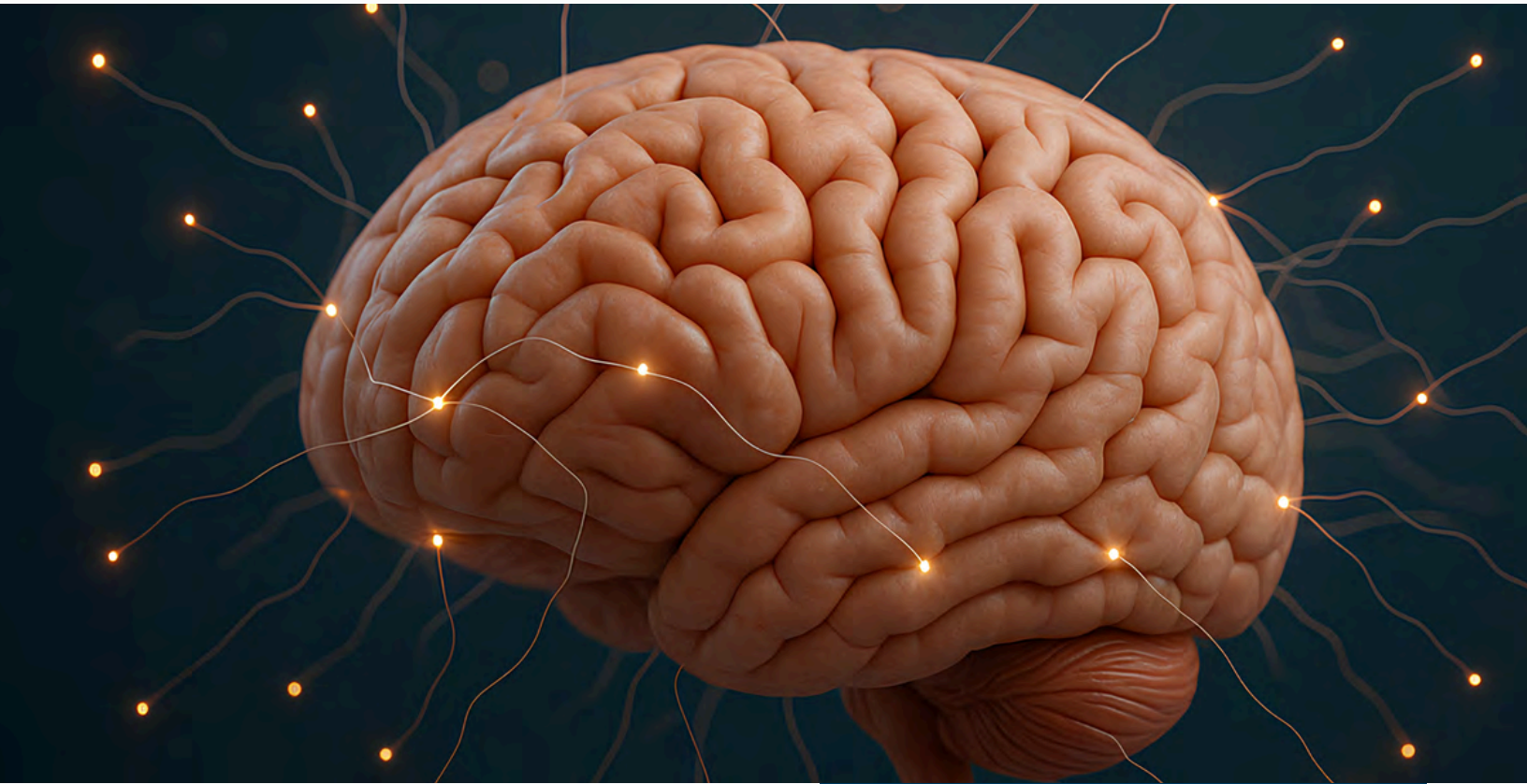


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THE GEORGE WASHINGTON UNIVERSITY

WASHINGTON, DC

The Clinical Neurosciences Newsletter



The GW Medical Faculty Associates
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OUR NEWS



Dr. Mohamad Koubeissi was a visiting Professor, Epilepsy Center of Xuanwu Hospital, Capital Medical University. Beijing, China - Jul 18, 2025. Presentation: Electrical Stimulation Mapping of the Insular Lobe.



Dr. Mohamad Koubeissi was a visiting Professor, Hebei Hospital, Shijiazhuang, Hebei - Jul 19, 2025. Presentation: The Claustrum in Consciousness and Epilepsy.

