



NeuroNet | pro



The American Society  
of Neuroimaging

# SCOTTSDALE



***A JOINT CONFERENCE  
ON NEUROINNOVATIONS***

**JANUARY 13-16, 2022**

THE SCOTT RESORT & CONFERENCE CENTER | Scottsdale, Arizona

# CONTINUING EDUCATION (CE) INFORMATION

## Target Audience.

This activity is designed to meet the needs of neurologists, neurosurgeons, neuroradiologists, vascular sonographers, & other neuroscientists.

## Method Of Participation.

Statements of credit will be awarded based on the participant's attendance. A statement of credit will be available upon completion of an online evaluation/claimed credit form available at: [www.akhcme.com/ASN](http://www.akhcme.com/ASN)

## Please claim your credit by February 15, 2022.

If you have questions about this CME activity, please contact AKH inc. at [jgoldman@akhcme.com](mailto:jgoldman@akhcme.com).

## CE Credit Provided by AKH Inc., Advancing Knowledge in Healthcare

In support of improving patient care, this activity has been planned and implemented by AKH Inc., Advancing Knowledge in Healthcare and American Society of Neuroimaging (ASN). AKH Inc., Advancing Knowledge in Healthcare is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

## Physicians

AKH Inc., Advancing Knowledge in Healthcare designates this live activity for a maximum of 17.75 AMA PRA Category 1 Credit(s)<sup>™</sup>.

## Physician Assistants.

NCCPA accepts AMA PRA Category 1 Credit<sup>™</sup> from organizations accredited by ACCME.

## Planner And Reviewer Disclosures.

The following planners & reviewers have no significant financial relationships with pharmaceutical or medical product manufacturers:

- Dorothy Caputo, MA, BSN, RN  
- Director of Accreditations
- ASN Staff & Planners
- AKH Inc. Staff & Planners

## Commercial Support

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## Disclosures

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## Disclaimer

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# ANNUAL MEETING OBJECTIVES

- ▲ Apply knowledge of neuroimaging to formulate a focused differential diagnosis
- ▲ Describe the role of neuroimaging in the training and practice of Neurology
- ▲ Ordering the proper imaging study based on clinical findings
- ▲ Reviewing images & reports for the purpose of confirming clinical suspicions
- ▲ Ensuring a practice based imaging operation meets service standards
- ▲ How to use images to discuss imaging and clinical findings with patients
- ▲ List examples of how neurologists can enhance their patients' outcomes by neuroimaging
- ▲ Recognize how neuroimaging training is key to the future of Neuroimaging
- ▲ Evaluate Neuroimaging findings
- ▲ Apply knowledge of neuroanatomy to formulate a focused differential diagnosis
- ▲ Achieve experience in understanding & applying contemporary carotid Duplex & TCD protocols in common neurovascular disorders, i.e., stroke, extra- & intracranial stenosis, subarachnoid hemorrhage, & traumatic brain injury.
- ▲ Have acquired new knowledge for carotid Duplex & TCD utilization in critical care & during cardiovascular procedures
- ▲ Improved patient management strategies & outcome due to utilization of carotid duplex & TCD testing during different clinical pathways
- ▲ Case based review of TCD findings & their clinical interpretation
- ▲ Explain when to image a headache
- ▲ Understand the use of different neuroimaging modalities for headache patients
- ▲ Review important imaging concepts, common findings, mimics & urgent findings in primary, secondary, adult & pediatric headache
- ▲ Review important imaging concepts, common findings, mimics & urgent findings in acute stroke & neurocritical care
- ▲ Understand the role of collateral flow imaging & vessel wall imaging in managing acute stroke patients, headache & other applications
- ▲ Describe the significance of neuroimaging in the management of patients presenting with acute stroke
- ▲ Discuss current endovascular management of patients with acute stroke
- ▲ Describe the use & application of CT perfusion studies in the evaluation & management of acute ischemic stroke as it pertains to the selection of patients for acute reperfusion therapies
- ▲ Understand the opportunities for applying Uses of Ultrasound in Stroke Prevention, Multimodal Neuro Monitoring, TCD, Monitoring after Thrombectomy
- ▲ Describe the early ischemic changes seen in acute ischemic stroke & discuss the application of ASPECTS score for patient selection for acute reperfusion therapies, intravenous & endovascular.
- ▲ Elucidate the role of collateral assessment in selection of patients for acute reperfusion therapies.
- ▲ Review important imaging concepts, common findings, mimics & urgent findings Multiple Sclerosis (MS), Cognitive Disorders, Movement Disorders, & Trauma
- ▲ Recognize anatomic landmarks using neuro-sonography & be familiar with age dependent variations
- ▲ Recognize pathologic findings requiring intervention
- ▲ Review important imaging concepts, common findings, mimics and urgent findings in neuroinflammatory disorders, neuro-oncology disorders, & seizure disorders
- ▲ Review important imaging concepts of infections involving the CNS
- ▲ Describe changes on TCD after concussion/TBI
- ▲ Discuss different cases of post-traumatic epilepsy and understand the pathophysiology
- ▲ Review important imaging concepts, common findings, mimics & urgent findings in pediatric neurologic disorders
- ▲ Review utilization practices for TCD among pediatric neurologists, intensivists and researchers who practice and conduct research in pediatric neurocritical care.
- ▲ Review conditions for which TCD is currently being used in children in clinical practice and research.
- ▲ Propose future directions intended to better understand the potential clinical impact of TCD in pediatric neurocritical care.
- ▲ Understand the role of data & artificial intelligence in precision medicine and practice automation
- ▲ Review of technology, clinical applications and how-to for ultrasound technologists
- ▲ Define waveform and vessel identification
- ▲ Define examinations protocols
- ▲ Define abnormal waveforms

# WELCOME

## Two Meetings Come Together to Produce a Unique Conference on Neuroinnovations

Since 1977, the **American Society of Neuroimaging** has always been a place for providers of all levels – students, residents, fellows, technologists, advanced practice providers & attendings – to gather & discuss all modalities of neuroimaging (CT, MRI, US), how they make our patients & practice better, & to meet with industry partners who bring us the latest in neurological diagnostic technology.

