



GREAT PLAINS PRIMARY CARE PRACTICE-BASED RESEARCH NETWORK NEWSLETTER

July 2021 • Volume 5

VIRTUAL MEMBER'S MEETING: August 24th, 2021

For more information, see the Updates section

Injury Rates and Physical Activity in Youth Football: Tackle vs. Flag

Over the past two decades, new information about brain injuries related to football participation has raised serious concerns about the safety of this sport. While most of the tragic stories and alarming data have come from retired professional football players, numerous questions about the risks to younger players have emerged in recent years. From a public health perspective, this makes sense, as approximately 95% of all tackle football players in the US are high school-age or younger. In addition to youth and high school players representing the largest group of participants, there are additional concerns about the effects of concussions and repetitive head impacts on the developing brains of children and adolescents.



In lieu of tackle football, flag football has been recommended as a safer alternative and an entry point to the game for those who wish to play tackle football at the high school level

and beyond. This version of the game has fewer players on the field, and players are not allowed to block or tackle their opponents. In addition to the lower perceived injury risk, advocates suggest that flag football players are more physically active during play and are likely to receive more health benefits.

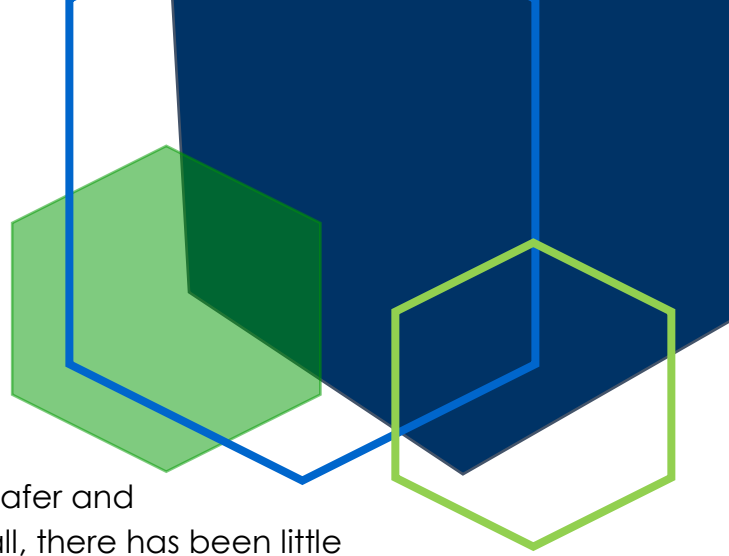
While it is reasonable to assume that flag football is safer and promotes greater health benefits than tackle football, there has been little research to support these arguments. Determining this information would be important to help guide public policy in an evidence-based manner and to help parents and their children make informed decisions about their own participation.

In 2020, Thayne Munce, PhD, FACSM, Director of the Athletic Health & Performance Lab and an Assistant Scientist in the Environmental Influence on Health and Disease Group at Sanford Research, received a Pilot Grant from the Great Plains IDeA-CTR to address these questions. Ongoing research titled, *“Injury Rates and Physical Activity in Youth Football: Tackle vs. Flag”* is being conducted in partnership with South Dakota Junior Football, Inc, a community-based youth football organization that offers tackle and flag football leagues of overlapping ages. This league structure provides Munce and colleagues with an ideal setting to evaluate injury rates and physical activity between tackle and flag youth football players from the same community.

Players on two tackle teams and two flag teams wore small GPS monitors during all practices throughout the 2020 season. In addition, the tackle players wore their GPS monitors during games (flag players didn't wear the GPS monitors during games, as flag games were played indoors where the GPS monitors were inoperable). GPS monitoring allowed the researchers to measure several indices of physical activity including total distance covered, distance while walking, jogging, or sprinting, work rate (distance/time), and walking/running speed. While Munce and his team are still analyzing these data, preliminary data indicates that youth tackle and flag football players exhibit several differences in physical activity characteristics.