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

For every patient a physician sees, there is the ongoing challenge of providing truly personalized care. This challenge arises from the inherent variability in disease processes, patient genetics, and environmental influences. In many neurological disorders, treatment responses vary widely. This is especially true in myasthenia gravis (MG), where one patient may respond remarkably well to prednisone—experiencing dramatic improvement within weeks with minimal side effects—while another may be critically ill, requiring mechanical ventilation and remaining unresponsive to both standard and non-standard therapies. This underscores the urgent need to rigorously characterize the clinical phenotypes of MG patients. Fortunately, advances in multi-omic technologies and machine learning are beginning to make this possible.

This brings me to the important work of Nelke and colleagues, a collaborative effort across several outstanding research centers in Germany. The team studied 140 patients with acetylcholine receptor antibody-positive MG, conducting in-depth proteomic analyses of blood samples. Despite these patients being clinically well-characterized, the proteomic data revealed four distinct clusters—each markedly different from healthy controls and from one another.

The protein signatures that defined these clusters differed significantly in disease expression, including variations in inflammatory pathways, complement activation, fatty acid metabolism, and immune regulatory proteins. Notably, one subgroup showed distinct activation of the complement system. Upon further analysis, these were the only patients who had received complement inhibitors and responded well—highlighting the potential of proteomic profiling to predict therapeutic response.

WHY IT MATTERS

While we are still some distance from routine clinical implementation, efforts like those from the German consortium—and our own work here at GW—are paving the way toward a future in which a physician can perform a few blood tests, likely coupled with whole genome sequencing and a thorough assessment of risk factors such as smoking history and other social determinants of health, to select the single best treatment for each individual patient.



Interview with
Dr. Linda Kusner



Interview with

Dr. Linda Kusner

Please tell us about your background and your current role.

I graduated from Case Western Reserve University in Cleveland, from the department of Pharmacology, Physiology, and Biophysics. Early on, I did a rotation looking at glucose metabolism in diabetes, which sparked my interest in research. Even before graduate school, I spent several years working in a lab, and that's when I realized how much I enjoyed scientific investigation.

One of my first major projects was studying the gamma subunit of the acetylcholine receptors in extraocular muscles—an unusual expression because most muscles replace the gamma subunit with epsilon in adulthood, but extraocular muscles retain them. That was my first real hands-on introduction to scientific research.

After graduate school, I spent four years at St. Louis University, fully focused on myasthenia gravis (MG). It was at St. Louis University that I joined the faculty as an assistant professor in the department of Ophthalmology.

I moved to George Washington University to join the Department of Pharmacology & Physiology with a secondary appointment in Neurology in 2011. I started out working with Eric Hoffman's group at Children's National hospital, trying to integrate their techniques into my research. However, it became clear that returning here made more sense because the animal models I was using were based here. Since then, I've been conducting MG research here—and it's now been 14 years.

Please tell us about your current research.

We're running multiple projects that include both patient studies and animal models. My main focus is understanding the role of the complement system in the pathogenesis of MG. We're especially interested in how different points along the complement cascade contribute to disease progression, and how modifying those points can improve outcomes.

Most therapeutic targets currently focus on C5, but we're exploring what happens when we target further downstream—like C7. The idea is to preserve some of the immune system's early functions while preventing the downstream damage that contributes to muscle weakness. We're also looking at the expression of complement regulatory proteins like CD55 and whether increasing them can alter disease course. We have partnered with pharmaceutical companies to study new therapeutic targets and understand atypical MG presentations, especially chronic patients who relapse despite treatment. These individuals are particularly informative because they still show active autoimmunity, even after therapies that should have suppressed it.



Interview with

Dr. Linda Kusner

Are you incorporating any new technologies or techniques in your work?

Yes, we're using a combination of transcriptomics and proteomics to build patient-specific molecular profiles. Our goal is to map how these patterns shift over time, particularly in response to therapy, and identify markers that predict which treatments will work best.

You mentioned immune modulation, how is your work overlapping with other fields, like oncology?

In terms of the recent cell-based therapeutics, there's an interesting intersection between autoimmunity and cancer. Some companies are now exploring the use of CAR-T cells, which were originally developed to fight cancer, to target autoreactive B cells in diseases like MG. These therapies are designed to selectively eliminate the B cells but miss the specific cells that produce pathogenic antibodies. I am currently working with a company, MimiVax, that has developed a target for cancer that is directed at a protein called survivin. We have found that this protein is also in those specific B cells that produce the pathogenic antibodies in MG patients. While MimiVax has already started clinical trials in multiple cancers, we are hoping that a clinical trial for MG can begin.