This year, we welcome as joint hosts, **NeuroNet Pro**, an education & consulting organization focused on helping physician groups implement best-practice business models, integrating modern technology to solve practical issues, & leveraging the value of neurology in our healthcare delivery system.

Together, these two societies offer an opportunity for examining potential solutions to significant real world issues through its own expert lens. Precision medicine from ASN providers & scientists. Business & operations technologies through the practical eyes of NeuroNetPro attendees. The groups will unite for strategic keynote addresses, panel discussions & social gatherings intended to re-imagine the neurology delivery model.

We hope that both clinical & business professionals attend this important in-person meeting together. It will be a beautiful time of year in Scottsdale, AZ. Our program & venue have been created to foster important relationships, & facilitate problem solving among clinicians, scientists, businesspersons, & industry.

-Joseph V. Fritz, PhD  
Program Chair

“Neuroimaging plays a critical role in shaping the future of neurology & more importantly neuroimaging makes us better neurologists”

*Marc Malkoff, MD, FAAN, FAHA, RPNI  
ASN President*

“It is impossible to separate treatment breakthroughs from the precision diagnostics & practice innovations that together are required to solve the devastation & economic burdens of neurologic disorders”

*David Evans, MBA  
NeuroNet Pro CEO*

# JOINT PROGRAM AT-A-GLANCE

NeuroNet Business Track

ASN Neuroimaging & Clinical Innovations Track

**Thursday, January 13 | 1:00 - 7:30 pm**

*What's Your Hassle?*

*Imaging Fundamentals Refresher*

*Fundamentals of US & Acute Care Imaging*

*Transcranial Doppler Case Studies*

*Welcome Reception & Poster Session*

**Friday, January 14 | 8:00 am - 7:30 pm**

*Clinical Plenary 1: Headache Imaging*

*HR, Legal, Compliance, & Ethical Issues*

*MS, Cognitive, Neurodegenerative Disorders*

*Ultrasound Technology*

*Lunch, Opening of The Innovations Hall, Roundtable Discussion, & Keynote "Role of AI & Digital Medicine in the Future Practice of Neurology"*  
*Junaid Kalia, Founder AI Neuro Care*

*Comprehensive Service Model*

*Imaging & Digital Medicine - Innovations Hall*

*Ultrasound Hot Topics*

*"Exciting Transformations in Neurologic Healthcare Delivery"*  
*Adam Boehler, Former CMMI Director*

*Townhall Reception*

**Saturday, January 15 | 8:00 am - 10:00 pm**

*Clinical Plenary 2: Stroke*

*Trends in Reimbursement & Payment Reform*

*Trauma*

*TCD & Critical Care Monitoring*

*Lunch & Broadcast "The Emerging Role of TCD as a Neuro Diagnostic Tool in Resource Limited Settings"*  
*Nicole O'Brien, MD*

*Innovations in the Practice of Neurology - Innovations Hall*

*Neuroinflammation, Neuro-oncology & Seizure Disorders*

*Pediatric Neuroimaging*

*"Conference Gala"*  
*sponsored by Dent Neurologic Institute*

# ANNUAL MEETING PROGRAM

## NeuroNetPro Business Track

THURSDAY, JANUARY 13

**WHAT'S YOUR HASSLE | SUNSET** ..... 1:00pm - 4:30pm

- Meet and greet, problem framing & group catharsis
- Performance Benchmarks and Alerts
- Resources for private practice

**WELCOME RECEPTION AND MEET THE EXPERTS** ..... 5:00pm - 7:30pm

FRIDAY, JANUARY 14

**HR, LEGAL, COMPLIANCE AND ETHICAL ISSUES | SUNSET** ..... 9:00am - 11:30am

- Fostering Wellbeing & Infecting culture enthusiastic of change
- Compliance Top 10: the pains & the risks
- Ethical considerations with COVID: mandates vs personal preferences
- Managing the VIP Patient
- The Team Member Experience: Recruiting, Growing, Retaining Talent
- Incorporating Inclusion, Diversity, and Equity

**LUNCH, INNOVATIONS HALL, ROUNDTABLE DISCUSSION, & KEYNOTE** ..... 11:30am - 2:00pm

- Keynote Speech: "Role of AI & Digital Medicine in the Future Practice of Neurology"  
-Junaid Kalia, Founder AI Neuro Care-

**CREATING A COMPREHENSIVE SERVICE MODEL | SUNSET** ..... 2:00pm - 4:30pm

- Strategies for and Benefits of a comprehensive practice model
- Keys to setting up your own infusion & imaging centers
- Inventory management
- Clinical Trial Strategies in Private Practice
- Collaborating with Industry under the 2022 Guidelines

