FINAL PROGRAM

ANA2021

VIRTUAL MEETING

OCTOBER 17–19, 2021

OPENING SYMPOSIUM: OCTOBER 16, 2021

146th Annual Meeting of the American Neurological Association

AMERICAN NEUROLOGICAL ASSOCIATION
INNOVATORS IN DISCOVERY, EDUCATION, AND CARE

2021.MYANA.ORG • #ANA2021
anameeting.ims.events

Please note: all session times are listed in Eastern Daylight Time.

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PLEASE JOIN US

A REMINDER TO JOIN US FOR OUR SATELLITE SYMPOSIUM ON TUESDAY, OCTOBER 19, 2021, FROM 4:30 PM TO 5:30 PM ET, PRESENTED BY FERNANDO L. PAGAN, MD

FACULTY:

Fernando L. Pagan, MD
Professor and Vice Chair of Neurology
Director of Movement Disorders Program
Medical Director PF COE
Fellowship Director for Movement Disorders Program
Medstar Georgetown University Hospital
Washington, DC

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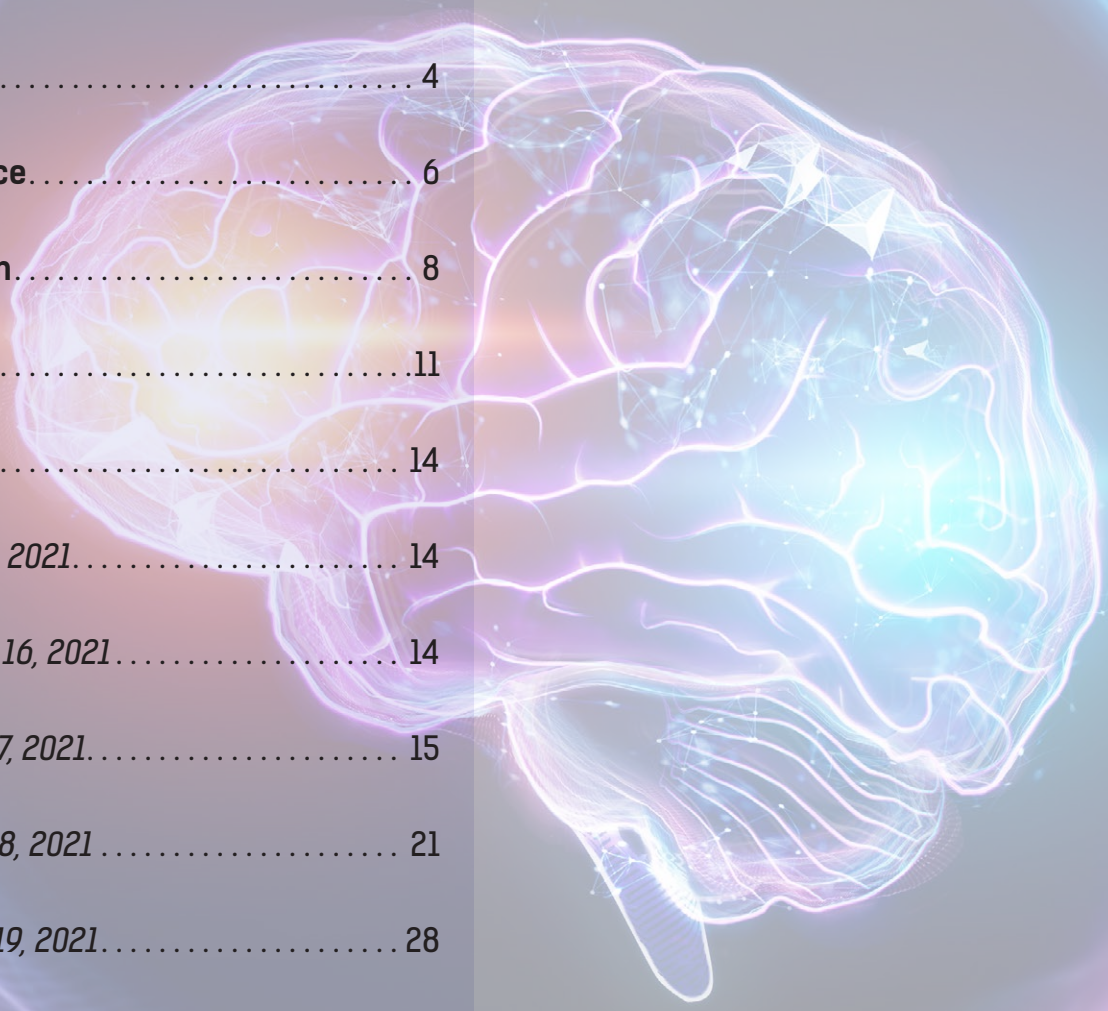

Dear Colleagues,

Conrad "Chris" Weihl, MD, PhD

Welcome to the ANA2021 Virtual Annual Meeting, the 146th Annual Meeting of the American Neurological Association (ANA).

We expect to welcome more than 1,000 academic neurologists and neuroscientists from around the world to share exciting research updates and best practices. As always, there will be a myriad of opportunities for professional networking and education, bringing the global neurological community together.

You won't want to miss our featured presentations from highly sought-after speakers as well as the opportunity to view posters from your peers representing the latest advances in translational neuroscience, neurobiology of disease, and academic neurology. Our program also features Interactive Workshops that spotlight advances across the full spectrum of neurologic subspecialties and Professional Development courses that have something for everyone, whether you are a student deciding which subspecialty to pursue or a department chair seeking best practices in administration. An exciting addition to this year's program are the live poster tour sessions taking place on Sunday, October 17th and Monday, October 18th. Here you will have the opportunity to view poster presentations given by hand-selected abstract submitters grouped by topic, with the eligibility to ask the presenters questions.

This year's symposia focuses on bench to bedside developments in therapeutics related to inherited and acquired neurologic diseases. Plenary session topics include advances in the genetics, pathophysiology and therapeutics of amyotrophic lateral sclerosis and epilepsy. Nobel Laureate, Gregg Semenza, will lead a session focused on hypoxia in the CNS and how the molecular pathway, hypoxia-inducible factor 1 alpha (HIF1α), that he discovered is a target for therapies in stroke and hypoxic-ishemic encephalopathy. Finally, young investigators will be highlighted in the popular Emerging Scholar Lecture Series sessions and Derek Denny-Brown Young Neurological Scholar Symposium.

The 2021 Presidential Symposium will explore the global and US impact of the SARS-COV-2 pandemic, including vaccine development and deployment, population impact and responses, and the neurological complications. Details of the contemporary understanding of neurobiological processes will be presented, as well as a review of the neurocognitive sequelae in COVID survivors.

The meeting kicks off with a networking event for junior and early career attendees on Friday, October 15th. The education program will commence on Saturday, October 16th with the Opening Symposium: Insights into the Genetic Underpinning and Treatment of Epilepsy.

On behalf of the Board of Directors, Scientific Program Advisory Committee (SPAC), ANA President Justin C. McArthur, Interactive Workshops Subcommittee, and the Career Development Subcommittee, welcome to the ANA2021 Virtual Annual Meeting.

With warmest wishes,

Conrad "Chris" Weihl, MD, PhD
Chair, Scientific Program Advisory Committee (SPAC)
Professor, Washington University School of Medicine in St. Louis

AMERICAN NEUROLOGICAL ASSOCIATION
INNOVATORS IN DISCOVERY, EDUCATION, AND CARE

Thank you

for your dedication, leadership, and many positive contributions to the ANA!

JUSTIN C. MCARTHUR, MBBS, MPH, FANA
PRESIDENT, AMERICAN NEUROLOGICAL ASSOCIATION 2019-2021

"Dr. McArthur was an absolute pleasure to work with as both president-elect and president of the ANA. He led the ANA through the pandemic as seamlessly as anyone possibly could. His devotion to equity and inclusion was very important and I think the ANA is in a wonderful place with the baton soon to be passed to Dr. Jensen."

DAVID HOLTZMAN, MD, FANA | ***ANA PAST PRESIDENT 2019-2021***

"Dr. McArthur has been an outstanding leader during one of the most challenging years for the ANA in its long history. Through his presidency, not only did he help guide academic neurology through the many challenges of the COVID pandemic, but he also brought an unprecedented awareness of important social justice issues to our organization during a time of national upheaval, and charted a path for academic neurology to follow in addressing these challenges going forward."

CLIFTON GOOCH, MD | ***ANA TREASURER 2018-2022***

ANA2021
VIRTUAL MEETING
OCTOBER 17–19, 2021
OPENING SYMPOSIUM: OCTOBER 16

All session times are listed in Eastern Daylight Time.

AMERICAN NEUROLOGICAL ASSOCIATION
INNOVATORS IN DISCOVERY, EDUCATION, AND CARE

SCHEDULE AT A GLANCE

Friday, October 15, 2021

11:00 AM–5:00 PM	**ANA–NINDS Career Development Symposium*** *(by invitation only)*
6:00 PM–7:00 PM	★ **Junior and Early Career Virtual Networking Session*** *(pre-registration required)*

Saturday, October 16, 2021

3:30 PM–4:30 PM	Insights into Using Dual Antiplatelet Therapy in Patients with Acute Ischemic Stroke and Transient Ischemic Attack** Satellite Symposium **Sponsored by Voxmedia**
3:30 PM–7:00 PM	**Poster Viewing***
5:00 PM–7:00 PM	**Plenary Session** Opening Symposium: Insights into the Genetic Underpinning and Treatment of Epilepsy

Sunday, October 17, 2021

10:00 AM–8:45 PM	**Poster Viewing***
10:00 AM–12:00 PM	**Plenary Session** Presidential Symposium: COVID-19 Pandemic: Population Impact and Responses, and Neurological Complications
12:15 PM–1:15 PM	★ **Professional Development Courses** Early Career Level (Student, Resident, Trainee, Postdoc Fellow) Course 1: Landing Your Fellowship and First Faculty Position Early to Mid Career Level Course 1: Becoming a Successful Medical Director ANA-AUPN Chair Career Level Course 1: Equity, Diversity & Inclusion: What Does it Take to Make Real Progress and How Do You Improve the Pipeline?

Sunday, October 17, 2021 *continued*

1:45 PM–2:45 PM	★ **Emerging Scholar Lecture Series 1**
3:15 PM–5:15 PM	**Plenary Session** Advances in Amyotrophic Lateral Sclerosis*
5:30 PM–6:30 PM	**Poster Tour:** ALS* **Poster Tour:** Autoimmune 1* **Poster Tour:** Cerebrovascular 1* **Poster Tour:** COVID-19* **Poster Tour:** Dementia 1* **Poster Tour:** Tauopathy*
6:45 PM–7:45 PM	**Poster Tour:** Autoimmune 2* **Poster Tour:** Cerebrovascular 2* **Poster Tour:** Dementia 2* **Poster Tour:** Epilepsy 1* **Poster Tour:** Headache* **Poster Tour:** Neuropathy*
7:45 PM–8:45 PM	★ **ANA–AUPN Career Fair***

Monday, October 18, 2021

10:00 AM–8:45 PM	**Poster Viewing***
10:00 AM–11:00 AM	★ **Professional Development Courses** Early Career Level (Student, Resident, Trainee, Postdoc Fellow) & Early to Mid-Career Level Course 2: View from the NINDS, NIA, NICHD, DOD, and the VA ANA-AUPN Chair Career Level Course 2: Social Media and Web Presence: How Do You Make Your Internet Presence Effective, and How Do You Handle Social Media "Surprises"?

★ Recommended for Junior and Early Career attendees.

* This session is not available for *AMA PRA Category I Credit(s)™*

Note: The American Board of Psychiatry and Neurology has reviewed the 146th Annual Meeting of the American Neurological Association and has approved this program as part of a comprehensive CME program, which is mandated by the ABMS as a necessary component of Maintenance of Certification.

E-posters: Available for viewing throughout the duration of the meeting.

Schedule Subject to Change: The event's operating hours, schedules, and speakers are subject to change or cancellation without notice. Refunds will be not issued for failure to view a live session.

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SCHEDULE AT A GLANCE, *continued*

All session times are listed in Eastern Daylight Time.

Monday, October 18, 2021 *continued*

11:15 AM–12:45 PM	**Interactive Workshops**
	Curing Coma – Science and Decision-Making for Recovery of Impaired Consciousness
	★ IDEAS to Action! Leading Diversity Initiatives in Academic Neurology
	Neuropsychiatric Disorders in Adults and Children: Approach to the Diagnosis and Potential for Precision Behavioral Neurology
11:30 AM–12:30 PM	**Additional Workshops**
	AUPN Small Department Networking Session
	★ Career on "Pause": Impact of the Pandemic on Early-to Mid-Career Women+ in Academic Neurology and Neuroscience
	Meet the Editors
1:00 PM–2:00 PM	★ **Emerging Scholar Lecture Series 2**
2:30 PM–4:30 PM	★ **Plenary Session**
	Derek Denny-Brown Young Neurological Scholar Symposium*
4:30 PM–5:15 PM	**Executive Session of Membership***
5:15 PM–6:15 PM	**Poster Tour:** Autoimmune 3*
	Poster Tour: Cerebrovascular 3*
	Poster Tour: Dementia 3*
	Poster Tour: Epilepsy 2*
	Poster Tour: Movement Disorders 1*
	Poster Tour: Neuromuscular 1*
6:30 PM–7:30 PM	**Poster Tour:** Dementia 4*
	Poster Tour: Epilepsy 3*
	Poster Tour: Movement Disorders 2*
	Poster Tour: Neuromuscular 2*
	Poster Tour: Sleep*
	Poster Tour: Traumatic Brain Injury*
7:45 PM–8:45 PM	Exploring the Utility of Whole-Genome Sequencing for the Diagnosis and Management of White Matter Disorders** Satellite Symposium **Sponsored by Illumina**

Tuesday, October 19, 2021

8:30 AM–9:30 AM	New Hope for Early-Stage Alzheimer's Disease: Can We Modify the Disease Pathway by Targeting Amyloid-β?** Satellite Symposium **Sponsored by Answers in CME**
8:30 AM–5:30 PM	**Poster Viewing***
10:00 AM–11:00 AM	★ **Professional Development Courses**
	Early Career Level (Student, Resident, Trainee, Postdoc Fellow) & Early to Mid-Career Level Course 3: Physician-Scientist Careers and Collaborations with Industry
	★ ANA-AUPN Chair Career Level Course 3: Supply and Demand in Neurology Subspecialties: How Can You Match the Trajectories of Trainees to the Needs of the Present and Future?
11:15 AM–12:15 PM	**Interactive Workshops**
	A Good Recovery? Under-Recognized Deficits Significantly Impact Functional Outcomes Post-Stroke
	Artificial Intelligence Applications in the Clinical Assessment of Alzheimer's Disease
	Deconvoluting FDA Decisions Regarding Neurological Diseases
11:15 AM–12:15 PM	**Additional Workshops**
	American Board of Psychiatry and Neurology (ABPN) Maintenance of Certification (MOC) Program Session
	Highlights of the Meeting*
	★ AUPN Meet the Chairs Session
12:30 PM–1:30 PM	★ **Emerging Scholar Lecture Series 3**
2:00 PM–4:00 PM	**Plenary Session**
	Hypoxic/Anoxic Injury in the CNS
4:30 PM–5:30 PM	An Early Levodopa/Carbidopa Partner for OFF Time in Parkinson's Disease** Satellite Symposium **Sponsored by Neurocrine Biosciences**

★ Recommended for Junior and Early Career attendees.

* This session is not available for *AMA PRA Category I Credit(s)™*

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General Information

Event Hours

Saturday, October 16	3:30 PM–7:00 PM EDT
Sunday, October 17	10:00 AM–8:45 PM EDT
Monday, October 18	10:00 AM–8:45 PM EDT
Tuesday, October 19	8:30 AM–5:30 PM EDT

Language

The official language of the Annual Meeting is English. No simultaneous translation is available.

Technology Requirements & Recommendations

For the best user experience, please review these personal device requirements in advance of the live meeting:

Computer:

- Operating System: Microsoft Windows 10, or macOS 10.14.6+
- Browser: Latest version of Google Chrome, Firefox, Safari

Mobile Device:*

- Operating System: iOS/iPad OS 13.6, Android 9+
- Browser: Mobile Safari, Mobile Google Chrome

** Attending the virtual meeting via a laptop or desktop computer (instead of a mobile device) is recommended, as it will provide you with the best user experience.*

Internet Requirements:

- A minimum internet speed of **10mpbs Download** and **5mbps Upload is required**. Your ability to participate can be impacted by the quality of your internet service.
- Satellite internet service may experience a poor streaming experience.
- You can test your speed by visiting the site **https://speedof.me**.
- You may be able to increase your internet speed or verify your internet bandwidth by contacting your internet service provider.
- Positioning your computer as close as possible to your wireless router or access point will help if you are experiencing slowness issues.
- Please coordinate with anyone who shares your internet connection in your home to ensure they are not consuming too much bandwidth impacting your ability to participate.

Poster Tour Sessions

E-posters will be viewable throughout the duration of ANA2021. The below schedule indicates the designated dates and times Poster Tour presenting authors will be presenting their posters and joining live for Q&A . Please check the Poster Tour session schedule to see which posters are being presented during each of the following dates and times.

Sunday, October 17	5:30 PM–6:30 PM EDT 6:45 PM–7:45 PM EDT
Monday, October 18	5:15 PM–6:15 PM EDT 6:30 PM–7:30 PM EDT

Continuing Medical Education

Accreditation & Designation Statement(s)

The Annual Meeting offers CME to eligible participants. Complete CME information, including a breakdown of the credits offered for each session and the instructions for claiming credit, is available online at **2021.myana.org/continuing-medical-education**.

The American Neurological Association is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

The American Neurological Association designates this live activity for a maximum of **14.5 *AMA PRA Category 1 Credit(s)***™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

The American Board of Psychiatry and Neurology has reviewed the 146th Annual Meeting of the American Neurological Association and has approved this program as a part of a comprehensive CME program, which is mandated by the ABMS as a necessary component of Maintenance of Certification.

Completion of this accredited CME activity meets the expectations of an Accredited Safety or Quality Improvement Program (IA_PSPA_28) for the Merit-based Incentive Payment Program (MIPS).

For more information, please visit the CME page online at: **https://2021.myana.org/continuing-medical-education**

PLEASE NOTE: In the agenda, any session that has an asterisk (*) next to the session title is not designated for ***AMA PRA Category 1 Credit(s)***™.

Annual Meeting Evaluations

Following the event, you will receive access to the evaluation. Please complete the online evaluation by November 9, 2021 to obtain CME credit. You will be provided with a certificate after completing the evaluation. If you have any questions, please contact the ANA Meeting Coordinator at: **meetings@myana.org**

Recording, Reproduction, and Distribution of Content

DON'Ts

Recording, Reproduction, and Distribution of Content is prohibited. By registering and attending the ANA2021 Virtual Annual Meeting, attendees agree to not record, photograph, reproduce, or distribute any presentations or scientific content presented during the meeting, as session and slide content is the intellectual property of our speakers.

Consent to Recording, Capture, and Distribution

ANA will be recording in audio and/or video format the virtual sessions and events taking place during the Annual Meeting. ANA may elect to distribute the recordings and associated materials either individually or as part of a compilation. By attending, an attendee's image and/or voice in photographs, video recordings, electronic reproductions, audio recordings, and other media throughout the world may be used and you acknowledge these activities and consent to such recording, capture, and distribution by ANA, royalty-free. Additionally, ANA contractors and sponsors may be audio and/or video recording virtual sessions and events at this event. By attending, your image and/or voice in photographs, video recordings, electronic reproductions, audio recordings, and other media throughout the world may be used, including, but not limited to publications, on their websites, and in any other marketing and promotional materials. You acknowledge these activities and consent to such recording, capture, and distribution, royalty-free.

Inappropriate Behavior Policy

The American Neurological Association (ANA) encourages open and honest intellectual interactions and debate as part of a welcoming and inclusive atmosphere at all ANA associated meetings and conferences. To help maintain an open and respectful community of physicians and scientists, the ANA does not tolerate illegal or inappropriate behavior at any in person or virtual meeting, including violations of applicable laws pertaining to sale or consumption of alcohol, description of property, or harassment of any kind, including sexual harassment. The ANA condemns inappropriate or suggestive acts or comments that demean another person by reason of his or her gender, gender identity or expression, race, religion, ethnicity, age or disability or that are unwelcome or offensive to other members of the community or their guests. The ANA reviews allegations of any such behavior on a case by case basis, and violations may result in revocation of ANA membership and/or the prohibition on future attendance of an ANA meeting or conference by a particular individual. **Click here to read our full policy**.

