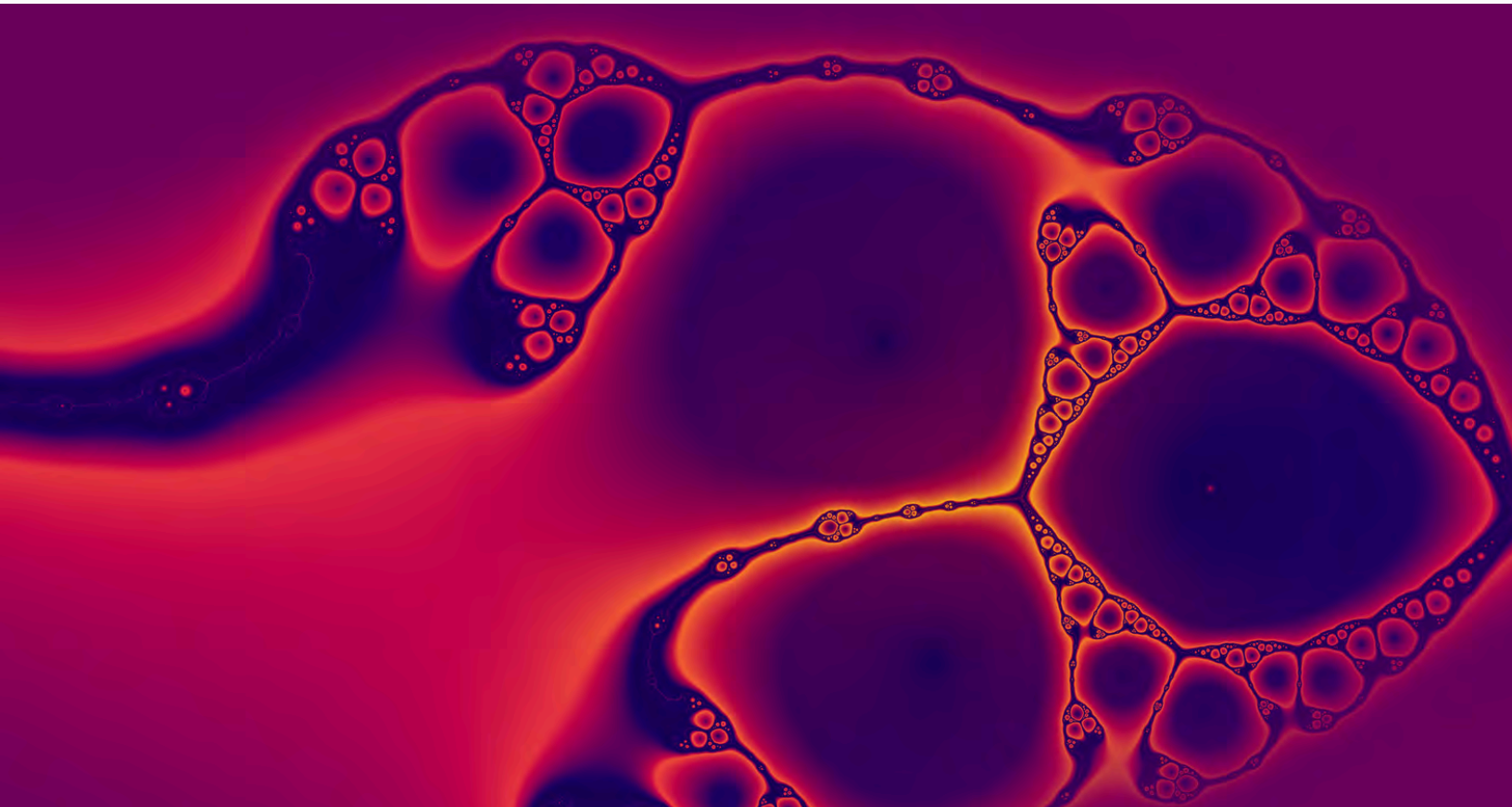


DECEMBER 2024 | ISSUE 12

THE GEORGE WASHINGTON UNIVERSITY

WASHINGTON, DC

The Clinical Neurosciences Newsletter



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A WELCOME MESSAGE

Dear Colleagues,

Welcome to the latest edition of the Newsletter! As we reflect on recent accomplishments and look forward to exciting developments, I am proud and grateful for the progress and growth within Neurology and Neurosurgery.

First, I would like to acknowledge the outstanding feedback we continue to receive from our medical students. Their recognition of the quality of education and mentorship provided by our faculty reflects the dedication and passion of our team.

In other great news, epilepsy surgery is set to return to GW soon, thanks to the tremendous efforts of Drs. Mike Rosner and Zach Levine. Their hard work in revitalizing this essential service highlights our collective mission to provide comprehensive care for our patients and their families.