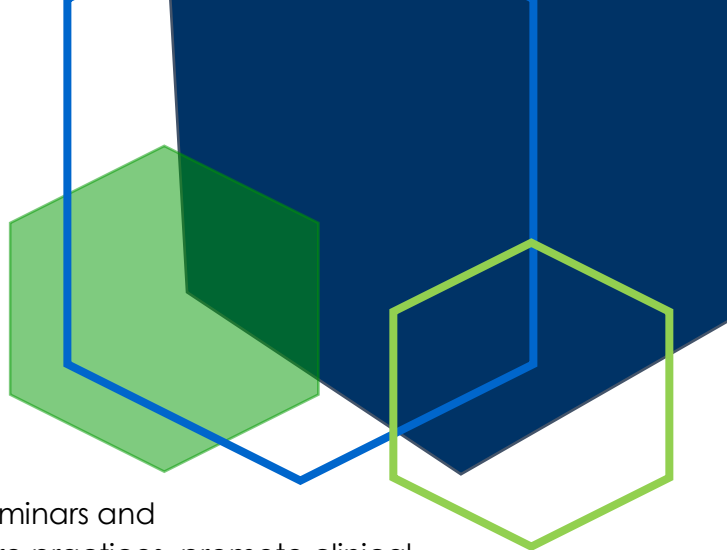
Munce and colleagues will continue to pursue the answers to meaningful research questions focused on the health and safety of youth football players. Specifically, the research team wants to generate and share new information so that parents and their children can make educated decisions to minimize their risks and maximize their benefits of football participation.

If you have any questions about this research, please contact Thayne Munce, PhD, FACSM at thayne.munce@sanfordhealth.org





PROFESSIONAL DEVELOPMENT



The Great Plains Primary Care PBRN provides links to professional development opportunities, in the form of seminars and webinars, that enhance clinical expertise, reveal best care practices, promote clinical research, and deliver cutting-edge research findings. Continuing education credits are available for in-person and distance participation. For a complete list of professional development opportunities, visit [the PBRN Education and Seminars webpage](#).

Great Plains IDeA-CTR Seminar: CHRI

Please join us as we host Ann Anderson-Berry, MD, PhD, Division Chief of Neonatology in the Department of Pediatrics in the UNMC College of Medicine and the Interim Executive Director of the Child Health Research Institute, when she presents "An Introduction to the Child Health Research Institute and Opportunities for Engagement" on Tuesday, August 17th at noon. Dr. Anderson-Berry will provide an introduction to CHRI and its areas of emphasis, outline membership opportunities and benefits, detail opportunities to collaborate with physicians/scientists with expertise in Child Health Research, and what's to come.

Tuesday, August 17th, 2021 | 12:00 PM-1:00 PM

[Click here for the Zoom link](#)

Webinar ID: 99042230402 Webinar Password: 2260

Great Plains IDeA-CTR Seminar: THINC-19

Join the research team, Proleta Datta, MD, Leslie Eiland, MD, and Carrie McAdam Marx, MSCI, PhD, RPh, as they describe their project, "Telemedicine and Health Inequalities during COVID-19" (THINC-19). This project examines the status of telehealth during the COVID-19 pandemic and how telehealth has the potential to address and exacerbate disparities in access to care. The research team will describe geographical patterns in access to provider visits in-person and via telehealth at Nebraska Medicine during COVID-19 versus the pre-pandemic period and will discuss the associations between in-person and telehealth provider access by demographics and socioeconomic factors.

