

A large, dark blue outline of a human brain, viewed from above, serves as the background for the entire page. The outline is composed of thick, rounded lines that define the cerebral hemispheres and the central sulcus.

Annual Report
FY 2022

Letter from the Director

As we emerge from the global pandemic and re-engage with each other, the faculty, staff, and students of the University of Michigan Concussion Center are working harder than ever to address key issues surrounding the acute and long-term effects of concussion. In our country, the pandemic has highlighted inequities and disparities in healthcare, and this year, we placed diversity, equity, inclusion, and justice at the center of all we do to better reflect the core values held by our entire team. We are proud of our progress and can boast a six-fold growth in membership, a group that has generated more than 200 peer-reviewed publications, secured more than \$80 million in federal and private grant support, and ranks #6 in concussion research and #1 in subject matter expertise globally.

Our Research Core continues to lead the National Collegiate Athletic Association (NCAA) Department of Defense (DoD) Concussion Assessment, Research and Education (CARE) Consortium, the largest prospective investigation on concussions ever conducted. The Research Core is also collaborating with U-M Athletics and the Alumni Association on a neurological health study looking at the long-term impact of concussions.

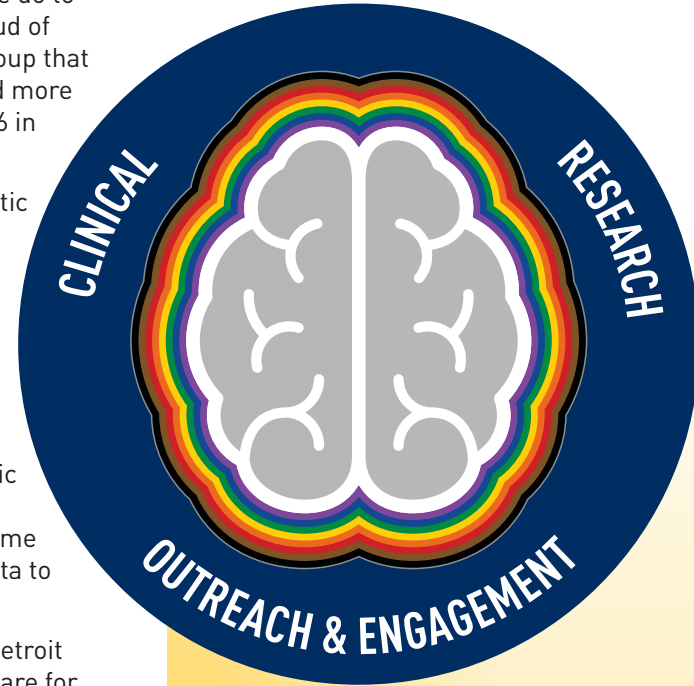
The Clinical Core remains a leader in delivering exceptional patient care through specialty clinics, emergency medicine, athletic medicine, and other providers. In conjunction with the Research Core, our clinicians are developing a novel Patient Reported Outcome Measure (PROM), integrating historical and prospective clinical data to support a patient-centered concussion care experience.

Lastly, the Outreach & Engagement Core continues to work with Detroit Public Schools Community District (DPSCD) to maximize clinical care for its student-athletes. We continue to create community impact through our strategic partnerships with the Michigan High School Athletic Association (MHSAA), the Michigan Department of Health and Human Services (MDHHS) and the Brain Injury Association of Michigan (BIAMI).

Looking toward the horizon of 2022/23, our team will continue pressing forward, constantly striving to be Leaders and Best!

Be well,

Steven Broglio, PhD
Director, University of Michigan Concussion Center



We are unwavering in learning and accepting a diverse membership and fostering an inclusive community where everyone feels a sense of belonging. Varied perspectives fuel the innovation that enacts our mission of maximizing individual and societal health.

Clinical Core

The Clinical Core, overseen by Co-Directors Drs. Andrea Almeida (*upper right*) and Matthew Lorincz (*lower right*), is working closely with the Research Core to support the center's effort to build an integrated infrastructure surrounding concussion care. Patients seen in the clinical setting are commonly recruited into transformative research projects and clinical trials, translating the results into the best clinical practices, treatments and management for patients.