**TOWN HALL RECEPTION | INNOVATIONS HALL** ..... 5:00pm - 7:30pm

- A Town Hall Discussion: "Exciting Transformations in Neurologic Healthcare Delivery"  
-Adam Boehler, Former CMMI Director-

SATURDAY, JANUARY 15

**TRENDS IN REIMBURSEMENT AND PAYMENT REFORM | SUNSET** ..... 9:00am - 11:30am

- Medicare changes for 2022
- Top 10 Dos and Don't of Revenue Cycle Management in a Fee for Service Environment
- The Buy-and-Bill market: keys to effective billing
- Clinical documentation and its many downstream uses
- Know thy stakeholders: what is your value proposition?
- New players in healthcare: population health collaboratives, health information exchanges, payer-provider networks, and corporations
- Why should I care about MU & Interoperability?
- Succeeding with Risk Based Payment Models
- Identifying & coordinating care for your at-risk patients

**LUNCH AND BROADCAST** ..... 11:30am - 1:30pm

- Keynote Speech: "The Emerging Role of TCD as a Neuro Diagnostic Tool in Resource Limited Settings"  
-Nicole O'Brien, MD-

**TECHNOLOGY & AUTOMATION | INNOVATIONS HALL** ..... 1:30pm - 4:00pm

- EMR gaps and workarounds
- Intelligent Automation of Forms, Scheduling, Registration, Auths and Patient Communication
- Data integration, curation, management and decision support
- The Touchless Office
- Virtual Scribes
- Optimizing patient flow with Virtual & Digital Medicine
- Managing formulary changes and prior authorization
- Clinical Trials strategies for outpatient clinics & remote care
- Cognitive Assessment Tools: methods of reimbursement, efficient collection, accuracy, standardization

**CONFERENCE GALA** ..... 7:30pm - 10:30pm

- SPONSORED BY DENT NEUROLOGIC INSTITUTE -

# ASN Neuroimaging & Clinical Track Details

Thursday, January 13

## Fundamentals of Ultrasound & Acute Care Imaging

1:00 - 5:00 pm | Heritage 2 | *Course Director(s)*: Ryan Hakimi, DO, MS, RPNI, NVS, CPB, FNCS, FCCM & Emma Fields, APRN-CNP

### TOPICS:

- "Clinical Applications of TCD" - Ryan Hakimi, DO, MS, RPNI, NVS, CPB, FNCS, FCCM
- "Carotid US for Stroke Risk" - Mark Rubin, MD, NVS, RPNI
- "Role of Emboli Detection" - Zsolt Garami, MD
- "Imaging for Acute Stroke Treatment in the Early Time Window" - Sanjeev Sivakumar, MD
- "Imaging Based Stroke Treatment Strategies in Late Time Window" - Ashu Jadhav, MD, PhD
- "Imaging in TBI-Past, Present & Future" - Ruchira Jha, MD, MSc

## Imaging Fundamentals Refresher

1:00 - 5:00 pm | Heritage 1 | *Course Director*: Jennifer McVige, MD

### TOPICS:

- "What to Order When: A Case Study Approach" - Laszlo Mechtler, MD
- "Imaging is Done & A Report Provided: Now What?" - Pat Capone, MD
- "Every Neuroimagers 5 Customers" - Peter Kalina, MD, MBA
- "Integrating Images into your Follow Up Visit with the Patient" - Jennifer McVige, MD

## Transcranial Doppler Case Studies

1:00 - 5:00 pm | Heritage 5 | *Course Director(s)*: Colleen Douville, RVT, NVS & Brenda Rinsky, RDMS, RVT, NVS

### STRUCTURE:

- Building Interpretation Skills in an Interactive Setting

### FACULTY:

- Emily Ho, MD, PhD, RPNI
- Mark Rubin, MD, RPNI, NVS
- Konrad Schlick, MD, RPNI
- Aaron Stayman, MD, RPNI

## Welcome Reception & Poster Session

5:00 - 7:30 pm

# ASN NEUROIMAGING & CLINICAL OVERVIEW

Friday, January 14

## CLINICAL PLENARY: Headache Imaging

8:00 - 10:00 am | Orangedale 1 (B,C,D,E) | *Course Director:* Laszlo Mechtler, MD

### TOPICS:

- "Biology of Headache" - Sheena Auora, MD
- "Secondary Headaches & Red Flags" - Laszlo Mechtler, MD
- "Common Neuroimaging Findings in Pediatric Headaches" - Jennifer McVige, MD

## Multiple Sclerosis, Cognitive & Neurodegenerative Disorders

10:30 - 12:00 pm | Orangedale 1 (B,C,D,E)  
*Course Director:* John Bertelson, MD, FAAN

### TOPICS:

- "Imaging & other Biomarkers in MS"  
- Wisam Elmalik, MD
- "Imaging in Cognitive Disorders"  
- Joseph Masdeu, MD, PhD
- "Imaging Biomarkers in Movement Disorders"  
- Mark Haacke, PhD

## Ultrasound Technology

10:00 - 12:00 pm | Orangedale 2 (A,F)  
*Course Director:* Mark Rubin, MD, RPNI, NVS

### TOPICS:

- "21st Century TCD"  
- Robert Hamilton, PhD, MS
- "Engineering Innovations in Ultrasound"  
- Carl Herickhoff, PhD  
& Dongwoon Hyun, PhD

