vigilant for new variants. Not only have UNMC researchers and clinicians continued to respond to this public health issue, but they also focused on other devastating neurological diseases.

In this edition, we feature Dr. Howard Fox, professor in the UNMC Department of Neurological Sciences (DONS), who earned a prestigious University of Nebraska systems Outstanding Research and Creative Activity (ORCA) Award for his exemplary scientific achievements. We also spotlight Matthew Brooks, DMA, orchestra conductor, music educator and courtesy professor in DONS, who received

UNMC's Impact in Education Valor in Educational Service Award for his work on music and well-being.

Importantly, the Comprehensive Stroke Center received recertification in February. It is Nebraska's only certified comprehensive stroke center. Denise Gorski, Neuroscience Clinical Programs and Clinics Manager, brings us up to date on the February visit from The Joint Commission, a recognized global leader for health care accreditation.

Another highlight is the ongoing research in neuroHIV.

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It has been said, “it takes a village,” and neuroHIV research teams at UNMC demonstrate this collaborative village in the push to find better treatments and care for people living with HIV. Raj Dave, PhD, Instructor in the Department of Neurological Sciences (DONS), provides the history and focus of the National Institutes of Health funded programs at UNMC.

Padmashri Ragunathan, PhD, describes the pathbreaking Auditory Vestibular Technology Satellite Core. The satellite facility provides infrastructure and support to Creighton University’s Translational Hearing Center (THC), an NIH National Institute of General Medical Sciences funded Center of Biomedical Research Excellence (CoBRE). The facility offers support to THC and UNMC researchers to conduct auditory research in mouse models.

Innovative research and discovery continue in the Mind & Brain Health Labs. From smart watches, phones, and car sensors,

the labs look for ways to use novel digital biomarkers to track health and early signs of disease for better treatment and outcomes. Several clinical trials are underway. We are proud of the neurosurgery residents and the research grant to Daniel Surdell, MD, on his study titled “Chronic Subdural Hematoma.” The Department of Neurosurgery and the DONS are also proud to have recruited exemplary classes of incoming resident physicians.

March 2022 celebrated Women’s History. We are proud of all our women in clinical and research. Special mention to Elizabeth Hartman, MD, on her election to chair of the General Neurology Section of the American Academy of Neurology and Olga Taraschenko, MD, PhD, on her work in epilepsy.

Along with supporting our clinical and research colleagues, we extend our support to our Ukrainian colleagues who are here in the United States and for their families

and friends impacted by the war in Ukraine. We hope you join the medical supply relief efforts.

Lastly, we feature a neurodegenerative disease event that will be led by Dr. Xinglong Wang on July 17-20, 2022.

As the year moves forward, we will continue to work hard as a team to push for better understanding and care for the brain across the lifespan.

Howard Fox, MD, PhD, receives University’s ORCA Award

Howard Fox, MD, PhD, senior associate dean of research and development in the UNMC College of Medicine, professor in the UNMC Department of Neurological Sciences and director of the Center for Integrative and Translational Neuroscience — has been awarded the University of Nebraska’s Outstanding Research and Creative Activity (ORCA) Award.

The award, one of the University of Nebraska’s President’s Excellence Awards, honors members of the University of Nebraska faculty who have conducted outstanding research or creative activity of national or international significance. University of Nebraska System President Ted Carter on April 6 announced Dr. Fox among the 2022 recipients of NU’s most prestigious faculty awards for teaching, research and engagement.



Howard Fox, MD, PhD
Senior Associate Dean, Research & Development,
College of Medicine
Professor, Department of Neurological Sciences



Dr. Matthew Brooks conducting his orchestra.

Matthew Brooks, DMA

receives UNMC's Impact in Education Valor in Educational Service Award

Dr. Brooks states "I am thankful for the opportunity to be a part of DONS and the greater UNMC community. It is immensely rewarding for me to build and grow partnerships between UNO School of Music and UNMC, lead the Nebraska Medical Orchestra, and be involved in arts-based research with students and colleagues."

"As an orchestra conductor and music educator who can probably count on one hand the number of science classes I took through my university career, I am always amazed at how my career has unfolded with a strong connection to the health science community. My courtesy faculty appointment in DONS has been a wonderful key to unlock access to serve students at UNMC, but also other faculty and staff through music. This role has given me the opportunity to serve more formally

as a faculty advisor to UNMC student groups, student research and theses, as well as other collaborative projects."

