



2024

# Annual Report

Wisconsin Institute of NeuroScience

**WINS**

Wisconsin Institute of NeuroScience



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# 01

## A Note from the Founder

Shekar N. Kurpad, MD, PhD  
Founding Director



**Our first full year as the Wisconsin Institute of NeuroScience has been an exciting one.**

Combining the unique strengths and expertise of Children's Wisconsin, the Froedtert and the Medical College of Wisconsin health network, the Medical College of Wisconsin and the Clement J. Zablocki VA Medical Center, the Wisconsin Institute of NeuroScience officially launched in November 2023.

Since then, we launched BRAVE, the Midwest's first program designed specifically to treat mild Traumatic Brain Injury in veterans and first responders. A three-week, intensive program to help people return to normal life after brain injury, BRAVE treated its 73rd patient in November and already has outgrown its current treatment space and will be moving to a new, larger location in 2025.

We also created a "WINS scorecard," Ranking things like access to patient care, pipelines for care across age demographics, research efforts and clinical trials, the scorecard represents metrics that we hope will help to define what a neuroscience institute should be nationwide.

This effort is so important to us because it draws on our mission to deliver "lifespan care," which weaves together our partners' strengths in a way that is unlike any other neuroscience center – delivering world-class clinical care, research and education in a unified way, across a person's entire lifespan.

Please continue reading to see how our "wins" are coming together!

**Shekar N. Kurpad, MD, PhD**  
Professor of Neurosurgery  
Senior Associate Dean, Neurosciences  
Founding Director, Wisconsin Institute of NeuroScience

# Who We Are

## About Us

The **Wisconsin Institute of NeuroScience (WINS)** integrates the extraordinary expertise, resources and clinical experience of four partners—Children’s Wisconsin, the Froedtert & the Medical College of Wisconsin health network, the Medical College of Wisconsin and the Clement J. Zablocki Veterans’ Administration Medical Center—into a singular set of offerings. WINS’ goal is to advance neurosciences through world-class clinical care, unique clinical trials, groundbreaking research and innovative education.



## Vision and Values

To advance the neurosciences through world-class clinical care, unique clinical trials, groundbreaking research and innovative education.

Collaboration  
Commitment  
Compassion  
Diversity  
Equity

Expertise  
Honesty  
Inclusiveness  
Integrity  
Mentorship

Professionalism  
Respect  
Service  
Transparency  
Trust

## Mission

### 1.

Deliver world class, sub-specialty, adult and pediatric neurological care that is patient centered, evidence informed and value based.

### 2.

Conduct research that advances the science of neurologic disease and has a positive translational impact on clinical care.

### 3.

Promote an environment of education and scholarship for trainees, faculty and staff.

### 4.

Improve the health of our community and beyond.





02



# Our goal is to gain national recognition as measured by:

## Exceptional Patient Care

Grow market share, achieve top-decile quality and outcome metrics across the neurosciences

## Clinical Trials

Participation on par with other top ten neuroscience institutes

## Research

Increase funding, grow program sizes, increase physician/researcher access

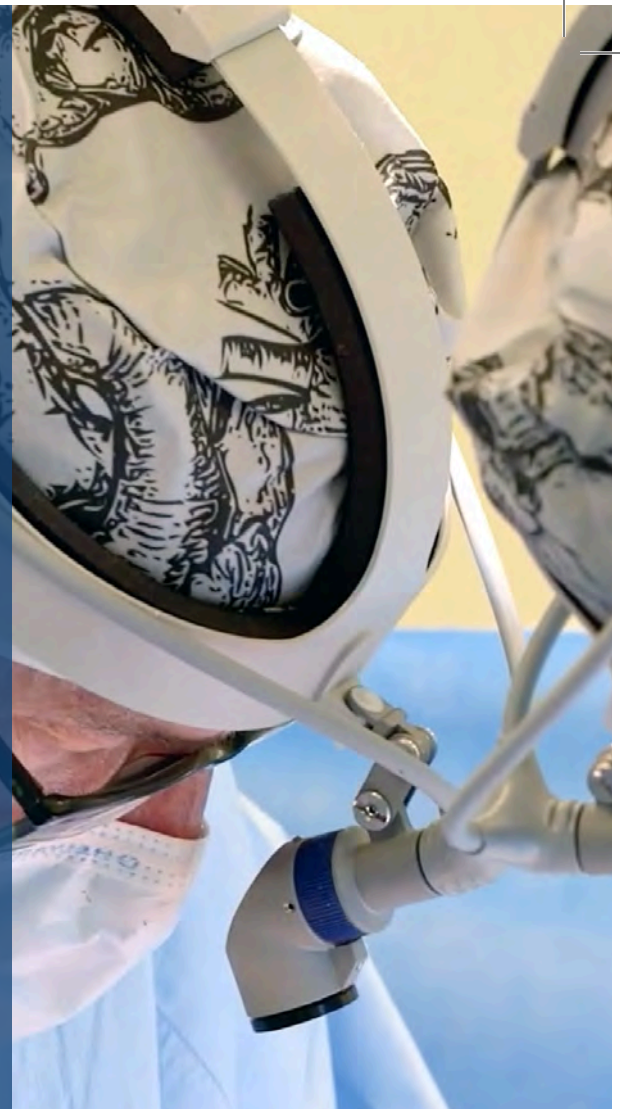
## Lifespan Neurological Care

Focused on Epilepsy, Brain/CNS (Neurotrauma), Stroke, followed over time by our additional pillars

## Neuroscience Education

Increase number of residencies and fellowships across the neurosciences, expand training for APPs, nurses, therapists and more

## Increasing Philanthropic Donations



All faculty, physicians, specialists and care team members who participate in neurological clinical care, trials and research at our partner facilities are members of the Wisconsin Institute of NeuroScience.

