Neurological Sciences Awarded Largest-Ever UNMC Grant

A team of UNMC researchers headed by Matthew Rizzo, M.D., professor and chair of the Department of Neurological Sciences, has landed the largest grant ever for UNMC – a five-year research grant from the National Institutes of Health totaling nearly $20 million.

The Institutional Development Award (IDeA)-Clinical Translational Research (CTR) will develop the next generation of CTR researchers, providing opportunities through scholar and pilot project grants. "The goals of this grant are to help early career scientists to become independent and launch their own research programs," Dr. Rizzo said, "as well as to increase infrastructure and resources for clinical and translational research in the region. We want to fill in the health gaps in the Great Plains area. We have unique needs. We have areas with relatively few people in big spaces, as well as medically underserved populations in urban areas."

The grant will create the Great Plains IDeA-CTR Network, a collaboration involving nine institutions in Nebraska, North Dakota, South Dakota and Kansas. In addition to UNMC, the Nebraska institutions include the University of Nebraska-Lincoln, the University of Nebraska at Omaha, and the University of Nebraska Medical Center College of Medicine.

IDeA CTR Network Releases Two RFAs

Dr. Matthew Rizzo and the IDeA CTR Network have already announced two new Requests for Applications (RFAs). Applications are now being accepted for the Great Plains IDeA CTR Scholar Program and for the Great Plains IDeA CTR Pilot Grant Program.

- The Scholar Program is a mentored career development award that will provide selected scholars with the protected time and seed grant funding to develop competitive CTR projects for submission to the NIH. Scholars accepted into the program will receive salary support and up to $50,000 annually to support preliminary research efforts for up to four years. This award is intended for full-time junior faculty members who are otherwise eligible to apply for NIH funds and are seeking to become independent CTR investigators.

- The Pilot Grant Program is open to all faculty at partnering institutions, and is intended to provide a mechanism to test the most promising and novel CTR projects and to help investigators at all levels obtain preliminary data necessary to apply for investigator-initiated extramural grants. Successful applicants will receive up to $50,000 annually, as well as access to the resources of the Great Plains IDeA CTR to support these preliminary efforts.

see GRANT page 9
It is a privilege to work at the University of Nebraska Medical Center (UNMC)/Nebraska Medicine with clinicians, scientists and educators who have the vision, ability and dedication to advance neural health across the lifespan. The Department of Neurological Sciences (DONS) and our Neurosciences Program partners continue to advance patient care, education, research and outreach – in line with our institutional Vision and Mission. Together, we are Neurology, Neurosurgery, Psychiatry, Psychology/Neuropsychology, Anesthesia/Pain Management, Spine Surgery, and Physical Medicine and Rehabilitation. Our teams deliver innovative care to patients with the most severe and complex disorders. This includes Alzheimer’s, Parkinson’s, MS, ALS, neuromuscular disease, stroke, TBI, brain-tumors, epilepsy, mental health, autism, ADD and neuro-developmental disorders. Our funded research includes many clinical trials and strong investigator-initiated research programs and laboratories including Mind and Brain Health; Dynamic Imaging, Cognition and Neuromodulation; and the Great Plains IDeA Clinical and Translational Research Network spanning four states and nine universities – which is aimed at developing new medical research infrastructure and training new scholars for the public good. The time is now to aggressively grow the Neurosciences, including robust programs and headquarters at UNMC/Nebraska Medicine, connections to the growing Regional Provider Network and even patient homes through telehealth and embedded sensor technologies. We will continue to report regularly to you on our progress.

Sincerely,

Matthew Rizzo, MD, FAAN, FANA
Francis and Edgar Reynolds Professor
Chair, Department of Neurological Sciences
Clinical Program Leader, Neurological Sciences
Director, Mind and Brain Health Laboratories
Director, Great Plains IDeA CTR Network
Telestroke Network Succeeds, Expands

UNMC’s pioneering telestroke network is growing to include more sites in less than a year since its launch in March 2016. After beginning a pilot program with Nebraska Medicine sites in Bellevue and Omaha, the network is now expanding to include Mary Lanning Hospital in Hastings and Faith Regional Health in Norfolk.