Dr. Brooks' primary appointment is at the University of Nebraska Omaha (UNO) in the School of Music and Medical Humanities as an assistant professor and director of Orchestral Activities in Music & Medicine. At UNO, he teaches undergraduate music theory, graduate orchestral conducting and conducts student orchestras. His responsibilities also include the Nebraska Medical Orchestra and other music and medicine partnerships between UNO and UNMC.

Other key collaborations with the DONS and music include Mary Perkinson, DMA, who holds a courtesy appointment in the DONS where she collaborates on research related to enhancing the environment of care through music and dementia care.



Mary Perkinson, DMA

Professor of violin, is helping to bring music to dementia care.

Additionally, DONS Professor Vaishali Phatak, PhD, conducts research on music intervention and neuropsychology. Their work on "Leveraging Cross-Campus Expertise to Contribute to Dementia Care Through Music", will appear in the July 2022 edition of the *AMA Journal of Ethics*.

Comprehensive Stroke Center receives joint commission recertification

by Denise Gorski, MHA, BSN, RN, Neuroscience Clinical Programs and Clinics Manager

The two-day Comprehensive Stroke Center virtual recertification visit by the Joint Commission concluded on February 2, 2022, and overall went well for all involved.

Day one included tracer activities involving the medical, surgical and procedural activities related to the program population. Colleagues from the Emergency Department, Pharmacy, Interventional Radiology, Neuroscience Intensive Care Unit, 6Neuro and CT were interviewed and asked to share knowledge on program protocols and patient care. Day two continued with individual patient tracer activities and a review of the program's use of data, quality initiatives, and credentialing/competency/education of our providers and colleagues.

There will be requirements for improvements in program activities related to assessment and monitoring. The stroke team will work with leaders to identify and communicate approaches to those

improvement opportunities. We anticipate that the projects would involve adjustments to workflows, communications and electronic documentation. Our ITEACH values were truly demonstrated by individuals who were interviewed, presented data/projects, and those who worked behind the scenes to help gather information and respond to inquiries.

The Comprehensive Stroke Center depends on the leadership dedication and expertise of Denise Gorski, MHA, BSN, RN, T. Scott Diesing, MD, Pierre Fayad, MD, Marco Gonzalez-Castellon, MD, Michael Pichler, MD, Lucas Stenzel, MD and Brian Westerhuis, MD.



Denise Gorski, MHA,
BSN, RN
*Neuroscience Clinical Programs
and Clinics Manager*



Pierre Fayad, MD
*Professor,
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T. Scott Diesing, MD
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Marco Gonzalez-Castellon, MD
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*Assistant Professor,
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Sciences*

Collaborative NeuroHIV Research in UNMC

by Rajnish Dave, PhD, Instructor, Department of Neurological Sciences

The neuroHIV research initiatives at UNMC are deep-rooted in the vision to collaborate with scientists in diverse but complementary areas of HIV, neuroscience, therapeutic research, and data science. Researchers in the UNMC College of Medicine Departments of Neurological Sciences (DONS), Pharmacology and Experimental Neuroscience (PEN), Internal Medicine, Psychiatry, and Radiology, College of Pharmacy, and College of Public Health, in addition to other institutions form this collaboration.

Together they are pushing the boundaries of what is possible with new technologies and experimental systems. Some noteworthy initiatives include the Chronic HIV And Integrative Approaches to NeuroHIV (CHAIN) Center, the National NeuroAIDS Tissue Consortium (NNTC) and the Single Cell Opioid Responses in the Context of HIV (SCORCH) Program.

The CHAIN Center was established in 1990 by Howard Fox, MD, PhD, (DONS) who brought it to UNMC with his move here in 2008. In 2016, Shilpa Buch, PhD, (PEN) joined Dr. Fox in the CHAIN Center for a multiple-PI program directorship and Rajnish Dave, PhD, (DONS) became the project coordinator. CHAIN Center investigators led research to elucidate the mechanism(s) of HIV-induced CNS disease using first-in-the-field omics technologies and now single-cell omic methods. CHAIN scientists have developed novel humanized mice for the study of neuroHIV, developed long acting antiretrovirals covering multiple classes of agents and successfully used these together in developing cure strategies. The National Institute of Mental Health (NIMH) has funded the center since its inception.