## LUNCH, Keynote, & Opening of The *Innovations Hall*

11:30 - 2:00 pm

### Keynote - 12:30pm

*"Role of AI & Digital Medicine in the Future Practice of Neurology"*

Junaid Kalia, Founder AI Neuro Care

### Roundtables Discussions - 1:00pm

*"Therapy Pipeline, Biomarkers & Practical Issues in Precision Neurology"*

## Imaging & Digital Medicine

2:00- 4:30 pm | In the Innovations Hall  
*Course Director:* Nandor Pinter, MD

### TOPICS:

- Session 1: New Imaging Technology
- Session 2: Biomarkers & Digital Medicine in Neurology

## Ultrasound Hot Topics

2:00 - 5:00 pm | Orangedale 2 (A,F)  
*Course Director:* Mark Rubin, MD, RPNI, NVS

### TOPICS:

- "Sonolysis"  
- Andrei Alexandrov, MD, RVT, NVS
- "Right Heart Monitoring During TCD Bubble Studies"  
- Mark Rubin, MD, NVS, RPNI
- "Intraoperative Monitoring with TCD"  
- Zsolt Garami, MD
- "Alphabet Soup of Credentialing"  
- JP Hughes, RVT, RVS, NVS

## *"Exciting Transformations in Neurologic Healthcare Delivery"*

*Adam Boehler, Former CMMI Director"*

5:00 - 5:30 pm | Innovations Hall

\*Ultrasound Hands-on Training Sessions | 11:30am-5:30pm

# ASN NEUROIMAGING & CLINICAL OVERVIEW

Saturday, January 15

## Stroke

8:00 - 10:00 am | Orangedale 1 (B,C,D,E) *Course Director:* Adnan Siddiqui, MD, PhD, FAHA

### TOPICS:

- "Uses of Ultrasound in Stroke Prevention" - J. David Spence, CM, MD, FRCPC, FAHA
- "Vessel Wall & Collateral Flow Imaging" - Nandor Pinter, MD & Rick Magun, MD, MSc
- "Imaging Innovations in Vascular Neurosurgery" - Adnan Siddiqui, MD, PhD, FAHA

## Trauma

10:30 - 12:30 pm | Orangedale 1 (B,C,D,E)

*Course Director:* Jennifer McVige, MD

### TOPICS:

- "Pediatric Abusive Head Trauma"  
- Peter Kalina, MD, MBA
- "Imaging of Disorder of Consciousness"  
- Brian Edlow, MD
- "Advanced MRI in Severe TBI"  
- Peter Ferrazzano, MD

## TCD & Critical Care Monitoring

10:30- 12:30 pm | Orangedale 2 (A,F)

*Course Director:* Mark Rubin, MD, RPNI, NVS

### TOPICS:

- "TCD - A Stethoscope for the Brain"  
- Marek Czosnyka, PhD
- "Multimodal Neuro Monitoring"  
- Brian Appavu, MD  
& Matthew Kirschen, MD, PhD
- "TCD Monitoring after Thrombectomy"  
- Claudio Baracchini, MD, PhD, FESO

## LUNCH in the Innovations Hall

11:30- 2:00 pm

**Broadcast - 12:30pm**

*"The Emerging Role of TCD as a Neurodiagnostic Tool in Resource Limited Settings"*

- Nicole O'Brien, MD

## Neuroinflammation, Neuro-oncology & Seizure Disorders

2:00 - 4:00 pm | Orangedale 1 (B,C,D,E)

*Course Director:* Laszlo Mechtler, MD

### TOPICS:

- "Imaging of Neuro-Inflammatory & Neuro-Rheumatologic Diseases"  
- Shamik Bhattacharyya, MD, MS
- "Tumor or Trouble? Integrating Contrast Clearance Analysis in Brain Radiosurgery"  
- Dheerendra Prasad
- "Imaging of Focal Seizure Disorders"  
- Robert Miletich, MD, PhD, FAAAS

## Pediatric Neuroimaging

2:00 - 5:00 pm | Orangedale 2 (A,F)

*Course Director:* Kerri LaRovere, MD

### TOPICS:

- "TCD for Sickle Cell Anemia"  
- Robert Adams, MD
- "Pediatric & Adult POCUS"  
- Marinna Mir, MD  
& Aarti Sarwal, MD, FNCS, FAAN, RPNI
- "Pediatric Echoencephalography"  
- Paul Maertens, MD

## "Conference Gala"

Sponsored by Dent Neurological Institute

7:30 - 10:30 pm

\*Ultrasound Hands-on Training Sessions | 11:00am-4:00pm

# KEYNOTE DETAILS

## Friday, January 14

### **“Role of AI & Digital Medicine in the Future Practice of Neurology”**

12:30 - 1:30 pm | *Innovations Hall*

*Course Director:*

Junaid Kalia, MD  
Founder of AI Neuro Care

*Panel Discussion Moderated by:*

David Evans, MBA  
CEO, Texas Neurology

*Overview:*

This joint session will demonstrate ways to create efficient workflows, reduce healthcare costs, improve data, and most importantly, better serve, diagnose and treat our patient populations with the use of technology. Dr. Junaid Kalia, Founder of AI Neuro Care, will share insights and benefits of incorporating AI and digital medicine in everyday patient care.

Our panelists representing clinical neurology, neuroimaging, pharmaceutical developers, and business perspectives will then join Dr. Kalia to discuss the implementation of informatics in the practice of neurology.