ANA2021 Session Recordings Package

All Virtual Annual Meeting registrations also include access to the **ANA2021 Sessions Recording** package which brings the groundbreaking research of ANA2021 to your fingertips 24/7, available in the weeks following the virtual annual meeting. Watch key sessions on-demand and earn CME for presentations you missed after the meeting. (CME is based on content eligibility and not all sessions may award credit.)

Note: Specific sessions and some presentations within a session may not be available if the presenter has not granted permission to repurpose their presentation.

Schedule Subject to Change

The event's operating hours, schedules, and speakers are subject to change or cancellation without notice. Refunds will not be issued for failure to view a live session.

Stay in the know and join in on Social Media #ANA2021

Satellite Symposia

The ANA values the participation of our corporate partners and is supportive of the role that members of this community continue to play in our efforts to provide neurologists & neuroscientists with quality educational programs. These symposia are not part of the ANA official educational program and the sessions and content are not endorsed by ANA.

Saturday, October 16, 2021

3:30 PM–4:30 PM EDT

Insights into Using Dual Antiplatelet Therapy in Patients with Acute Ischemic Stroke and Transient Ischemic Attack**

There is a substantial risk for recurrent stroke in the early period after an acute ischemic stroke or transient ischemic attack (TIA). Aspirin (ASA) has been a fundamental preventive therapy in these patients; however, residual risk remains despite ASA monotherapy. The CHANCE and POINT trials, albeit with distinct differences, have demonstrated the effectiveness of the timely and short-term addition of clopidogrel to ASA. However, patients with CYP2C19 loss-of-function (LOF) alleles are poor metabolizers of clopidogrel and often have a suboptimal response to dual antiplatelet therapy (DAPT) when clopidogrel is added to ASA. In the THALES trial, more potent antiplatelet therapy with the P2Y12 inhibitor ticagrelor, in combination with ASA, has demonstrated a reduction in risk of recurrent stroke in patients with mild-to-moderate acute ischemic stroke or high-risk TIA. More recent insights from the THALES trial have assessed the effectiveness and safety of dual therapy with ticagrelor in reducing disabling stroke and disability after recurrent stroke, as well as outcomes in patients with and without ipsilateral atherosclerosis stenosis. Platelet reactivity has been compared between clopidogrel plus ASA and ticagrelor plus ASA in patients with TIA or minor stroke, and an ongoing trial is investigating clinical outcomes of TIA or minor stroke patients who are CYP2C19 LOF allele carriers and who are receiving either DAPT with ASA plus clopidogrel or ASA plus ticagrelor. In this program, experts in the management of stroke with antiplatelet therapy will interpret clinical trial evidence and identify patients for use of DAPT. A multi-specialty panel discussion (with representatives from neurology, emergency medicine, and internal medicine) will follow, with a focus on overcoming barriers to timely and successful implementation of DAPT.

SPONSORED BY: *Voxmedia*
COMMERCIAL SUPPORTER: *AstraZeneca Pharmaceuticals*
SPEAKERS:
S. Claiborne Johnston, MD, PhD, University of Texas at Austin
Gregory Albers, MD, Stanford University School of Medicine
Brett Cucciara, MD, Hospital of the University of Pennsylvania
Deborah Diercks, MD, University of Texas Southwestern

Monday, October 18, 2021

7:45 PM–8:45 PM EDT

Exploring the Utility of Whole-Genome Sequencing for the Diagnosis and Management of White Matter Disorders**

This session will provide an overview of the current state of WGS and transcriptomics for neurological disorders and discuss the impact results can have on clinical management and long-term outcomes. The presenters will review interim data from an observational study that implemented WGS as a first-tier test in patients with leukodystrophy and provide an overview of the next phase of that study which will evaluate clinical utility up to six months after results.

SPONSORED BY: *Illumina*
SPEAKERS:
Kayla J. Muirhead, MS, LCGC, Children's Hospital of Philadelphia
Holly Snyder, MS, LCGC, Illumina, Inc.
Dr. Ryan Taft, PhD, Illumina, Inc.

This session is not available for ***AMA PRA Category I Credit(s)*™, however, the sponsor may be accrediting this event independently. Please check the website for details closer to the date of the event.

Tuesday, October 19, 2021

8:30 AM–9:30 AM EDT

New Hope for Early-Stage Alzheimer's Disease: Can We Modify the Disease Pathway by Targeting Amyloid-β?**

The objective of this activity series is to improve neurologists' knowledge and competence in evaluating the rationale behind selectively targeting neurotoxic soluble amyloid-β oligomers in early-stage AD, assessing the latest evidence on the efficacy and safety of emerging late-stage anti-amyloid-β immunotherapies and proposing a patient-centered approach that will maximize the benefits of these emerging therapies.

SPONSORED BY: *Answers in CME*

(This activity is supported by an educational grant from Biogen)

SPEAKERS:

Marwan N. Sabbagh, MD, Cleveland Clinic
James E. Galvin, MD, MPH, University of Miami Miller School of Medicine
Lueva Demps, Alzheimer's Caregiver

4:30 PM–5:30 PM EDT

Once-Daily ONGENTYS (opicapone) Capsules: An Early Levodopa/Carbidopa Partner for OFF Time in Parkinson's Disease**

SPONSORED BY: *Neurocrine Biosciences*

SPEAKERS:

Fernando L. Pagan, MD, Medstar Georgetown University Hospital
Brooke McCausland, MA, Neurocrine Biosciences

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Program By Day

Friday, October 15, 2021

11:00 AM–5:00 PM

ANA-NINDS Career Development Symposium*

(by invitation only)

CHAIR: *Lesli Skolarus, MD, MS, University of Michigan*

This symposium is a joint collaborative effort between the ANA and NINDS which is designed for clinician-scientists with NIH career development awards (K08 and K23) and is chaired by senior neurologists and neuroscientists who have proven success in career building and navigation, scientific grant writing, networking, and balancing clinical and research efforts.

6:00 PM–7:00 PM

★ Junior and Early Career Virtual Networking Session*

(pre-registration required)

Pre-registration is required to access the Zoom meeting outside of the ANA2021 platform. Registered attendees should access their invitations sent via email.

Learn how to make the most of your ANA Meeting. Join the members of the Junior and Early Career Virtual Membership Committee for a networking session to discuss how to take advantage of the ANA, identify mentors and discuss career tracks in academic neurology and neuroscience.

Saturday, October 16, 2021

3:30 PM–7:00 PM

Poster Viewing*

E-poster presentations are available for viewing throughout the duration of the meeting.

5:00 PM–7:00 PM

Plenary Session

Opening Symposium: Insights into the Genetic Underpinning and Treatment of Epilepsy

CHAIR: *Frances E. Jensen, MD, Perelman School of Medicine, University of Pennsylvania*

CO-CHAIR: *M. Elizabeth Ross, MD, PhD, Weill Cornell Medicine*

The explosion of genome sequence information in recent years has illuminated a growing list of gene associations with epilepsy. Many genetic variants are familial or arise as de novo changes in an individual and may be of uncertain impact on gene function. These variants of uncertain significance (VUS), though they may occur in a gene that is consistent with an individual patient's seizure phenotype, require critically important molecular investigation for establishing seizure causality. Epileptogenic mutations may arise in voltage-gated channels, neurotransmitter receptors, or several classes of synaptic function regulators. This symposium provides an update regarding recent frontiers in understanding and modulating epileptic mechanisms ranging from the surprising etiology of drug-resistant, brain tumor driven seizures, to the role of mutations in intergenic regions that generate poison exons that can be targeted with ASOs, to the use of reprogrammed stem cell-derived human neurons toward the repurposing of drugs for individualized treatment.

LEARNING OBJECTIVES:

1. **Consider novel mechanisms leading to epilepsy and expand the traditional landscape of pathogenesis that will improve diagnostic capabilities**
2. **Avoid the presumption in the absence of functional testing that a variant of uncertain significance (VUS) is disease causing**
3. **Understand the need to interrogate not only protein coding regions but also the whole genome to find pathogenic mutations and the importance of functional testing of VUSs in neurogenetic diagnoses**

Aberrant Inclusion of Poison Exons Leads to Premature Truncation of Ion Channels in Epilepsy

SPEAKER: *Gemma Carvill, PhD, Northwestern University*

Rescuing SCN1A Haploinsufficiency Using an Antisense Oligonucleotide (ASO) Targeting a Poison Exon in a Genetic Model of Epilepsy

SPEAKER: *Lori Isom, PhD, University of Michigan Medical School*

Opening Remarks

SPEAKER: *Justin C. McArthur, MBBS, MPH, Johns Hopkins University*

Oncogene-Driven Epileptogenesis

SPEAKER: *Jeffrey Noebels, MD, PhD, Baylor College of Medicine*

Genetic Basis of Epilepsy

SPEAKER: *Ingrid Scheffer, AO, MBBS, PhD, FRACP, FAES, FAA, FRS, PresAHMS, University of Melbourne*

Stereo-Electroencephalographic Language and Memory Mapping: "Electric Wada" and High Gamma Activity

ORAL PRESENTER: *Donald J. Bearden, PhD, Children's Healthcare of Atlanta / Emory University School of Medicine*

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

Sunday, October 17, 2021

10:00 AM–8:45 PM

Poster Viewing*

E-poster presentations are available for viewing throughout the duration of the meeting.

10:00 AM–12:00 PM

Plenary Session

Presidential Symposium: COVID-19 Pandemic: Population Impact and Responses, and Neurological Complications

CHAIR: *Justin C. McArthur, MBBS, MPH, Johns Hopkins University*
CO-CHAIR: *Kiran Thakur, MD, Columbia University Irving Medical Center / New York Presbyterian Hospital*

This symposium will review the global and US impact of the SARS-COV-2 pandemic, including vaccine development and deployment, population impact and responses, and neurological complications. Details of the contemporary understanding of neurobiological processes will be presented, as well as a review of the neurocognitive consequences in COVID survivors.

LEARNING OBJECTIVES:

1. **Identify the neurological consequences, and neurobiological mechanisms of COVID-19**
2. **Describe how COVID-19 has highlighted health care disparities, both in treatment and in vaccine deployment**

Operation Warp Speed: How COVID Vaccines Were Developed in Record Time

SPEAKER: *Emily Erbelding, MD, MPH, National Institutes of Health*

Neurological Consequences of COVID-19: Acute and Chronic

SPEAKER: *Jennifer Frontera, MD, New York University*

Neurobiology of COVID-19

SPEAKER: *Avindra Nath, MD, National Institute of Neurological Disorders and Stroke, National Institutes of Health*

How COVID-19 Has Emphasized Health Care Disparities

SPEAKER: *Olajide Williams, MD, MS, Columbia University Irving Medical Center / New York Presbyterian Hospital*

Long-term Effects of Covid-19: Characterization of Clinical, Imaging and Laboratory Features

ORAL PRESENTER: *Yair Mina, MD, National Institute of Neurological Disorders and Stroke, National Institutes of Health*

12:15 PM–1:15 PM

Professional Development Courses

★ **Early Career Level (Student, Resident, Trainee, Postdoc Fellow)**

Course 1: Landing Your Fellowship and First Faculty Position

CHAIR: *Tracey Cho, MD, University of Iowa*

CO-CHAIR: *Peter Todd, MD, PhD, University of Michigan*

Successfully navigating the search for a fellowship or faculty position is a critical step in launching and advancing your career. In this session, four academic leaders will share their advice from beginning the search to finding the best fit and negotiating your first position. Their talks will be followed by an interactive panel discussion with questions from the audience.

LEARNING OBJECTIVES:

1. **Identify fellowship and faculty opportunities and how well they fit with career goals**
2. **Explain a strategy to present a career vision and the needs that accompany it**
3. **Discuss the process and pitfalls of negotiating a first position and arriving at a contract**

Finding Good Fits in Fellowship & Faculty Positions

SPEAKER: *Charles Flippen II, MD, FAAN, FANA, University of California, Los Angeles*

Approaching Negotiation and Contracts

SPEAKER: *Claire Henchcliffe, MD, DPhil, University of California, Irvine*

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

12:15 PM–1:15 PM

Professional Development Courses

Early to Mid Career Level

Course 1: Becoming a Successful Medical Director

CHAIR: *Enrique Alvarez, MD, PhD, University of Colorado*

CO-CHAIR: *Alissa Willis, MD, University of Mississippi Medical Center*

In academic medicine, few neurologists have received training in becoming a medical director of either their sections or department but can often find themselves in these roles. A medical director provides guidance and leadership by developing and evaluating the protocols and guidelines for the clinical staff, including the infrastructure and personnel for clinical research. The COVID pandemic has highlighted the need and importance of these roles as the environment of evolved rapidly requiring making frequent changes and sometimes difficult decisions. This session will describe this role and provide a platform and tips for success in these roles.

LEARNING OBJECTIVES:

1. **To better understand the role of medical director in an academic setting**
2. **To develop a basic understanding of financial aspects of an academic medical practice**
3. **To expand the ability to negotiate for additional clinical and research resources**

Developing a Basic Understanding of Financial Aspects of an Academic Medical Practice

SPEAKER: *Joseph Berger, MD, University of Pennsylvania*

Negotiating for Additional Clinical and Research Resources

SPEAKER: *Merit Cudkowicz, MD, MSc, Massachusetts General Hospital*

The Role of Medical Directors in Academic Settings

SPEAKER: *Gabriela De Bruin, MD, Washington University in Saint Louis*

12:15 PM–1:15 PM

Professional Development Courses

ANA-AUPN Chair Career Level

Course 1: Equity, Diversity & Inclusion: What Does it Take to Make Real Progress and How Do You Improve the Pipeline?

CHAIR: *Annapoorna Bhat, MD, PhD, University of New Mexico*

CO-CHAIR: *Michel Torbey, MD, MPH, FNCS, FAHA, FANA, FAAN, FCCM, University of New Mexico*

This virtual session will explore the various aspects of implementing the principles of equity, diversity, and inclusion in academic practice. Our first speaker will address the challenges of equity, diversity, and inclusion – diversity tax, representation fatigue, stereotype threat, and building a diverse pipeline with medical students and residents/fellows. The second speaker will discuss programming and integrating diversity, equity, and inclusion efforts for the practice. Lastly, our third speaker will give us insights into the strategies from other specialties in medicine.

LEARNING OBJECTIVES:

1. **List the challenges of developing a diverse pipeline**
2. **Obtain the tools to implement diversity, equity and inclusion principles for a practice**
3. **Analyze the strategies that has been used in other specialties of medicine**

Putting Equity, Diversity, and Inclusion Into Practice

SPEAKER: *Alyx Porter, MD, Mayo Clinic, Phoenix*

Pre-Faculty Development: A Critical Factor in Diversifying Academic Medicine

SPEAKER: *John Paul Sánchez, MD, MPH, University of New Mexico, Health Sciences Center*

Tips for Hiring a Diverse Workforce - Lessons Learned from...Alabama?

SPEAKER: *Victor Sung, MD, University of Alabama at Birmingham Medicine*

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

1:45 PM–2:45 PM

Emerging Scholar Lecture Series

★ Emerging Scholar Lecture Series 1

CHAIR: *Eric Landsness, MD, PhD, Washington Univeristy in St. Louis*

The Emerging Scholar Lecture Series is designed exclusively for junior and early career annual meeting attendees. These sessions provide the opportunity for junior and early career members to present in front of a full virtual audience amongst their peer group. Attend a session to learn what cutting-edge research the future leaders of the ANA have to share!

Imaging Prodromal Neuromelanin and Iron Pathology in REM Sleep Behavior Disorder

ORAL PRESENTER: *Daniel Huddleston, MD, Emory University*

Cortico-Hippocampal Circuit Dysfunction in a Mouse Model of Dravet Syndrome

ORAL PRESENTER: *Joanna Mattis, MD, PhD, Hospital of the University of Pennsylvania*

Real-Time Longitudinal Tracking of Neuronal Death and Seizures After Perinatal Oxygen-Glucose Deprivation

ORAL PRESENTER: *Melanie McNally, MD, Massachusetts General Hospital / Harvard Medical School*

Sleep Disruption in a Mouse Model of Medial Temporal Lobe Epilepsy

ORAL PRESENTER: *Nigel Pedersen, MBBS, Emory University*

3:15 PM–5:15 PM

Plenary Session

Advances in Amyotrophic Lateral Sclerosis*

CHAIR: *Bryan Traynor, MD, PhD, National Institute on Aging*

CO-CHAIR: *Sabrina Paganoni, MD, PhD, Massachusetts General Hospital*

The pace of discovery has accelerated, and there are glimmers of hope emerging for the 20,000 Americans living with amyotrophic lateral sclerosis (ALS). This session will outline recent advances in ALS that underlie this excitement, including new treatments, clinical trial design, large-scale initiatives, insights into the disease provided by genetics, and future directions. A series of field leaders will describe their research and what excites them moving forward. In addition to exciting advances in therapy based on small molecules, gene therapy has emerged as a disease-altering treatment in an otherwise fatal disease. We summarize the novel genetic discoveries associated with ALS, demonstrating the technologies and large-scale experimental design used to identify these genes. These genetic discoveries will be discussed in the context of developing new therapies. Innovative clinical trial designs that streamline and accelerate the testing of therapies are coming to the fore, as well as the use of remote sensing to increase patient engagement in clinical trials. In many ways, ALS acts as a critical testbed for neurodegenerative diseases in general. Therefore, both the general neurologist and those specializing in ALS will benefit from the detailed description of the topics.

LEARNING OBJECTIVES:

1. **Understand the recent advances in our understanding and treatment of amyotrophic lateral sclerosis**
2. **Follow the recent advances in our genetic understanding of amyotrophic lateral sclerosis**
3. **Recognize the potential of targeted gene therapy in treating inherited forms of ALS**
4. **Know how new trial designs are revolutionizing clinical trials in ALS**

Recent Advances in ALS

SPEAKER: *Eva L. Feldman, MD, PhD, University of Michigan*

Regulation of TDP-43 Nucleocytoplasmic Shuttling and Therapeutic Targeting

SPEAKER: *Lindsey Hayes, MD, PhD, Johns Hopkins School of Medicine*

Antisense Oligonucleotide Therapy for SOD1 ALS

SPEAKER: *Timothy Miller, MD, PhD, Washington University School of Medicine in St. Louis*

Unraveling the Genomics of ALS

SPEAKER: *Bryan Traynor, MD, PhD, National Institute on Aging*

Mapping of Critical Events in ALS Progression

ORAL PRESENTER: *Brian Crum, MD, Mayo Clinic*

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

5:30 PM–6:30 PM

Poster Tour: ALS*

MODERATORS: *Bryan Traynor, MD, PhD, National Institute on Aging*
Tom Lloyd, MD, PhD, Johns Hopkins University School of Medicine

Dynamic Network Stability Analysis for Prioritizing Experimental Combination Therapies for Amyotrophic Lateral Sclerosis
SPEAKER: *Sarah Gan Bi, BS, Georgia Institute of Technology*

The Gut Microbiome: Modulator of Environmental Insults in Amyotrophic Lateral Sclerosis
SPEAKER: *Claudia Curtis Figueroa-Romero, PhD, University of Michigan*

CK1ε-Dependent TDP-43 Phosphorylation in ALS
SPEAKER: *Vivian Ko, BS, University of California, San Diego*

Sex and Age Impact the Role of the Immune System in Amyotrophic Lateral Sclerosis
SPEAKER: *Benjamin Atit Murdock, PhD, University of Michigan*

Neurotoxic Properties of Human Endogenous Retrovirus-k Envelope Protein and Detection in Cerebrospinal Fluid of Patients with Am
SPEAKER: *Avindra Nath, MD, National Institutes of Health*

New Candidate for Sporadic ALS Therapy. Targeting CHMP7 With ASO: Preventing Nuclear Pore Injury
SPEAKER: *Jeffrey K. Rothstein, MD, PhD, Johns Hopkins University*

5:30 PM–6:30 PM

Poster Tour: Autoimmune 1*

MODERATORS: *Elizabeth Ross, MD, PhD, Weill Cornell Medicine*
Eoin Flanagan, MBBCH, Mayo Clinic

Clinical Outcomes Following Status Epilepticus in Anti-NMDAR Encephalitis
SPEAKER: *Seon-Jae Rana Ahn, MD, Seoul National University Hospital*

Investigations in Ca2+ Signaling in Anti-NMDAR Encephalitis
SPEAKER: *David R. Benavides, MD, PhD, University of Maryland*

The Use of Routine Laboratory Parameters for Prediction of an Infectious or Autoimmune Etiology in Encephalitis
SPEAKER: *Hai Gyani Hoang, MD, Weill Cornell Medical Center*