In addition to the CHAIN Center, the NNTC is a significant driver in neuroHIV research. The clinical sites recruit participants and perform longitudinal studies on the

neurological and other effects of HIV, sampling and storing biofluids (blood and cerebrospinal fluid) and perform autopsies and tissue banking, with an emphasis on the brain. The NNTC Data Coordinating Center (DCC) provides biostatistical, epidemiological, and bioinformatic expertise to help coordinate and design experiments, and prepares NNTC specimens and datasets for research. Dr. Fox directs the NNTC-DCC, which has been funded by NIMH as well as the National Institute for Neurological Disease and Stroke (NINDS) since 1998.

Given the overlap between drug abuse and HIV infection, the National Institute of Drug Abuse (NIDA) funded the multisite consortium entitled Single Cell Opioid Responses in the Context of HIV (SCORCH). Drs. Fox and Buch direct the UNMC site. One particular focus is to understand the primary drivers of neuropathogenesis and determine the characteristics of the cells responsible for viral persistence in the brain.

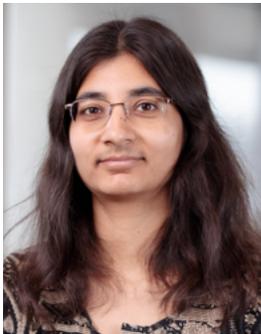
With continued collaboration among scientists, departments and other institutions, UNMC will remain at the forefront of neuroHIV research.



Rajnish Dave, PhD



Howard Fox, MD, PhD



Padmashri Rangunathan, PhD

UNMC Auditory Vestibular Technology Satellite Core

by Padmashri Rangunathan, PhD, Assistant Professor, Department of Neurological Sciences

The Auditory Vestibular Technology (AVT) Satellite Core at UNMC was recently established with the support of the Translational Hearing Center (THC, Creighton University, Omaha, Nebr.), an NIH National Institute of General Medical Sciences funded Center of Biomedical Research Excellence (CoBRE).

The satellite facility provides infrastructure and support to THC research project leaders and UNMC researchers to conduct auditory research in mouse models. Padmashri Rangunathan, PhD, a research project leader in the THC CoBRE was involved in setting up the AVT satellite core.

The satellite core is located within the Animal Behavior Core in the Durham Research Center I. The facility is currently set up to assess auditory function in mice

by measuring auditory brainstem response (ABR) and distortion-product otoacoustic emissions (DPOAEs). The satellite Core has enabled Padmashri Rangunathan's laboratory to perform longitudinal measurements of auditory function in mice prenatally exposed to alcohol. The facility provides an opportunity for UNMC investigators interested in assessing auditory function during development or aging in animal models.

Mind & Brain Health Labs Program Update

by Elizabeth Vlock, MS, Research Coordinator, Mind & Brain Health Labs and others

The Mind & Brain Health Labs in the UNMC Department of Neurological Sciences is dedicated to clinical and translational research to support mind and brain health across the lifespan for the people and communities we serve.

We use technology like smart watches, phones and sensors in cars – along with innovative data analysis tools—to learn how our health affects our behavior, movement, sleep, mobility and quality of life in the real world. This research also enables us to find new ways for tracking health and identifying early signs of disease for earlier treatment, better outcomes and independence.

This is an exciting time in research as we strive to better understand effects of impairment and disease on patterns of behavior at home, at work, at play and travel in between. Successful discovery depends on active engagement and participation of community members like you, together with scientists and physicians like ours, working to develop new tools and technologies that support mind and brain health.

Below is a list of our studies:

Driving and Alzheimer's Disease (IRB # 522-20-FB)

This is a study of active drivers between the ages of 65-90 with a range of cognitive abilities, from normal to impaired. The goal of this study is to evaluate how changes on a person's memory or thinking affect how

they sleep, move, and drive, to develop better ways to detect early impairments in Alzheimer's disease. Participants have a sensor package installed in their car to measure driving, and they wear a smart watch to measure daily patterns of movement activity and sleep. How a person sleeps, moves and drives may help demonstrate health changes – even before they reach the clinic. Early detection may enable earlier help and treatment in patients with early Alzheimer's disease.