## DEPARTMENTS

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Physical Medicine and Rehabilitation  
Psychiatry & Behavioral Medicine (Adult & Pediatric)  
Neurology (Adult & Pediatric)

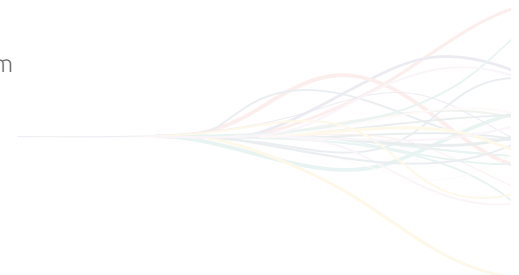
Neuroscience Research Center  
Neurosurgery (Adult & Pediatric)

## TEAMS

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Acoustic Neuroma Program  
ALS Clinic  
Aphasia Therapy Program (IPAT)  
Brain Injury Program  
Brain & Spine Tumor  
BRAVE Program  
Center for Cervical Myelopathy  
Chiari Malformation Program  
Chiropractic  
Comprehensive Epilepsy Center  
Deep Brain Stimulation  
Epilepsy Surgery  
Headache Medicine  
Hyperbaric Medicine Unit

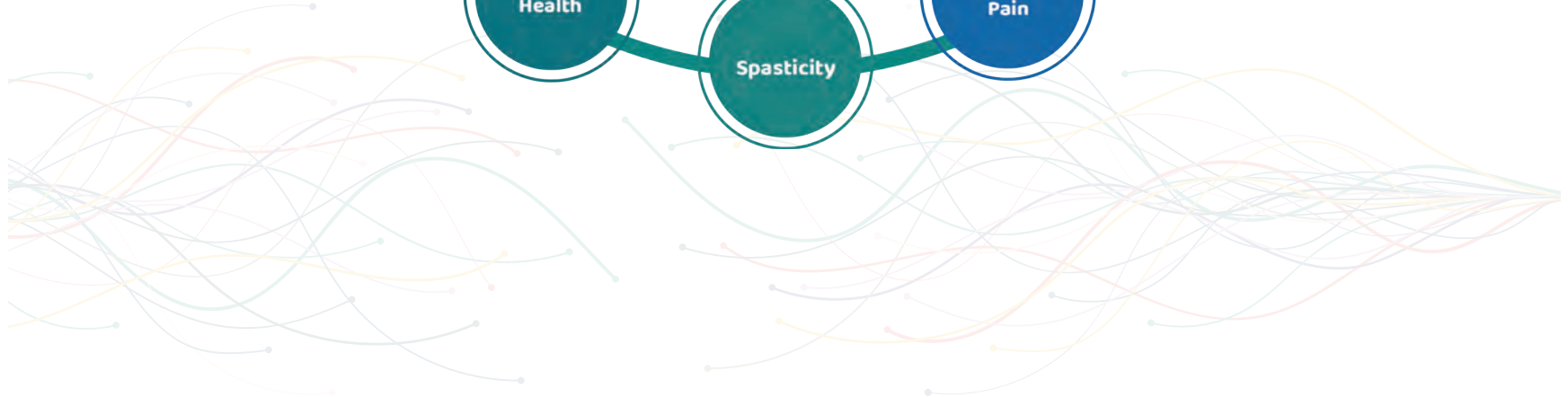
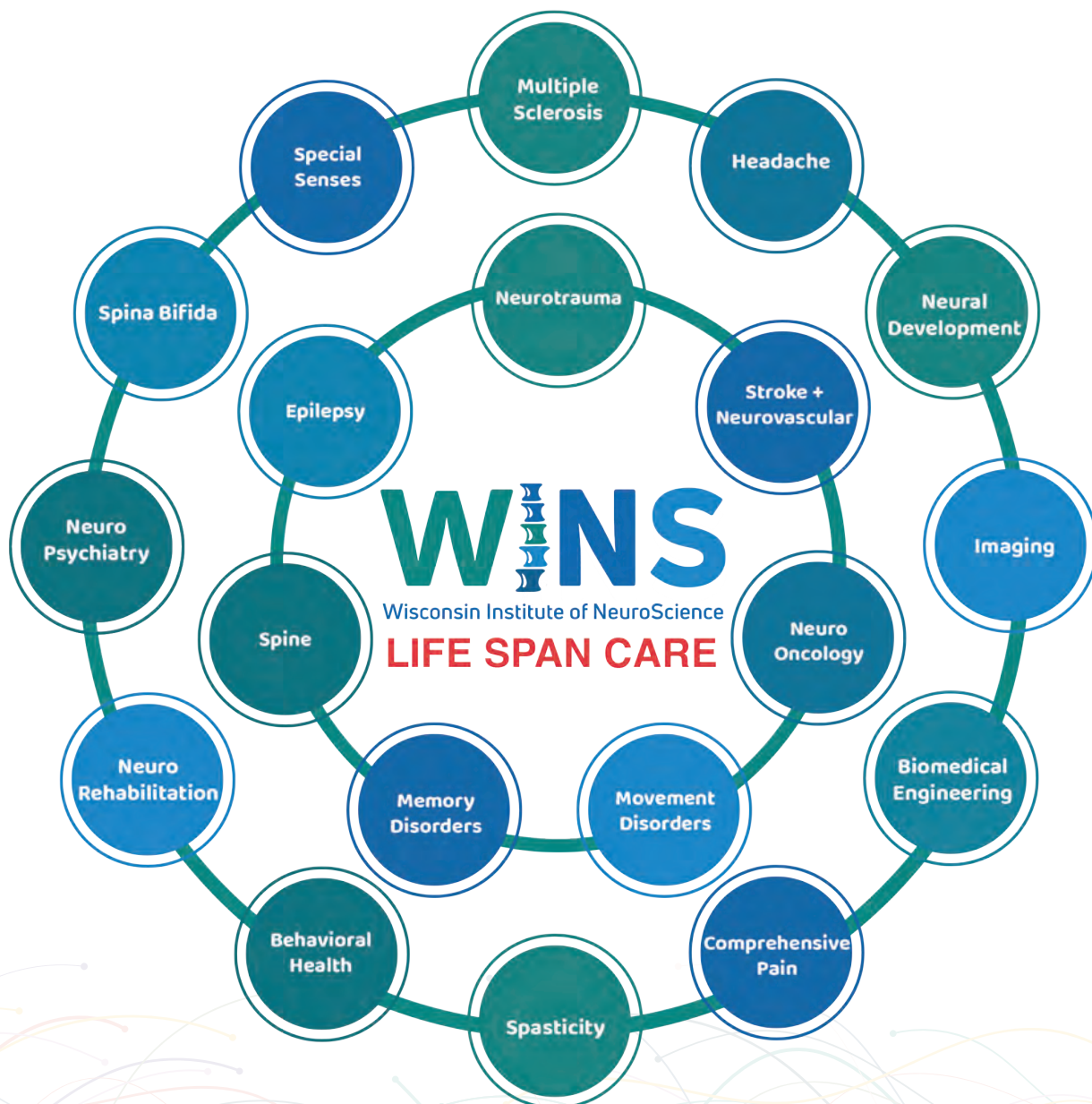
Memory Program  
Neuromuscular Disorders (Adult & Peds)  
Neuro-oncology Program (Adult & Peds)  
Neuro-ophthalmology Program  
Neuropsychiatry  
Neuropsychology  
Neuroradiology  
Parkinson's & Movement Disorders Program  
Pituitary Disorders Program  
Sleep Disorders Program  
Spinal Cord Injury Center  
Sports Concussion Clinic  
Stroke Program





# Life Span Care

The Wisconsin Institute of NeuroScience stands out because it delivers patient care, clinical trials and research that spans the entire life cycle. To achieve that, WINS was built on the following pillars and unique specialties.