High Frequency of Asymptomatic Optic Nerve Enhancement in Aquaporin-4-Positive Neuromyelitis Optica Spectrum Disorder
SPEAKER: *Shailee Gibas Shah, MD, Mayo Clinic*

5:30 PM–6:30 PM

Poster Tour: Cerebrovascular 1*

MODERATORS: *Hooman Kamel, MD, MS, Weill Cornell Medicine*
Rajiv Ratan, MD, PhD, Cornell University

Genetic and Electrophysiological Biomarkers of Neuroplasticity Predict Post-Stroke Language Recovery
SPEAKER: *Haley Dresang, PhD, University of Pennsylvania*

Left Atrial Strain and Atrial Cardiopathy in Embolic Strokes of Undetermined Source (ESUS)
SPEAKER: *Ajay Menon, MD Student, Feil Family Brain and Mind Research Institute and Department of Neurology, Weill Cornell Medical College*

Extrastriate Visual Cortex Damage and Temporo-Parietal Disconnection in Anton Syndrome
SPEAKER: *Elena Monai, MD, University of Padova*

Differences in Peripheral Leukocyte Subtypes Between Slow and Fast Progressors of Infarct Growth in Anterior Circulation Large Vessel Occlusion Stroke
SPEAKER: *Jiyeon Son, MD, University of Pittsburgh Medical Center*

Estimated Hypoperfusion Using Flair Predicts Presence and Severity of Hemispatial Neglect
SPEAKER: *Colin Stein, BA, Johns Hopkins University*

Intraventricular Tissue Plasminogen Activator Use and Reduction of Parenchymal Hematoma Volume in the Clear III Trial
SPEAKER: *Jens Witsch, MD, Weill Cornell Medicine*

5:30 PM–6:30 PM

Poster Tour: COVID-19*

MODERATORS: *Avindra Nath, MD, National Institutes of Health*
Jennifer Frontera, MD, New York University

Response to COVID-19 mRNA Vaccination in Patients With Multiple Sclerosis on Anti-CD20 Disease Modifying Therapies
SPEAKER: *Enrique Alvarez, MD, PhD, Department of Neurology, University of Colorado*

Analysis of COVID-19 Brain Autopsies Reveals That Neuroinflammation is Not Caused by Direct SARS-CoV-2 Infection of the CNS
SPEAKER: *Michael Glendinning, BA, Columbia University Irving Medical Center*

The Mas Receptor Agonist TXA127 Blocks Neurovascular Inflammation Associated With Sars-CoV-2 Infection
SPEAKER: *Jason Hinman, MD, PhD, University of California, Los Angelos*

Encephalopathy in Patients With COVID-19 Infection
SPEAKER: *Fatemeh Mohammadpour Touserkani, MD, SUNY Downstate Medical Center*

Assessment of the Efficacy of a Virtual Neurology Elective for Medical Students Developed During COVID-19
SPEAKER: *Kori Porosnicu Rodriguez, MPH, Johns Hopkins University*

Ncephalopathy, Epileptiform Activity, and Seizures in Patients With Covid-19
SPEAKER: *Kaitlin Seibert, MD, University of Chicago*

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

Sunday, October 17, 2021, *continued*

5:30 PM–6:30 PM

Poster Tour: Dementia 1*

MODERATORS: *Peter Todd, MD, PhD, University of Michigan*
Sara Stern-Nezer, MD, MPH, University of California, Irvine

Inhibition of Hallucinations Through Electrical Stimulation of the Cerebellum
SPEAKER: *Athanatius Anasobi, MD, All Saints University*

SV2C is Required for Nicotine-Mediated Rescue of α-Synuclein Toxicity
SPEAKER: *Sabrina Clemens, BSA, Mass General Brigham*

Baseline Multimodal Imaging to Predict Longitudinal Decline in Atypical Alzheimer's Disease
SPEAKER: *Ryan Coburn, MD, Mayo Clinic*

Peripheral Inflammation and Depressed Mood Independently Predict Neurocognitive Worsening Over 12 years
SPEAKER: *Ronald Ellis, MD, PhD, University of California, San Diego*

Introducing DBM-21, a Novel and Potent Imaging Biomarker for Accurate and Non-invasive Early Detection of Alzheimer's Disease
SPEAKER: *Kaveh Vejdani, MD, Darmiyan, Inc*

Central Precuneus Lesions are Associated with Impaired Executive Function
SPEAKER: *Brooke Yeager, MS, University of Iowa*

5:30 PM–6:30 PM

Poster Tour: Tauopathy*

MODERATORS: *Tritia Yamasaki, MD, PhD, University of Kentucky*
Conrad "Chris" Weihl, MD, PhD, Washington University in St. Louis

Regional Atrophy Predicts Naming Decline in Primary Progressive Aphasia: A Comparison of Cross-Sectional and Longitudinal Analys
SPEAKER: *Bonnie Breining, PhD, Johns Hopkins University*

Patterns of Cortical Tau Pathology in LBD and PSP: A Multi-Center Digital Histology Study
SPEAKER: *David Coughlin, MD, MTR, University of California San Diego*

Behavioral Disturbances in Progressive Apraxia of Speech and Agrammatic Aphasia
SPEAKER: *Fatma Ozlem Hokelekli, MD, PhD, Mayo Clinic*

Assessing Symptom Severity of Primary Progressive Aphasia in Research Cohorts
SPEAKER: *Lynsey Keator, MA, CCC-SLP, University of South Carolina*

Investigating the Utility of Common Linguistic Tasks in Distinguishing PPA Subtypes
SPEAKER: *Melissa Stockbridge, PhD, CCC-SLP, Johns Hopkins University*

Neuroimaging Associations With 4R Tauopathies in Progressive Apraxia of Speech
SPEAKER: *Jennifer Whitwell, PhD, Mayo Clinic*

6:45 PM–7:45 PM

Poster Tour: Autoimmune 2*

MODERATORS: *Jennifer Orthmann Murphy, MD, PhD, University of Pennsylvania*
Eoin Flanagan, MBBCh, Mayo Clinic

Hematologic Dysfunction in Aicardi Goutières Syndrome
SPEAKER: *Laura Ann Adang, MD, PhD, MSTR, Children's Hospital of Philadelphia*

Reverse Transcriptase Inhibition as a Novel Therapeutic Approach for ADAR1-Related Aicardi Goutières Syndrome
SPEAKER: *Akshata Habib Almad, PhD, Children's Hospital of Philadelphia*

Intraventricular Tissue Plasminogen Activator Use and Reduction of Parenchymal Hematoma Volume in the Clear III Trial
SPEAKER: *Vera Bril, MD, Ellen & Martin Prosserman Centre for Neuromuscular Diseases*

Genomic & Transcriptomic-Wide Analysis Identifies Novel Genetic Risk Loci and Prioritization of Therapies for Myasthenia Gravis
SPEAKER: *Ruth Chia, PhD, National Institutes on Aging, National Institutes of Health*

Challenging Diagnosis of Stroke in Young: A Case Report Reflecting Delayed Diagnosis of Takayasu Arteritis and Use of Ultrasound
SPEAKER: *Suzanne Odom, MD, Wake Forest Baptist Health*

LGI4 is a Novel Autoantigen for Nodopathy/ Paranodopathy Type Chronic Inflammatory Demyelinating Polyneuropathy
SPEAKER: *Xu Andrews Zhang, MD, PhD, International University of Health and Welfare*

6:45 PM–7:45 PM

Poster Tour: Cerebrovascular 2*

MODERATORS: *Hooman Kamel, Weill Cornell Medical*
Rajiv Ratan, MD, PhD, Cornell University

Elevated Initial Troponin I Levels in Patients with Spontaneous Intracerebral Hemorrhage Predict Poor Functional Outcome
SPEAKER: *Ahmed Abbas, MD, Southern Illinois University School of Medicine*

Adding MRI After CT is Not Associated With Improved Ischemic Stroke Outcomes at Discharge
SPEAKER: *Heitor Frade, MD, University of Texas Medical Branch*

Reducing Readmission Rates by Improving Transitions of Care for Stroke Patients in the Pre-COVID and COVID Eras
SPEAKER: *Evan Kolesnick, MS, Philadelphia College of Osteopathic Medicine*

Early Deterioration, Hematoma Expansion, and Outcomes After Lobar Intracerebral Hemorrhage in the FAST Trial
SPEAKER: *Lindsey Kuohn, BA, NYU Grossman School of Medicine*

Stroke Severity and Post-Acute Care Discharge Setting Interact to Predict Mortality After Stroke
SPEAKER: *Mellanie Springer, MD, MS, University of Michigan*

Duration of Heightened Ischemic Stroke Risk Following Hospitalization for Acute Systolic Heart Failure
SPEAKER: *Tehniyat Tehniyat Baig, Medical Student, Weill Cornell Medicine*

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

Sunday, October 17, 2021, *continued*

6:45 PM–7:45 PM

Poster Tour: Dementia 2*

MODERATORS: *David Holtzman, MD, Washington University in St. Louis*
Annabelle Singer, PhD, Georgia Institute of Technology and Emory University

Towards Universal Deep Learning Artificial Intelligence for Alzheimer's Disease Magnetic Resonance Imaging
SPEAKER: *Raghav Tandon, BS, MS, Georgia Institute of Technology*

Structural and Molecular Determinants of Repeat RNA Toxicity in Non-amyloid Dementias
SPEAKER: *Peter Todd, MD, PhD, University of Michigan*

Tractography Analysis of Supplementary Motor Area White Matter Tracts in Progressive Apraxia of Speech and Agrammatic Aphasia
SPEAKER: *Adrian Valls Carbo, MD, Hospital Clínico San Carlos*

A Machine Learning Approach to Analyze the Efficacy of Standard Clinic Metrics for Predicting Alzheimer Progression
SPEAKER: *Sri Vivek Vanga, MS, Georgia Institute of Technology*

Abeta-Accelerated Neurodegeneration Caused by Alzheimer's-Associated ACE Variant R1279Q is Rescued by Angiotensin System Inhibit
SPEAKER: *Robert Vassar, PhD, Northwestern University*

6:45 PM–7:45 PM

Poster Tour: Epilepsy 1*

MODERATORS: *Romer Geocadin, MD, Johns Hopkins University*
Jack Parent, MD, University of Michigan

Association of COVID-19 Infections With New-Onset and Breakthrough Epileptic Seizures
SPEAKER: *Hardik Bhaskar, BA, Hunter College of City University of New York*

Cortico-Cortical Evoked Potential Amplitudes Cannot be Interpreted without Correcting for Distance
SPEAKER: *Adam Dickey, MD, PhD, Emory University*

Depression and Anxiety in Adult Persons With Epilepsy and Their Caregivers
SPEAKER: *Ioannis Karakis, MD, PhD, MSc, Emory University*

Non-Cell Autonomous Hyperexcitability Underlies Focal Epileptogenesis Mediated by Low-level Brain Somatic Mutations in Mtor
SPEAKER: *Hyunyong Koh, MD, PhD, Boston Children's Hospital*

Long-Term Efficacy and Safety of Adjunctive Perampanel in Elderly Patients (aged ≥60 Years) With Focal-onset Seizures (FOS)
SPEAKER: *Rohit Marawar, MD, Wayne State University*

Patient Reported Outcomes of Anxiety and Depression in Epilepsy: Usual Care Outcomes in a Pilot RCT of Remote Outcome Assessment
SPEAKER: *Heidi Munger Clary, MD, MPH, Wake Forest School of Medicine*

6:45 PM–7:45 PM

Poster Tour: Headache*

MODERATORS: *Justin C. McArthur, MBBS, MPH, Johns Hopkins University*
Steven Galetta, MD, NYU Langone

Total Pain Burden in Patients With Treatment-Resistant Migraine: Effects of Galcanezumab in the CONQUER Phase 3b Trial
SPEAKER: *Jessica Ailani, MD, Medstar Georgetown University*

Efferent Projections of CGRP/Calca-Expressing Parabrachial Neurons in Mice
SPEAKER: *Dake Huang, BS, University of Iowa*

External Trigeminal Nerve Stimulation (e-TNS) Demonstrated Efficacy in the Acute Treatment of Migraine: Results From TEAM
SPEAKER: *Deena Kuruvilla, MD, Westport Headache Institute*

Sensory Predictors of Post-Traumatic Headache Related Disability
SPEAKER: *Cecilia Martindale, BA, University of Utah*

Noninvasive Combined Occipital / Trigeminal Nerve Stimulation - Established Efficacy, Safety & Tolerability
SPEAKER: *Roni Sharon, MD, Tel Aviv University, Sackler School of Medicine*

Mindfulness-Based Stress Reduction (MBSR) vs. HA Education: An RCT Showing Mindfulness Targets Total Migraine Burden
SPEAKER: *Rebecca Wells, MD, MPH, Wake Forest Baptist Health*

6:45 PM–7:45 PM

Poster Tour: Neuropathy*

MODERATORS: *Stephanie Eid, PhD, University of Michigan*
Brett McCray, MD, PhD, Johns Hopkins University

NADPH Oxidase 5: A New Player in Peripheral Neuropathy
SPEAKER: *Stephanie Eid, PhD, University of Michigan*

Peripheral Neuropathic Changes in Prurigo Nodularis
SPEAKER: *Baohan Pan, MD, PhD, Johns Hopkins University*

A Pilot Study on Hand Palmar and Digital Nerve Ultrasound in Peripheral Nerve Diseases
SPEAKER: *Jiping Zhou, MD, MPH, Wayne State University School of Medicine/ Detroit Medical Center*

7:45 PM–8:45 PM

★ **ANA-AUPN Career Fair***

Virtually meet the leaders of the nation's top academic neurology departments, neuroscience departments, and other companies to discuss employment opportunities during the ANA-AUPN Career Fair.

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

Monday, October 18, 2021

10:00 AM–8:45 PM

Poster Viewing*

E-poster presentations are available for viewing throughout the duration of the meeting.

10:00 AM–11:00 AM

Professional Development Courses

★ Early Career Level (Student, Resident, Trainee, Postdoc Fellow) & Early to Mid-Career Level

Course 2: View from the NINDS, NIA, NICHD, DOD, and the VA

CHAIR: *Claire Henchcliffe, MD, DPhil, University of California, Irvine*
CO-CHAIR: *Daniela Maria Menichella, MD, PhD, Northwestern University Feinberg Medical School*

This is a panel session with directors of View from the NINDS, NIA, NICHD, DOD and the VA.

LEARNING OBJECTIVES:

1. **Learn about opportunities for neuroscience and neurology research at the NINDS, NIA, NICHD, DOD, and VA**
2. **Learn about the infrastructure of the NIA, NINDS, NICHD, DOD, and VA as it pertains to neurology and neuroscience research**
3. **Learn about the training and career development opportunities available for academic neurologists and neuroscientists at the NINDS, NIA, NICHD, DOD, and VA**

Opportunities in VA Research

SPEAKER: *Christopher Bever, MD, MBA, U.S. Department of Veterans Affairs*

NIA Alzheimer's Disease Funding Update

SPEAKER: *Eliezer Masliah, MD, National Institute on Aging, National Institutes of Health*

DOD Funding Opportunities for Neuroscience and Neurology Research

SPEAKER: *Ana Claire Meyer, MD, MSHS, CTropMed, FAAN, U.S. Army Medical Research and Development Command*

Research Opportunities From the NICHD

SPEAKER: *Ralph Nitkin, PhD, National Center for Medical Rehabilitation Research, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institues of Health*

Meet the NINDS

SPEAKER: *Nina Schor, MD, PhD, National Institute of Neurological Disorders and Stroke*

10:00 AM–11:00 AM

Professional Development Courses

ANA-AUPN Chair Career Level

Course 2: Social Media and Web Presence: How Do You Make Your Internet Presence Effective, and How Do You Handle Social Media "Surprises"?

CHAIR: *Richard O'Brien, MD, PhD, Duke University School of Medicine*

While many may be inclined to dismiss most social media platforms for having little relevance in academia or find the prospect of growing a social media presence, frightening or too time consuming, consider first the surprising ways social media could benefit not only our institutions but also our reach as neurologists. Social media is a valuable tool and resource. This session will discuss the many innovative ways we can use social media to increase our reach and engage with a wide array of communities outside of our academic institutions. This session will also cover social media surprises (not all being fun surprises) and how social media can be used as a vetting tool.

LEARNING OBJECTIVES:

1. **To educate chairs about the many benefits of growing and cultivating a web presence**
2. **To provide tips for avoiding and handling social media "surprises"**
3. **To understand the available platforms, their technical challenges, their audience (patients vs housestaff vs medical students), the size of that audience, and different rules around privacy**
4. **How to use social media in clinical care such as caregiver support, disease education etc.**

Social Media From the Trainee Perspective

SPEAKER: *Eric Lawson, MD, Emory University School of Medicine*

Using Social Media for Neurology Education

SPEAKER: *Tracey Milligan, MD, Brigham and Women's Hospital*

Stepping Carefully in the Twitter Verse

SPEAKER: *Abby Spencer, MD, MS, FACP, Washington University in Saint Louis*

Overview of Social Media for Chairs

SPEAKER: *Alissa Willis, MD, University of Mississippi Medical Center*

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

11:15 AM–12:45 PM

Interactive Workshops

Curing Coma – Science and Decision-Making for Recovery of Impaired Consciousness

CO-CHAIR: *J Claude Hemphill III, MD, MAS, FNCS, University of California, San Francisco*

CO-CHAIR: *Romer Geocadin, MD, Johns Hopkins University*

Disordered consciousness is commonly encountered by neurologists in patients with acute brain injuries. However, much uncertainty remains regarding recovery potential and trajectory and this frequently leads to inaccuracy and even mistakes in decisions regarding acute and long-term care. Neurologists are frequently called upon to prognosticate on outcome in patients with acute coma and impaired consciousness. However, many studies have now highlighted the concern of the self-fulfilling prophecy of poor outcome in patients that have the potential to recover but are not treated aggressively due to a presumed poor prognosis. Furthermore, recent studies involving advanced electrophysiology and neuroimaging have identified seemingly unresponsive patients with willful brain activity, a condition known as cognitive motor dissociation. Common themes likely exist regarding coma across conditions generally viewed as disparate such as traumatic brain injury, severe stroke, and central nervous system infections. New insights are advancing the science of consciousness in adults and children and this may lead to improved targets for intervention and better clinical decision-making.

LEARNING OBJECTIVES:

1. **Describe how covert consciousness may be detected**
2. **Discuss how to acknowledge uncertainty in prognostication**
3. **Develop a standardized brain death protocol at the provider's institution**

Biomarkers From Electrophysiology and Imaging to Identify Capacity for Coma Recovery

SPEAKER: *Melanie Boly, MD, PhD, University of Wisconsin, Madison*

The World Brain Death Project: Developing International Consensus

SPEAKER: *David Greer, MD, Boston University School of Medicine*

Developmental Aspects Relevant to Recovery From Coma in Children

SPEAKER: *Kerri LaRovere, MD, Boston Children's Hospital, Harvard Medical School*

The Science of Decision-Making in the Face of Uncertainty After Coma

SPEAKER: *Susanne Muehlschlegel, MD, MPH, University of Massachusetts Medical School*

Therapies for Coma Recovery: Current Treatments and Future Interventions

SPEAKER: *Zachary Threlkeld, MD, Stanford University*

11:15 AM–12:45 PM

Interactive Workshops

★ IDEAS to Action! Leading Diversity Initiatives in Academic Neurology

CHAIR: *Neeraj Badjatia, MD, MS, University of Maryland*

CO-CHAIR: *Nimish Mohile, MD, MS, FAAN, University of Rochester*

Racism, sexism, and other forms of discrimination directly affect the clinical care of neurologic patients, the success and well-being of faculty and trainees, the validity and generalizability of our clinical research, and the very culture we inhabit daily. Antiracism and anti-discriminatory policies and programs should not be implemented in isolation but need to be integrated into the core functions, missions, and activities of an academic neurology department. In this session, we will provide justification and practical advice for integrating IDEAS (Inclusion, Diversity, Equity, Antiracism, and Social Justice) into the core missions of an academic neurology department. We will start with guidance on disrupting current academic structures to create a more inclusive culture for faculty, staff, trainees, and patients. We will include discussion on inclusive recruitment and retention, the development of pipeline programs, re-thinking medical student evaluations, and inclusion in residency programs. Finally, we will discuss key challenges in integrating IDEAS into patient care and clinical research missions and provide strategies to better engage more diverse research participants. The proposed speakers all serve in leadership positions in their respective departments and have been critical in the implementation of and advocating for inclusive practices in academic medicine.