Mind and Brain Health Registry (IRB #398-15-EP)

We seek volunteers to join a research registry of people who are interested in participating in mind and brain health research at UNMC. Together, we are working to support research aiming to improve mind and brain health. A registry is a list of people who are interested in being contacted about ongoing research studies. Joining a registry does not mean you have to participate in any research studies. You may decline to participate in any research study you learn about.



Interested in joining?

Email the Mind & Brain Health Labs at mbhl@unmc.edu or call 402-559-6870. See this and other active neurology studies at NebraskaMed.com/Mind-Research

Welcome!

Neurological Sciences Residents & Fellows Summer 2022



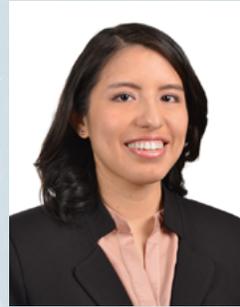
Joseph Benes, MD
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Hannah Maldonado, MD
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Valeria Desiree Parra Payano, MD
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*Beheshti University of
Medical Sciences*



Zaid Rkh Najdawi, MD
*University of Jordan Faculty
of Medicine*



Andrew Creed, MD
*University Kansas School of
Medicine Kansas City
Movement Disorder Fellow*



Maria Moreno Escobar, MD
*Universidad Nacional de
Colombia Facultad de Medicina
Movement Disorder Fellow*



Salam Assad, MD
*Shifa College of Medicine
Islamabad
Epilepsy Fellow*

Neurosurgery Residents July ~2022



Pasha Lookian, MD
*Creighton University
School of Medicine*



Elli Rezaii, MD
*Loyola University Chicago
Stritch School of Medicine*

Neurosurgery Research Grant

Principal Investigator: Daniel Surdell, MD; Sub-Investigator: William Thorell, MD

Title: The SQUID Trial for the Embolization of the Middle Meningeal Artery (STEM) for Treatment of Chronic Subdural Hematoma

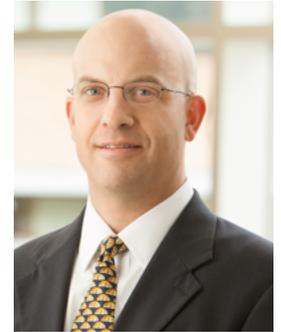
Sponsor: Balt USA, LLC

Current year funding: \$150,000

This trial is intended to determine the efficacy of the endovascular use of Squid to decrease the recurrence of chronic subdural hematomas in our patients, by embolization of the middle meningeal artery. Squid, similar to Onyx, is an ethylene-vinyl alcohol copolymer-based liquid embolic agent used for endovascular treatment of various vascular lesions, including cerebral AVMs (arteriovenous malformations). This is a multicenter trial run out of Vanderbilt University.



Daniel Surdell, MD



William Thorell, MD

More information on this trial (NCT04410146) is available at

<https://clinicaltrials.gov/ct2/show/NCT04410146?term=squid%2C+STEM&draw=2&rank=1>



Elizabeth Hartman, MD

Elizabeth Hartman, MD, DONS
associate professor, elected chair of
the General Neurology Section of the
American Academy of Neurology for
the 2022-2024 term

I consider myself a specialized generalist in Neurology. I enjoy the variety and challenge of general neurology, and I have also built-up niche focus areas in multiple sclerosis and headache. I am a mid-career neurologist who has spent near equal time in private and academic practice, both in underserved rural and in major metropolitan areas. My key focus is on clinical care of neurology patients, though I dabble in education and clinical research. I hope to use my experiences and insight to advocate on behalf of our General Neurology section and to serve as a voice for our unique needs and concerns.

Epilepsy Program Updates

The DONS Epilepsy Division had a successful presence at the American Epilepsy Society Annual Meeting (AES). They had six posters, all of them were residents mentored by DONS faculty.