# Neuroscience Research Center

Lezi E, PhD  
Cecilia Hillard, PhD  
Shekar Kurpad, MD, PhD  
Penny Lam, PhD

Chris Olson, PhD  
Kajana Satkunendrarajah, PhD  
Shelly Timmons, MD, PhD  
Jennifer Tuscher, PhD

## MCW Department of Neurology

Elham Emad Abushanab, MD  
Samuel J. Adams, MD  
Naveen K Addagatla, MD  
Omar M. Alkhatib, MD  
Joseph L Amaral, PhD  
Folefac Aminkeng, MD  
Andrew J Anderson, PhD  
Rene Andrade-Machado, MD  
Piero G Antuono, MD  
Hatim Attar, MBBS  
Paul E Barkhaus, MD  
Nancy Bass, MD  
Humberto A Battistini, MD  
Patrick M Bauer, MD  
Jeffrey R Binder, MD  
Karen A Blindauer, MD  
Diane S Book, MD  
Ryan T Brennan, DO  
Alissa Butts, PhD  
Chad Carlson, MD  
Rachel Joy Churchill, PhD  
Marek Cierny, MD  
Michael P Collins, MD  
Jennifer M Connelly, MD

Anthony N Correro, PhD  
Sheila Rane Eichenseer, MD  
Nida Faheem, MD  
Raquel Farias-Moeller, MD  
Dominic B Fee, MD  
Leonardo Ferdinando, PhD  
Kaylene Fiala, MD  
Juan Jose Figueroa, MD  
Jonathan W Florczak, MD  
Ekokobe Fonkem, DO  
Malgorzata Franczak, MD  
Danielle M Glad, PhD  
Milena Y. Gotra, PhD  
Elias David Granadillo Deluque, MD  
Corinne Guilday, PsyD  
Stephanie Hassouneh, MD  
Amy Heffelfinger, PhD  
Ann K Helms, MD  
Sam I Hooshmand, DO  
Eric Jackowiak, MD  
Julie K Janecek, PhD  
Pradeep Javarayee, MD  
Elise Johnson, MD

Virginia Kaperick, MD  
Jennifer I Koop Olsta, PhD  
Ellen F Krueger, PhD  
Kathy Kujawa, MD  
Melissa A Lancaster, PhD  
Joshua J Larocque, MD  
Marc A Lazzaro, MD  
Ryan M Lee, MD  
Brittany A. Legg, MD  
Xiaoyan Li, PhD  
Shih-Hsuan Lin, PhD  
Sara Maria Markuson, PhD  
Joshua E Medow, MD  
Niyati Mehta, MD  
Lauren E Miller, PhD  
Abdul S Mohammed, MD  
Lileth Joy H Mondok, MD  
Caitlin Moore, MD  
Michelle Loman Moudry, PhD  
James K Murtha, MD  
Ahmed Zayed Obeidat, MD  
Mohamed Osman, MD  
Vishal B. Pandya, MD  
Danish Pardhan, MD

Sydney E Park, MA  
Hema Patel, MD  
Namrata D Patel, MD  
Sara B Pillay, PhD  
Shannon Pollock, MD  
Manoj Raghavan, MD  
Bernd F Remler, MD  
Gregory E Rozansky, MD  
Fallon C Schloemer, DO  
Priyanka P Shah, PhD  
Shamshad MD Shahrukh, MD  
David Shirilla, DO  
BraRysheyia Simpson, PsyD  
Avantika Singh, MBBS  
Haley Skymba, PhD  
Sara J Swanson, PhD  
Erickson F Torio, MD  
Laura Umfleet, PsyD  
Aditya Vuppala, MD  
Rebecca Wu, MD  
Eunji Yim, MD



# MCW Department of Neurosurgery

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Elsa Arocho-Quinones, MD  
Benjamin Brett, PhD  
Matthew Budde, PhD  
Stephanie Cheok, MD  
Rupen Desai, MD  
Andrew Foy, MD  
Kunal Gupta, MD, PhD  
Hirad Hedayat, MD  
Dan Heffez, MD, FRCS  
Bruce Kaufman, MD  
Irene Kim, MD  
Antje Kroner-Milsch, MD, PhD

Max Krucoff, MD  
Shekar Kurpad, MD, PhD  
Max Lee, MD  
Sean Lew, MD  
Michael McCrea, PhD  
Timothy Meier, PhD  
Wade Mueller, MD  
Tugan Muftuler, PhD  
Lindsay Nelson, PhD  
John Nerva, MD  
Peter Pahapill, MD, PhD  
Hernan Rey, PhD

Kajana Satkunendrarajah, PhD  
Saman Shabani, MD  
Grant Sinson, MD  
Karen Swartz, MD  
Shelly Timmons, MD, PhD  
Aditya Vedantam, MD  
Marjorie Wang, MD, MPH  
Christopher Wolfla, MD  
Narayan Yoganandan, PhD  
Nathan Zwagerman, MD

# MCW Department of Physical Medicine and Rehabilitation

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Diane Braza, MD  
Charlotte Ball, MD  
Denis Castillo, MD  
Jeffrey Cheng, MD  
Peter Connelly, MD  
Chen Cui, MD  
Heather Curtiss, MD  
David Del Toro, MD  
Matthew Durand, PhD  
Mark England, MD  
Ellie Farr, MD

Karin Goodfriend, MD  
Carrie Jones, MD  
Judith Kosasih, MD  
Tom Kotsonis, MD  
Kenneth Lee, MD  
Erin McGonigle Ketchum, MD  
John McGuire, MD  
Whitney Morelli, PhD  
Vaishnavi Muqeet, MD  
Andrew Nelson, MD  
Mary Elizabeth Nelson, DNP

Mitchell O'Neill, MD  
Olivia Park, MD  
Carley Sauter, MD  
Anjum Sayyad, MD  
Bindiya Shah, DO  
Lauren Shuda, MD  
Vladimir Suric, MD  
Chris White, MD  
Jennifer Yacub Martin, MD  
Kimberley Zvara, MD

# 03

## Introducing the WINS Scorecard

The WINS Scorecard highlights our dedication to excellence across patient care, research and education. With an impressive amount of active clinical trials, millions in philanthropic contributions, and robust residency and fellowship programs, the scorecard illustrates WINS' leadership in advancing the neurosciences and fostering community support.

## \$14.3m

Philanthropic support reached an impressive \$14.3 million, reflecting the strong backing of the community and stakeholders. These funds are vital for sustaining WINS' research, enhancing educational offerings and delivering exceptional patient care.