The telestroke network allows UNMC stroke experts to be immediately involved and guide the care of patients in far-flung areas without local access to stroke experts. High-quality videoconferencing and remote technology make it possible for specialists to not only visualize and interview each patient, but also to perform a focused neurologic examination, review their brain imaging studies and provide expert guidance to the emergency care team and the family about the patient care.

“The program has been an immense success,” said Dr. Marco Gonzalez-Castellon, the telestroke network’s medical director. “In rural areas without 24-7 access to neurologists, we’ve been able to virtually place a specialist in the room with the patient at a moment’s notice. With strokes, every minute of delay can mean a greater chance of lingering disability or death. The telestroke network is making a difference in the communities that need it most.”

“The telestroke network continues the legacy of the Stroke Center at UNMC and Nebraska Medicine in setting high standards for stroke care in Nebraska and the region” said Dr. Pierre Fayad, Professor and Medical Director of the Stroke Center. The Stroke Center was the first primary stroke center in Nebraska to be certified and recognized nationally.

“The telestroke network allows immediate implementation of the rapid advances in stroke care to any hospital connected to the network.”

TIMELINE

March 2016 – The UNMC telestroke network launches at Nebraska Medicine-Omaha and Nebraska Medicine-Bellevue.

August 2016 – Mary Lanning Hospital in Hastings becomes the network’s third site.

October 2016 – The program reports 169 telestroke consults, resulting in 31 patients treated with IV tPA and 10 patients treated with mechanical thrombectomy.

November 2016 – Faith Regional Health in Norfolk becomes the network’s fourth site.

December 2016 – The original pilot sites report average “door-to-needle” tPA treatment times of under 60 minutes, which is the recommended benchmark.
On the Road Again

Dr. Matthew Rizzo and the Mind and Brain Health Laboratories (MBHL) want to preserve the independence and mobility of people with diabetes.

More than one in 10 Americans have diabetes, and many depend on insulin to control their blood sugar levels. However, the lifesaving medication can leave patients more vulnerable to hypoglycemic episodes that impair judgment, reaction times and the decision-making abilities needed for safe driving.

Through an innovative new study, the MBHL, led by Dr. Matthew Rizzo, is measuring the relationship between real-world driving behavior and blood sugar control. Study participants wear activity monitors and continuous glucose monitors, and Black Box Systems are installed in every participant’s car to record driving performance and safety. By correlating activity levels, blood sugar levels and real-world driving behavior, the MBHL will be able to determine the relationship between blood sugar control, driver performance and safety errors during real-life driving. The study’s overall goal is to develop sensors that could be worn by a driver or installed in their vehicle to alert them to dangerous hypoglycemic episodes.

The results of this study may be used to develop clinical guidelines for driving recommendations in diabetes. Even more importantly, this work has enormous potential to lead to the prevention of accidents and injuries while preserving mobility and quality of life for thousands of Americans.

The Eyes Have It

It is said that the eyes are the window to the soul, but they may also be the window to a new breakthrough in neurology care.

Accurately measuring intracranial pressure (ICP) is important in the treatment of a number of conditions including intracranial hemorrhage, traumatic brain injury, brain tumors, hydrocephalus and idiopathic intracranial hypertension. However, ICP can only be measured through invasive procedures such as lumbar puncture or external ventricular catheterization that require specialized clinical skills to perform.

UNMC neurologist Dr. Sachin Kedar wants to change that by finding a reliable, non-invasive and portable method of predicting changes in ICP. If the optic nerve changes in response to fluctuations in ICP, and if these changes can be correlated with ICP, then patients could be monitored using readily available non-invasive imaging technologies. With the collaboration of experts from across the University of Nebraska system, including neurologists, neurosurgeons, ophthalmologists, biostatisticians, mechanical engineers and computer scientists, Dr. Kedar is studying ICP and eye pressure changes in a variety of models. His important work is supported through grants not only from UNMC, but also from organizations including the Fremont Area Alzheimer’s Committee, Research to Prevent Blindness, and the Nebraska Research Initiative.
New Faculty Member Studies Memory and Brain Networks

Dr. David Warren has questions about your memory. Not just how you feel about your memory — although that’s important, too — but how your brain allows you to make new memories and retrieve old ones. His research may have key implications for improving our understanding of neurological disease and healthy aging.