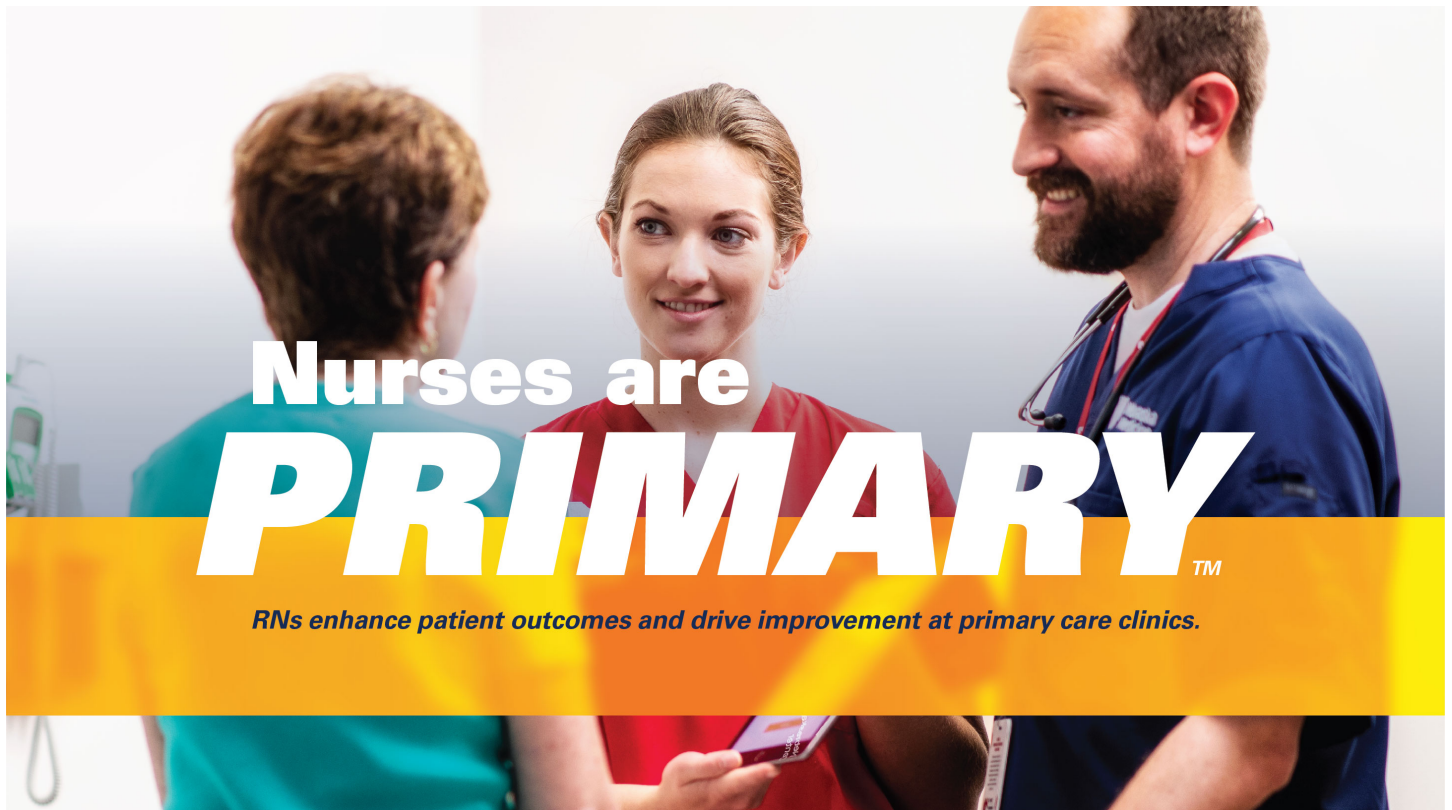
Thursday, August 26th, 2021 | 12:00 PM-1:00 PM

[Click here for the Zoom link](#)

Webinar ID: 99042230402 Webinar Password: 2260

UNMC PriCare Fellowship

The UNMC College of Nursing is offering a unique opportunity for 12 Nebraska nurses to improve their skills and further their education in leadership and primary care practice through a free, yearlong fellowship program. The UNMC PriCare Fellowship, part of UNMC's Nurses are Primary program, funded by a four-year, \$2.6 million grant from the U.S. Health Resources & Services Administration (HRSA), will provide training in leadership, communication, management, practice transformation, payment models and more. This training takes place over a 12-month period, beginning in September. Training and instruction can be done remotely, at a computer, or at any of UNMC's five nursing divisions across the state -- Omaha, Lincoln, Norfolk, Kearney or Scottsbluff -- or a combination of both. The time commitment is one half-day per month, with one to two additional hours of online work and one monthly practice project. For more information, go to www.unmcpricare.org or email pricare@unmc.edu. Applications are due August 19th, 2021.



Nurses are
PRIMARY™

RNs enhance patient outcomes and drive improvement at primary care clinics.

For more information, visit the UNMC PriCare Fellowship [webpage](http://www.unmcpricare.org).



Learn about upcoming, ongoing, and completed research impacting the region. Please share these opportunities and findings with your patients and healthcare community. A complete list of ongoing research can be found on [the PBRN Research webpage](#).

The Partnership of Automobiles and Medicine: Driving Healthcare into the Future



Remote sensors are now capable of monitoring health, safety, and daily activity in patients and provide exciting new horizons for improving healthcare and informing disease treatment. Personal vehicles now have onboard technology that can detect, monitor, and predict real-world safety.