### **Town Hall Reception: "Exciting Transformations in Neurologic Healthcare Delivery"**

5:00 - 7:30 pm | *Heritage Ballroom & Courtyard*

Adam Boehler  
Former Center for Medicare & Medicaid Innovations (CMMI) Director

*Overview:*

This special fireside chat with former CMS Innovations Program Director, Adam Boehler will review the current state of healthcare economics in the United States and discuss why urgent change is needed in the delivery model. The role of, and benefits for, neurologists and neuroimagers will be emphasized as he outlines exciting opportunities for transformation.

## Saturday, January 15

### **The Emerging Role of TCD as a Neurodiagnostic Tool in Resource Limited Settings**

11:30 - 1:30 pm | *Innovations Hall*

*Course Director:*

Nicole O'Brien, MD  
Nationwide Children's Hospital

*Moderator:*

Kerri LaRovere, MD  
Boston Children's Hospital

*Overview:*

Nicole O'Brien is an Associate Professor in the Division of Critical Care Medicine and the Director of Pediatric Neurocritical Care at Nationwide Children's Hospital in Columbus, Ohio. She has been using Transcranial doppler ultrasound in clinical care and research since 2009 in both the USA as well as in several NIH funded projects in sub-Saharan Africa.

# REFRESHER COURSE DETAILS

**Thursday, January 13**

## **Imaging Fundamentals Refresher**

**1:00 - 5:00 pm | Heritage 1**

### *Course Director:*

Jennifer McVige, MD  
DENT Neurologic Institute

### *Course Description:*

This session is intended to help providers use imaging more proficiently in their everyday neurology practice. As the primary diagnostic tool used in neurology, it is critical that neurologists, APPs, and residents learn and remain current with regular technological advances and guidelines for neuroimaging. This is especially true in an era of explosive growth in the pipeline of sophisticated therapies that require for precision diagnostics, as well as safety and effectiveness monitoring. The course will be taught by neurologists with expertise in imaging, who will share practical insights on appropriate ordering and justification, clinical details that determine imaging protocols, reviewing images to gain greater insight and reassurance into your patient's disorder than a radiology report by itself, and offer tips on how to use images to communication with your patient.

### *Course Objectives:*

- a) Apply knowledge of neuroimaging to formulate a focused differential diagnosis
- b) Describe the role of neuroimaging in the training and practice of Neurology
- c) Ordering the proper imaging study based on clinical findings
- d) Reviewing images and reports for the purpose of confirming clinical suspicions
- e) Ensuring a practice based imaging operation meets service standards
- f) How to use images to discuss imaging and clinical findings with patients
- g) List some examples of how neurologists can enhance their patients' outcomes by neuroimaging
- h) Recognize how neuroimaging training is key to the future of Neuroimaging
- i) Evaluate Neuroimaging findings
- j) Apply knowledge of neuroanatomy to formulate a focused differential diagnosis

### *Individual Speaker Schedule:*

1:00 - 1:45 pm **What to Order When: A Case Study Approach** - Laszlo Mechtler, MD

1:45 - 2:30 pm **Imaging is Done, & A Report Provided: Now What?** - Pat Capone, MD

2:30 - 2:45 pm **BREAK**

2:45 - 3:30 pm **Don't Miss These Findings at the Edges of Your Images** - Peter Kalina, MD, MBA

3:30 - 4:15 pm **Integrating Images into your Follow Up Visit with the Patient** - Jennifer McVige, MD

# Thursday, January 13

## Fundamentals of Ultrasound & Acute Care Imaging

1:00 - 5:00 pm | Heritage 2

*Course Director(s):*

Ryan Hakimi, DO, MS, RPNI, NVS, CPB, FNCS, FCCM

USC School of Medicine-Greenville

*Course Director(s):*

Emmaculate Fields, APRN-CNP

University Of Oklahoma Health Services center

*Course Description:*

This course is intended for trainees, advanced practice providers, general neurologists & new learners in the neurosciences. It will highlight the use of various neuroimaging modalities; including TCD, carotid ultrasound, CT, CT angiography, CT perfusion, MRI, conventional cerebral angiography, & functional neuroimaging modalities in helping guide the evaluation & management of patients with neurological injuries.

*Course Objectives:*

- a) Describe common clinical applications of transcranial Doppler ultrasound (TCD)
- b) Illustrate the use of carotid ultrasound in stroke risk assessment
- c) Demonstrate the use of TCD emboli detection studies in stroke risk factor modification
- d) Review the use of CT, CTA, CT perfusion, MRI brain in the acute phase of stroke assessments
- e) Review the various imaging modalities utilized in the care of patients with traumatic brain injury

*Individual Speaker Schedule:*

1:00 - 1:30 pm Clinical Applications of TCD - Ryan Hakimi, DO, MS, RPNI, NVS, CPB, FNCS, FCCM

1:30 - 2:00 pm Carotid Ultrasound for Stroke Risk Assessment - Mark Rubin, MD, NVS, RPNI

2:00 - 2:15 pm BREAK

2:15 - 2:45 pm The Role of Emboli Detection in Stroke Risk Factor Modification - Zsolt Garami, MD

2:45 - 3:15 pm Imaging for Acute Stroke Treatment in the Early Window - Sanjeev Sivakumar, MD

3:15 - 4:00 pm Imaging Based Stroke Treatment Strategies in the Late Time Window  
- Ashutosh P. Jadhav, MD, PhD