The center's concussion PROM is a novel measure of the concussed patient's experience with the injury and gives clinicians a unique perspective to provide treatment. With promising pilot data collected, the goal is to integrate the measures across Michigan Medicine. The integration is planned, in part, through the continued development of a Concussion Learning Health System (CLHS), an electronic medical record tailored to concussion care that serves as a standardized evaluation and treatment

"As a parent with a medical background, my concussed daughter's care at NeuroSport, facilitated through the U-M Concussion Center, was truly exemplary. The multidisciplinary team delivered personalized care focusing on her injury, rehab specific to her sport and appropriate academic accommodations to aid in her recovery, resulting in her return to school and sport without restrictions."

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platform, with real-time feedback to the clinician allowing for individualized patient management. Over the past year, significant infrastructure development has been achieved to support future dissemination of the PROM and CLHS within Michigan Medicine, U-M Athletics, and University Health Service.



In addition to these efforts, center members began innovative approaches to improve patient outcomes through novel comic-based printed and video discharge instructions for adolescents and parents. Additionally, support from the Joyce and Don Massey Foundation and the Department of Defense has allowed other center members to investigate the use of a novel biomarkers platform to decrease the number of brain CTs performed during clinical evaluations for traumatic brain injury.

"The University of Michigan Concussion Center is a nationally recognized leader in concussion education, treatment and research, and we're fortunate to be able to work with and learn from such a valued partner in our efforts to provide accurate, updated information on concussion management to communities across Michigan."

TOM CONSTAND, PRESIDENT AND CEO, BIAMI



More than **4,000** patients at NeuroSport and Physical Medicine and Rehabilitation (PM&R)

Research Core



The Research Core, led by Dr. JT Eckner (left), continues to serve as the university's hub for concussion-related research. The Concussion Center is at the forefront of cutting-edge interdisciplinary collaboration and biosciences research. This past year, it brought together faculty and clinicians from 19 schools and colleges across campus to collaborate on innovative and ground-breaking research projects, ultimately aiming to improve patient care.

Through strategic collaborations, the Research Core identified foundational projects, including the cross-sectional Alumni Neurological Health Study evaluating the long-term neurological health of former U-M athletes and general students across the age spectrum. This will be the first University of Michigan population-based study, inviting alumni to contribute to the scientific efforts in evaluating key neurological outcomes to help shed light on the relationship between sport participation, concussion history and long-term brain health.

"I am primarily a clinician, but also very interested in improving care through clinically informed research. The Concussion Center has been invaluable in connecting me with experienced concussion research collaborators, allowing us to develop projects that are clinically relevant, easily translatable and methodologically sound. This is exactly what we need to move concussion care forward for our patients."

KATHERINE SEAGLY, PHD,
ASSISTANT PROFESSOR, PHYSICAL MEDICINE &
REHABILITATION, MICHIGAN MEDICINE

Our faculty continue to have a leading role in the CARE Consortium, the most extensive prospective concussion study to date. In 2021, the CARE Consortium received a \$42.65 million award to launch the project's next phase: the CARE/Service Academy Longitudinal mTBI Outcomes Study (SALTOS) Integrated (CSI) Study. This study follows former NCAA student-athletes and military service members previously enrolled in CARE for up to 10 years after graduation to investigate the long-term effects of head impact exposure and concussion. The center's research portfolio is expanding to include an industry-sponsored study at U-M Mott Children's Hospital, investigating a novel, non-invasive hypothermic therapy device (i.e., brain cooling) designed to improve post-concussion outcomes.

The research activities of Concussion Center members are being recognized on numerous levels, including the 2021 Journal of Athletic Training Kenneth L. Knight Award for Outstanding Research Manuscript and the National Athletic Trainers' Association Medal for Distinguished Athletic Training Research.

"We are so fortunate to have partners like the University of Michigan and are always excited to see the programs, information and resources that the Concussion Center generates. We look forward to collaborative opportunities to support and serve people in Michigan impacted by concussions and the provider community who care for them."

LAURA ROWEN, INJURY PREVENTION/MICHIGAN
SAFE KIDS COORDINATOR, INJURY AND VIOLENCE
PREVENTION SECTION, MICHIGAN DEPARTMENT OF
HEALTH AND HUMAN SERVICES



Outreach & Engagement Core

The Concussion Center is building upon established relationships to further engage stakeholders and members across the university, state of Michigan, and nationally.

Over the past 12 months, the center established partnerships with the MDHHS and BIAMI to help raise awareness of concussion education and resources around Michigan. Collaboration with DPSCD continues to grow with additional educational materials that empower the community, coaches, athletes, and families to know "what's next" after a concussion. In addition, the center has formed new partnerships in Detroit, including the one with Marygrove Conservancy, the primary site of U-M School of Education's landmark Detroit P-20 partnership, creating a cradle-to-career educational campus. This network allows the center to share timely and relevant concussion knowledge outside of U-M.