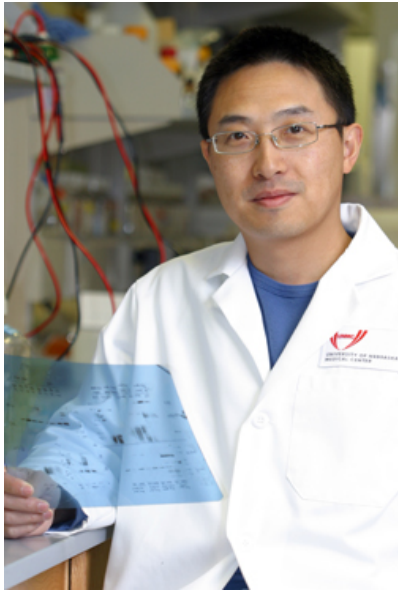
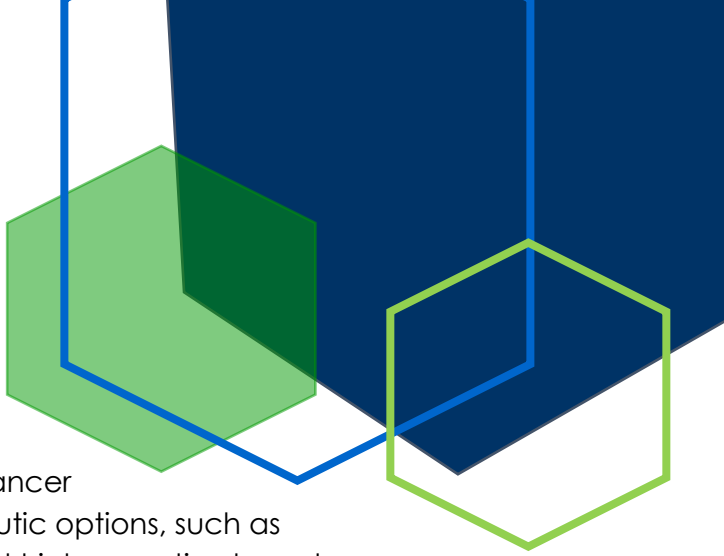
To learn more, see the attached article, "Mind & Brain Health Labs Clinician News".

Great Plains Cognitive Network, "GP CogNET"



Symptoms of Alzheimer's disease may lag decades behind brain changes. We invite all adults 19 years of age and older to enroll in the Great Plains Cognitive Network, GP CogNET, a research registry linking community members to Alzheimer's disease and brain health-focused clinical research. Enroll online at <https://gp.cognet.unmc.edu>. For more information, contact gp.cognet@unmc.edu. IRB #214-19-EP

Breaching the Greatwall of Cancer Resistance



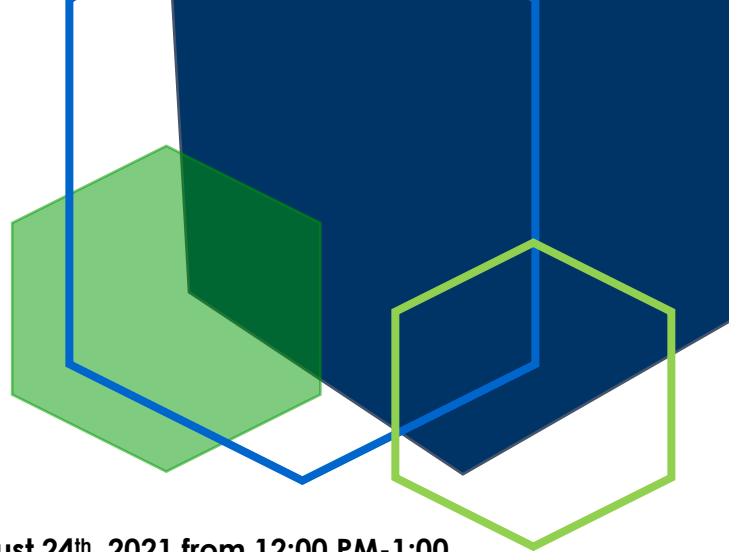
Dr. Aimin Peng, PhD

Radiation and chemotherapy are fundamental treatment options for cancer, especially those types of cancer that lack targeted therapeutic options, such as head and neck cancer and triple negative breast cancer. Radiation and chemotherapy work largely by inducing DNA damage, which is highly cytotoxic, and can effectively induce tumor cell death. Unfortunately, in many cases, the therapeutic benefits of radio/chemotherapy are limited and transient, due to intrinsic and adapted mechanisms of tumor resistance. Subsequently, tumors can recur and further progress. To meet this significant clinical challenge, Dr. Aimin Peng and his research group at the College of Dentistry at the University of Nebraska Medical Center (UNMC) investigate the tumor response to DNA damage, to discover new mechanisms underlying