4:00 - 4:45 pm Imaging in TBI-Past, Present, & Future - Ruchira Jha, MD, MSc

*List all modalities addressed within this session:*

TCD, Carotid US, CT, CTA, CT perfusion, MRI, MR perfusion, conventional cerebral angiography, functional neuroimaging

*\* This session counts towards Ultrasound Maintenance of Certification requirement*

**Thursday, January 13**

**Transcranial Doppler Case Studies:**

*"Building Interpretation Skills in an Interactive Setting"*

1:00 - 5:00 pm | Heritage 5

*Course Director(s):*

Brenda Rinsky, RDMS, RVT, NVS  
Cedars-Sinai Medical Center

*Course Director(s):*

Colleen Douville, RVT, NVS  
Swedish Neuroscience Institute

*Course Description:*

The spectral Doppler waveform generated by transcranial Doppler (TCD) technology exquisitely defines the movement of red blood cells through vascular spaces.

The goal of this seminar is to acquire the skills essential for interpretation of TCD findings. TCD case studies will be presented by expert faculty who utilize this technology in their hospital practice & outpatient settings.

Following each case presentation there will be opportunities for questions, dialogue, & polling to test your understanding.

Cerebrovascular applications covered include the usefulness of TCD in acute & chronic stroke, competency of collateral flow, vasospasm secondary to subarachnoid hemorrhage, emboli monitoring, detection and grading of right to left cardiac shunts (PFO), vasomotor reactivity, cerebral circulatory arrest, & intraoperative applications for carotid procedures.

These case studies may be used to help satisfy the 100 supervised studies required to take the ASN RPNI exam.

*Individual Speaker(s):*

Emily Ho, MD, PhD, RPNI  
Swedish Neuroscience Institute

Mark Rubin, MD, RPNI, NVS  
Univ. Tennessee Health Science Center

Konrad Schlick, MD, RPNI  
Cedars-Sinai Medical Center

Aaron Stayman, MD, RPNI  
Swedish Neuroscience Institute

**\* This session counts towards Ultrasound Maintenance of Certification requirement**

# ASN COURSE DETAILS

**Friday, January 14**

## **Clinical Plenary: Headache Imaging**

8:00 - 10:00 am | Orangedale 1 (B,C,D,E)

*Course Director:*

Laszlo Mechtler, MD  
DENT Neurologic Institute

*Individual Speaker Schedule:*

8:00 - 8:40 am      Biology of Headache - Sheena Aurora, MD  
8:40 - 9:20 am      Secondary Headaches & Red Flags - Laszlo Mechtler, MD  
9:20 - 10:00 am     Pediatric Headache - Jennifer McVige, MD

## **Ultrasound Technology**

10:00 - 12:00 pm | Orangedale 2 (A,F)

*Course Director:*

Mark Rubin, MD, RPNI, NVS  
Univ. Tennessee Health Science Center

*Individual Speaker Schedule:*

10:00 - 10:45 am    21st Century TCD - Robert Hamilton, PhD, MS  
10:45 - 12:00 pm    Engineering Innovations in Ultrasound - Carl Herickhoff, PhD & Yongwoon Hyun, PhD

*\* This session counts towards Ultrasound Maintenance of Certification requirement*

## **Multiple Sclerosis, Cognitive Disorders & Neurodegenerative Diseases**

10:30 - 12:00 pm | Orangedale 1 (B,C,D,E)

*Course Director:*

John Bertelson, MD, FAAN  
UT Health Austin

*Individual Speaker Schedule:*

10:30 - 11:00 am    Imaging & other Biomarkers in MS - Wisam Elmalik, MD  
11:00 - 11:30 pm    Imaging in Cognitive Disorders - Joseph Masdeu, MD, PhD  
11:30 - 12:00 pm    Imaging Biomarkers in Movement Disorders - Mark Haacke, PhD

## Friday, January 14

### Ultrasound Hot Topics

2:00 - 5:00 pm | Orangedale 2 (A,F)

*\* This session counts towards Ultrasound Maintenance of Certification requirement*

*Course Director:*

Mark Rubin, MD, RPNI, NVS  
Univ. Tennessee Health Science Center

*Individual Speaker Schedule:*

2:00 - 2:40 pm    Sonolysis - Andrei Alexandrov, MD, RVT, NVS  
2:40 - 3:20 pm    Right Heart Monitoring During TCD Bubble Studies - Mark Rubin, MD, NVS, RPNI  
3:20 - 3:40 pm    BREAK  
3:40 - 4:20 pm    Intraoperative Monitoring with TCD - Zsolt Garami, MD  
4:20 - 5:00pm    Alphabet Soup of Credentialing - JP Hughes, RVT, RVS, NVS

### Imaging & Digital Medicine

2:00- 4:30 pm | Innovations Hall

*Course Director:*

Nandor Pinter, MD  
Univ. at Buffalo, Jacobs School of Medicine & Biomedical Sciences

**TOPICS:**

Session 1: New Imaging Technology  
Session 2: Biomarkers & Digital Medicine in Neurology

## Saturday, January 15

### Stroke

8:00 - 10:00 am | Orangedale 1 (B,C,D,E)

*\* This session counts towards Ultrasound Maintenance of Certification requirement*

*Course Director:*

Adnan Siddiqui, MD, PhD, FAHA  
Univ. at Buffalo, Jacobs School of Medicine & Biomedical Sciences