Olga Taraschenko, MD, PhD, Chief, Comprehensive Epilepsy Program, gave a talk at the AES meeting on the 'Pathogenesis of New Onset Refractory Status Epilepticus (NORSE)' at the Critical Care Special Interest Group and another talk on the mouse model of autoimmune seizures

developed in her laboratory. Dr. Taraschenko gave a third talk on the development of anakinra nanoparticles at the NORSE interest group. This year, Dr. Taraschenko co-chaired the AES Women in Epilepsy Luncheon, an annual event that celebrates the contribution of female professionals to the field of epilepsy and gathers over 50 participants.

Neurodegenerative Disease Conference



Xinglong Wang, MD

We are proud that UNMC is hosting a conference on Neurodegenerative Disease, under the leadership of Xinglong Wang, PhD (UNMC Department of Pharmacology and Experimental Neuroscience), bringing together neuroscientists with trainees and junior faculty. This meeting

will be held in Omaha, Neb., on July 17 – 20, 2022. Neurodegenerative diseases are characterized by death

of nerve cells in the brain or peripheral nervous system, with reduced function, autonomy, agency and lifespan. Our physicians and multidisciplinary specialty teams offer state-of-the-art diagnosis and care for these difficult conditions, including Alzheimer's disease, Parkinson's disease, Lewy body disease, frontotemporal degeneration, Huntington's disease, amyotrophic lateral sclerosis (Lou Gehrig's disease) and other conditions. Together and with our national network, including the American Brain Coalition, NIH and FDA, we are also working hard on policies and discoveries that can lead to much needed treatments and cures.

The event will be held at the Scott Conference Center on the UNO campus with a hybrid option to participate virtually.

Support available for those impacted by events in Ukraine

by Karen Burbach, UNMC strategic communications and others

UNMC faculty member Valia Gumenyuk, PhD, grew up in southern Ukraine, in the port city of Odessa.

The week of February 20, 2022, the world received reports of Russian attacks across the eastern European country, Dr. Gumenyuk's attention was on her 77-year-old mother and her husband's parents, who still live there.

"The night was horrible," she said Thursday afternoon, hours after the attacks began. "It's just very terrible and terrifying across all Ukraine regions. There is no quiet spot in Ukraine right now to hide ... and no escape zone."

Dr. Gumenyuk joined UNMC in 2021 as an assistant professor in the UNMC Department of Neurological Sciences and a research scientist for the MEG Lab.

She was calling her mom, who lives on the upper floors of a nine-story apartment building, often — every 15 to 20 minutes — to make sure she had a connection. She also has relatives in Kyiv and Kharkiv, where some took shelter in subway stations.

"It's terrifying, but the Ukrainian Army is doing good things and the people of Ukraine — three out of four — believe in the Ukrainian Army," Dr. Gumenyuk said. "They're doing their best, and the world is watching."

She appreciates the support and "million messages" received from friends at UNMC and beyond. "It's amazing the support and big heart of all the people who are thinking about this tragedy and praying with Ukrainians for peace. This war shouldn't be

happening at all. From my Ukrainian heart, I appreciate all the people in the world who are with us and thinking of us and praying for us."

DONS Professor Dr. Olga Taraschenko also has family and friends directly impacted by the events in Ukraine. "My mother, my sister and her family have escaped from Kyiv on the night of first bombing. They lived close to the Gostomel, a strategic airport and air command base built to defend the capital. The bombs were falling very close to their homes. While they have managed to escape, thousands of people in Ukraine are not so fortunate. Many have died in apocalyptic destruction, and we still do not know true number of casualties," says Dr. Taraschenko. "Here we can do very little to change the course of the war, but we can help tremendously by helping the hospitals in Ukraine to take care of wounded. The demands of the strained medical system are immense, and things will be needed for the months to come."

"Pharmaceutic sciences graduate student Viktoriya Mashinson (UNMC College of Pharmacy) and the entire Ukrainian community are grateful to everyone who have participated in our fundraising campaign. We have gathered countless boxes of medical supplies at Nebraska Medicine and Children's hospital. We will continue the campaign for as long as the help is needed in Ukraine," Dr. Taraschenko added.



Valia Gumenyuk, PhD



Olga Taraschenko, MD, PhD

To learn more on how to donate, please see our DONS Twitter post at https://twitter.com/UNMC_neurology/status/1506993479733288965



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If you have any news or upcoming events that you would like featured in the next edition of the *NeuroNExT UNMC* newsletter, please send the information to sallie.weathers@unmc.edu

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