Additionally, we are actively recruiting to expand our department at Cedar Hill Regional Medical Center. This new venture will allow us to serve a broader community, foster interdisciplinary collaboration, and further enrich the department's expertise and scope.

Our connection with the neuroscientists at the School of Medicine continues to strengthen as we build meaningful bridges between clinical practice and research. These collaborations will drive innovation and advance our understanding of the complexities of the nervous system.

Finally, I am pleased to share that we recently received a generous donation from a grateful patient, which will further enhance our programs and initiatives. Such acts of kindness reaffirm the impact of our work and inspire us to strive for excellence every day.

Thank you for your dedication to advancing clinical neuroscience. Together, we are shaping a brighter future for our field and the patients we serve.

Warm regards,

M. Z. Koubeissi, MD
Professor and Interim Chair
GW Department of Neurology & Rehabilitation Medicine



OUR NEWS

George Washington University Hospital has started the first high intensity, focus ultrasound treatment program in an adult care hospital in the Washington metro DC area.

We have already treated a number of patients since it's opening in August of this year.

We are continuing to build the functional neurosurgery program in conjunction with the Department of neurology, including the epilepsy program and the movement disorders program. This is in conjunction with Dr. Panagiotis Kassavetis, Dr. Pritha Ghosh and the chair of the neurology department Dr. Mohamad Koubeissi.

Currently, Dr. Zachary Levine is the only surgeon offering the focus ultrasound, treatment of Parkinson's disease and essential tremor in our region.

Researchers at the George Washington University are looking for interested volunteers for a healthy control study to better understand an autoimmune, neuromuscular (disease affecting nerves and muscles) known as Myasthenia Gravis.

Faculty and staff are welcome to participate.

PARTICIPATION INVOLVES:
One-time blood draw (You will have either 4 teaspoons (20 milliliters) or 10 teaspoons (50 milliliters) from an arm vein.

YOU MAY QUALIFY IF YOU:

- Don't have any autoimmune diseases
- No prednisone or corticosteroid use
- No vaccinations within a month



For more information, contact goztosun@mfa.gwu.edu



WHAT'S NEW IN NEUROLOGY

WHAT'S NEW

A new gene therapy offers hope for a mutation associated with epilepsy.

WHY IT MATTERS

Researchers from the Yong Loo Lin School of Medicine, National University of Singapore, have developed a promising gene therapy to treat epilepsy linked to mutations in the KCNA2 gene. This rare genetic form of epilepsy is associated with recurring seizures caused by abnormal neuron activity. The team used a Gapmer antisense oligonucleotide (ASO) therapy to specifically target and break down faulty RNA while preserving normal gene function. By reducing the production of a defective potassium channel protein encoded by the KCNA2 gene, the therapy restored potassium flow and normalized neuron activity, effectively addressing the hyper-excitability that underlies epilepsy.

The study, published in *Molecular Therapy–Nucleic Acids*, involved in vitro cell samples and was initiated after the team was approached by the family of an infant suffering from severe, treatment-resistant seizures. While still in early stages, the therapy shows potential for clinical application within 10 to 20 years, offering hope for patients with epilepsy caused by ion channel dysfunctions (channelopathies). The Gapmer technology could also be adapted to treat other mutations in the KCNA2 gene or similar ion channel genes, paving the way for personalized therapies. This research not only addresses a specific mutation but also represents a broader commitment to improving the lives of patients with severe, medication-resistant epilepsy.

Reference: Huang, Hua et al. Targeting heterozygous dominant negative variant of KCNA2 using Gapmer ASO for the treatment of drug-resistant epilepsy. *Molecular Therapy Nucleic Acids*, Volume 35, Issue 4, 102316.

WHAT'S NEW

A previously little-understood region of the brain plays a key role in triggering and sustaining seizures.

WHY IT MATTERS

For individuals with drug-resistant epilepsy, where seizures are not adequately controlled with medications, surgical intervention becomes a vital treatment option. In mesial temporal lobe epilepsy (MTLE), the most common focal epilepsy in adults, targeted tissue ablation of the anterior hippocampus is considered the standard of care. The hippocampus, a critical structure involved in memory and spatial navigation, is often implicated in MTLE due to its role in generating and propagating abnormal seizure activity. While anterior hippocampal resection can be effective, a significant proportion of patients continue to experience seizures following surgery, highlighting the need for alternative or supplementary therapeutic approaches.