## 111

WINS is actively conducting 111 clinical trials, demonstrating its commitment to advancing groundbreaking treatments and therapies. These trials represent a significant investment in research aimed at improving patient outcomes and addressing complex neurological conditions.

## 179

WINS supports a total of 179 residents and fellows across its programs, including 136 residents and 43 fellows in adult and pediatric specialties. These programs provide rigorous training and mentorship, ensuring the continued growth of skilled professionals dedicated to advancing neurological care and research.





# WINS Scorecard

The following scorecard covers data up until 12/20/2024. All measures are for Adult care unless specified otherwise.

Strategic Goal	Measure	FY 2024 Baseline	FY 2025 YTD
<b>Achieve Exceptional Patient Care</b>	Inpatient Market Share	21.7%	21.7%
	Inpatient Market Share (Peds)	66.4%	66.4%
	Inpatient Mortality Index	0.63	0.57
	Length of Stay (LOS) Index	0.79	0.79
	30-Day Readmission Index	9.3%	11%
	Percent of New Patients Seen Within 10 Days	42.9%	42.1%
<b>Clinical Trials</b>	<b>Measure</b>	<b>FY 2024 Baseline</b>	<b>FY 2025 YTD</b>
	Active Clinical Trials	111	111
	Clinical Trial Patient Accruals	533	533
	Non-Trial Clinical Research Studies	144	144
<b>Redefine Neuroscience Education</b>	<b>Measure</b>	<b>FY 2024 Baseline</b>	<b>FY 2025 YTD</b>
	Number of Residency/Clinical Fellowship Programs	Residency: 8 Fellowship: 20	Residency: 8 Fellowship: 19
	Number of Residency/Clinical Fellowship Programs (Peds)	Residency: 2 Fellowship: 3	Residency: 2 Fellowship: 4
	Number of Residents/Clinical Fellows	Residency: 115 Fellowship: 29	Residency: 122 Fellowship: 28
	Number of Residents/Clinical Fellows (Peds)	Residency: 14 Fellowship: 12	Residency: 14 Fellowship: 15
	Number of Neurosciences Doctoral Program / Interdisciplinary Doctoral Program Students	5	6

# WINS Wins

WINS "Wins" showcase the incredible progress made throughout the year, highlighting advancements in research, patient care and education. These milestones reflect a commitment to innovation, collaboration and excellence in neuroscience, driving meaningful change and improving lives.

# 04





## Leading the Way in Clinical Trials

One of WINS' overarching goals is to be a leader in clinical trial participation nationwide by 2030. That entails growing to be one of the top ten locations nationwide for participation – as well as being No. 1 in Wisconsin and the Midwest – by 2030. Achieving such a goal will require an increase of nearly four times current trial numbers at the adult level, as well as expansion of pharma and payer opportunities at the pediatric level.

Some steps to reach those goals already are underway: WINS established a Clinical Trials Office under the direction of Dr. Michael McCrea to drive participation and raise our profile, capability assessments have begun to allow for planning to ramp up toward participation goals, and many of our teams already are recruiting new faculty to drive research and numbers.

Many new trials already are underway, with some already recruiting patients. And Froedtert & MCW are one of the leading locations for trial participations amongst spinal cord injury patients in the world – of the world's two, active interventional trials for acute SCI, we are the highest enroller in one trial and the second-highest enroller in the other; we also stand out as one of the only sites in the world to offer 24/7 enrollment.

# 24/7

Froedtert & MCW are among the top global enrollers for spinal cord injury trials, with 24/7 patient access to groundbreaking research.

# 2030

By 2030, WINS aims to quadruple its clinical trial numbers and rank among the top 10 nationwide and No. 1 in WI and the Midwest in trial participation.



## Advancing Glioblastoma Treatment

An ongoing phase 1 trial into the activity safety and tolerance of gallium maltolate (GaM) in individuals with relapsed, treatment-refractory glioblastoma, has reached its third and final round of this phase. It recently enrolled its 13th patient and is ahead of expected accrual.

The novel therapy, for which MCW is the lone phase 1 site, is based on research also developed at MCW. It evolved from years of research led by Drs. Christopher Chitambar and Kathleen Schmainda, in which they found that GaM significantly slowed the growth of glioblastoma while also reducing its size.

The goal of the study is to develop GaM as a new, oral treatment for people with glioblastoma whose brain tumors have relapsed or progressed despite initial treatment. It's based on lab research that shows GaM can shrink glioblastoma growth in animals. Phase 1 is about determining GaM dosage tolerance and whether it also will shrink tumors in humans.

"What truly stands out about this study is that so much of the work has been completed right here at MCW – this may be the first drug at MCW to truly go from bench to bedside," said Dr. Connelly. "Results so far are very promising and point to the need for further investigation."

Phase 2 of the trial is expected to begin soon.

# 2024 Imagine More Dinner

Hundreds of people from Milwaukee’s business, health care and philanthropic communities gathered at Milwaukee’s Discovery World for the eleventh annual Imagine More Dinner on June 25. The dinner, which celebrates groundbreaking research and innovative treatments that bring hope to people coping with neurological diseases and injuries, was chaired by MCW Board of Trustees members Jon and Ann Hammes.

This year’s event, which focused on stroke – from immediate response to treatment, recovery and long-term outcomes – raised more than \$800,000 for the Neuroscience Research Center (NRC).

Videos shown throughout the evening highlighted the need for more research as well as the deeply personal ways that stroke affects people of all ages. Those videos helped to encourage the roughly 400 people in attendance to commit their financial support to the ongoing efforts of the NRC.



Dr. Cecilia Hillard (left) received the 2024 Neuro Hero Award.

## Stroke Process Improvements

>50%

The percentage of eligible stroke patients that receive life-saving IV thrombolytic treatment in under 30 minutes at Froedtert.

An interdisciplinary team of staff, providers, and EMS convened in 2017 to reduce the time from Froedtert Hospital Emergency Department arrival to initiation of IV thrombolytic. At that time using structured quality improvement techniques (Six Sigma, which is used for all of our Stroke Process improvement efforts), door-to-needle (DTN) was running nearly 60 minutes.

The hospital established a goal of reducing average DTN times on eligible patients (i.e., blood pressure within recommended parameters, patient family didn’t refuse, team able to establish eligibility for thrombolytic, no other medical priorities needed attention first –like respiratory distress and intubation, etc.). They now maintain more than 50% of eligible patients receiving IV thrombolytic in under 30 minutes and

have for 7 years and are frequently recognized as having the fastest DTN times in the state and among the fastest in the nation.

Work continues at the Menomonee Falls and West Bend hospitals, which now meet the goal of DTN in 60 minutes or less – with many cases meeting the stretch goal of 45-30 minutes.