tumor resistance, and develop new therapeutic strategies that prevent tumor recurrence.

With support from a pilot project funded by the GP IDeA-CTR and the Buffett Cancer Center at UNMC, the Peng group is focused on a new and promising anti-cancer drug target, a protein kinase named Greatwall. The kinase bears this interesting name because earlier research in fly cells reported a role of this kinase in protecting the chromosomal integrity during cell division. More recently, emerging evidence from the Peng group and other groups suggested that Greatwall kinase is involved in the DNA damage response as well. In fact, Greatwall kinase is strongly upregulated in many cancer cases, especially in head and neck cancer, triple negative breast cancer, and colon cancer. Tumor cells with Greatwall kinase upregulation are highly resistant to radiation and chemotherapy. By comparing matched tumor samples from the primary and recurrent tumors, the group further demonstrated the involvement of Greatwall kinase as a promoter of tumor recurrence. Thus, tumor cells, at least some of them, manage to build a strong defense to protect them, much like building the Greatwall to protect the country's borders in ancient China.

The Peng group proposes to further understand how tumor cells upregulate Greatwall kinase, and how this kinase renders cells resistant to radiation and drug treatment. In collaboration of a renowned chemist at UNMC, Dr. Amar Natarajan, they also hope to test small molecule compounds that inhibit the kinase activity of Greatwall. They are very excited about the potential of this research project in improving the therapeutic outcome of cancer. The project recently secured 5-year funding from the National Institutes of Health (NIH).



We are hosting a virtual **PBRN Member's Meeting** on **August 24th, 2021 from 12:00 PM-1:00 PM**. Please share the zoom link with providers and staff at your clinic:

<https://unmc.zoom.us/j/7350312307?pwd=ZEldGpleUMybXVITXVwY3ZnWlcvUT09>

Do you have a clinical research question? Are you interested in collaborating with other clinical investigators? Is there an evidence-based practice you would like to implement in your clinic for quality improvement? Fill out the Great Plains Primary Care PBRN Request [here](#).

To ensure you are included on all PBRN correspondences, please complete [the Membership Survey](#).

Have information, news, or an event to include in the next newsletter? Contact Emily Frankel at emily.frankel@unmc.edu

The Great Plains IDeA-CTR is a collaborative effort between nine biomedical research institutes across the Great Plains.



To learn more about the Great Plains Primary Care PBRN, visit:

<https://gpctr.unmc.edu/ctr-resources/pbrn/>

The content of this newsletter is solely the responsibility of the Great Plains IDeA-Clinical & Translational Research and does not necessarily represent the official views of UNMC.



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Mind & Brain Health Labs

CLINICIAN NEWS

The Partnership of Automobiles and Medicine: Driving Healthcare into the Future

Remote sensors are now capable of monitoring health, safety, and daily activity in patients and provide exciting new horizons for improving healthcare and informing disease treatment. Personal vehicles now have on-board technology that can detect, monitor, and predict real-world safety.

The goal of the University of Nebraska Medical Center's Mind & Brain Health Labs (MBHL) is to apply these technologies in combination with advancements in big data analysis to use real-world sensor data, derived directly from an individual's own behavior, to improve patient health and health care. These data hold promise for developing tools to improve patient safety, mobility, and independence, monitor treatment compliance and effectiveness, flag warning signs of early disease, and determine objective metrics of patient quality of life and disease impact.

MBHL is a multidisciplinary group of researchers who use a broad, innovative range of tools to investigate and improve real-world mind and brain health, quality of life, and mobility in people who are aging or with diseases.