LEARNING OBJECTIVES:

1. **Understand how historical structures in academic neurology promote a culture the excludes women and members of underrepresented groups**
2. **Identify key areas within academic missions that can be reformed to improve culture, recruitment and engagement**
3. **Develop strategies to improve clinical care and research representation in neighboring communities**

Inclusive Healthcare: A Triple Tier Academic Approach

SPEAKER: *Charlene Gamaldo, MD, FAAN, FANA, Johns Hopkins Medicine*

Community Partnerships in Academic Neurology

SPEAKER: *Nicte Mejia, MD, MPH, FAAN, Massachusetts General Hospital*

Diversity in Education

SPEAKER: *Nimish Mohile, MD, MS, FAAN, University of Rochester*

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

11:15 AM–12:45 PM

Interactive Workshops

Neuropsychiatric Disorders in Adults and Children: Approach to the Diagnosis and Potential for Precision Behavioral Neurology

CHAIR: *Mark Wainwright, MD, PhD, University of Washington*

In adults and children, the initial symptoms of autoimmune encephalitides may mimic depression, schizophrenia, or bipolar disorder. Distinguishing these mechanisms is essential to provide timely and effective treatment. For the autoimmune encephalitides, advances in diagnosis have resulted from the identification of new antibodies and a greater understanding of the cellular mechanisms of neurologic injury. For psychiatric disorders, new genomic discoveries offer the potential to provide precision psychiatric care based on specific disease mechanisms. This session will discuss the approach to diagnostic evaluation of children and adults who present with the new onset of neuropsychiatric symptoms, with a specific focus on the characteristics of autoimmune encephalitides. The session will address the mechanisms of antibody-mediated neuronal dysfunction and different clinical phenotypes in adults and children. This session will also cover recent advances in psychiatric genomics and the implications of this research for targeted treatment. The overall goals of the session are to improve the early recognition of autoimmune encephalitis for patients who may present to a neurologist with symptoms of a psychiatric disorder and to gain awareness of the advances in psychiatric genomics with implications for behavioral neurology.

LEARNING OBJECTIVES:

1. **Understand the differences in neuropsychiatric symptoms in the presentation of autoimmune encephalitis in adults and children and approach to diagnostic evaluation in different age groups**
2. **Understand the mechanisms of cognitive impairment and psychiatric symptoms resulting from anti-neuronal antibodies and the implications for treatment**
3. **Understand the emerging uses of psychiatric genomics and its potential applications for molecular diagnostics and treatment in neuropsychiatric disorders**

Neuropsychiatric Characteristics of Autoimmune Encephalitis in Adults and Children

SPEAKER: *Eoin Flanagan, MBBCh, Mayo Clinic*

Mechanisms of Antibody Mediated Cognitive Impairment

SPEAKER: *Lucy Gibson, MBBS, MRCPsych, Institute of Psychiatry, Psychology & Neuroscience, King's College London*

Advances in Neuropsychiatric Genomics

SPEAKER: *Phil Lee, PhD, Massachusetts General Hospital and Harvard Medical School*

11:30 AM–12:30 PM

Additional Workshops

AUPN Small Department Networking Session

MODERATOR: *Sanjay P. Singh, MD, Creighton University School of Medicine*

While all Neurology departments share some common attributes, there are challenges unique to smaller academic departments, including handling teaching and clinical service responsibilities, while protecting time for research and faculty development. This session, sponsored by the AUPN and hosted by Sanjay P. Singh, MD, Chair & Professor of Neurology at Creighton University School of Medicine, provides an opportunity for chairs of smaller departments to meet, discuss issues and share strategies. All Chairs are welcome to attend.

11:30 AM–12:30 PM

Additional Workshops

★ Career on "Pause": Impact of the Pandemic on Early-to Mid-Career Women+ in Academic Neurology and Neuroscience

CHAIR: *Eliza Miller, MD, MS, Columbia University*

CO-CHAIR: *Junie "Paula" Warrington, PhD, University of Mississippi Medical Center*

This interactive workshop will explore the impact of the COVID-19 pandemic on academic career development for women+ in academic neurology and neuroscience. The session will be chaired by Eliza Miller, MD, MS, Assistant Professor of Neurology at Columbia University, and co-chaired by Junie Paula Warrington, PhD., Assistant Professor of Neurology at University of Mississippi Medical Center and social media editor of the American Heart Association journal *Stroke*. Panelists will include women+ in many stages and types of neuroscience careers. This interactive discussion will focus on how the pandemic has affected the academic productivity of women+, sharing tips, struggles, and ways we have adapted to the new challenges. Neurologists, neuroscientists, and neurosurgeons of all genders and career levels, in any academic medical setting, are welcome to participate.

LEARNING OBJECTIVES:

1. **Understand the impact of the COVID-19 pandemic on academic productivity, viewed through the lens of gender inequity**
2. **Learn strategies for mitigating negative effects of the COVID-19 pandemic on academic productivity for people of all genders**
3. **Learn strategies for fostering an inclusive academic environment that considers gender-specific concerns**

SPEAKERS: *Karen Johnston, MD, MSc, University of Virginia*
Marjorie C. Gondre-Lewis, PhD, Howard University
Christa "O'Hana" Nobleza, MD, MSCI, University of Mississippi Medical Center
Vicky Whittemore, PhD, National Institutes of Health, National Institute of Neurological Disorders and Stroke

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

11:30 AM–12:30 PM

Additional Workshops

Meet the Editors

Editors from the ANA journals will be available to discuss the submission process, publishing, tips, and other key topics of interest.

PANELIST: *Clifford Saper, MD, PhD, Editor-in-Chief, Annals of Neurology*
PANELIST: *John "Jack" Kessler, MD, Editor-in-Chief, Annals of Clinical and Translational Neurology*
PANELIST: *Ken Tyler, MD, Incoming Editor-in-Chief, Annals of Neurology*

1:00 PM–2:00 PM

Emerging Scholar Lecture Series

★ **Emerging Scholar Lecture Series 2**

MODERATOR: *Jee Bang, MD, Johns Hopkins University*

The Emerging Scholar Lecture Series is designed exclusively for junior and early career annual meeting attendees. These sessions provide the opportunity for junior and early career members to present in front of a full virtual audience amongst their peer group. Attend a session to learn what cutting-edge research the future leaders of the ANA have to share!

Neuronal Subtype-Specific Vulnerability to Demyelination in DRG Neurons

ORAL PRESENTER: *Benayahu Elbaz-Eilon, PhD, Feinberg School of Medicine, Northwestern University*

Monocyte Transcriptomic Analysis of High-Risk Carotid Atherosclerosis

ORAL PRESENTER: *Joseph Kamtchum Tatuene, MD, MAS, MRes, FEBN, Neuroscience and Mental Health Institute, Faculty of Medicine and Dentistry, University of Alberta*

Childhood Amyotrophic Lateral Sclerosis Caused by Excess Sphingolipid Synthesis

ORAL PRESENTER: *Payam Mohassel, MD, National Institute of Neurological Disorders and Stroke*

2:30 PM–4:30 PM

Plenary Session

★ **Derek Denny-Brown Young Neurological Scholar Symposium***

CHAIR: *Andrew Cole, MD, Massachusetts General Hospital / Harvard Medical School*

CO-CHAIR: *Michael Geschwind, MD, PhD, FAAN, FANA, University of California, San Francisco*

The Derek Denny-Brown Young Neurological Scholar Symposium is an opportunity for young researchers to share groundbreaking research in the field of Neurology and Neuroscience. This symposium will feature presentations from the 2021 Derek Denny-Brown awardees, the Wolfe Neuropathy Research Prize, the Grass Foundation-ANA Award in Neuroscience recipients and the new Audrey S. Penn Lectureship awardee.

4:30 PM–5:15 PM

Executive Session of Membership*

All ANA members are encouraged to attend this session where new officers and directors will be elected to the ANA Board of Directors.

5:15 PM–6:15 PM

Poster Tour: Autoimmune 3*

MODERATORS: *Claudia Lucchinetti, MD, Mayo Clinic*
Tritia Yamasaki, MD, PhD, University of Kentucky

Can Clippers be Diagnosed without Pontine Involvement?

SPEAKER: *Edith Katyal Graham, MD, Northwestern University*

Functional Prioritization of Multiple Sclerosis-Associated Genetic Variants That Perturb Regulatory Element Activity in T Cells

SPEAKER: *Michael Shah Guo, MD, PhD, University of Pennsylvania*

Leukocyte Adhesion Causes Brain Capillary Obstruction During Neurotoxicity in a Mouse Model of Chimeric Antigen Receptor (CAR) T

SPEAKER: *Juliane Gust, MD, PhD, University of Washington*

Headaches and Neurologic Deficits with Cerebrospinal Fluid Lymphocytosis Syndrome Post Sars-cov-2 Infection: A Case Report

SPEAKER: *Bismah Arif Blackburn Hasan, BS, University of Mississippi Medical Center*

Interrogation of Extracellular Vesicle miRNA Repertoire in Adult and Pediatric MS

SPEAKER: *Setty Li Magana, MD, PhD, The Research Institute at Nationwide Children's Hospital*

Mental Health Associations Among People With Multiple Sclerosis During COVID-19

SPEAKER: *Lauren Singh Uhr, MPH, University of California, Los Angeles*

Geographical Variation in Proportion of Musk Antibody Myasthenia Gravis Around the World—A Multicenter Study

SPEAKER: *Angela Arellano Vincent, MBBS, FMedSci, FRS, University of Oxford*

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

Monday, October 18, 2021, *continued*

5:15 PM–6:15 PM

Poster Tour: Cerebrovascular 3*

MODERATORS: *Rebecca Gottesman, MD, PhD, Johns Hopkins University*
S. Thomas Carmichael, MD, PhD, University of California Los Angeles

White Matter Microstructure as a Predictor of Clinical Response to tDCS in Post-Stroke Aphasia
SPEAKER: *Cori Cummings, MD, Medical University of South Carolina*

Sex Differences in Risk Factor Control Among Patients Undergoing Thrombectomy for Acute Ischemic Stroke
SPEAKER: *Adam Klein, DO, University of Maryland Medical Center*

Stroke as a Cause of Donor Brain Death and Prognostic Implication in Heart Transplantation
SPEAKER: *Takahisa Mikami, MD, Tufts Medical Center*

Natural Language Processing Model to Extract Acute Abnormalities From Ct Head Reports
SPEAKER: *Victor Torres-Lopez, MA, Yale University*

Evaluating the Impact of a New Model of Structured Interprofessional Bedside Rounding (TeaminguUP) on Climate Safety in an Inpatient Stroke Unit
SPEAKER: *Elizabeth Zink, PhD, RN, CCNS, CNRN, Johns Hopkins Hospital*

5:15 PM–6:15 PM

Poster Tour: Dementia 3*

MODERATORS: *Beau Ances, MD, PhD, Washington University in St. Louis*
Krish Sathian, MBBS, PhD, Pennsylvania State University

Periventricular White Matter Hyperintensities Are a Potential Noninvasive Imaging Marker for Alzheimer-Like Cerebrospinal Fluid
SPEAKER: *Omar Al-Janabi, MD, MS, PhD, University of Kentucky*

Non-Invasive Deep Brain Modulation in Humans via Rhythmic Sensory Stimulation
SPEAKER: *Lou Blanpain, BA, Emory University*

Anti-Hypertensive Medication Use is Associated With Decreased Likelihood of Neurodegenerative Pathologies
SPEAKER: *Hannah Nguyen, BS, University of California, Irvine*

Unsupervised Machine Learning to Identify Separable Clinical Alzheimer's Disease Sub-Populations
SPEAKER: *Robert Quinn, BS (In Progress), Georgia Institute of Technology*

Differentiating the Cognitive Trajectory of TDP-43 vs. Alzheimer's Disease Neuropathology in the Oldest Old
SPEAKER: *Kiana Scambray, BA, University of California, Irvine*

Transcriptomic Analyses of Synaptic, Amyloid, and Tau Pathways in A20-Deficient Mice
SPEAKER: *Rawan Tarawneh, MD, The Ohio State University*

5:15 PM–6:15 PM

Poster Tour: Epilepsy 2*

MODERATORS: *J. Ricardo Carhuapoma, MD, The Johns Hopkins Hospital*
Kate Davis, MD, MSc, University of Pennsylvania

Looking Beyond Apnea: A Widespread Cortical Repertoire That Modulates the Rate and Depth of Breathing
SPEAKER: *Chaitanya Ganne, MBBS, PhD, University of Texas Health Science Center, Houston, Texas*

Presurgical Evaluation Initiation Among Medicare Beneficiaries With Refractory Epilepsy
SPEAKER: *Chloe Hill, MD, MS, University of Michigan*

A Single-Center Retrospective Analysis of Occipital Lobe Epilepsy Surgery Outcomes at Mayo Clinic Arizona
SPEAKER: *Christian Rosenow, BS, Mayo Clinic*

Total Daily Dosage of Anti-Epileptic Drugs in Women With Epilepsy With Subsequent Pregnancies
SPEAKER: *Andrea Sanchez, MS, Thomas Jefferson University*

Failed Acute Stroke Interventions and High Ischemic Burden Increase Post-Stroke Epilepsy Risk
SPEAKER: *Alexandria Soto, BS, Yale School of Medicine*

5:15 PM–6:15 PM

Poster Tour: Movement Disorders 1*

MODERATORS: *Sheng-Han Kuo, MD, Columbia University*
M. Maral Mouradian, MD, Rutgers University

Satisfaction with Interdisciplinary Home Visits Among Individuals With Advanced Parkinson's Disease and Their Caregivers
SPEAKER: *Jori Fleisher, MD, MSCE, Rush University Medical Center*

Clusters of Olfactory Performance are Associated With Motor Decline in LRRK2 G2019S Variant Parkinson Disease
SPEAKER: *Rachel Gerber, BS, Mount Sinai*

Characterizing the Role of Genetic Variants Influencing α-Synuclein Seeding Activity Neuropathologically Quantified Human Brains
SPEAKER: *Naveen Kondru, DVM, PhD, Mayo Clinic*

Monogenic Hub of the Global Parkinson's Genetics Program (GP2): The 500 Genomes Pilot Project
SPEAKER: *Niccolo Mencacci, MD, PhD, Northwestern University*

Investigation and Rescue of Disrupted SNARE-Mediated Macroautophagy in Parkinson's Disease
SPEAKER: *Caleb Pitcairn, BS, Northwestern University at Chicago*

A Proposed Electronic Health Record Algorithm for Parkinson's Disease Case Identification
SPEAKER: *Lauren Uhr, MPH, University of California, Los Angeles*

★ Recommended for Junior and Early Career attendees.

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Monday, October 18, 2021, *continued*

5:15 PM–6:15 PM

Poster Tour: Neuromuscular 1*

MODERATORS: *Tim Miller, MD, PhD, Washington University in St. Louis*
Conrad "Chris" Weihl, MD, PhD, Washington University in St. Louis

Opioid Initiation for Common Neurologic Diagnoses: A US Population-Based Medicare Study
SPEAKER: *Chun Chieh Lin, PhD, MBA, University of Michigan*

Muscle Biopsy in an Era of Neurogenetics: A Novel Mutation Leading to Becker Muscular Dystrophy
SPEAKER: *Erin McDevitt, MD Student, University of Mississippi Medical Center*

Leriglitazone Reduces Cerebral Lesions and Improves Biomarkers Related to Axonal Degeneration, Inflammation and Compromised Blood-Brain-Barrier in Patients with Adrenomyeloneuropathy
SPEAKER: *Fanny Mochel, MD, PhD, Hôpital La Pitié-Salpêtrière, ICM*

Brain Structure and Cognitive Endpoints in Myotonic Dystrophy Type 2
SPEAKER: *Araya Puwanant, MD, MS, Wake Forest University Health Sciences*

Germline and Therapeutic Suppression of Tubulin Alpha 4a Rescues H-abc Leukodystrophy in Mice
SPEAKER: *Sunetra Sase, PhD, Children's Hospital of Philadelphia*

A Rare Case of Rapidly Progressive Myasthenia Gravis With Coexisting Necrotizing Autoimmune Myopathy
SPEAKER: *Neeharika Thottempudi, MD, University of Texas Medical Branch*

6:30 PM–7:30 PM

Poster Tour: Dementia 4*

MODERATORS: *Alberto Serrano-Pozo, MD, PhD, Massachusetts General Hospital*
Anabelle Singer, PhD, Georgia Institute of Technology and Emory University

Systemic Inflammation Elicits Distinct Brain Immune Signaling Dynamics in Female and Male Mice with AD Pathology
SPEAKER: *Sara Bitarafan, BS, Georgia Institute of Technology*

Quantitative and Qualitative EEG Differences Between Dementia With Lewy Bodies and Alzheimer's Disease
SPEAKER: *Jay Bronder, MD, MBA, Johns Hopkins Hospital*

Pathophysiological Changes in Soluble Amyloid Precursor Protein; Turnover in Alzheimer's Disease
SPEAKER: *Justyna Dobrowolska Zakaria, PhD, Northwestern University*

Written Language Impairments in Subgroups of Mild Cognitive Impairment
SPEAKER: *Hana Kim, PhD, Johns Hopkins University*

Machine Learning Classification of Diagnostic Proteomics for Alzheimer Disease
SPEAKER: *Raghav Tandon, BS, MS, Georgia Institute of Technology*

6:30 PM–7:30 PM

Poster Tour: Epilepsy 3*

MODERATORS: *Ingrid Scheffer, AO, MBBS, PhD, FRACP, FAES, FAA, FRS, PresAHMS, University of Melbourne*
Jack Parent, MD, University of Michigan

Natural Language Processing to Assess Seizure Frequency
SPEAKER: *Barbara Decker, MD, MSCE, University of Vermont Medical Center*

Trio Exome Sequencing With in-Depth Phenotyping in Pediatric Epilepsy: A Prospective, Single-Centered Cohort Study with Return
SPEAKER: *Hyunyong Koh, MD, PhD, Boston Children's Hospital*

Epilepsy Stigma in the Republic of Guinea and its Demographic, Social, and Clinical Associations: A Cross-Sectional Analysis
SPEAKER: *Dylan Rice, BA, Massachusetts General Hospital*

Occurrence of Seizure Worsening and Clinical Toxicity During Postpartum Lamotrigine Taper in Women with Epilepsy
SPEAKER: *Elizabeth Shashkova, BS, Brigham and Women's Hospital*

Pv+ Interneurons Are Non-cell Autonomously Dysregulated in Depdc5-Associated Epilepsies
SPEAKER: *Tao Yang, PhD, University of Michigan*

6:30 PM–7:30 PM

Poster Tour: Movement Disorders 2*

MODERATORS: *Sheng-Han Kuo, MD, Columbia University*
Clifford Saper, MD, PhD, Harvard University

Stabilization of Overall Quality of Life via Interdisciplinary Home Visits Among Individuals With Advanced Parkinson's Disease
SPEAKER: *Jori Fleisher, MD, MSCE, Rush University Medical Center*

Characterization of a Mouse Model of Pde10a-Related Autosomal-Dominant Movement Disorder
SPEAKER: *Nick Marotta, BSc, Northwestern University*

Heterozygous PRKN Mutations Are Common but Do Not Increase the Risk of Parkinson's Disease
SPEAKER: *Derek Narendra, MD, PhD, National Institute of Neurological Disorders and Stroke*

Efficacy of ASN51, an Orally Bioavailable Small-Molecule O-GlcNAcase Inhibitor, in Models of Parkinson's Disease and Epilepsy
SPEAKER: *Ryan Schubert, MD, Asceneuron*

DYT-TOR1A Subcellular Proteomics Reveals Selective Vulnerability of the Nuclear Proteome to Cell Stress
SPEAKER: *Kunal Shroff, BS, Duke University School of Medicine*

Effect of Hydrogen Sulfide on Alpha-synuclein Aggregation
SPEAKER: *Tritia Yamasaki, MD, PhD, University of Kentucky*

★ Recommended for Junior and Early Career attendees.