Those hospitals also continue to improve times for patients being transferred to Froedtert Hospital when they experience a large vessel occlusion that requires thrombectomy. A multidisciplinary team will be formed including ED Physicians, Radiologist, Neurointerventionalist, and other team members to identify areas of improvement and decrease door in to transfer time for eligible patients.



## Stroke Study

**Dr. Hiram Hedayat and his team are taking part in a new**, phase II, randomized, placebo-controlled, double blind, multicenter clinical trial evaluating the drug Scp776 for the treatment of Acute Ischemic Stroke in people undergoing endovascular thrombectomy (EVT). The trial, from SilverCreek Pharmaceuticals, is evaluating the neuroprotective capacity and safety of the drug with two parts: a sequential dose escalation, followed by a dose expansion.

During an acute injury, cells can go into apoptosis or necrosis. IGF-1 enhances apoptotic escape, giving cells a chance for recovery. Scp776 is a targeted, insulin-like growth factor (IGF-1) fusion protein designed to mitigate cellular damage. It's administered during the acute phase of injury, within six hours of EVT and 24 hours of last well seen time.

Scp776 was well tolerated in healthy adults in Phase I studies.

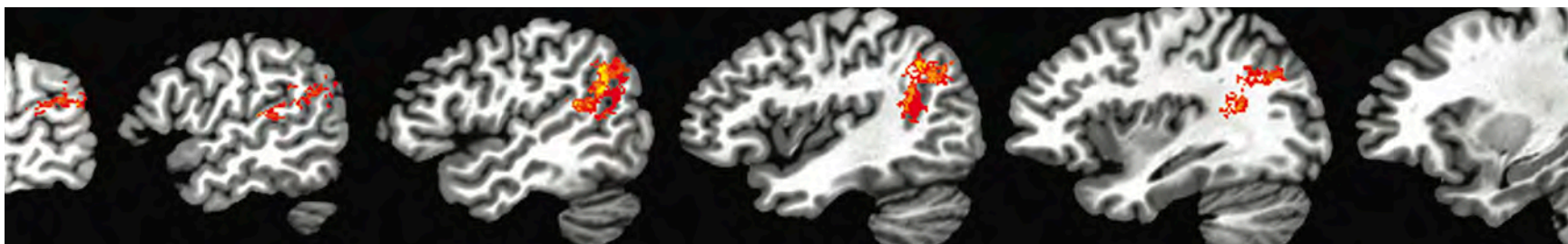
## Sound Waves Reduce Tremors

**Treating essential tremors or tremors in people with Parkinson's disease** by creating a lesion in a part of the brain that transmits tremor signals has decades of proven success. However, it requires a surgeon to drill through the skull and insert a probe deep inside the brain.

Focused ultrasound (FUS), soon to be available at Froedtert & MCW, increases the precision of thalamotomy with real-time MRI guidance while also making it a non-invasive, outpatient procedure.

Using MRI to target a specific location within the brain, FUS then allows a the surgeon to use ultrasound technology to create a lesion at the exact location where tremor signals can be disrupted.

"For people whose tremors can't be controlled by medication, or for whom other anti-tremor options won't work, focused ultrasound is a great option," said Dr. Kunal Gupta. "Reductions in tremors are immediate and can be long-lasting."

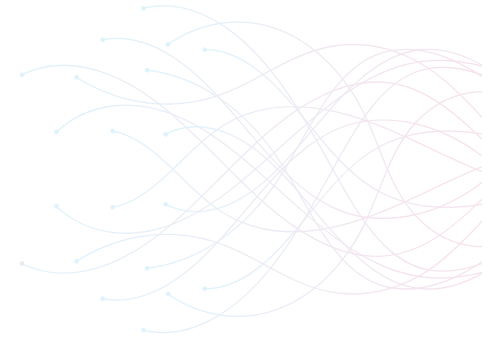


## How Gut Microbiome May Affect Parkinson's Therapies

**Growing evidence shows that gut dysbiosis** – changes in composition or metabolic activity of bacteria in the gut – is linked to the genesis and progression of Parkinson's disease. Of particular interest are short-chain fatty acids (SCFAs), metabolites that are produced via bacterial fermentation of dietary fibers and starches. This is because the microbiome of people with PD shows decreased levels of bacteria that produce SCFA, as well as less diversity of those bacteria.

SCFAs affect the gut-brain axis in many ways. However, how they may affect PD remains largely unknown. MCW researchers Drs. Balaraman Kalyanaraman, Gang Cheng and Micael Hardy are working to change that.

In a recent study, they found evidence suggesting that SCFAs may play an important role in regulating neuroinflammation of PD. However, they say additional research is needed to determine the full extent of SCFAs and their pro- and anti-inflammatory roles.



## Tackling the NFL LONG Study

The NFL LONG Study aims to learn more about head trauma and long-range neurologic health, and improve the diagnosis and treatment of neurologic disease associated with repetitive neurotrauma. This project is led by a team of experts from Harvard Medical School, the University of North Carolina at Chapel Hill (UNC), and the Medical College of Wisconsin (MCW), which is represented by Dr. Michael McCrea (co-principal investigator) and Dr. Benjamin Brett (co-investigator).

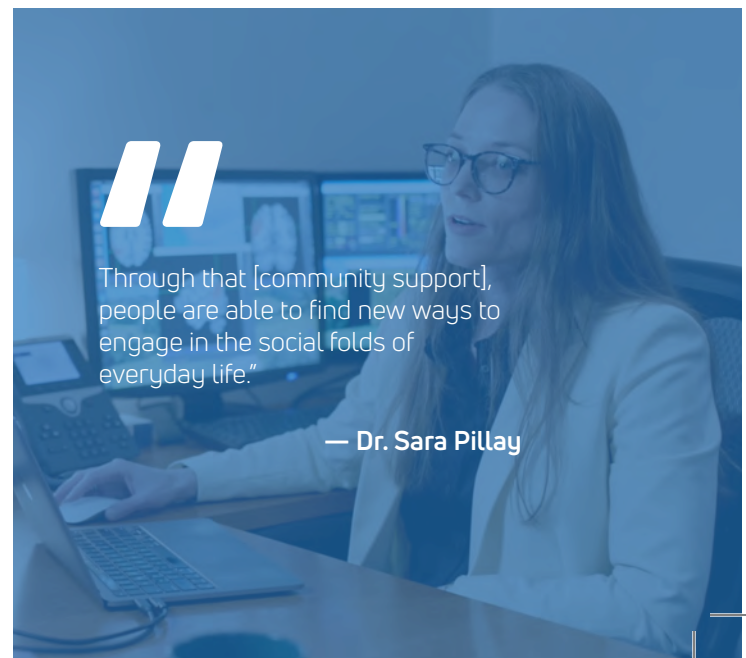
To accomplish the above goal, the study was designed in two phases. Phase I is the General Health Survey – an in-depth health history survey that has been completed by nearly 2,000 former NFL players and resulted in 18 peer-reviewed publications. Primary findings from the General Health Survey revealed that former NFL players are very comparable to the general population across a number of functional domains (e.g., mental health, physical health) and that a select portion of individuals with a history of notably higher number of prior concussions (10 or more) may be at greater risk for adverse long-term health outcomes such as mild cognitive impairment, stroke and depression. Findings from the study have also shown that non-head injury, moderating factors such as health and lifestyle behaviors, cardiovascular health, and psychosocial factors play a critical role in the long-term neurological health of former players.