Dr. David Warren has studied memory for more than 15 years using a wide variety of methods.

“Even simple questions, such as, ‘Have you seen this item before?’ can shed light on memory development.”

By asking such questions of people with different patterns of brain damage, Dr. Warren has found that specific parts of the brain, such as the hippocampus, play a critical role in forming memories.

Some research questions can be asked without saying a word. For example, by tracking eye movements, Dr. Warren’s lab has found that people’s eyes behave differently when viewing an object that they’ve previously seen, even if they don’t remember having seen it. Along the same lines, by using neuroimaging technologies such as functional MRI, Dr. Warren has found that there are distinct signatures of brain activity for studied items versus non-studied items. Intriguingly, he has shown that activity in certain brain networks can predict memory abilities even when the activity was collected from a person who was merely resting quietly in the MRI scanner. Findings from all of these lines of research have helped Dr. Warren to refine his perspective on how memory functions in healthy adults as well as in people with brain injury or disease.

In his new laboratory at UNMC, Dr. Warren and his team are pursuing new research related to memory and other cognitive processes in the domains of healthy development and neurological disease. One current project examines how brain networks relate to memory change early in life and how genetic factors may alter that development.

Another project is examining whether non-invasive brain stimulation can improve memory in healthy adults and potentially in patients with disorders of memory such as Alzheimer’s. Yet another project is studying how the speed and accuracy of eye movements change in adults with and without neurological disease.

These studies represent Dr. Warren’s commitment to studying how the brain supports cognitive abilities and how those abilities change throughout development in health and disease.

Dr. Warren is also the head of the Mind Brain Health Registry, a rapidly-expanding resource for recruitment of research participants that is accessible by all UNMC investigators. If you have questions about Dr. Warren’s research, please contact him at david.warren@unmc.edu.
Dr. Omalu visits UNMC

The truth will always prevail.

That was the message that Dr. Bennet Omalu delivered in November when he visited UNMC to tour the Mind & Brain Health Laboratories and meet with some of the Department of Neurological Sciences’ top brain experts.

Dr. Omalu’s research identifying the risk of traumatic brain damage in National Football League players was the basis for the 2015 movie “Concussion.” He was in Omaha to deliver the keynote address at the Better Business Bureau’s annual awards luncheon.

His message was loud and clear.

“We must protect the most vulnerable, our greatest gift – our children,” said Dr. Omalu. Noting that children playing football have a “100 percent risk of exposure to brain damage,” he urged that children under age 18 with still-developing brains should avoid high-impact, high-contact sports including not only football, but also hockey, boxing and mixed martial arts. Helmets don’t prevent brain injury, he said, adding that children can suffer brain damage from playing even one season of football.

“We have a very progressive society. Our society evolves with science,” Dr. Omalu said. “The truth will prevail... (even if) the truth is inconvenient. Choose to do good, no matter how painful and difficult it can be.”

Born in Nigeria, Dr. Omalu was impressed with what he saw at the Mind & Brain Health Labs.

“It’s phenomenal, very innovative,” he said. “Omaha and the state should be proud of what’s going on here.”
Reaching Out to Our Patients

The Department of Neurological Sciences is committed to connecting with our patients and providing them all the information they need to manage their disease. Department faculty regularly volunteer with local organizations to teach and expand awareness of neurological diseases, as well as hosting talks, presentations and conferences for the community.

In October 2016, the Department hosted its largest-ever patient education event. The 26th annual Parkinson’s disease symposium, “Living Better with Parkinson’s Disease in 2016,” was attended by more than 500 Parkinson’s patients, caregivers and family members. Throughout the day-long event, UNMC faculty conducted presentations and answered questions about new treatments, new research and the best methods for managing the symptoms of Parkinson’s.