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Monday, October 18, 2021, *continued*

6:30 PM–7:30 PM

Poster Tour: Neuromuscular 2*

MODERATORS: *Stefanie Geisler, MD, Washington University School of Medicine in St. Louis*

Brett Morrison, MD, PhD, Johns Hopkins University

Loss of TDP-43 Function and Rimmed Vacuoles Persist After T Cell Depletion in a Xenograft Model of Inclusion Body Myositis

SPEAKER: *Chiseko Ikenaga, MD, PhD, Johns Hopkins University*

Mitochondrial Replisome Protein Changes in Aging Mice

SPEAKER: *Ricardo Roda, MD, PhD, Johns Hopkins University*

Monounsaturated Fatty Acids Rescue Peripheral Nerve Function and Increase Very-long Chain Sphingolipids in the Sciatic Nerve of Murine Models of Prediabetes

SPEAKER: *Amy Rumora, PhD, University of Michigan*

Defects in Mitochondria-Lysosome Contact Site Dynamics in Charcot-Marie-Tooth Type 2 Disease

SPEAKER: *Yvette Wong, PhD, Northwestern University Feinberg School of Medicine*

6:30 PM–7:30 PM

Poster Tour: Sleep*

MODERATORS: *Charlene Gamaldo, MD, FAAN, FANA, The Johns Hopkins University School of Medicine*

Lesli Skolarus, MD, MS, University of Michigan

Daytime Sleepiness in Parkinson's Disease: Subjective and Objective Measures

SPEAKER: *Corina Catiul, MD, University of Alabama at Birmingham*

New Insight Into REM Sleep Behavior Disorder Circuits in Living Humans

SPEAKER: *Maria Garcia Gomar, MD, PhD, Massachusetts General Hospital*

Sleep Disturbances in Two Progressive Supranuclear Palsy Variants

SPEAKER: *Fatma Ozlem Hokelekli, MD, PhD, Mayo Clinic*

Global and Local Sleep Changes in Brain Oscillations After Stroke

SPEAKER: *Hanyang Miao, BS, Washington University in St. Louis*

Effects of Lower-Sodium Oxybate on Functioning and Work Productivity in Participants With Idiopathic Hypersomnia

SPEAKER: *Michael Thorpy, MD, Albert Einstein College of Medicine*

6:30 PM–7:30 PM

Poster Tour: Traumatic Brain Injury*

MODERATORS: *S. Thomas Carmichael, MD, PhD, University of California Los Angeles*

David Greer, MD, Boston University School of Medicine

Resilience of Arousal Mechanisms in Traumatic Coma

SPEAKER: *Marta Bianciardi, PhD, Harvard Medical School and Massachusetts General Hospital*

Mild Behavioral Impairment Domains Are Associated With Traumatic Brain Injury in All-cause Dementia

SPEAKER: *Michael Bray, MSc, Johns Hopkins University*

Does Concomitant Traumatic Brain Injury Adversely Affect Survival, and Neurological and Functional Recovery After Acute Traumati

SPEAKER: *Julio Furlan, MD, LLB, MBA, PhD, MSc, FRCPC, University of Toronto*

Epigenetic Regulation of Abcc8 and Trpm4 is Associated With Intracranial Hypertension and Outcome After Severe TBI

SPEAKER: *Ruchira Jha, MD, MSc, Barrow Neurological Institute*

AMA Guides® To The Evaluation Of Permanent Impairment : Achieving Equitable Impairment Ratings Through The Most Current Medicine

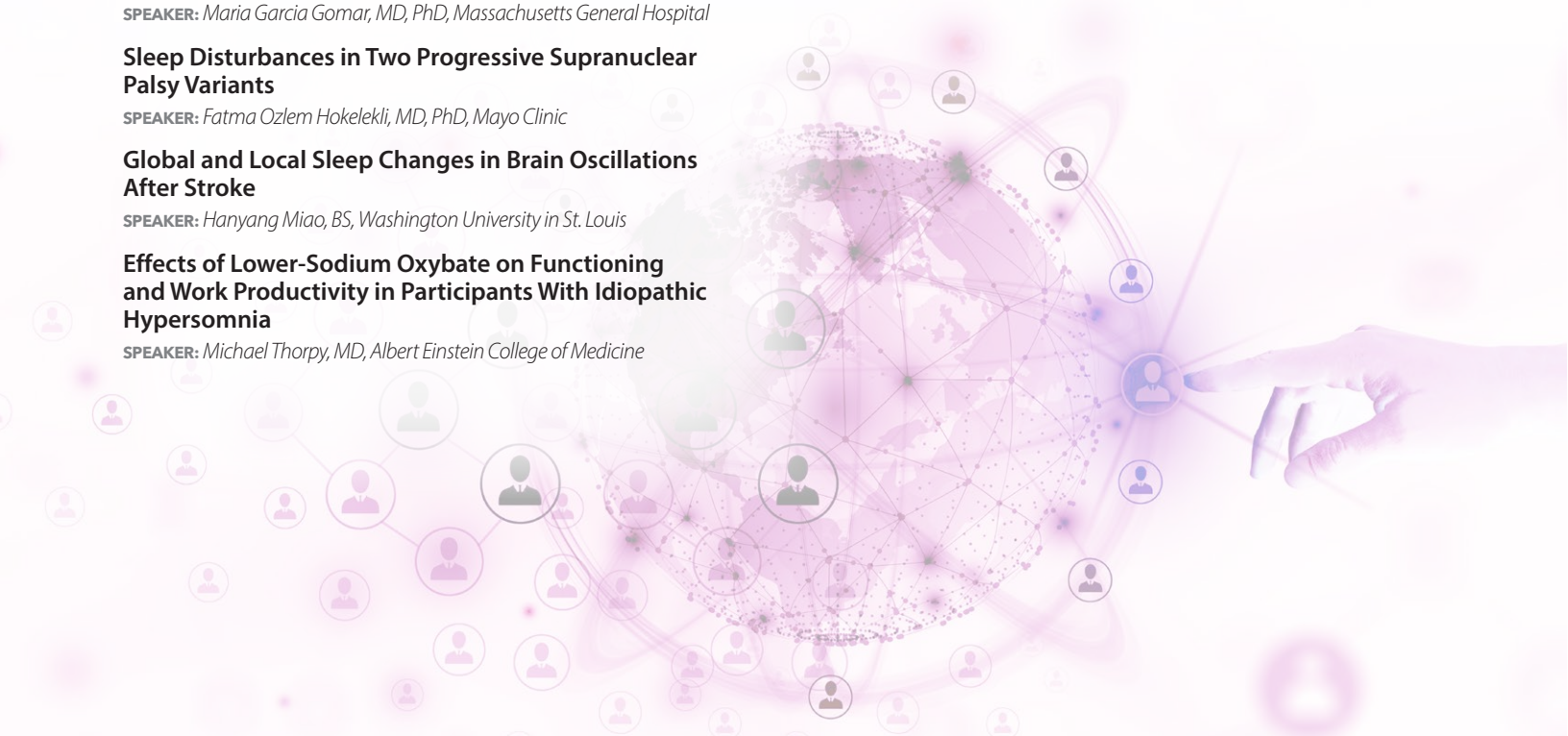
SPEAKER: *Victoria Riordan, MPH, American Medical Association*

Poor Cognitive Outcome One Year After Mild Traumatic Brain Injury: Results from the TRACK-TBI Study

SPEAKER: *Andrea Schneider, MD, PhD, University of Pennsylvania*

Associations of Pre-injury Vascular Risk Factors with Traumatic Brain Injury Outcomes: A TRACK-TBI Study

SPEAKER: *Andrea Schneider, MD, PhD, University of Pennsylvania*



★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

Tuesday, October 19, 2021

8:30 AM–5:30 PM

Poster Viewing*

E-poster presentations are available for viewing throughout the duration of the meeting.

10:00 AM–11:00 AM

Professional Development Courses

★ **Early Career Level (Student, Resident, Trainee, Postdoc Fellow) & Early to Mid-Career Level**

Course 3: Physician-Scientist Careers and Collaborations with Industry

CHAIR: *Ludy Shih, MD, MMSc, Boston University School of Medicine*
CO-CHAIR: *Andrew Siderowf, MD, MSCE, University of Pennsylvania School of Medicine*

Physician-scientists and clinician-investigators may have interest in career paths where clinical research takes a central focus, whether in academia or in industry. During the session we describe the roles and responsibilities of physicians in research and development teams in the biotech and pharmaceutical industry. We will discuss how certain academic research programs, involving individual lab, multi-center or consortium studies, can be well-equipped to answer some of the questions that both academic and industry investigators have in common with respect to developing therapeutics for neurologic diseases.

LEARNING OBJECTIVES:

1. **To identify the needs of medical and scientific directors within research and development teams in industry and how they can involve academic-industry collaborations**
2. **To describe which kinds of scientific gaps in knowledge are amenable to academic-industry collaborations and give examples and characteristics of rigorous and well-designed academic research programs that make such collaborations more fruitful**

Academia-Industry Collaborations in Clinical Trial Readiness

SPEAKER: *Tetsuo Ashizawa, MD, Houston Methodist Research Institute*

Scientist Careers and Collaborations with Industry

SPEAKER: *Erika Augustine, MD, MS, Kennedy Krieger Institute*

Physician-Scientists in Industry: An Inside View

SPEAKER: *Ludy Shih, MD, MMSc, Boston University School of Medicine*

10:00 AM–11:00 AM

Professional Development Courses

★ **ANA-AUPN Chair Career Level**

Course 3: Supply and Demand in Neurology Subspecialties: How Can You Match the Trajectories of Trainees to the Needs of the Present and Future?

CHAIR: *Larry Goldstein, MD, Univeristy of Kentucky*

Aside from the northeast, there is a large gap nationally between the supply and demand for neurologists. Given advances in neurodiagnostics and neurotherapeutics, the gap is even greater for neurology subspecialities such as neuro immunology, neuromuscular medicine, and headache medicine. Yet, neurology trainees' career choices do not necessarily align with the need. This session will explore the approaches different chairs use to encourage trainees to consider fellowships in needed subspecialties.

Scenario 1: The Medical Student (MD and MD, PhD, Physician Scientist)

SPEAKER: *Andrew Josephson, MD, University of California, San Francisco*

Scenario 2: The Non-Committed Resident

SPEAKER: *Cathy Sila, MD, Case Western Reserve University School of Medicine*

Scenario 3: Returning Resident with Location Preferences (General Neurology)

SPEAKER: *Lawrence Wechsler, MD, University of Pennsylvania*

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

11:15 AM–12:15 PM

Interactive Workshops

A Good Recovery? Under-Recognized Deficits Significantly Impact Functional Outcomes Post-Stroke

CHAIR: *Tom Lloyd, MD, PhD, Johns Hopkins University School of Medicine*

CO-CHAIR: *Elisabeth B. Marsh, MD, Johns Hopkins University School of Medicine*

Advancements in acute stroke treatment have revolutionized the field of cerebrovascular neurology and significantly improved outcomes for patients. Turning major strokes due to large vessel occlusion into smaller infarcts results in shorter hospitalizations and more individuals being discharged home or too short rehabilitation stays rather than longer-term nursing facilities. However, this shift has changed the most common symptoms now experienced by stroke survivors. Individuals who lack a dense aphasia or hemiparesis can still experience quite disabling cognitive difficulties, leading to poor quality of life. In this interactive workshop, we explore the under-recognized deficits in those with a minor stroke that can significantly impact functional outcomes and novel advances in rehabilitation strategies tailored to this group of patients with significant potential to successfully reintegrate into their home and workplace environments.

LEARNING OBJECTIVES:

1. **Learners will be able to effectively identify the impact of in(neglect) and other cognitive dysfunction on post-stroke rehabilitation for those with differing stroke severities**
2. **Learners will be able to identify tools to help predict who may be at greatest risk for post-stroke cognitive decline**
3. **Learners will be able to identify and effectively use emerging therapies that may reduce morbidity due to post-stroke cognitive dysfunction including TMS and Mindfulness**

The Role of TMS to Treat Post-Stroke Cognitive Deficits

SPEAKER: *Alex Carter, MD, PhD, Washington University School of Medicine in Saint Louis*

The Impact of Hemispatial Neglect on Post-Stroke Rehabilitation

SPEAKER: *Maurizio Corbetta, MD, University of Padova*

Mindfulness Based Stress Reduction May Improve Post-Stroke Cognition

SPEAKER: *Neda Gould, PhD, Johns Hopkins University School of Medicine*

Cognitive Disruption After Minor Stroke is Due to Network Disruption

SPEAKER: *Elisabeth B. Marsh, MD, Johns Hopkins University School of Medicine*

11:15 AM–12:15 PM

Interactive Workshops

Artificial Intelligence Applications in the Clinical Assessment of Alzheimer's Disease

CHAIR: *Cassie Mitchell, PhD, Georgia Institute of Technology / Emory University*

CO-CHAIR: *Beau Ances, MD, PhD, MSc, Washington University School of Medicine in Saint Louis*

Artificial intelligence (AI), which uses computational algorithms to provide actionable insight, is a rapidly evolving technology that can be potentially powerful in enhancing and synthesizing information available to a neurologist. There is a common misconception that "the purpose of AI will replace the neurologist". In contrast, AI is simply another adjunctive tool that can assist the clinician in providing the best possible diagnostic, prognostic, or treatment recommendations. In particular, Alzheimer's Disease has been a recent domain of interest for AI implementation in the clinic setting. In this workshop, we will provide an overview of AI from the neurologist's perspective and specific examples of AI implementation to improve the analysis of multimodal magnetic resonance imaging and genomic and proteomic analysis in clinical Alzheimer's Disease.

LEARNING OBJECTIVES:

1. **Become familiar with basic strengths and weaknesses of artificial intelligence technology, especially technology that can be used in the Alzheimer's clinic**
2. **Learn how to include existing AI technology, such as those in imaging or comics, to improve the care of patients**
3. **Look for overlapping opportunities to collaborate with and provide physician insight to technical engineers and scientists that are improving AI for the Alzheimer's clinic**

The Benefits of AI in the Alzheimer's Clinic: A Clinician's Perspective

SPEAKER: *Ibukun Adedugbe, MBBS, BSc, FRCA, National Hospital for Neurology and Neurosurgery*

Artificial Intelligence Approaches for Discovery in Alzheimer's Disease Biobanks

SPEAKER: *Paul Thompson, PhD, University of Southern California, Keck School of Medicine*

AI Applications in Imaging for Alzheimer's Disease

SPEAKER: *Prashanthi Vemuri, PhD, Mayo Clinic*

★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

11:15 AM–12:15 PM

Interactive Workshops

Deconvoluting FDA Decisions Regarding Neurological Diseases

CHAIR: *Seemant Chaturvedi, MD, University of Maryland*

CO-CHAIR: *Johanna Fifi, MD, Icahn School of Medicine at Mount Sinai*

The FDA oversees the evaluation and potential approval of new pharmacologic products and medical devices. There has been a large increase in the number of medical devices approved for the treatment of neurologic conditions ranging from migraine to movement disorders. Similarly, new pharmacologic compounds are being investigated at a rapid pace, especially for neurodegenerative disorders. This workshop will review the FDA process, highlighting differences in the evidence required for a pharmacologic product vs. a device. Information will also be provided regarding serving as an expert in a FDA review panel. Finally, discussion will be held on "close calls" and how convincing data need to be from the perspective of a clinician scientist.

LEARNING OBJECTIVES:

1. **Understand differences in the review process used by the FDA for drugs vs. devices**
2. **Appreciate the benefits and risks of serving on a FDA review panel**
3. **Appreciate the inside workings of an FDA submission**

Crossing the Finish Line: Marathons and SPRINTS

SPEAKER: *Jaishri Blakeley, MD, Johns Hopkins University*

Serving on a FDA Advisory Committee: A Neurologist's Perspective

SPEAKER: *Earl Ray Dorsey, MD, University of Rochester*

Moving Medical Devices to Patients in the US

SPEAKER: *Carlos Peña, PhD, Jacobs Institute*

11:15 AM–12:15 PM

Additional Workshops

American Board of Psychiatry and Neurology (ABPN) Maintenance of Certification (MOC) Program Session

CHAIR: *J. Clay Goodman, MD, FAAN, FANA, Baylor College of Medicine*

Dr. J. Clay Goodman, ABPN Vice-Chair Neurology Director, will lead the session by providing background on the ABMS Continuing Certification (CC) program, recent changes to the CC program, and perspective on the future of CC. Dr. Goodman, will detail the four-part ABPN CC Program, giving specific requirements related to licensure, self-assessment, CME, and performance in practice components. The new option for opting out of the 10 year secure examination using the Article Based Continuing Certification program will be discussed in detail.

11:15 AM–12:15 PM

Additional Workshops

Highlights of the Meeting*

MODERATOR: *Julia Brannan-Rauch, MoJJo Collaborative Comunications*

This is a live session to showcase the highlights of ANA2021 for consumer and medical/scientific journalists. While many reporters will have been attending individual sessions and poster and abstract presentations, this helps them put all they've learned into a broader context. It consists of live presentations by Plenary Session Chairs and the Scientific Program Advisory Committee Chair, followed by a Q&A session. While anyone attending the meeting is welcome to attend, the structure is designed to benefit journalists specifically.

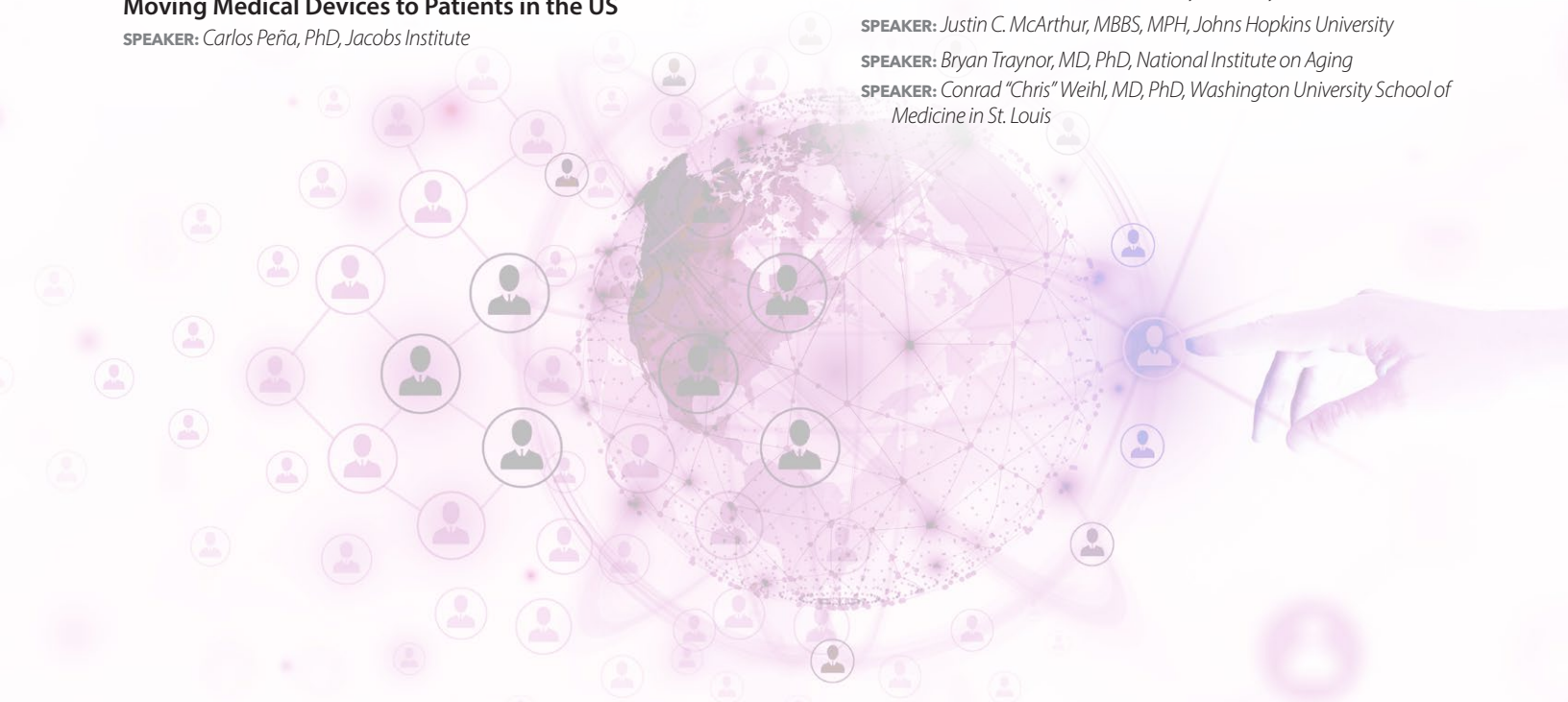
SPEAKER: *Jennifer Frontera, MD, New York University*

SPEAKER: *Frances E. Jensen, MD, University of Pennsylvania*

SPEAKER: *Justin C. McArthur, MBBS, MPH, Johns Hopkins University*

SPEAKER: *Bryan Traynor, MD, PhD, National Institute on Aging*

SPEAKER: *Conrad "Chris" Weihl, MD, PhD, Washington University School of Medicine in St. Louis*



★ Recommended for Junior and Early Career attendees.