Phase II is currently underway and involves comprehensive assessment over a three-day, in-person visit at UNC or MCW. Former NFL players ages 50-70 years old and matched controls complete neurocognitive testing, neuroimaging (advanced MRI and PET imaging), a body composition scan (DEXA), biospecimen collections, self-report questionnaires, balance testing, and biometric data collection via a Fitbit. The study has completed Phase II visits for 164 former players and 18 controls. Finally, there is a basic science arm of the study being led by team members at Harvard Medical School investigating the physiology, prevention, and possible treatments for neurological problems seen in former NFL players; with the intention of translating therapies that appear most promising into future clinical trials.

## Community Support for Aphasia

In addition to the struggle to simply communicate, many people with **aphasia** feel a stigma even as they recover because their speech is no longer normal. Fortunately, community support groups can help to empower those with trouble speaking.

The Aphasia Community Group, a support group at Froedtert Bluemound Campus, gives participants the opportunity to practice speaking, as well as hear others speak with aphasia so they know they're not alone and can build confidence.



Through that [community support], people are able to find new ways to engage in the social folds of everyday life."

— Dr. Sara Pillay





## \$3mm

The U.S. Department of Defense issued a \$3 million continuation award to support neurosurgery research.

# Department of Defense Continues Support of Neurosurgery Research

**Dr. Narayan Yoganandan recently received** a \$3 million continuation award from the U.S. Department of Defense to support research he began in 2021. The study, “Behind Armor Blunt Trauma Consortium: Injuries, Mechanisms and Biomedical Injury Criteria,” has received \$8 million in support from the DOD.

Dr. Yoganandan is the principal investigator and Dr. Brian Stemper, from the Joint Department of Biomedical Engineering, is the co-principal investigator for the consortium study, which consists of researchers at the Medical College of Wisconsin, University of Virginia and Duke University. The US Army Aeromedical Research Laboratory is the overseeing institution from the DOD.

The multiyear research study is aimed at developing regional human tolerance limits to assist in upgrading current or developing newer standards, assist in the design and development of newer and lighter body armors, and help improve Warfighter safety against current and emerging threats.

## Preventing Epilepsy

**The first surgery in Wisconsin for interneuron cell therapy to treat epilepsy** took place in July at Froedtert & MCW. The trial (NTE001), led locally by Principal Investigator Dr. Sean Lew, in conjunction with Drs. Manoj Raghavan and Kunal Gupta, and a broad team of specialists, involves implantation of human MGE-type inhibitory GABAergic interneurons that secrete neurotransmitters that suppress seizures.

The goal is to develop a targeted, non-tissue-destructive, long-lasting therapy that is safe and effective for drug-resistant epilepsy.

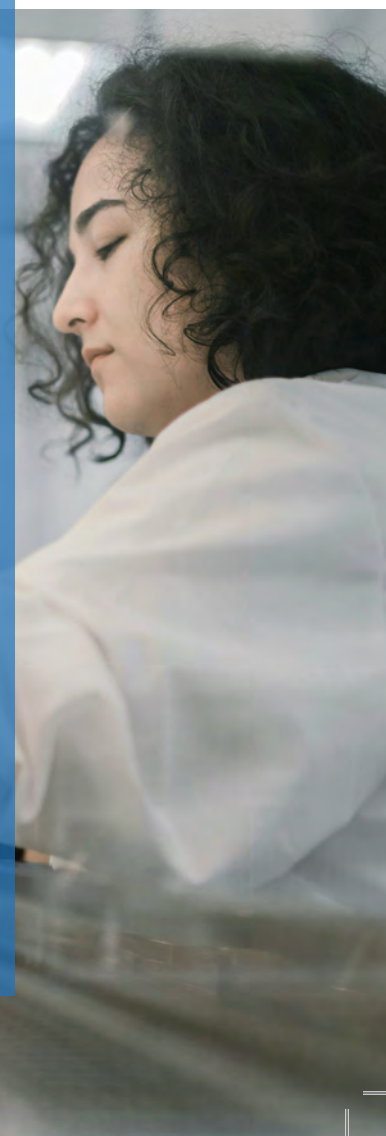
“Currently, the trial focuses on mesial temporal sclerosis, which causes the hippocampus to stop working and increases the likelihood of future seizures,” said Dr. Lew. “Other available treatments are destructive to the hippocampus,

thus causing people to lose memory, or they’re less effective at inhibiting seizures.”

The trial is intended to produce the best of both worlds – reducing the likelihood of seizures and protecting brain cells within the hippocampus. It requires 10 micro-injections – 1/1000th of a milliliter – of interneuron cells across a roughly 20-millimeter section of the hippocampus; Those cells then travel through the hippocampus, working to decrease seizures without affecting memory.

At three months post surgery, the first patient had gone one month without a seizure, which represents a significant improvement from baseline.

A second patient underwent the surgery in December.





# 25

Since the BRAVE program began in April 2024, the program has graduated 25 participants.

## BRAVE

(Building Resilience through Action in Veterans & First Responders)

The BRAVE program at the Wisconsin Institute of NeuroScience is a Traumatic Brain Injury recovery program specifically designed for military veterans and first responders. An intensive, outpatient program, BRAVE focuses on getting people with symptoms of brain injury diagnosed and treated so they can return to normal life.

BRAVE is the first program of its kind in the Midwest and was created through a \$12.5 million gift from Avalon Action Alliance, a post-trauma wellness non-profit helping veterans, first responders and their families gain control over mental illness and brain injury issues.

Avalon specifically selected WINS to bring its services to the Midwest due to the remarkable history of medical treatment development and research of brain injuries at Froedtert & the Medical College of Wisconsin.

Since its first participant began treatment in April 2024, BRAVE has graduated 25 people from the program – with another 78 having completed intake evaluations and more than 200 undergoing the evaluation process.