*Individual Speaker Schedule:*

8:00 - 8:40 am    Uses of Ultrasound in Stroke Prevention - J. David Spence, CM, MD, FRCPC, FAHA  
8:40 - 9:20 am    Vessel Wall & Collateral Flow Imaging - Nandor Pinter, MD & Rick Magun, MD, MSc  
9:20 - 10:00 am    Imaging Innovations in Vascular Neurosurgery - Adnan Siddiqui, MD, PhD, FAHA

### Trauma

10:30 - 12:30 pm | Orangedale 1 (B,C,D,E)

*Course Director:*

Jennifer McVige, MD  
DENT Neurologic Institute

*Individual Speaker Schedule:*

10:30 - 11:00 am    Pediatric Abusive Head Trauma - Peter Kalina, MD, MBA, FACR  
11:00 - 11:30am    Diagnose & Treat Neurologic Disease - Michael Fox, MD, PhD  
11:30 - 12:00 pm    Imaging of Disorder of Consciousness - Brian Edlow, MD  
12:00 - 12:30 pm    Advanced MRI in Severe TBI - Peter Ferrazzano, MD

# Saturday, January 15

## TCD & Critical Care Monitoring

*\*This session counts towards Ultrasound Maintenance of Certification requirement*

10:30 - 12:30 pm | Orangedale 2 (A,F)

*Course Director:*

Mark Rubin, MD, RPNI, NVS  
Univ. Tennessee Health Science Center

*Individual Speaker Schedule:*

- 10:30 - 11:10 am TCD - A Stethoscope for the Brain - Marek Czosnyka, PhD
- 11:10 - 11:50 am Multimodal Neuro Monitoring - Brian Appavu, MD & Matthew Kirschen, MD, PhD
- 11:50 - 12:30 pm TCD Monitoring after Thrombectomy - Claudio Baracchini, MD, PhD, FESO

## Neuroinflammation, Neuro-oncology, & Seizure Disorders

2:00 - 4:00 pm | Orangedale 1 (B,C,D,E)

*Course Director:*

Laszlo Mechtler, MD  
DENT Neurologic Institute

*Individual Speaker Schedule:*

- 2:00 - 2:40 pm Imaging in Neuro-inflammatory & Neuro-rheumatologic Diseases  
- Shamik Bhattacharyya, MD, MS
- 2:40 - 3:20 pm Tumor or Trouble? Integrating Contrast Clearance Analysis in Brain Radiosurgery  
- Dheerendra Prasad
- 3:20 - 4:00 pm Imaging of Focal Seizure Disorders - Robert Miletich, MD, PhD, FAAAS

## Pediatric Neuroimaging

*\*This session counts towards Ultrasound Maintenance of Certification requirement*

2:00 - 5:00 pm | Orangedale 2 (A,F)

*Course Director:*

Kerri LaRovere, MD  
Boston Children's Hospital

*Individual Speaker Schedule:*

- 2:00 - 2:45 pm TCD for Sickle Cell Anemia - Robert Adams, MD
- 2:45 - 3:30 pm Pediatric Application POCUS - Marina Mir, MD
- 3:30 - 4:15 pm Adult POCUS - Aarti Sarwal, MD, FNCS, FAAN, RPNI
- 4:15 - 5:00 pm Pediatric Echoencephalography - Paul Maertens, MD

# BUSINESS TRACK DETAILS

**Thursday, January 13**

## **What's Your Hassle?**

1:00 - 4:30 pm | Sunset

### *Course Director:*

Christine Mann, MBA  
COO, Dent Neurologic Institute

### *Overview:*

Neurology practice leaders will address everyday hassle factors that impact the sustainability of the outpatient sector. Come prepared to share your hassles and frame the issues that will be addressed throughout the conference, including revenue cycle management, employee retention and recruiting, compliance, and process improvement.

### *Objectives:*

- a) Problem framing & group catharsis
- b) Performance benchmarks
- c) Resources for private practice

**Friday, January 14**

## **HR, Legal, Compliance & Ethical Issues**

9:00 - 11:30 am | Sunset

### *Course Director:*

Lee Williams, Esq. General Counsel  
Director of Business Development Dent Neurologic Institute

### *Overview:*

This all-encompassing session will dive into hot topics on the HR, legal and compliance front. Learn how to create a culture that embraces and adapts to change, how to incorporate inclusion, diversity, and equity, and best practices for recruiting, growing and retaining talent within your organization. This session will also provide solutions and insights for mitigating risk within your organization.

### *Course Objectives:*

- a) Fostering wellbeing & creating a culture that is enthusiastic about change
- b) Compliance Top 10: Pains & Risks
- c) Ethical considerations with COVID: Mandates vs. personal preferences
- d) Managing VIP patient
- e) The Team Member Experience: Recruiting, growing, retaining talent
- f) Incorporating inclusion, diversity & equity

## Friday, January 14

### Creating a Comprehensive Service Model

2:00 - 4:30 pm | Sunset

*Course Director:*

Leeann Garms, MBA  
CEO Raleigh Neurology

*Overview:*

Discover ways to transform your practice model and optimize your financial and operating potential. Outpatient practices can bridge the gap with comprehensive service models that support cost-effective, high-quality patient care. Our experts will share best practices for setting up and managing your own infusion and/or imaging center, integrating inventory management solutions into your practice, and incorporating clinical trials into your organization.