* This session is not available for ***AMA PRA Category I Credit(s)***™

11:15 AM–12:15 PM

Additional Workshops

★ AUPN Meet the Chairs Session

CHAIR: *Clifton L. Gooch, MD, University of South Florida*

Prominent chairs of neurology will discuss how they handle their position, including what's involved with being a chair; what the process is for attaining their position, and how to interact with chairs.

SPEAKER: *John Greenfield, MD, PhD, UConn Health*

SPEAKER: *Matthew Fink, MD, Weill Cornell Medicine / New York Presbyterian Hospital*

SPEAKER: *Louise D. McCullough, MD, McGovern Medical School at UTHealth*

12:30 PM–1:30 PM

★ Emerging Scholar Lecture Series 3

MODERATOR: *Jason Hinman, MD, PhD, University of California, Los Angeles*

The Emerging Scholar Lecture Series is designed exclusively for junior and early career annual meeting attendees. These sessions provide the opportunity for junior and early career members to present in front of a full virtual audience amongst their peer group. Attend a session to learn what cutting-edge research the future leaders of the ANA have to share!

Gamma Frequency Sensory Stimulation in Probable Mild Alzheimer's Dementia Patients: Results of a Preliminary Clinical Trial

ORAL PRESENTER: *Diane Chan, MD, PhD, Massachusetts Institute of Technology*

Autophagy & Neurons: Targeting Protein Quality Control for Modifying Proteostasis and Discovering Therapeutic Targets for Neurodegenerative Diseases

ORAL PRESENTER: *Jason Chua, MD, PhD, Johns Hopkins University*

Pulse-Chase Proteomics of the App Knock-in Mouse Models of Alzheimer's Disease Reveals Synaptic Dysfunction Originates in Presynaptic Terminals

ORAL PRESENTER: *Jeffrey Savas, PhD, Northwestern University*

Complexes of Soluble α-Synuclein and Amyloid-ß With Their Cognate Antibodies Activate the NLRP3 Inflammasome in hiPSC-Derived Microglia

ORAL PRESENTER: *Dorit Trudler, PhD, The Scripps Research Institute*

2:00 PM–4:00 PM

Plenary Session

Hypoxic/Anoxic Injury in the CNS

CHAIR: *Jennifer Frontera, MD, New York University*

CO-CHAIR: *Marion Buckwalter, MD, PhD, Stanford School of Medicine*

In this session, Nobel Prize-winning scientist, Dr. Gregg Semenza will introduce the audience to HIF (hypoxia-inducible factors) that play a role in gene regulation in variable oxygen environments. HIF is instrumental in regulating the transcription of genes involved in adaptive responses to hypoxia, such as glycolysis, erythropoiesis, angiogenesis, and vascular remodeling. There may be therapeutic roles for HIF modulation in cancer therapy, stroke treatment, and management of hypoxic-ischemic encephalopathy in neonates. This session will also touch on ferroptosis and neuronal death as well as post-stroke recovery strategies including novel therapies such as transcortical magnetic stimulation.

LEARNING OBJECTIVES:

1. **Understand the role of HIF-1 in gene signaling in different oxygen environments**
2. **To understand potential future therapeutic interventions involving HIF-1 pathways**
3. **To understand the role of HIF-1 in neonatal hypoxic ischemic brain injury**

Precision Therapy for Neonatal HI: Role of HIF and Metabolomics

SPEAKER: *Donna Ferriero, MD, MS, University of California San Francisco*

Transcranial Magnetic Stimulation (TMS) and Post-Stroke Recovery

SPEAKER: *Roy Hamilton, MD, MS, University of Pennsylvania*

Harnessing Hypoxic Adaptation to Interdict Ferroptosis and Treat Neurological Diseases

SPEAKER: *Rajiv Ratan, MD, PhD, Cornell University*

Hypoxia-Inducible Factors: Master Regulators of Oxygen Homeostasis

SPEAKER: *Gregg Semenza, MD, PhD, Johns Hopkins University School of Medicine*

Epigenetic Regulation of Abcc8 and Trpm4 is Associated With Intracranial Hypertension and Outcome After Severe TBI

ORAL PRESENTER: *Ruchira Jha, MD, MSc, FNCS, Barrow Neurological Institute & St Joseph's Hospital and Medical Center*

★ Recommended for Junior and Early Career attendees.* This session is not available for ***AMA PRA Category I Credit(s)***™

Note: The American Board of Psychiatry and Neurology has reviewed the 146th Annual Meeting of the American Neurological Association and has approved this program as part of a comprehensive CME program, which is mandated by the ABMS as a necessary component of Maintenance of Certification.

E-posters: Available for viewing throughout the duration of the meeting.

Schedule Subject to Change: The event's operating hours, schedules, and speakers are subject to change or cancellation without notice. Refunds will be not issued for failure to view a live session.**This session is not available for AMA PRA Category I Credit(s)™, however, the sponsor may be accrediting this event independently. Please check the website for details closer to the date of the event.

SPEAKER ABSTRACTS

All abstract information listed below has been provided to the ANA by plenary session speakers.

Sunday, October 17, 2021

PRESIDENTIAL SYMPOSIUM: COVID-19 PANDEMIC: POPULATION IMPACT AND RESPONSES, AND NEUROLOGICAL COMPLICATIONS

Operation Warpspeed: How COVID Vaccines Were Developed in Record Time

Emily Erbelding, MD, MPH
National Institutes of Health

The devastation caused by the SARS CoV2 pandemic led to an aggressive effort to develop an efficacious vaccine. Coordination across government agencies and collaboration with industry led to unprecedented success. In this talk I will describe the US government supported efforts and the successes as well as challenges that remain. I will also discuss a research agenda for preparing for future pandemics.

References:

1. Audio Interview. A new mRNA Vaccine Rubin EJ, Baden LR, Morrissey S.N Engl J Med. 2021 Jun 24;384(25):e109. doi: 10.1056/NEJMe2110531.PMID: 34161714
2. Audio Interview. Vaccination and variants in the US and South Africa. Rubin EJ, Baden LR, Gray GE, Morrissey S. N Engl J Med. 2021 May 13;384(19):e85. doi: 10.1056/NEJMe2108162.PMID: 33979495 No abstract available.
3. Safety and efficacy of single-dose Ad26.COV2.S Vaccine against Covid-19. Sadoff J, Gray G, Vandebosch A, Cárdenas V, Shukarev G, Grinsztejn B, Goepfert PA, Truyers C, Fennema H, Spiessens B, Offergeld K, Scheper G, Taylor KL, Robb ML, Treanor J, Barouch DH, Stoddard J, Ryser MF, Marovich MA, Neuzil KM, Corey L, Cauwenberghs N, Tanner T, Hardt K, Ruiz-Guiñazú J, Le Gars M, Schuitemaker H, Van Hoof J, Struyf F, Douoguih M; ENSEMBLE Study Group. N Engl J Med. 2021 Jun 10;384(23):2187-2201. doi: 10.1056/NEJMoa2101544. Epub 2021 Apr 21.PMID: 33882225

Neurological Consequences of COVID-19: Acute and Chronic

Jennifer Frontera, MD
New York University

The profound impact of COVID-19 has been felt for the past 18 months and the long-term sequelae are likely to affect substantial proportions of the worldwide population for years to come. Acute neurological complications during index hospitalization have been reported from multiple sites, with encephalopathy, hypoxic brain injury and stroke being particularly common. Long-term sequelae including brain fog, headache, dysautonomia and sleep disorders have been documented in at least 25% of COVID survivors, suggesting that millions of Americans may be dealing with post-acute complications. While the underlying mechanisms of acute neurological injury appears to be related to secondary effects of SARS-CoV-2 including hypoxia, renal failure, and hypercoagulability, the mechanisms underpinning long-term sequelae are still being elucidated and may include autoimmune phenomena. The field of Neuro-COVID is rapidly evolving as billions of dollars are being committed to researching this topic. In this talk, updated scientific advances will be presented.

References:

1. Frontera JA, Sabadia S, Lalchan R, Fang T, Flusty B, Millar-Vernetti P, Snyder T, Berger S, Yang D, Granger A, Morga N, Patel P, Gutman J, Melmed K, Agarwal S, Bokhari M, Andino A, Valdes E, Omari M, Kvernland A, Lillemoe K, Chou SH, McNett M, Helbok R, Mainali S, Fink EL, Robertson C, Schober M, Suarez JI, Ziai W, Menon D, Friedman D, Friedman D, Holmes M, Huang J, Thawani S, Howard J, Abou-Fayssal N, Krieger P, Lewis A, Lord AS, Zhou T, Kahn DE, Czeisler BM, Torres J, Yaghi S, Ishida K, Scher E, de Havenon A, Placantonakis D, Liu M, Wisniewski T, Troxel AB, Balcer L, Galetta S. A Prospective Study of Neurologic Disorders in Hospitalized Patients With COVID-19 in New York City. Neurology. 2021 Jan 26;96(4):e575-e586. doi: 10.1212/WNL.0000000000010979. Epub 2020 Oct 5. PMID: 33020166; PMCID: PMC7905791.
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Neurobiology of COVID-19

Avindra Nath, MD
National Institute of Neurological Disorders and Stroke, National Institutes of Health

SARS-CoV-2 causes a neuroinflammatory syndrome that can involve the entire nerve axis. A unique aspect of this manifestation is the extend of vascular injury associated with the infection. Clinical presentations include arterial and venous occlusions, microinfarcts and microhemorrhages. We conducted high resolution post-mortem MRI scans of the brain on an 11.7 Tesla scanner followed by histopathological evaluation of the lesions. We found extensive multifocal microvascular injury that included the olfactory bulb and brainstem. Leakage of fibrinogen in the perivascular regions was indicative of breakdown of the blood brain barrier. The endothelial cells expressed markers of activation with platelet aggregates attached to these cells. Some blood vessels were occluded by the platelets resulting in microthrombi. Perivascular inflammation was another prominent observation. The infiltrates were predominantly composed of macrophages with small numbers of T cells. CD8 T cells outnumbers CD4 cells. Only rare CD20 B cells were seen. Neuronophagia was commonly seen in the brainstem nuclei. These findings are in keeping with other studies that show activation of makers of innate immunity in blood and CSF with decreased gamma interferon and evidence of T cell exhaustion. However, SARS-CoV-2 could not be detected in the brain by immunostaining for multiple antigens, PCR, in-situ hybridization and RNA sequencing. These findings raise the possibility that the neuropathology is indirectly mediated by viral proteins such as the spike protein which binds to the ACE receptor on endothelial cells resulting in a characteristic neurovascular-inflammatory syndrome.

References:

1. Lee MH, Perl DP, Nair G, Li W, Maric D, Murray H, Dodd SJ, Koretsky AP, Watts JA, Cheung V, Masliah E, Horkayne-Szakaly I, Jones R, Stram MN, Moncur J, Hefti M, Folkerth RD, Nath A. Injury in the Brains of Patients with Covid-19. Engl J Med 2021; 384(5):481-483
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3. Heming M, Li X, Räuber S, Mausberg AK, Börsch AL, Hartlehnert M, Singhal A, Lu IN, Fleischer M, Szepanowski F, Witzke O, Brenner T, Dittmer U, Yosef N, Kleinschnitz C, Wiendl H, Stettner M, Meyer Zu Hörste G. Neurological Manifestations of COVID-19 Feature T Cell Exhaustion and Dedifferentiated Monocytes in Cerebrospinal Fluid. Immunity 2021;54(1):164-175.

How COVID-19 Has Emphasized Health Care Disparities

Olajide Williams, MD, MS
Columbia University Irving Medical Center / New York Presbyterian Hospital

The COVID pandemic has highlighted the relationship between structural racism and health disparities, and that health inequities remain entrenched in our society. This talk with discuss the relationship between poverty, marginalization and COVID infection rates and mortality through an equity lens, including the social determinants driving healthcare disparities.

References:

1. Churchwell K, Elkind MS, Benjamin RM, Carson AP, Chang EK, Lawrence W, Mills A, Odom TM, Rodriguez CJ, Rodriguez F, Sanchez E, Sharrief A, Sims M, and Williams O. On behalf of the American Heart Association. Call to action: structural racism as a fundamental driver of health disparities: a presidential advisory from the American Heart Association. Circulation. 2020; 142:00–00.
2. Lopez L, Hart LH, Katz MH. Racial and ethnic health disparities related to COVID-19. JAMA. 2021 Feb 23;325(8):719-20.
3. Romano SD. Trends in racial and ethnic disparities in COVID-19 hospitalizations, by region—United States, March–December 2020. MMWR. Morbidity and mortality weekly report. 2021;70.

ADVANCES IN AMYOTROPHIC LATERAL SCLEROSIS

Recent Advances in ALS

Eva Feldman, MD, PhD
University of Michigan

The lethal progressive course of amyotrophic lateral sclerosis (ALS) has remained essentially unchanged since it was first described by Jean-Martin Charcot in 1869. Only recently have new diagnostic and scientific advances begun to reshape the clinical trajectory of the disease. This past decade has seen exponential growth in our understanding of the multiple clinical phenotypes of ALS and their overlap with other neurodegenerative disease entities. This expanding spectrum of disease presentations and clinical outcomes has been facilitated by a greater understanding of the biology of genes underlying familial ALS, as well as the complex genetic architecture and environmental exposures underlying sporadic ALS. The genetic mutations linked to familial ALS are loosely grouped into genes that affect RNA function, alter proteostasis, or alter the cytoskeleton and distal terminals. The biology of the best studied genes, C9orf72, SOD1, TARDBP, and FUS, has both shed insights into disease mechanisms and identified potential disease targets. In response, therapeutic approaches, including antisense oligonucleotides (ASOs), small interfering RNAs (siRNAs), viral-vector gene therapy, genome-editing technologies, and protein-targeted strategies with monoclonal antibodies, are now under development and in clinical trials for ALS. In parallel, the role of peripheral and central inflammation is both a source of new scientific investigation and novel, mechanism-based targets for ALS clinical trials. The next decade brings new hope for significant inroads into our understanding of disease pathogenesis and the development of effective, meaningful therapies for ALS.

References:

1. Chia R, Chio A, Traynor BJ. Novel genes associated with amyotrophic lateral sclerosis: diagnostic and clinical implications. Lancet Neurol. 2018 Jan;17(1):94-102. PMID: 29154141
2. Goutman SA, Boss J, Patterson A, Mukherjee B, Batterman S, Feldman EL. High plasma concentrations of organic pollutants negatively impact survival in amyotrophic lateral sclerosis. J Neurol Neurosurg Psychiatry. 2019 Aug;90(8):907-912. PMID: 30760645
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4. Karch CM, Wen N, Fan CC, et al. Selective Genetic Overlap Between Amyotrophic Lateral Sclerosis and Diseases of the Frontotemporal Dementia Spectrum. JAMA Neurol. 2018 Jul 1;75(7):860-875. PMID: 29630712
5. Maniatis S, Aijo T, Vickovic S, et al. Spatiotemporal dynamics of molecular pathology in amyotrophic lateral sclerosis. Science. 2019 Apr 5;364(6435):89-93. PMID: 30948552

Regulation of TDP-43 Nucleocytoplasmic Shuttling and Therapeutic Targeting

Lindsey Hayes, MD, PhD
Washington University School of Medicine in St. Louis

Loss of nuclear TDP-43 expression and accumulation of cytoplasmic aggregates is a pathologic hallmark of amyotrophic lateral sclerosis (ALS) and frontotemporal dementia (FTD), where approximately 97% and 45% of cases show TDP-43 pathology at autopsy, respectively (reviewed in Ling et al., 2013). Substantial evidence links TDP-43 disruption to the pathogenesis of ALS and FTD, including via loss of TDP-43 nuclear splicing regulation (reviewed in Prasad et al., 2019). TDP-43 is therefore an important therapeutic target, although the mechanism of TDP-43 mislocalization in disease remains unknown. Like many heterogeneous ribonucleoproteins (hnRNPs), TDP-43 continuously shuttles between the nucleus and cytoplasm (Ayala et al., 2008). While the mechanism of TDP-43 nuclear import is well understood, the mechanism and regulation of TDP-43 nuclear export is less clear. Elucidating this fundamental biology is essential to understanding TDP-43 mislocalization in disease and is major focus of our laboratory. In ongoing work, we are utilizing high content microscopy to analyze the mechanism and regulation of TDP-43 nuclear export in in vitro models, and test methods for promoting TDP-43 nuclear accumulation. Our data show that TDP-43 nuclear localization critically depends on binding to GU-rich pre-mRNAs, which sequesters TDP-43 in the nucleus and regulates its availability for nuclear export by passive diffusion through the nuclear pore (Duan et al., in preparation). Studies with small molecule inhibitors show that TDP-43 nuclear enrichment is regulated via the dynamic balance of pre-mRNA transcription and splicing. Moreover, TDP-43 nuclear localization and shuttling behavior strictly depends on the presence of its RNA recognition motifs. Collectively, our findings suggest that disruption of RNA metabolism may contribute to TDP-43 mislocalization in ALS/FTD, and that RNA-based strategies may be useful for promoting TDP-43 nuclear accumulation. Toward that goal, we are currently investigating multiple RNA-based approaches aimed at preserving TDP-43 nuclear localization and splicing regulatory function.

References:

1. Ling S-C, Polymenidou M, Cleveland DW. Converging mechanisms in ALS and FTD: disrupted RNA and protein homeostasis. Neuron. 2013 Aug 7;79(3):416–38.
2. Prasad A, Bharathi V, Sivalingam V, Girdhar A, Patel BK. Molecular Mechanisms of TDP-43 Misfolding and Pathology in Amyotrophic Lateral Sclerosis. Frontiers in molecular neuroscience. 2019;12:25.
3. Ayala YM, Zago P, D'Ambrogio A, Xu Y-F, Petrucelli L, Buratti E, et al. Structural determinants of the cellular localization and shuttling of TDP-43. J Cell Sci. 2008 Nov 15;121(Pt 22):3778–85.

Unraveling the Genomics of ALS

Bryan Traynor, MD, PhD
National Institute on Aging

Approximately 15,000 individuals die of ALS in the United States and Europe annually. The number of cases will rise over the next thirty years due to the global population's aging, putting further strain on healthcare resources and infrastructure. Considerable progress has been made in unraveling the genetic causes of this mysterious disease. Today, we understand the genetic etiology of approximately two-thirds of all familial ALS cases and approximately 10% of sporadic ALS cases. In this lecture, we will review genes implicated in the pathogenesis of ALS and how this new information is changing the way we think about this fatal disorder. We will also outline emerging themes in ALS research, such as the genetic convergence of familial and sporadic ALS and the proposed oligogenic basis for the disease. We will describe how genetic discoveries broaden the phenotype associated with the clinical entity we know as ALS. Finally, we will discuss how genomics is already becoming a key driving force in biomarker discovery and therapeutic development.

References:

1. Projected increase in amyotrophic lateral sclerosis from 2015 to 2040. Arthur KC, Calvo A, Price TR, Geiger JT, Chiò A, Traynor BJ, Nat Commun. 2016;7:12408. doi: 10.1038/ncomms12408. PMID: 27510634
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3. Novel genes associated with amyotrophic lateral sclerosis: diagnostic and clinical implications. Chia R, Chiò A, Traynor BJ. Lancet Neurol. 2018;17(1):94-102. doi: 10.1016/S1474-4422(17)30401-5. PMID: 29154141

Antisense Oligonucleotide Therapy for SOD1 ALS

Timothy Miller, MD, PhD
Washington University in St. Louis

Approximately 1-2% of cases of amyotrophic lateral sclerosis (ALS) are caused by mutations in the gene superoxide dismutase 1(SOD1). Human genetic data and animal model data suggest that SOD1 mutations result in a gain of function. For SOD1 and other gain of function causes of neurodegenerative disease, reducing levels of a disease causing mutant may be therapeutic. To reduce levels of mRNA and protein, we have used antisense oligonucleotides (ASO). ASO are delivered directly to the cerebral spinal fluid, since ASO do not cross the blood brain barrier. Surprisingly, these highly charged molecules distribute throughout the brain and spinal cord (1). SOD1 ASO lower levels of SOD1 mRNA and protein (1, 2), extend survival in animal models (1,2) and reverse the decrement in the muscle response in animal models (2).

A recent Phase 1/2 trial of an SOD1 ASO (3), Tofersen, in 50 participants with SOD1 gene mutations met its primary and secondary endpoints demonstrating that Tofersen was well tolerated and led to a 33% lowering of SOD1 protein in the CSF. Exploratory endpoints showed a slowing in the rate of decline in an ALS functional rating scale, measures of strength, and breathing in Tofersen vs. placebo. These changes were most apparent in the small number (N=4 per group) of rapidly progressive participants. Increases in neurofilament proteins in CSF and serum are non-specific markers of neuronal damage. In participants treated with Tofersen compared with placebo, neurofilament light and phosphorylated neurofilament heavy decreased in both CSF and serum.