## McCrea Recognized Worldwide for TBI Research

A bibliometric analysis of global, peer-reviewed, scientific literature on Traumatic Brain Injury found Dr. Michael McCrea to be one of the most published and most cited authors on the subject.

*Neurochemistry International* noted Dr. McCrea's ranks between the years 2000 and 2022:

- **11 in the world** for highest number of TBI-related publications
- **3 in average citation rate**

Dr. McCrea also wrote two of the 20 most cited papers from 2000 to 2022.





## Appalachian Trail Donation to WINS

MCW Board of Trustees member **John Grogan** recently donated \$10,000 to WINS following his successful completion of the Appalachian Trail.

"The hike was awesome," Grogan said. "Both more challenging and more rewarding than I could have imagined."

Grogan hiked the more than 2,000 mile trail to raise money for spinal cord injury (SCI) research on behalf of a former employee of his who suffered an SCI in August 2023, while vacationing with his family in northern Wisconsin. Grogan, who had recently retired, immediately jumped in to help coordinate a carpool to support the family with the many appointments his former employee, Greg Steinbrenner, now faced.

In total, Grogan raised nearly \$80,000, which also will help to support Steinbrenner's care.



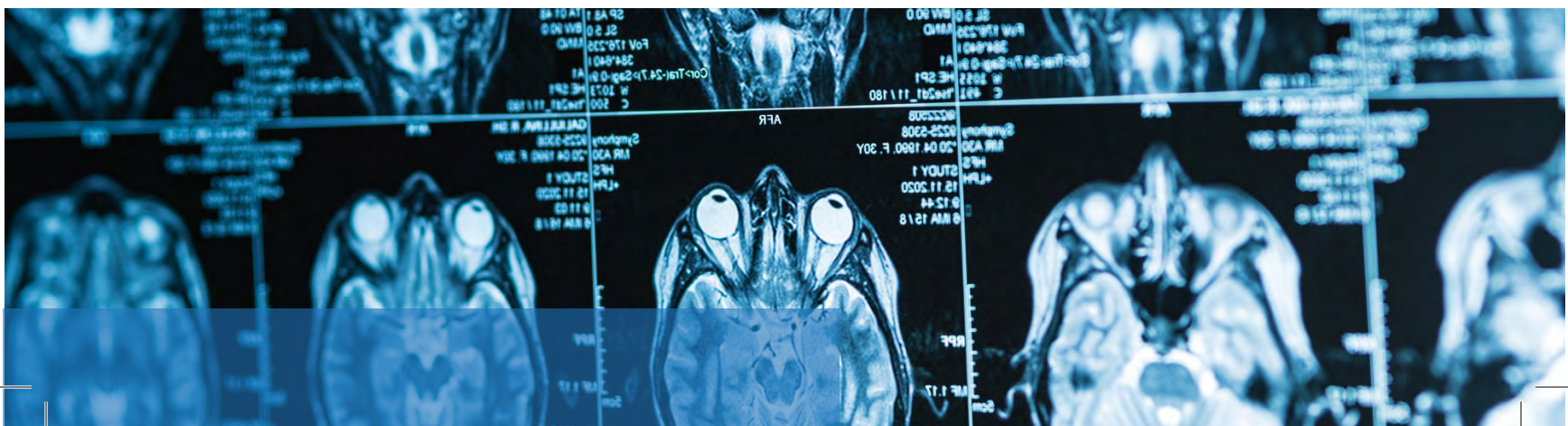
## Restoring Breathing After SCI

The **Satkunendrarajah laboratory** is at the forefront of exploring novel preclinical approaches to enhance ventilatory function in the chronic stages of cervical spinal injury. Current research targets populations of understudied spinal interneurons and respiratory circuits, aiming to uncover new pathways for breathing recovery and improved function.

Dr. Kajana Satkunendrarajah and her graduate student, Alli Brezinski, have recently received a prestigious NIH research supplement. This significant achievement will enable them to delve deeper into the role of unique populations of spinal neurons, in particular di3 interneurons, in promoting recovery of breathing function after injury.



This research not only advances understanding of spinal interneurons, but also holds the potential to develop therapeutic interventions that can make a real difference in the lives of individuals with spinal cord injuries. Supported by VA-ORD (to Drs. Satkunendrarajah and Shekar Kurpad) and NIH funding, this study is poised to yield groundbreaking findings.





# Increasing Diversity in Trials

**Dr. Ahmed Obeidat is working to increase diversity** of participants in multiple sclerosis (MS) trials. Currently, he's leading MCW's participation in Phase IV of the CHIMES (CHaracterization of ocrelizumab In Minorities with multiplE Sclerosis) study, which is evaluating the drug ocrelizumab specifically among Black, Hispanic and Latinx people with MS.

However, he says it's not enough to just increase participants of different races in studies.

Currently, participants must still be fairly young to participate in a study and they can't have any physical impairments.

"We're actually doing more harm than good by restricting those people because we can't see how a treatment might impact them. And, if they're willing to help us further the science of medicine, we should be including them."

Dr. Obeidat has several trials currently underway for MS, which he says could benefit from additional participants, such as the TREAT-MS (Traditional Versus Early Aggressive Therapy for Multiple Sclerosis) trial and a multi-center, longitudinal, open-label, single-arm study to track cognitive processing speed changes in people whose MS has relapsed following treatment with ozanimod.



Requirements for an MS trial are extremely restrictive...we know we need more participants from different races, but that is not enough. We must also increase participation among people from all age groups and levels of physical capabilities."

— Dr. Ahmed Obeldat

## Celebrating 50 Years

**The Department of Neurology celebrated its 50th anniversary** on Friday and Saturday, Sept. 20-21. The event began with a special grand rounds, featuring a historical timeline of the department by Dr. Paul Barkhaus. The next day, they hosted a symposium covering advances across the many sub-specialties of neurology, followed by a gala at the Milwaukee Public Museum.

Created in 1974, under the leadership of Dr. Michael McQuillen, Neurology quickly grew in terms of faculty and sub-specialties. It also established MCW's first medical ethics committee, laying the groundwork for the compassionate, ethical care that defines the department to this day.





## Mapping the Brain

**The Froedtert & MCW Magnetoencephalography (MEG) Program** was established in 2008 and remains the only clinical MEG program in Wisconsin. This sophisticated diagnostic tool can be invaluable for localizing epileptic regions of the brain as well as functionally important brain areas in patients with drug-resistant epilepsy who are being evaluated for surgical treatment.

The MEG program is not only a distinguishing element of our clinical Epilepsy Program, it also supports a variety of research programs on brain physiology in neurological disorders as well as healthy subjects. It also collected data used for the NIH-funded Epilepsy Connectome Project.