Collaborating with U-M's Institute for Healthcare Policy and Innovation (IHPI), the center published its first white paper entitled "Concussion and long-term neurological health: What does the science tell us?" based on the October 2021 virtual session with experts in concussion and neurodegenerative disease research from across the United States. During the session, experts discussed the current science around concussions, shared best practices to manage symptoms and addressed their long-term health implications.

October 2021 saw the center hold its first (post-COVID) in-person speaker series event with Dr. John Leddy from the University of Buffalo, where he discussed concussion physiology and exercise as a treatment modality. Subsequent events featured a discussion on concussion in youth athletes led by Dr. Stanley Herring from the University of Washington and a conversation around chronic traumatic encephalopathy (CTE) and the long-term effects of sports-related repetitive head impact exposure with Dr. Robert Stern from Boston University School of Medicine.



\$42 million awarded **144 members**

53 publications



“The Concussion Center continues to make important strides in this critical space, elevating the University of Michigan as a national leader in concussion-related clinical care, research, outreach, and engagement. The team has developed strong collaborations with both internal and external stakeholders, catalyzing the intellectual power across the university research community, while positively impacting patients’ neurological health.”

REBECCA CUNNINGHAM, MD
VICE PRESIDENT FOR RESEARCH,
UNIVERSITY OF MICHIGAN
OFFICE OF RESEARCH

Center Highlights

New Faculty

Eleanna Varangis, PhD

Dr. Eleanna Varangis joins the center as a tenure-track assistant professor with the School of Kinesiology. Eleanna is the first faculty hire under the U-M Biosciences Initiative and serves on the center’s Faculty Council. Dr. Varangis’ research centers on the long-term effects of sports-related concussions utilizing advanced neuroimaging techniques, strengthening the center’s leadership in advancing concussion research.



Douglas Wiebe, PhD

Dr. Douglas Wiebe joins the university as a professor of Emergency Medicine and the director of the Injury Prevention Center. Doug has a long track record of leading multi-institutional injury prevention research projects, including the Ivy League-Big Ten Concussion Epidemiology Study. Dr. Wiebe serves as the associate director of Outreach & Engagement, enhancing the center’s societal impact.



New Staff

Tina Chen

Tina Chen joined the center in February 2022 as our managing director. Tina holds a master’s degree from the University of Chicago Crown Family School of Social Work, Policy, and Practice. Before joining the center, Tina was the program manager with Michigan Medicine and the university engagement manager with the Alumni Association of the University of Michigan. With her experience in clinical research and administration in higher education, Tina is well-positioned to lead the center’s operation as we move into the next phase.



New Advisory Board Members

Jarrett Irons, MS

Vice President of Recon Sales, NPI MedLogic, Inc., Distributor for Smith and Nephew



Lindsey Mortenson, MD

Chief Mental Health Officer, Student Life; Associate Executive Director, University Health Service



Henry Paulson, MD, PhD

Lucile Groff Professor of Neurology; Director, Michigan Alzheimer’s Disease Center; Interim Co-Director, Michigan Neuroscience Institute



New Faculty Council Members

Xuming He, PhD

Chair and H.C. Carver Professor of Statistics, Department of Statistics, College of Literature, Science and the Arts



David Millward, MD, MS

Athletic Medical Director; Head Team Physician, U-M Athletics



Eleanna Varangis, PhD

Assistant Professor, School of Kinesiology
(pictured above left)



#6 for concussion research *(Eagle 2021)*

#1 concussion subject matter expert *(Expertscape.com)*

Foundational Partners

Biosciences Initiative
School of Kinesiology
Department of Neurology
Michigan NeuroSport
Department of Physical Medicine
and Rehabilitation

2021-22 U-M Collaborators

Michigan Athletics
College of Engineering
College of Literature, Science, and
the Arts
Eisenberg Family Depression
Center
Exercise and Sport Science
Initiative
Injury Prevention Center
Institute for Healthcare Policy and
Innovation
Michigan Medicine
Michigan Neuroscience Institute
Office of the Vice President for
Research
School of Education
School of Nursing
School of Public Health
University Health Service

External Partners

Brain Injury Association of Michigan
Detroit Public Schools Community
District
Michigan Department of Health and
Human Services
Michigan High School Athletic
Association

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