The Valor Trial, a Phase 3 trial of Tofersen (NCT02623699), will be completed in 2021.

References:

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Monday, October 18, 2021

DEREK DENNY-BROWN SYMPOSIUM YOUNG NEUROLOGICAL SCHOLAR SYMPOSIUM

New Approaches to Alzheimer's: From Neural Deficits to Neural Stimulation

Anabelle Singer, PhD
Georgia Institute of Technology and Emory University

In this talk I will describe the development of a new therapeutic approach to Alzheimer's disease: non-invasive neurostimulation. Inspired by deficits in neural activity we found in mouse models of Alzheimer's disease, we stimulated gamma, or 40Hz, frequency neural activity. We developed new non-invasive methods to drive this rhythmic neural activity that could be readily applied to humans. We found that driving gamma frequency activity non-invasively mobilized the immune system and reduced pathogenic proteins in mouse models. Furthermore, driving gamma rapidly initiated a unique immune signaling cascade. Finally, we tested this non-invasive stimulation in humans with Alzheimer's disease. These discoveries could lead to new therapies for Alzheimer's disease by driving specific patterns of neural activity to impact the disease at the cognitive, cellular, and molecular levels.

References:

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THE DEREK DENNY-BROWN YOUNG NEUROLOGICAL SCHOLAR AWARD—BASIC SCIENCE

The Striatal Origins of Action Selection and When They Fail

Alexandra Nelson, MD, PhD
University of California, San Francisco

We choose a desired action amongst many alternatives, which requires the simultaneous selection of one action and suppression of competing motor commands. However, involuntary movements (dyskinesias) can develop when this process fails. Dyskinesias occur in several diseases, including inherited, neurodegenerative, and drug-induced neurological conditions. To identify the physiological basis of dyskinesias, we have used a combination of mouse models, electrophysiology, and optogenetics. We find that the input nucleus of the basal ganglia, the striatum, is a key locus of dysfunction in multiple forms of dyskinesia, and abnormal activity of striatal neurons drives dyskinetic movements. In one line of research, we find that a subset of striatal direct pathway neurons achieves exceptionally high firing rates during levodopa-induced dyskinesia, and bidirectional optogenetic manipulations confirm they are causally related to dyskinesia in the mouse model. This subset of neurons is selectively vulnerable to hyperactivity by virtue of stronger excitatory input and increased sensitivity to dopamine, which are likely to develop in response to chronic parkinsonism and levodopa treatment. Unraveling the cellular and circuit mechanisms of dyskinesia will give insight into the development of movement disorders, as well as action selection itself.

References:

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Dyskinesia. Cell Reports Jun 19; 23(12):3438-3446. PMID: 29924988.
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THE DEREK DENNY-BROWN YOUNG NEUROLOGICAL SCHOLAR AWARD—CLINICAL SCIENCE

Piloting Individualized Therapies for Orphan Neurogenetic Disease

Timothy Yu, MD, PhD
Boston Children's Hospital and Harvard Medical School

Over 300 million patients worldwide live with a rare disease. Genome sequencing is revolutionizing their diagnosis, but the great majority still lack effective therapy; creative frameworks are necessary to address this gap. We will (1) review our experience developing milasen, a patient-specific antisense oligonucleotide drug modeled after nusinersen for spinal muscular atrophy, for a young girl with CLN7 Batten disease, (2) discuss additional patient-customized antisense oligonucleotide cases that have followed, and (3) survey the scientific, ethical, and regulatory landscape for future exploration of individualized genomic medicine.

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THE GRASS FOUNDATION—ANA AWARD IN NEUROSCIENCE

APOE Genotype and Cognitive and Reactive Glia Phenotypes in Alzheimer's Disease

Alberto Serrano-Pozo, MD, PhD
Massachusetts General Hospital

Introductions: APOE remains the strongest genetic factor influencing Alzheimer's disease (AD) risk after several large GWAS meta-analyses. Compared to the most common APOEe3 allele, possessing APOEe4 increases AD risk and anticipates its clinical onset, whereas carrying APOEe2 reduces AD risk and delays its onset [1]; however, data regarding APOE allele associations with AD clinical progression after symptom onset are conflicting, possibly due to lack of autopsy confirmation in many studies, and likely hampering clinical trial design. Although APOE is normally secreted by astrocytes, recent single nuclei RNA-seq studies have suggested that reactive microglia upregulates APOE in the AD brain [2]. Moreover, in vitro data from human iPSC-derived glia [3] and in vivo data from transgenic AD mouse models [4] have suggested that that APOE isoforms differentially impact the phenotype of both glial cell types, conceivably driving differences in rates of neurodegeneration and cognitive decline; however, whether this effect holds true in the human brain remains elusive.

Hypothesis: We hypothesized that APOEe4 accelerates and APOEe2 slows down the rate of cognitive decline in subjects with autopsy-proven AD and that these associations are independent of APOE allele effects on AD and comorbid neuropathologies. Further, we also tested the hypothesis that APOEe4 is independently associated with potentially deleterious transcriptomic phenotypes of microglia and astrocytes in the human brain.

Methods: Reverse-time longitudinal modeling of the National Alzheimer's Coordinating Center (NACC) autopsy dataset to evaluate APOE allele associations with cognitive trajectories while controlling for autopsy variables, and reanalysis of the ROSMAP bulk RNA-sequencing dataset to compare the expression pattern of microglia and astrocyte-predominant genes across APOE genotypes.

Results: Compared to APOEe3 homozygotes (reference group, CDR-SOB 1.44 points/year and MMSE -3.03 points/year), APOEe4 was associated with a faster (CDR-SOB 2.12 points/year and MMSE -3.45 points/year) and APOEe2 with a slower (CDR-SOB 1.65 points/year [n.s.] and MMSE -2.43 points/year) rate of cognitive decline in subjects with moderate/frequent neuritic plaques and Braak NFT stage >=III at autopsy; these associations were largely independent of the APOE effects on AD neuropathological changes and comorbid pathologies. Spectral clustering on the average expression of 519 microglial-predominant genes from the ROSMAP bulk RNA-seq dataset by APOE genotype revealed a cluster of 172 co-expressed genes with an e4>e3>e2 pattern of expression in individuals without neuritic plaques (i.e., independently of the presence and severity of AD neuropathology), which was mainly composed of pro-inflammatory and phagocytic genes. In sharp contrast, the association between the APOE genotype and the expression of 397 astrocyte-predominant genes was relatively weak.

Conclusions: The APOE genotype partly drives the clinical heterogeneity of AD regarding rate of cognitive decline independently of its effects on AD neuropathological changes and comorbid pathologies [5]. Differential effects of APOE isoforms on microglial transcriptomic phenotype may contribute to this clinical heterogeneity [6].

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WOLFE RE SEARCHPRIZE FOR IDENTIFYING NEW CAUSES OR NOVEL TREATMENT OF AXONAL PERIPHERAL NEUROPATHY

Insights Into the Pathogenesis of TRPV4 Neuropathy Highlight the Therapeutic Potential Of TRPV4 Ion Channel Inhibition

Brett McCray, MD, PhD
Johns Hopkins University

TRPV4 (transient receptor potential vanilloid 4) is a calcium-permeable cation channel that responds to a variety of environmental stimuli, including shear stress and hypotonicity. The discovery of dominant mutations of TRPV4 that cause forms of inherited neuropathy (designated as Charcot-Marie-Tooth (CMT) disease type 2C and forms of distal spinal muscular atrophy) has highlighted the importance of TRPV4 in nerve biology and homeostasis (Landoure et al., 2010). Furthermore, as a cell surface-expressed ion channel that can be modulated by small molecule drugs, TRPV4 is an attractive therapeutic target. To study the pathogenesis of TRPV4 neuropathy and therapeutic potential of manipulating TRPV4 ion channel activity, we generated a fly model of TRPV4 neuropathy by expressing either wild-type or neuropathy mutant TRPV4 in Drosophila. We found that neuropathy-causing mutations lead to gain of ion channel function and multiple neurodegenerative phenotypes. Importantly, we found that genetic or pharmacological inhibition of TRPV4 ion channel activity rescues these degenerative phenotypes, suggesting that TRPV4 ion channel inhibition is a promising potential treatment strategy for patients with TRPV4 mutations (Woolums et al., 2020). We then expanded on these results by defining downstream pathological consequences of TRPV4 neuropathy mutations. We described a novel functional interaction of TRPV4 and the cytoskeletal remodeling protein RhoA (McCray et al., 2021). RhoA has a well-characterized role as a negative regulator of axonal outgrowth and regeneration following peripheral nerve injury. Furthermore, increased RhoA activation has emerged as a prominent contributor to pathological blood-brain barrier breakdown in stroke and other neurological insults (Shi et al., 2016). Importantly, our data demonstrate that disease mutations in TRPV4 abolish interaction with RhoA, leading to pathological overactivation of RhoA and dramatic changes in cell morphology. Using our fly model of TRPV4 neuropathy, we further showed that inhibition of RhoA rescues TRPV4 mutation-dependent neurodegenerative phenotypes. Together, these data identify TRPV4 as a critical regulator of RhoA activity and demonstrate that excessive RhoA activation is an important downstream pathological consequence in TRPV4 neuropathy. Moreover,

these results suggest that targeting excessive TRPV4 and RhoA pathway activity may hold therapeutic promise not only for patients with TRPV4 mutations, but also in other neurological conditions associated with RhoA dysregulation, such as stroke, traumatic brain and spine injury, and peripheral nerve injury. With the availability of several highly specific TRPV4 antagonists, one of which has shown good tolerability in a human trial for pulmonary edema (Goyal et al., 2019), pharmacologic TRPV4 inhibition may provide an opportunity to precisely limit pathological RhoA activation while preserving the wide range of vital RhoA functions in other tissues.

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DEREK DENNY-BROWN YOUNG NEUROLOGICAL SCHOLAR SYMPOSIUM

Audrey S. Penn Lectureship

Nicte Mejia, MD, MPH, FAAN
Massachusetts General Hospital

Neurologic disorders disproportionately burden women, Black, Indigenous, Latino and lower socioeconomic status communities. Concomitantly, there is stark underrepresentation of these groups in the neurology workforce. Advancing neurologic health equity requires investing meaningful resources to broaden the workforce diversity. In 2020, MGH Neurology launched the MGH Youth Neurology Education and Research Program for students from backgrounds underrepresented in neurology to engage in neurology education and research despite the COVID-19 pandemic. The longer-term goals of this program are for students to pursue careers in neurology and to broaden neurology workforce diversity. We recruited high school and undergraduate students from marginalized communities to participate in paid remote mentored neurology research, didactic sessions, and individualized, long-term support. The inaugural 31 participants predominantly identified as female 68%, Black or Latino 68%, immigrant 39%, and first-generation students 61%, residing in marginalized communities across Massachusetts 96%. Mentored research occurred in teams across 11 neurology labs spanning a diversity of research topics. At program completion, 90% participants indicated interest in pursuing a career in neurology. Participants perceived an increase in their abilities to conduct research, present their findings, collaborate with others and apply their knowledge to real world scenarios. Participants also indicated the program allowed them to explore various careers in the field and build meaningful connections with professionals while feeling inspired, with most students planning to pursue graduate or professional studies (90%) and work in healthcare (84%). In 2021, we received hundreds of applications from students interested to participate in this program and recruited a cohort with even greater diversity than our 2020 class. Innovations included holding a 1 week "boot camp" to better prepare students in advance of their lab experiences, expanding across 15 laboratories to decrease the mentor:mentee ratio, increasing the number of weekly work hours for high school students, and offering select in-person opportunities for students to engage in hands-on lab experiences and clinical shadowing. This presentation will summarize program development, implementation, and measurement while highlighting students' experiences and outcomes.

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AUDREY S. PENN LECTURESHIP

Inclusive Healthcare: A Triple Tier Academic Approach

Charlene Gamaldo, MD
Johns Hopkins University, School of Medicine

Marian Wright Edelman's statement - "You can't be what you can't see," has remained at the core of my inspiration to represent an agent of change. I have come to realize, that a person's journey may have to first embrace the following - "If you don't see it then you got to be it." I have spearheaded collaborative research and scholarly publications aimed at closing the gap in health equities in sleep, furthering our understanding of the relationship of social determinants of health/medical outcomes, and increasing efforts to foster a more inclusive healthcare team from the pipeline through executive leadership. I am one of a handful of academic physicians that holds certification as a strengths coach. I have applied the principles of coaching in an effort to provide more precision-based care for my patients, my team, and continue to work on enhancing its incorporation into our clinical care . I hope my journey can provide perspective on the critical importance of building allyship across the community to reach this goal. Support and allyship is critical to maintain the momentum for change, to sponsor and support those disproportionately represented and to continue to foster an environment that cultivates leaders and inspires our pipeline to join the effort. I look forward to sharing the challenges, triumphs and ongoing aspirational goals towards creating more equitable care, an inclusive academic environment, and to learning from my fellow colleagues attending the lectureship as we forge greater bonds to honor the IDEAS value as a community.

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4. Be a Better Ally. by Tsedale M. Melaku, Angie Beeman, David G. Smith, and W. Brad Johnson. Harvard Business Review (November–December 2020)
5. Male Allyship Is About Paying Attention. by W. Brad Johnson and David G. Smith. Harvard Business Review (February 10, 2021)
6. Are Your Diversity Efforts Othering Underrepresented Groups? by Lori Nishiura Mackenzie and Melissa V. Abad. Harvard Business Review February 5, 2021

Tuesday, October 19, 2021

Plenary Session

HYPOXIC/ANOXIC INJURY IN THE CNS

"HIF, Metabolomics & Neonatal HI Brain Injury"

Donna Ferriero, MD, MS
Weill Institute for Neuroscience, University of California San Francisco

Therapeutic hypothermia has become standard of care for newborns with hypoxic ischemic (HI) injury. However, only 60 % respond to the therapy. We have been utilizing a rodent model of neonatal HI to study metabolomics with hyperpolarized C13 MRS (HP13C MRS). After HI, the animals are exposed to therapeutic hypothermia (TH) to see which patterns on HP13C MRS are associated with a non-response (1). In exploring the differential ratio of lactate to pyruvate in HP13C MRS imaging, we have found differences in these ratios in responders (R) vs non-responders (NR) at 24hrs after TH treatment. We also elucidate the role of Hypoxia Inducible Factor 1α (HIF1 α) in the pathway for repair after neonatal HI. We now know that HIF is necessary for preconditioning, upregulated in neonatal rodent brain after HI and stroke, and when eliminated, can worsen injury (2). Cold stress proteins are induced after therapeutic hypothermia and interact with the critical HIF pathway. We further investigate the contribution of another closely related HIF subunit, HIF2α, specifically the neuronal HIF2α, in neonatal brain HI injury. We find that compared to the wildtype mice, the neuronal HIF2α knockout mice have more cell death at 24hr and larger infarct volumes at 6 days after HI (3).

References:

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Harnessing Hypoxic Adaptation to Interdict Ferroptosis and Treat Neurological Diseases

Rajiv Ratan, MD, PhD
Burke Neurological Institute at Weill Cornell Medicine

Iron dysregulation has been linked to many neurodegenerative conditions. The pluripotent effects of iron chelators in multiple disease models including those involving hypoxia-ischemia has suggested that iron is a primary driver of disease pathogenesis. Here we describe evidence that iron chelators mediate their protective effects via suppression of the HIF prolyl hydroxylases (HIF PHD). Suppression of these iron, 2-oxoglutarate, and oxygen dependent dioxygenases leads to inhibition of a unique, iron dependent form of cell death called ferroptosis. Protection results from suppression of prodeath, ATF4-dependent gene expression. A cell based screen was utilized to identify a target selective iron chelator, adapatquin, a low molecular weight oxyquinoline. Adaptaquin was shown by non-denaturing mass spectrometry to bind to a HIF PHD, and inhibit its activity. It was also shown to stabilize a HIF reporter in the brain and to protect from stroke, traumatic brain injury and retinal diseases. Altogether, these studies highlight how adaptive responses to hypoxia, evolved over millions of years, can be harnessed to treat nervous system diseases.

References:

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2. Protection from oxidative stress-induced apoptosis in cortical neuronal cultures by iron chelators is associated with enhanced DNA binding of hypoxia-inducible factor-1 and ATF-1/CREB and increased expression of glycolytic enzymes, p21(waf1/cip1), and erythropoietin.

   Zaman K, Ryu H, Hall D, O'Donovan K, Lin KI, Miller MP, Marquis JC, Baraban JM, Semenza GL, Ratan RR.J Neurosci. 1999 Nov 15;19(22):9821-30. doi: 10.1523/JNEUROSCI.19-22-09821.1999.PMID: 10559391 Free PMC article.

3. Hypoxia-inducible factor prolyl hydroxylase inhibition: robust new target or another big bust for stroke therapeutics?

   Karuppagounder SS, Ratan RR.J Cereb Blood Flow Metab. 2012 Jul;32(7):1347-61. doi: 10.1038/jcbfm.2012.28. Epub 2012 Mar 14.PMID: 22415525 Free PMC article. Review.

   Indeed, some of the known salutary effects of putative 'antioxidant' iron chelators in ischemic and hemorrhagic stroke may derive from their abilities to inhibit this family of iron, 2-oxoglutarate, and oxygen-dependent enzymes. …

4. Small molecule activation of adaptive gene expression: tilorone or its analogs are novel potent activators of hypoxia inducible factor-1 that provide prophylaxis against stroke and spinal cord injury.

5. Ratan RR, Siddiq A, Aminova L, Langley B, McConoughey S, Karpisheva K, Lee HH, Carmichael T, Kornblum H, Coppola G, Geschwind DH, Hoke A, Smirnova N, Rink C, Roy S, Sen C, Beattie MS, Hart RP, Grumet M, Sun D, Freeman RS, Semenza GL, Gazaryan I.Ann N Y Acad Sci. 2008 Dec;1147:383-94. doi: 10.1196/annals.1427.033.PMID: 19076458 Free PMC article.

Transcranial Magnetic Stimulation (TMS) and Post-Stroke Recovery

Roy Hamilton, MD, MS
University of Pennsylvania

Although recent years have witnessed dramatic advances in the ability to diagnose, treat, and in many cases reverse the effects of acute stroke, many stroke survivors remain heavily burdened by persistent motor and cognitive deficits and stroke remains a leading cause of morbidity and disability. While behavioral neurorehabilitation techniques—the current mainstay of treatment for post-stroke deficits—have shown some efficacy, there is a clear need to advance targeted, neurally-based interventions for post-stroke deficits. Noninvasive brain stimulation (NIBS) approaches like transcranial magnetic stimulation (TMS) represent a promising approach to treating patients with post-stroke deficits because they are capable of directly and focally manipulating brain activity and neuroplasticity in order to facilitate functional recovery from brain injury. This presentation will present an overview of past, present, and emerging evidence that indicates that magnetic stimulation of the brain can facilitate recovery of motor and cognitive deficits caused by stroke, with special emphasis on the use of TMS for the treatment of patients with post-stroke aphasia. Mechanistic relationships

between brain stimulation and mechanisms of post-stroke neuroplasticity will be addressed. Finally, the presentation will provide insight into how advances in parallel fields such as network neuroscience and neuroimaging may lead to the further refinement of therapeutic brain stimulation approaches in stroke recovery.

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ANA2021 AWARDEES

Saturday, October 16, 2021

F.E. BENNETT MEMORIAL LECTURESHIP AWARD

The F.E. Bennett Memorial Lectureship began in 1979 to recognize outstanding neuroscientists.

SATURDAY, OCTOBER 16, 2021 FROM 5:00 PM–7:00 PM EDT

Ingrid Scheffer, AO, MBBS, PhD, FRACP, FAES, FAA, FRS, PresAHMS

UNIVERSITY OF MELBOURNE

Presentation Title: Genetic Basis of Epilepsy

This award will be presented during the Opening Symposium: Insights Into the Genetic Underpinning and Treatment of Epilepsy session.

Laureate Professor Ingrid Scheffer AO, MBBS, PhD, FRACP, FAES, FAA, FRS, PresFAHMS, is a physician-scientist whose work as a paediatric neurologist and epileptologist at the University of Melbourne and Florey Institute has led epilepsy genetics research over 25 years. In collaboration with Professor Samuel Berkovic and molecular geneticists, they identified the first epilepsy gene and many genes subsequently. She led the first major International League Against Epilepsy revision of the classification of epilepsies in 28 years (March 2017) and was a co-recipient of the Australian Prime Minister's Prize for Science and in 2018 was elected to the Royal Society (London).