Using the MEG, the Epilepsy team, led by Dr. Manoj Raghavan, also is exploring different methods to map language areas of the brain. The scanner records brain activity that can then be evaluated with high spatial and temporal resolution. Their findings already represent substantial progress in MEG language mapping and are being put together for publication.

Froedtert Hospital recently committed to replacing the 16-year-old MEG scanner. The new hardware and accompanying software packages will bring state-of-the-art MEG scanner technology to Wisconsin. The program also receives referrals from epilepsy surgery programs in Illinois and Iowa since there are no facilities with MEG scanners in those states.

## Global Connections

**The Multiple Sclerosis and Neuroimmunology team** is very active globally. In addition to participating or, at times, leading global clinical trials or registries, the team pursues active collaborations worldwide.

Dr. Obeidat has established a collaboration with Jordan University of Science and Technology, where medical students exchange takes place. Students from various countries, including Jordan, Egypt, Saudi Arabia and Pakistan, frequently visit and rotate in the neuroimmunology and MS clinics.

The team's efforts are supported by the global health office, led by Tiffany Frazer and facilitated by Melisa Hodzic. They also are exploring a large collaboration with Qatar University.

Dr. Obeidat also served as a judge for one of the most prestigious scientific research awards in the Arab World. Further, he has been invited as an international faculty to deliver a presentation on MOG antibody-associated disease at the upcoming 9th annual MENACTRIMS meeting to be held in Jeddah, Saudi Arabia. He also was invited to lead a nursing session on brain health in Saudi Arabia and has delivered a global webinar on clinical trial design and pitfalls surrounding the implementation of clinical trials in the real-world setting.

Meanwhile, members of the team also recently gave scientific presentations at the 2024 European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS) conference in Copenhagen, Denmark.





## Notable WINS Initiatives 2024

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### A Strong Year for the Neuroscience Research Center

**2024 was an extraordinary year for the Neuroscience Research Center (NRC)** and its goal of advancing neuroscience research, education and collaboration.

One of the most impactful achievements was the relaunch of its seminar series, "Neuroscience & Justice." Fostering critical discussions at the intersection of neuroscience and societal issues, seminars covered topics from trauma to mental health, addiction and more, and included presentations from MCW, Marquette University Law School, the Milwaukee Court System, and the University of Wisconsin-Milwaukee.

Another notable highlight was the 2024 Milwaukee Neuroscience Research Retreat. Hosted at the Milwaukee County War Memorial Center, it underscored the NRC's role in fostering regional partnerships by bringing together more than 100 local neuroscientists from seven different institutions for collaboration and networking.

Seminars were another cornerstone of the NRC's efforts, with an impressive 17 events hosted in 2024, 10 of which featured speakers from other institutions, bringing a wealth of expertise and diverse perspectives to the NRC community.

The NRC also strengthened its commitment to education and training through its partnership with the Neuroscience Doctoral Program (NDP). Together, they developed the Neuroscience Techniques Course, now serving as the first rotation for all incoming NDP students. This hands-on, immersive experience has become a cornerstone of the program, equipping students with essential skills and fostering a collaborative learning environment. The success of this course is a testament to the power of partnership in enhancing academic and professional development.



*Dr. Cecilia Hillard founded the Neuroscience Research Center in 2010.*



## BRAVE

(Building Resilience through Action in Veterans and First Responders)

The **BRAVE program at the Wisconsin Institute of Neuroscience** is a Traumatic Brain Injury recovery program specifically designed for military veterans and first responders. An intensive, outpatient program, BRAVE focuses on getting people with symptoms of brain injury diagnosed and treated so they can return to normal life.

BRAVE is the first program of its kind in the Midwest and was created through a \$12.5 million gift from Avalon Action Alliance, a post-trauma wellness non-profit helping veterans, first responders and their families gain control over mental wellness and brain injury issues.

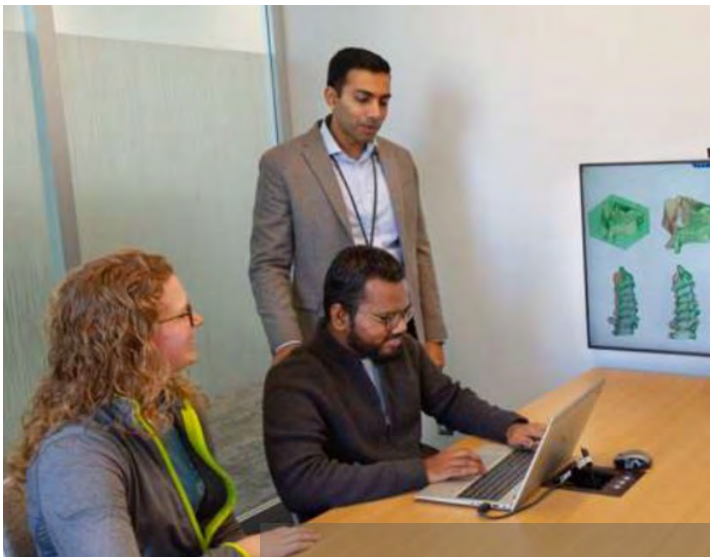
Avalon specifically selected WINS to bring its services to the Midwest due to the remarkable history of medical treatment development and research of brain injuries at Froedtert & the Medical College of Wisconsin.



## Center for Cervical Myelopathy

The **Center for Cervical Myelopathy** was founded in 2022 to address the growing need for specialized care related to Cervical Myelopathy. Cervical Myelopathy results from compression of the spinal cord in the neck. Patients with cervical myelopathy experience problems with fine motors skills, pain and stiffness in the neck and/or arms, loss of balance and trouble walking.

DCM is the most common cause of Spinal Cord Injury, affecting approximately 2% of adults globally; however, public awareness is limited. The Center for Cervical Myelopathy aims to fill that void by providing patients, physicians, and scientists with resources to advance understanding and treatment of this condition.





## In Gratitude

Neurological disorders and injuries touch so many lives, affecting how we think, move, act or even breathe. The Wisconsin Institute of NeuroScience – through the collective expertise of Children’s Wisconsin, the Froedtert & the Medical College of Wisconsin health network, the Medical College of Wisconsin and the Clement J. Zablocki VA Medical Center – is dedicated to exploring the intricacies and unraveling the mysteries of the brain, spine and peripheral nervous system.

**Our goal is to harness this knowledge to reimagine and reshape the future of neurosciences to improve the lives of adult and pediatric patients.**

The exciting and wide-ranging advances described in this report attest to the pervasive dedication and innovative thinking of the scientists and clinicians within WINS. **These achievements also attest to the commitment and generosity of the many donors who believe in and support our life-changing work. Much of this work would not be possible without your support.** We are fortunate and truly grateful that you are accompanying us on this journey of discovery.



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