Dr. John Bertoni, who co-directs the UNMC/Nebraska Medicine Comprehensive Multidisciplinary Parkinson’s Disease Clinic, served as the symposium’s keynote speaker.

“We have a message of hope for our patients. If they exercise, if they eat well and sleep well and do all the other things a good athlete would do, their chances of having a quality of life lasting many years can skyrocket,” Dr. Bertoni said. “There’s a lot that can be done by the patient, by the family, by the community and by the doctors and all of the therapists involved.”

“The Parkinson’s conference was a huge success, but we’re not resting on our laurels,” said Dr. Amy Hellman, director of the department’s Huntington’s Disease Center of Excellence.

“We’re hosting our next Huntington’s disease patient and caregiver symposium in March 2017, and we’ll also be hosting the Orthostatic Tremor Community’s worldwide annual meeting next October. We have a lot to share with our patients!”

UNMC Joins Enroll-HD

UNMC is now an approved study site for Enroll-HD, the world’s largest international observational study for Huntington’s disease (HD). This study is monitoring how the disease appears and changes over time in different people. The study will eventually enroll more than 20,000 people from sites in the U.S. and Canada, as well as Europe, Latin America, Australia, New Zealand and countries in Asia.

People with HD and their at-risk family members are eligible for participation, regardless of whether they know their gene status. Study participants are evaluated through annual visits in order to measure and track their motor, cognitive and psychiatric symptoms. The information obtained from this study will lead to a better understanding of the disease, which will accelerate the development of new treatments. The study also aims to improve the design of clinical trials and to improve clinical care by identifying the best clinical practices for HD patients and their families.

“Enroll-HD is critical in the world of HD, and we are excited to be a part of this international effort. It is vitally important that we provide the opportunity for our patients and their family members to participate in this research to help us better understand and treat HD,” said Amy Hellman, MD, Director of the Huntington’s Disease Center of Excellence at Nebraska Medicine and UNMC.
The human brain processes information with tremendous speed. For example, the average English speaker can speak about three words per second, and we can all track the spatial location of objects that are traveling at hundreds of miles per hour. To accomplish these feats, specific brain regions must process information and send results to other regions of the brain within a matter of milliseconds.

Despite the speed at which the brain works, most human brain imaging research measures changes in neural activity that occur over several seconds, or even minutes, and simply averages all of the mental activity that occurs within that time period together. Tony Wilson, PhD, director of the Department of Neurological Sciences’ new DICON laboratory (Dynamic Imaging of Cognition and Neuromodulation), aims to change all of that.

The DICON Laboratory, which opened last summer, is focused on developing precise, “real time” images of the temporal dynamics of brain activity, and determining how these change with healthy aging, and are affected by diabetes, chronic heart failure, major infections, drug use and other health and lifestyle factors. Dr. Wilson explained, “Many ‘non-neuro’ health complications appear to cause subtle changes in the brain that gradually lead to more significant concerns like cognitive impairment. These very subtle changes first appear in the timing of brain circuits, and thus we can identify and study these early markers using the new resources in the DICON laboratory. In turn, this will give us a much deeper understanding of the disease process and ultimately lead to more effective treatments and superior preventive strategies.”

The lab’s key infrastructure includes 22 ultra-high performance workstations.
for processing neuroimaging data, more than 100 terabytes of storage space, and the latest technology for noninvasive modulation of the human brain. In addition, the laboratory is directly connected to UNMC’s state-of-the-art Center for Magnetoencephalography (MEG), which Dr. Wilson also directs, and to the major MRI systems at UNMC and Boys Town National Research Hospital. A large team of neuroscience PhD students, postdoctoral fellows, and professional research assistants call the laboratory home.

The DICON laboratory is also home to the Dev-CoG Study, one of the largest longitudinal neuroimaging studies of healthy brain development in children to ever be conducted in the United States. Now in its second year, the study is a collaboration with brain imaging groups at the Mind Research Network and Tulane University.