In a recent study, researchers identified the fasciola cinereum (FC), a lesser-known structure in the posterior hippocampal tail, as an important seizure node in both animal models and humans with epilepsy. The FC, a thin band of tissue within the hippocampal formation, had not been previously recognized as a major player in seizure generation or maintenance. In epileptic mice, genetically defined FC neurons were found to be highly active during spontaneous seizures. Furthermore, closed-loop optogenetic inhibition of these neurons significantly reduced seizure duration, demonstrating their direct involvement in sustaining seizure activity. In human patients, the authors discovered that the FC also showed prominent activation during seizures, underscoring its role in seizure propagation, offering new insights into the complexity of seizure networks and the limitations of current surgical approaches.

Reference: Jamiolkowski RM, Nguyen QA, Farrell JS, et al. The fasciola cinereum of the hippocampal tail as an interventional target in epilepsy. *Nat Med*. 2024 May;30(5):1292-1299



Interview with Dr. Sawsan Alabbad



Interview with

Dr. Sawsan Alabbad

What is Headache Medicine?

Headache medicine is a specialized field that addresses both primary and secondary headache disorders. It focuses on diagnosing the underlying causes of headaches and providing effective treatments to alleviate pain and prevent disability. It aims at giving patients and their families the opportunity to decrease the impact of headache disorders on the quality of life.

How Has the Field Evolved Over the Years?

Neurologists and primary care providers have always been involved in headache medicine, as headaches are among the most common neurological disorders encountered in outpatient care. Over the past few years, there has been increased recognition of the importance of accurate diagnosis and innovative management of headache disorders. Providers specializing in headache care must stay abreast of rapidly expanding therapeutic options, which include pharmacological and nonpharmacological interventions, as well as neuromodulation and nutraceutical approaches. Many headache disorders represent lifelong conditions that patients did not choose, and we strive to incorporate patient values and the severity of their condition into our therapeutic plans.

For these reasons, headache medicine has evolved into a sub-specialty, growing steadily since Dr. Raskin first used ergots to treat migraines, followed by a decade of discoveries regarding triptans. Just five years ago, CGRP-targeted therapy was approved in 2019.

To my knowledge, until last year, there were fewer than 700 headache-certified neurologists in North America, though this number is definitely expanding. The future of headache medicine looks bright, with new therapeutic targets emerging, such as Phase 2 clinical trials for PCAP antibodies and research into using psilocybin, along with several new neuromodulation devices. The tools I am using to practice headache medicine today will continue to expand in the next 10 years.



Interview with

Dr. Sawsan Alabbad

What Does GW Offer in Headache Medicine?

We offer advanced treatment options for refractory cases, including infusions, CGRP-targeted therapies, chemo-denervation, and surgical options. We collaborate closely with the neurosurgery and pain clinics. Soon, GW will provide both inpatient and outpatient infusion therapy, with the ultimate goal of establishing a multidisciplinary headache clinic.

When Should Patients Be Referred to a Specialist?

Usually, primary care providers and general neurologists can treat a significant number of headache patients, and there are no strict criteria for referral. However, referral should be considered if there is uncertainty regarding the diagnosis, if there is no appropriate response to treatment, if the patient has a complex medical history with multiple comorbidities, if the patient requests a referral, or if there is any discomfort in managing the case.

How Long Have You Been at GW?

I returned to GW in June 2024. I did my residency here and graduated in 2022. During that time, I built strong relationships with many wonderful colleagues, and I am thrilled to be back.

How Has Your Experience Been So Far?

My experience at GW has been overwhelmingly positive. I am continually impressed by the dedication and professionalism of the entire team, from the front desk staff to my fellow clinicians. Returning to GW has reaffirmed my decision to come back, and I am grateful for the opportunity to work here.

How Has Your Role as Associate Program Director Been?

Becoming an Associate Program Director has been a rewarding experience. During my residency, I benefited from exceptional mentorship from leaders like Dr. Richardson and Dr. Baker as my program directors but I can mention many other names of neurologists for whom I have immense gratitude. As an APD, I am committed to supporting our residents similar to how everyone in GW neurology residency supported me.

Interview with

Dr. Sawsan Alabbad

What Do You Enjoy Most About GW?

I appreciate the diversity of the patient population in Washington, DC, and I deeply value the opportunity to work with the GW team and residents. Their dedication and hard work inspire me to continuously improve as a clinician and educator.

A Message to the Readers

1. Addressing Migraine Stigma:

Migraine patients are often unfairly labeled as dramatic or difficult, a bias rooted in the invisibility of pain compared to visible neurological deficits. I encourage all healthcare professionals to set aside personal biases and recognize migraines as a disabling disorder. Migraines can significantly impact a patient's life, causing cognitive fog, nausea, word-finding difficulties, and associated conditions such as anxiety and depression. By understanding these challenges, we can become more empathetic and provide better care. Managing migraines requires a unique set of skills that develop with experience, and patients deserve respect and support, not judgment.