How has the field evolved since you started your research career?

When I started, prednisone was basically the only available treatment for MG. There were no FDA-approved therapies specifically for the disease. A lot of treatment decisions were made by trial and error or based on small studies.

It's been amazing to see FDA-approved therapies emerge, and the growth in clinical trials is very encouraging. That said, we still lack robust biomarkers. We can't always tell whether a patient is truly improving based on clinical exams alone. If we had a reliable biomarker that could be tracked over time, something that reflects the patient's immune activity or degree of weakness, that would completely transform how we assess therapies.

Right now, we're relying heavily on subjective measures, and those can be misleading. For example, a patient may seem stable one day, but we miss the bigger trend. That's why developing longitudinal monitoring tools is one of our top priorities.



Interview with

Dr. Linda Kusner

What have you enjoyed most about being a GWU faculty?

I've been at GW for 14 years. What I enjoy most is the people, it's a really friendly and supportive environment. We've recently started collaborating more closely with the McCormick Center and the Genomics Core, and that's opened new avenues for interdisciplinary work. It took some time to break down silos, but now there's much more collaboration across departments, which has been great for advancing the research.

Any final thoughts you'd like to share with our readers?

Yes, just a reminder that research progress takes time. From the early days of trying to understand how the neuromuscular junction works, to today's targeted therapies, it's been a long journey. Every advancement is the result of countless hours of work, and none of it happens spontaneously.

That's why donor support and funding make such a difference. If more people understood the time, effort, and collaboration it takes to get from a basic scientific question to an actual treatment, I think they'd be even more motivated to support the cause. Every contribution goes a long way.



January 7, 2025
Carlos Sanchez, MD
The George Washington University
Title: Cellular Engineering of Autologous
Glioblastoma Specific T cells

January 14, 2025
Mark J. Edwards, MD
King's College London, United Kingdom
Title: TBD

January 28, 2025
Victor Wang, MD
Sutter East Bay Medical Group
Title: Headache Medicine in the
LGBTQIA Community: Sex, Drugs, and
Everything in Between

February 4, 2025
Saleem Abdulrauf, MD
The George Washington University
Title: TBD

February 11, 2025
Cheryl Bushnell, MD
Atrium Wake Forest Baptist Health
Title: Advancing Blood Pressure
Management after Stroke: A New Model
of Care

February 18, 2025
Aline Herlopian, MD
Yale University
Title: HFO and the Epilepsy Networks

February 25, 2025
David Hafler, MD
Yale University
Title: The Underlying Cause of Multiple
Sclerosis

March 4, 2025
Dimitri Sigounas, MD
The George Washington University
Title: TBD

March 11, 2025
Erik St. Louis, MD
Mayo Clinic
Title: TBD

March 18, 2025
Raman Sankar, MD, PhD
UCLA
Title: TBD

March 25, 2025
James Grotta, MD
UT Houston/Memorial Hermann
Title: TBD

April 1, 2025
Justin Kwan, MD
National Institute of Health
Title: TBD

April 8, 2025
Chase Foster, MD
Johns Hopkins University
Title: TBD

April 15, 2025
Pierre Fayad, MD
University of Nebraska
Title: TBD

April 22, 2025
David Auerbach, PhD
Upstate Medical University
Title: Looking Beyond the Classically
Studied Organ: Bedside-to-Bench
Approaches to Study Electrical
Disturbances in the Brain and Heart

April 29, 2025
Simon Little, PhD
UCSF
Title: Closed Loop/adaptive DBS

May 6, 2025
Donald Shields, MD
Spartanburg Regional Healthcare
Title: TBD

May 13, 2025
Casey Albin, MD
Emory School of Medicine
Title: Interesting Subjects within NCC

May 20, 2025
John Schreiber, MD
Children's National
Title: TBD

May 27, 2025
James Mastrianni, MD, PhD
University of Chicago
Title: TBD

June 3, 2025
Chima Oluigbo, MD
Children's National
Title: TBD

June 10, 2025
Steven Zeiler, MD, PhD
John's Hopkins University
Title: TBD

June 17, 2025
John Stern, MD
UCLA
Title: TBD

June 24, 2025
Alberto Espay, MD
University of Cincinnati
Title: TBD



Connect with us



Thank you

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