Dr. Wilson and the DICON lab team are also studying whether noninvasive brain stimulation can enhance cognition and reduce the symptoms of major neurologic diseases including Parkinson’s disease, Alzheimer’s disease, and cerebral palsy. Research in the DICON laboratory is supported by major research grants from the National Institute of Mental Health (NIMH), National Institute on Drug Abuse (NIDA), National Institute of Child Health and Human Development (NICHD), the National Science Foundation (NSF), and the American Heart Association (AHA).

DONS Program Receives National Distinction

In September 2016, The ALS Association renewed the status of the Department of Neurological Science’s ALS multidisciplinary clinic as an ALS Certified Treatment Center of Excellence – a distinction that recognizes the quality of its treatment and research programs for patients with amyotrophic lateral sclerosis, or Lou Gehrig’s disease. J. Americo Fernandes, M.D., associate professor of Neurological Sciences, directs the program, which includes physicians, nutrition therapists, respiratory therapists, social workers, nurse case managers and clinic staff employed by UNMC and Nebraska Medicine.

To maintain certification, the program met rigorous standards established by The ALS Association for research initiatives and a comprehensive and collaborative approach to patient care and services.

“We are committed to providing the highest quality of care to our patients,” said Dr. Fernandes. “We’re thrilled that The ALS Association has recognized our efforts by renewing our certification as a Certified Treatment Center of Excellence, and we look forward to continuing to partner with The ALS Association and the Mid-America Chapter to improve our patients’ quality of life and offer them new treatments and research opportunities.”

The states involved in our grant are rural states, so we will put extra emphasis on projects that will benefit people in rural areas or the medically underserved,” Dr. Rizzo said. “We can’t wait to get going and recruit our first class of scholars and launch our first pilot projects.”

Pictured on the front page:

Some of the steering committee members of the Great Plains IDeA-CTR Network include: (left-right) Ted Mikuls, M.D., Ann Fruhling, Ph.D., Ashok Mudgapalli, Ph.D., Fang Yu, Ph.D., Jim McClay, M.D., Matt Rizzo, M.D., Mary Cramer, Ph.D., Shinobu Watanabe-Galloway, Ph.D., Risto Rautiainen, Ph.D., Howard Fox, M.D., Ph.D., and Karla Klaus. **NOTE:** Dr. Fruhling is from the University of Nebraska at Omaha. All others in the photo are from UNMC. Those UNMC steering committee members missing from the photo are: Paul Estabrooks, Ph.D., Lani (Chi Chi) Zimmerman, Ph.D., Jane Meza, Ph.D., David Palm, Ph.D., and Babu Guda, Ph.D.
Welcome to Our New Faculty

Pamela Flax-Laws, MA

Pamela is an instructor in the Department of Neurological Sciences at the University of Nebraska Medical Center. She did her graduate work at the University of Kansas (Clinical Psychology, Health Psychology Specialty). She conducted research at the University of Kansas pertaining to the cognitive effects of aging. For post-graduate work, she has focused on research administration. Prior to her arrival at UNMC, she worked at Wake Forest Baptist Medical Center as part of its Clinical and Translational Science Award team. Currently, Pamela is helping to build the neuroscience institute, build infrastructure for research, foster research collaborations within UNMC and between UNMC and outside institutions, and establish processes for the institution’s new IDeA-CTR grant.

Neuropsychology Group Joins Department of Neurological Sciences

In January, the Department of Neurological Sciences is celebrating the new year by integrating the UNMC neuropsychology group into the department.

Clinical neuropsychologists focus on the assessment of cognitive problems such as memory, reasoning, language and attention problems associated with medical conditions, emotional conditions, neurological diseases, and injuries affecting the brain. Specialty areas include epilepsy, neuro-oncology, Parkinson’s disease, head trauma, dementia, learning disabilities, attention-deficit disorder, and changes in thinking associated with liver and kidney disease. The results of neuropsychological testing can serve as a baseline prior to surgery or treatment, or may be used to assist in diagnosis and treatment planning.