Sunday, October 17, 2021

SORIANO LECTURESHIP AWARD

This award was established in 1987 by ANA member Dr. Victor Soriano and his wife to provide a "brilliant lecture delivered by an outstanding scientist" who is a member of the Association.

SUNDAY, OCTOBER 17, 2021 FROM 10:00 AM–12:00 PM EDT

Avindra Nath, MD

NATIONAL INSTITUTES OF HEALTH

Presentation Title: Neurobiology of COVID-19

This award will be presented during the Presidential Symposium: COVID-19 Pandemic: Population Impact and Responses, and Neurological Complications

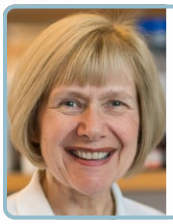
Dr. Avindra Nath is a physician–scientist who specializes in the field of neuro-immunology and neurovirology. His research is focused on the clinical manifestations, pathophysiology and treatment of emerging neurological infections with a focus on HIV infection. In recent years, he has studied the neurological complications of endogenous retroviruses, Ebola, Zika virus and SARS-CoV-2 and conducts research on patients with undiagnosed neuroinflammatory disorders. He is internationally recognized for his contributions and serves on advisory committees to the NIH, CDC, FDA and WHO. The International Society of NeuroVirology has honored Dr. Nath with the Pioneer in NeuroVirology Award for his contributions to HIV neuropathogenesis and elected him as the President of the Society. He received the Wybran award from the Society of Neuroimmune Pharmacology for contributions to Neurovirology. He also received the NIH Director's award and the HHS Secretary's award for his work on Ebola infection. He was elected to the American Association of Physicians. Dr. Nath is the Clinical Director of the National Institute of Neurological Disorders and Stroke (NINDS) at NIH, where he is also Chief of the Section of Infections of the Nervous System, Director of the Translational Center for Neurological Sciences, and Director of the Neuroimmunology and Neurovirology Fellowship Program. Dr. Nath received his medical degree from Christian Medical College in Ludhiana India, and completed a residency in neurology from the University of Texas Health Science Center in Houston, followed by a fellowship in multiple

sclerosis and neurovirology at the same institution. He then completed a fellowship in neuro-AIDS at NINDS. Having held faculty positions at the University of Manitoba and the University of Kentucky, he joined Johns Hopkins University in 2002 as Professor of Neurology and Director of the Division of Neuroimmunology and Neurological Infections. He joined NIH in 2011.

RAYMOND D. ADAMS LECTURESHIP AWARD

This award honors Dr. Raymond D. Adams, emeritus Bullard Professor of Neuropathy at Harvard Medical School and emeritus Chief of Neurology Service at the Massachusetts General Hospital.

SUNDAY, OCTOBER 17, 2021 FROM 3:15 PM–5:15 PM EDT



Eva Feldman, MD, PhD
UNIVERSITY OF MICHIGAN

Presentation Title: Recent Advances in ALS

This award will be presented during the Advances in Amyotrophic Lateral Sclerosis Plenary Session.

Eva L. Feldman, MD, PhD, is the Russell N. DeJong Professor of Neurology and Director of the ALS Center of Excellence at University of Michigan. With 30 years of continuous NIH funding, she directs the NeuroNetwork for Emerging Therapies, a consortium of investigators from multiple disciplines whose research bridges the translational gap. Her own laboratory of 25 scientists has pioneered studies in immunity, the exposome, and stem cells in ALS. Dr. Feldman currently chairs the Neurology and Psychiatry section of the National Academy of Medicine and has served the ANA as a Board member, Vice-President, and, from 2011-13, as President.

DEREK DENNY-BROWN YOUNG NEUROLOGICAL SCHOLARS

The Derek Denny-Brown Young Neurological Scholars Awards are clinical awards given each year during the Annual Meeting to new members of the association who have achieved significant stature in neurological research, and who show promise and will continue making major contributions to the field of neurology.

DEREK DENNY-BROWN YOUNG NEUROLOGICAL SCHOLAR AWARD IN NEUROSCIENCE

MODAY, OCTOBER 18, 2021 FROM 2:30 PM – 4:30 PM EDT

Anabelle Singer, PhD
GEORGIA INSTITUTE OF TECHNOLOGY AND EMORY UNIVERSITY

Presentation Title: New Approaches to Alzheimer's: From Neural Deficits to Neural Stimulation

This award will be presented during the Derek Denny-Brown Young Neurological Scholar Symposium.

Annabelle Singer is an Assistant Professor in the Coulter Department of Biomedical Engineering at Georgia Tech and Emory University. Her research aims to understand how neural activity produces memories and controls brain immune function. Dr. Singer's research has shown how coordinated electrical activity across many neurons in the hippocampus represents memories of experiences and fails in animal models of Alzheimer's disease. Dr. Singer has found that driving particular patterns of neural activity, like gamma, reduces Alzheimer's pathology and alters brain immune function. Using non-invasive sensory stimulation to control neural activity, she is translating her discoveries from rodents to humans to develop radically new ways to treat disease. Dr. Singer completed a post-doctoral fellowship in Ed Boyden's Synthetic Neurobiology Group at MIT and she received her Ph.D. in Neuroscience from UCSF, performing research in the laboratory of Loren Frank. She is a Packard Fellow, Kavli Fellow, and recipient of the Society for Neuroscience's Janett Rosenberg Trubatch Career Development Award.

THE DEREK DENNY-BROWN YOUNG NEUROLOGICAL SCHOLAR AWARD IN BASIC SCIENCE

MODAY, OCTOBER 18, 2021 FROM 2:30 PM – 4:30 PM EDT

Alexandra Nelson, MD, PhD
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Presentation Title: The Striatal Origins of Action Selection and When They Fail

This award will be presented during the Derek Denny-Brown Young Neurological Scholar Symposium.

Alexandra Nelson MD, PhD is the Richard and Shirley Cahill Endowed Chair in Parkinson's Disease Research at UC San Francisco. Dr Nelson received her MD/PhD training at UC San Diego, completed her residency and fellowship training at UCSF, and joined the faculty in 2014. In the lab, her research group investigates the cellular and circuit basis of movement disorders, using electrophysiology, optogenetics, and other optical methods in mouse models of disease. In the clinic, she focuses on the care of patients and families with Huntington's Disease, atypical parkinsonian disorders, and Spinocerebellar Ataxias.

DEREK DENNY-BROWN YOUNG NEUROLOGICAL SCHOLAR AWARD IN CLINICAL SCIENCE

MONDAY, OCTOBER 18, 2021 FROM 2:30 PM – 4:30 PM EDT

Timothy Yu, MD, PhD
BOSTON CHILDREN'S HOSPITAL

Presentation Title: Piloting Individualized Therapies for Orphan Neurogenetic Disease

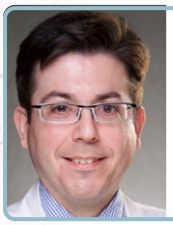
This award will be presented during the Derek Denny-Brown Young Neurological Scholar Symposium.

Dr. Yu, MD, PhD leads a research group in the Division of Genetics & Genomics at Boston Children's Hospital that works at the intersection of genomics, informatics, and neurobiology to better understand and treat rare neurologic disease. A graduate of Harvard College, he completed MD-PhD training at UC San Francisco and neurology residency at Massachusetts General Hospital and Brigham and Women's Hospital. Research efforts span the range from gene discovery for autism and other neurodevelopmental disorders to clinical genome interpretation to the advancement of novel models for advancing individualized medicine for severe neurogenetic diseases.

THE GRASS FOUNDATION—ANA AWARD IN NEUROSCIENCE

Established in 2007, the award honors outstanding young investigators conducting research in basic or clinical neuroscience.

MONDAY, OCTOBER 18, 2021 FROM 2:30 PM–4:30 PM EDT



Alberto Serrano-Pozo, MD, PhD
MASSACHUSETTS GENERAL

Presentation Title: APOE Genotype and Cognitive and Reactive Glia Phenotypes in Alzheimer's Disease

This award will be presented during the Derek Denny-Brown Young Neurological Scholar Symposium.

Alberto Serrano-Pozo, MD, PhD is an Assistant Professor of Neurology at Massachusetts General Hospital (MGH) and Harvard Medical School. He obtained his MD at University of Málaga and his PhD at University of Seville in Spain. He completed neurology residencies at University of Seville and University of Iowa, and a clinical dementia fellowship at MGH. Dr. Serrano-Pozo is a board-certified neurologist and a neuroscientist with an interest in Alzheimer's disease and related dementias. His research focuses on the clinic-pathological correlations of dementia, the role of reactive glia in Alzheimer's disease, and the mechanisms underlying the influence of APOE and other gene variants in Alzheimer's risk.

WOLFE NEUROPATHY RESEARCH PRIZE

The Wolfe Research Prize was established in 2009 by Mr. Winston Wolfe and the ANA to honor outstanding investigators who identify a new cause or novel treatment of axonal peripheral neuropathy.

MONDAY, OCTOBER 18, 2021 FROM 2:30 PM–4:30 PM EDT

Brett McCray, MD, PhD
JOHNS HOPKINS SCHOOL OF MEDICINE

Presentation Title: Insights Into the Pathogenesis of TRPV4 Neuropathy Highlight the Therapeutic Potential Of TRPV4 Ion Channel Inhibition

This award will be presented during the Derek Denny-Brown Young Neurological Scholar Symposium.

Brett McCray, MD, PhD is a physician-scientist with a clinical and research focus on Charcot-Marie-Tooth (CMT) disease, the most common form of inherited neuropathy and the most common inherited neurologic disease worldwide. In addition to caring for patients with CMT and other neuromuscular diseases, Dr. McCray has a basic science lab focused on the pathogenesis of inherited forms of peripheral neuropathy with the goal of identifying common pathogenic mechanisms and novel broadly applicable therapeutic targets. His current work is focused on understanding the pathogenesis of CMT type 2C, which is caused by mutations in the calcium-permeable cation channel TRPV4 (transient receptor potential vanilloid 4).

AUDREY S. PENN LECTURESHIP AWARD

Provided to ANA members who conduct outstanding research, program-building, or educational scholarship to promote health equity on health care disparities.

MONDAY, OCTOBER 18, 2021 FROM 2:30 PM–4:30 PM EDT

Nicte Mejia, MD, MPH, FAAN
MASSACHUSETTS GENERAL HOSPITAL

Presentation Title: Sustainability and Growth: the MGH Youth Neurology Education and Research Program

Nicte Mejia is Director of Neurology Community Health Diversity and Inclusion at Massachusetts General Hospital and Assistant Professor of Neurology at Harvard Medical School. After graduating medical school at the Monterrey Institute of Technology in Mexico, Dr. Mejia trained at Harvard and its affiliated hospitals, completing a Medicine internship, Neurology residency, Movement Disorders fellowship, Master of Public Health degree, and postdoctoral fellowships in Neurostatistics and Neuroepidemiology as well as in Mental Health Policy. She works to advance equity and justice through patient care, education, research, and administrative leadership. Dr. Mejia created opportunities for trainees to engage in these efforts, including the Harvard Neurology Residency Program Diversity and Inclusion Certificate (for neurology residents and fellows), MGH Neurology Community Health Diversity and Inclusion Internship (for undergraduate and graduate students), MGH Youth Stroke Education Program (for high school students), and the MGH Neurology Education and Research Program (for high school and undergraduate students). She is honored to serve as part of local and national groups committed to equity and justice, including the Neurology Journal Editorial Board, the Davis Phinney Foundation Inclusion Diversity Equity and Access (IDEA) Advisory Board, and the Boston Health Care for the Homeless Program Board of Directors. Dr. Mejia has been recognized with the MGH Ernesto Gonzalez Award, HMS Harold Amos Faculty Diversity Award, HMS Scholars in Medicine Excellence in Student Mentoring Award, YMCA Achievers Award, Dominican Medical College New England Boston Chapter and Hispanic Health Professionals Association Outstanding Healthcare Professional Award, Amplify Latinx Latina Leader Award, and the American Academy of Neurology AB Baker Teacher Recognition Award.

AUDREY S. PENN LECTURESHIP AWARD

Provided to ANA members who conduct outstanding research, program-building, or educational scholarship to promote health equity on health care disparities.

MONDAY, OCTOBER 18, 2021 FROM 2:30 PM–4:30 PM EDT

Charlene Gamaldo, MD, FAAN, FANA
JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE

Presentation Title: Inclusive Healthcare: A Triple Tier Academic Approach

Dr. Gamaldo is a Professor at Johns Hopkins School of Medicine. Dr. Gamaldo is the vice-chair of the Joint Coordinating Council on Equity, Diversity, Inclusion, and Disparities and is a member of the Board of Directors. She is working with the JHU vice provost to develop novel professional and leadership development programs for faculty across the University. Dr. Gamaldo is a master certified life coach and certified strengths coach and uses a strengths-based approach in her educational and professional development programs. Dr. Gamaldo's research interest focuses on the impact of sleep on the manifestation and progression of neurologic diseases.

These awards will be presented during the Derek Denny-Brown Young Neurological Scholar Symposium.

ANA AWARD FOR EXCELLENCE—OUTSTANDING CONTRIBUTION IN A SENIOR ADMINISTRATIVE ROLE

The award was established in order to recognize outstanding enumerable contributions to the field of neurology and neuroscience in the form of senior administrative roles over a sustained period of time.

MONDAY, OCTOBER 18, 2021 FROM 2:30 PM–4:30 PM EDT

Walter Koroshetz, MD
NATIONAL INSTITUTE OF NEUROLOGICAL DISORDERS AND STROKE

Dr. Koroshetz serves as Director of the National Institute of Neurological Disorders and Stroke. He joined NINDS in 2007 as Deputy Director and has co-led the NIH's BRAIN Initiative, the Neuroscience Blueprint, the Traumatic Brain Injury Center with the Uniformed Health Services University, the Helping to End Addiction Long Term (HEAL) Initiative, the Undiagnosed Disease, and the Acute to Chronic Pain Transition Programs, NIH Emergency Care Research and the Post Acute Sequalae of COVID-19 Initiative. Before NINDS, Dr. Koroshetz served as the Neurology Vice Chair and Director of stroke and neurointensive care, led neurology resident training at Massachusetts General Hospital as a Harvard professor.

This award will be presented during the Derek Denny-Brown Young Neurological Scholar Symposium.

ANA AWARD FOR EXCELLENCE-SERVICE TO THE ANA

This award was established to recognize an individual who has made high impact contributions to the ANA in the form of service as an officer, board member, committee chair, task force leader, or in some other administrative role that results in substantial, meaningful, and measurable positive change in the ANA's ability to serve its membership and the field.

MONDAY, OCTOBER 18, 2021 FROM 2:30 PM–4:30 PM EDT

Allison W. Willis, MD, MS
UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE

Dr. Willis is an Associate Professor of Neurology and of Epidemiology at the University of Pennsylvania School of Medicine. Additionally, she is a Senior Scholar in the CCEB, a senior Fellow at the Leonard Davis Institute of Health Economics, a Faculty Scholar at the Center for Pharmacoepidemiology Research Training, and Director of the Department of Neurology's Translational Center of Excellence for Neuroepidemiology and Neurology Outcomes Research, and Co-director of the Resource Center for Minority Aging Research. Dr. Willis has formal research training in analytical and spatial epidemiology, pharmacoepidemiology, health outcomes research. Her formative post-doctoral clinical and research training occurred at Washington University in Saint Louis School of Medicine, in the departments of Medicine, Neurology, and Epidemiology. She is a fellowship- trained movement disorders specialist.

Dr. Willis has developed a clinical research program in translational neuroepidemiology, and neuroaging patient-oriented research, which focuses on institutionalization of scientific discovery into clinical practice and policy, and the health outcomes and disparities associated therewith. I have received funding from NINDS, NIA, PCORI, MJFF, APDA and the PF. Her current work focuses on drug-disease interactions in Parkinson Disease, and health disparities as experienced by individuals with neurological conditions across the lifespan. She regularly presents her work at national meetings of neurologists and PD researchers and other academic institutions. Dr. Willis serves as Chair of the Health/Care Outcomes and Disparities Working Group of the Parkinson Study Group and has held

several leadership and organizing roles in the American Neurological Association. She is the 2015 recipient of the American Academy of Neurology's Jon Stolk Award, and the 2019 recipient of the UPenn Marjorie Bowman Award. Dr. Willis has published over 130 peer reviewed research manuscripts and abstracts.

This award will be presented during the Derek Denny-Brown Young Neurological Scholar Symposium.

DISTINGUISHED NEUROLOGY TEACHER AWARD

The award recognizes and rewards contributions by gifted and talented teachers of neurology. Nominees come from the entire field of clinical neurology or neuroscience.

MONDAY, OCTOBER 18, 2021 FROM 2:30 PM–4:30 PM EDT

Robert Lisak, MD, FRCP (E), FAAN, FANA
WAYNE STATE

This award will be presented during the Derek Denny-Brown Young Neurological Scholar Symposium.

Robert P Lisak, MD, FRCP (E), FAAN, FANA is the Parker Webber Chair in Neurology, Professor of Neurology and of Biochemistry, Microbiology and Immunology at Wayne State University. He received his BA from NYU, MD from Columbia, trained in Medicine at Montefiore and Bronx Municipal Hospital/Einstein, in Neurochemistry at NIMH, and Neurology and Allergy and Immunology at the University of Pennsylvania. Dr Lisak was a member of the Department of Neurology at Penn for 15 years, including 2 years as Vice-Chair, before moving to WSU where was Chair of Neurology for 25 years, and continues as a faculty member.

AMERICAN NEUROLOGICAL ASSOCIATION

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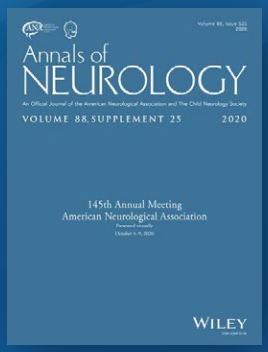
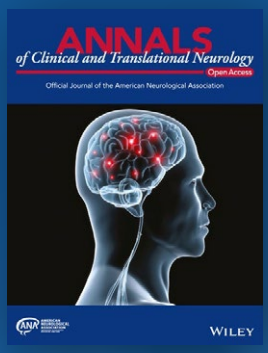
Congratulations to the *Annals of Neurology* and *Annals of Clinical and Translational Neurology (ACTN)* on their increased Impact Factors!



NEW IMPACT FACTOR: 10.422



NEW IMPACT FACTOR: 4.511

Thank you to our editors and authors for your contributions toward this achievement!

Learn more about the American Neurological Association's two peer-reviewed journals at myana.org/publications

ANA2021 ABSTRACT REVIEWERS

We want to thank the experts who reviewed the almost 500 abstracts submitted in 18 categories for inclusion in this year's e-poster hall. They performed an outstanding service for ANA. Based on these ratings and comments, authors of almost 50 impressive studies were selected to give short oral presentations of their abstracts during both Plenary and the new SIG Series sessions.

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The overall educational focus of the Virtual Annual Meeting has been planned by the following dedicated and accomplished ANA committee members:

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Thank you to the Career Development Workshops Subcommittee chair and members for your hard work on this year's program. Your assistance planning the career development workshops was invaluable.

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Thank you to the Interactive Lunch Workshops Subcommittee chair and members for your help in planning the 6 Interactive Lunch Workshops. Your assistance and guidance was invaluable and greatly appreciated.

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Answers in CME VIRTUAL LIVE | INTERACTIVE CME VIRTUAL LIVE SYMPOSIUM, EARN CREDIT!

New Hope for Early-Stage Alzheimer's Disease:

Can We Modify the Disease Pathway by Targeting Amyloid-β?

James E. Galvin, MD, MPH

Marwan N. Sabbagh, MD

Mrs. Lueva Demps
Alzheimer's Caregiver

TUE
19 OCT

8:30 AM – 9:30 AM EDT
Virtual Live Symposium

Activity Description
The objective of this activity series is to improve neurologists' knowledge and competence in evaluating the rationale behind selectively targeting neurotoxic soluble amyloid-β oligomers in early-stage AD; assessing the latest evidence on the efficacy and safety of emerging late-stage anti–amyloid-β immunotherapies, and proposing a patient-centered approach that will maximize the benefits of these emerging therapies.

This program is not affiliated with American Neurological Association or its ANA2021 Virtual Annual Meeting.
This activity is supported by an educational grant from Biogen. | This CME activity is jointly provided by Oakstone Publishing and Answers in CME.

SAVE THE DATE

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INNOVATORS IN DISCOVERY, EDUCATION, AND CARE