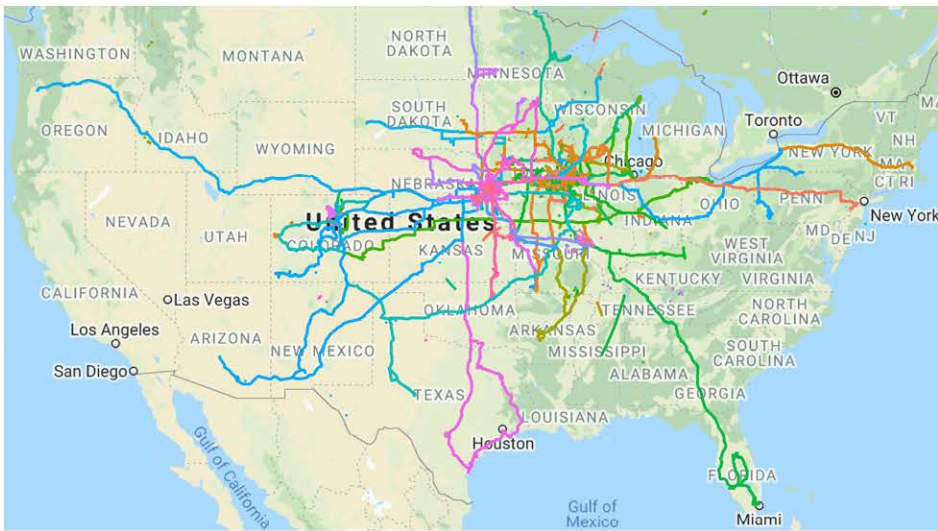
Marv Welstead, founder of the Fremont Area Alzheimer's fund, test drives the Mind & Brain Health Labs' driving simulator to help researchers understand how people who are older or have diseases drive.

Our group is strongly collaborative and invested in developing new partnerships with researchers and clinicians to foster our shared mission of improving patient lives.

In a recent study focusing on

individuals with Type 2 Diabetes Mellitus (DM), we deployed in-vehicle systems and procedures capable of quantifying real-time driver behavior and physiology in drivers with

[cont. pg 2](#)



We have studied over 350 individuals who have a range of diseases and collected over 700,000 miles of real-world driver behavior data that provide valuable insights into how disease impacts real-world patient mobility, quality of life, and safety.

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DM. In comparison to the general population, individuals with DM have a significantly increased risk for motor vehicle crashes, due to changing blood sugar levels which may impair driver cognition in areas of alertness, judgement, and other decision-making processes needed to safely operate a motor vehicle. Drivers' glucose levels were monitored continuously along with wearable devices that provided us with real-world driver sleep and mobility data. By combining real-time physiologic data with real-world driving data, we developed predictive models capable of detecting safety-critical events before they happened.

In the future, vehicles may be able to apply algorithms "on the fly" to prevent risk by continuously monitoring the driver's own physiology and real-time behavior. Data of this type can also help inform doctor evaluation of real-world patient safety and treatment needs, improve patient outcomes, develop fair and accurate guidelines for supporting patients

with diabetes, or guide specific safety interventions aimed at preventing injury and preserving mobility.

Our approach has wide applications, reinforcing the possibilities of using a patient's own vehicle and devices as clinically effective diagnostic tools across a range of disorders, including diabetes, obstructive sleep apnea, cancer, glaucoma, Alzheimer's disease, Parkinson's disease, and other neurodegenerative conditions.

We are committed to supporting clinical translational research (CTR) at the University of Nebraska Medical Center (UNMC) and other institutions. To accomplish this, our lab has a growing registry currently comprised of 600 individuals, with and without diseases, who are interested in participating in CTR at UNMC and the Omaha area. We are very grateful to all of our research participants for their commitment to helping research aimed at improving mind and brain health, safety, and quality of life.



Dr. Matthew Rizzo (far right) is the Director of the Great Plains Ide-A Clinical Translational Research (CTR) Network, a collaborative network of institutions working together to transform and advance clinical and translational research within the Great Plains region.



Mind & Brain Health Labs CLINICIAN NEWS

June 2021

This newsletter is produced by the College of Medicine Department of Neurological Sciences at the University of Nebraska Medical Center.

For additional information contact:

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unmc.edu/mbhl

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We're excited to continue our research this coming year.

To read more about our work, please visit us at unmc.edu/mbhl. If you are interested in collaborating with our lab, please contact us at 402.559.6870 or mbhl@unmc.edu.

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