“We are very excited about bringing the neuropsychologists on board,” said Dr. Matthew Rizzo, Professor and Chair of DONS. “They will play a very valuable role in increasing continuity of care. Not only will our patients benefit from their more direct involvement in our clinics, but we’ll also be able to collaborate with them on our research studies. They have considerable expertise with regards to experimental design and scientific approaches to clinical practice.”

The neuropsychology group includes the following:

Amelia Nelson Sheese, PhD, is an Assistant Professor in the Department of Neurological Sciences whose primary practice is in the Clinical Neurosciences Center. She is the leader of the Neuropsychology group and the director of the Neuropsychology Fellowship Program. Her clinical areas of expertise include the cognitive assessment and treatment of patients with memory disorders stemming from underlying diseases including Alzheimer’s and Parkinson’s diseases, as well as patients with concussions, traumatic brain injuries and adult psychiatric disorders.

Matthew Garlinghouse, PhD, is an Assistant Professor in the Department of Neurological Sciences whose primary practice is in the Clinical Neurosciences Center. His areas of interest include the effects of cannabis on cognition, predicting language function post-surgery in patients with electrographically confirmed temporal lobe epilepsy, and brain imaging.

Ty Callahan, PhD, is a neuropsychologist in the Department of Neurological Sciences whose primary practice is in the Clinical Neurosciences Center.
James Kappen, EDD, is a pediatric neuropsychologist who will continue to primarily practice in the Nebraska Medicine Psychology Department. His areas of clinical expertise include pediatric neuropsychology, childhood psychiatric disorders, ADHD, learning disabilities, traumatic brain injuries, and candidates for solid organ transplantation.

Nadia Pare, PhD, is an adult neuropsychologist who will primarily practice in the Geriatric Clinic at Methodist Hospital. Her areas of expertise include memory and aging, mild cognitive impairment, dementias, cerebrovascular disease and traumatic brain injury.

Arthur Maerlender, PhD, is a pediatric neuropsychologist whose primary academic appointment is at the University of Nebraska-Lincoln as the Director of Clinical Research at the Center for Brain, Biology and Behavior (CB3), where he is focused on improving the system of care for traumatic brain injury across the state.

In addition to the Neuropsychology faculty, the group includes post-doctor fellows Drs. Pamela May, Allison Logemann and Kate Higgins, as well as a team of psychometrists.

“This is a very exciting time for the neuropsychology group,” neuropsychologist Dr. Ty Callahan said. “We couldn’t be more pleased with the opportunities inherent to our new role in the DONS. This will be fun.”

Giving Back

UNMC is in a key position to leverage clinical and research expertise, creating synergies between clinicians, teachers and scientists to transform neurological care now, and for future generations.

Investing in the UNMC Department of Neurological Sciences will advance research for effective treatment and prevention of neurologic diseases that threaten life, independence, productivity and happiness. Your gift can impact big discoveries and transform care in these devastating diseases.

To learn more about how you can help, contact Suzanne Rogert, Senior Director of Development, at 402.502.4118 or suzanne.rogert@nufoundation.org.
Save the Date

The UNMC Department of Neurological Sciences
Annual Department Faculty and Alumni Reception
During the American Academy of Neurology (AAN) Annual Meeting

Tuesday, April 25, 2017 | 6:00 p.m. – 8:00 p.m.

Sheraton Boston Hotel
Boston Common Room, 5th floor
39 Dalton Street
Boston, MA 02199

RSVP to Crystal Upshaw at crystal.upshaw@unmc.edu or 402.559.6591

Please mark your calendars and plan to join us.

The More We Grow...

The Department of Neurological Sciences is expanding. Positions are currently posted in the following areas: General Neurology, Vascular Neurology, Epileptology, Scientific Administration and Human Factors. We are also interested in expanding all of our subspecialties, and we welcome inquiries even if positions are not currently posted. Expanding subspecialties include Behavioral/Geriatric Neurology, Epilepsy, General Neurology, Movement Disorders, Multiple Sclerosis, Neurocritical Care, Neuromuscular Diseases, and Vascular Neurology/Stroke.

Please visit us at unmc.edu/employment/ for more information.