2. Advocacy in Headache Care:

Stigma surrounding migraines extends into the healthcare system, often preventing patients from receiving appropriate treatment, disability accommodations, and management. Advocacy is essential to improve outcomes for patients, ensuring they receive the care and recognition they need. As healthcare providers, we have a responsibility to break down these barriers and champion the needs of our patients.



January 9, 2024
Adam Ostendorf, MD
Nationwide Children's National, Ohio,
United States
Title: The Future of The Epilepsy
Monitoring Unit

February 13, 2024
Emilio Perruca, MD, PhD, FRCP
University of Melbourne, Australia
Title: Recent Advances and Future
Perspectives in The Pharmacological
Treatment of Epilepsy

March 12, 2024
Fred Lado, MD, PhD
Northwell Health, New York, United
States
Title: TBA

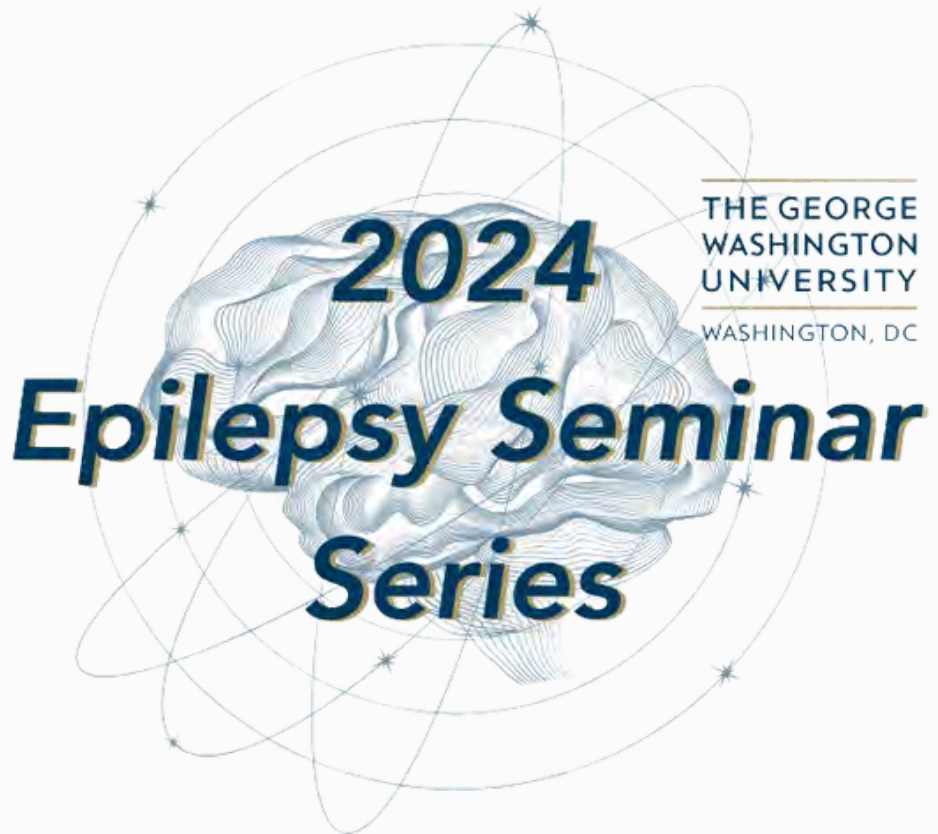
April 9, 2024
William Stacey, MD, PhD
University of Michigan,
United States
Title: Predicting Surgical Outcome With
Network Properties of HFOs

May 14, 2024
Judy Liu, MD, PhD
Brown University, Rhode Island, United
States
Title: Metabolic Pathways in Epilepsy

June 11, 2024
Samir Sheth, MD, PhD
Columbia University, New York,
United States
Title: Network-Minded Epilepsy Surgery

July 9, 2024
Brian Lundstrom, MD, PhD
Mayo Clinic, Minnesota
United States
Title: Low Frequency Brain Stimulation

August 13, 2024
Michael Fox, MD, PhD
Brigham and Women's Hospital,
Massachusetts, United States
Title: Causal Mapping of Epilepsy and Other
Symptoms Onto Human Brain Circuits



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September 17, 2024
Carrie McDonald, PhD
University of California San Diego,
United States
Title: Imaging of Cognitive Networks in
Epilepsy

October 15, 2024
Lori Isom, PhD
University of Michigan,
United States
Title: Discovering Mechanisms of
Developmental and Epileptic Encephalopathy
With SUDEP

November 11, 2024
William H Theodore, MD
National Institute of Neurological
Disorders and Stroke, United States
Title: Where Do Antiseizure Drugs
Come From?

December 17, 2024
Joseph Tracy, PhD, ABPP/CN
Thomas Jefferson University, Pennsylvania,
United States
Title: TBA



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Connect with us



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