*Course Objectives:*

- a) Strategies for & benefits of a comprehensive practice model
- b) Keys to setting up your own infusion & imaging center
- c) Inventory management
- d) Clinical Trial Strategies in private practice
- e) Collaborating with industry under 2022 guidelines

## Saturday, January 15

### Trends in Reimbursement and Payment Reform

9:00 - 11:30 am | Sunset

*Course Director:*

Joseph Fritz, PhD  
CEO Dent Neurologic Institute

*Expert Panel:*

Thomas Schenk, MD, Executive Director Population Health, Former CMO Blue Cross  
Dan Porecca, MBA, Executive Director, Health-e-Link Health Information Exchange  
Ron Howrigan, MBA, Owner, Fulcrum Technologies Managed Care Consulting and Strategic Planning  
Jonathan Feldstein, MD, Rubicon Founders  
Rob Fraser, PhD, Molecular You – leveraging technology in preventative care models  
David Evans, MBA, Neurology Practice Consortium of Outpatient Neurology Group Practices

*Overview:*

This session will bring experts in payment negotiation, strategic planning, payment reform and representatives from successful outpatient neurology group practices to discuss strategies for improving revenue cycle management and transforming to the new world of value based payment models.

*Course Objectives:*

- a) Medicare changes for 2022
- b) Keys to effective billing & revenue cycle management
- c) Transitioning Neurology to risk based payment models

**Saturday, January 15**

**"Innovations in the Practice of Neurology"**

1:30 - 4:30 pm | *Innovations Hall*

*Course Director:*

Shawn Ferger

Business Development, Dent Neurologic Institute

*Overview:*

This interactive session allows attendees to collaborate and network with sponsors and peers. Hear from experts that have developed and used technology to address common problems in workflow, revenue cycle management, patient communication, remote patient monitoring and information technology.

*Course Objectives:*

- a) EMR gaps
- b) Intelligent automation forms, scheduling, registration, authorization & patient communication
- c) Data integration, curation, management and decision support
- d) The Touchless Office
- e) Virtual scribes
- f) Optimizing patient flow with Virtual and Digital Medicine
- g) Clinical Trials strategies for outpatient clinics and remote care
- h) Cognitive Assessment Tools

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## POSTER SESSION

Thursday, January 14th, 2022

5:00 - 7:00pm | Heritage Rooms 3 & 4

### **P1: Brain abscess appearing twenty years post craniotomy**

Rebecca John, Vijay Palakuzhy, Chris Ralyea, Laszlo Mechtler  
Dent Neurologic Institute, Buffalo, USA

### **P2: Clinical Characteristics of Patients with Acute Ischemic Stroke including neurosonology lab**

Jun Hong Lee  
Department of Neurology, National Health Insurance Service Ilsan Hospital, Goyang-si, Korea, Republic of

### **P3: Postoperative Diffusion Restriction in the Proximal Optic Nerve: Optic Neuropathy or Central Retinal Artery Occlusion?**

Parth P Parikh<sup>1</sup>, Oana M Dumitrascu<sup>2</sup>  
<sup>1</sup>Mayo Clinic Alix School of Medicine, Scottsdale, Arizona, USA. <sup>2</sup>Mayo Clinic Arizona, Phoenix, AZ, USA

### **P4: Magnetic resonance imaging as a prognostic disability marker in clinically isolated syndrome: A systematic review**

Amjad Ibrahim Altokhis<sup>1,2</sup>, Abrar Omran Alamrani<sup>3</sup>, Abdulmajeed Alotaibi<sup>1,4</sup>, Anna Podlasek<sup>1</sup>, Cris Constantinescu<sup>1</sup>  
<sup>1</sup>University of Nottingham, Nottingham, United Kingdom. <sup>2</sup>Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia. <sup>3</sup>York University, Toronto, Canada. <sup>4</sup>King Saud bin Abdulaziz University, Riyadh, Saudi Arabia

### **P5: Neuroaspergillosis in a patient with chronic lymphocytic leukemia as progressively worsening ischemic infarct**

Cull Zareen Khan Sial, John M. Hourihane  
University at Buffalo, Buffalo, USA

### **P6: Bilateral Internuclear Ophthalmoplegia Caused by Unilateral Infarction**

Yathish Haralur Sreekantaiah, Srimadhav Nallani Chakravartula  
Mississippi Baptist Medical Center, Jackson, USA

### **P8: Neuroimaging in Mitochondrial Short-Chain Enoyl-coa Hydratase 1 Deficiency: A Progressive Encephalomyelopathy Starting in Utero**

Paul Maertens, Asri Yuliati  
University of South Alabama, Mobile, USA

### **P9: Childhood-Onset Neurodegeneration with Brain Atrophy (CONDBA): Imaging Findings of a Rare Diagnosis**

Osman Corbali, Laszlo Mechtler  
Dent Neurologic Institute, Buffalo, USA

### **P10: Multiple Sclerosis Associated with Balo-like Lesions Post-COVID-19**

Rana Zabad<sup>1,2</sup>, Kathleen Healey<sup>3,2</sup>, Angela French<sup>2</sup>, Afsaneh Shirani<sup>1,2</sup>  
<sup>1</sup>University of Nebraska Medical Center, Omaha, USA. <sup>2</sup>Nebraska Medicine, Omaha, USA. <sup>3</sup>University of Nebraska Medical Center, Omaha, USA

### **P11: Within-subject reproducibility of quantitative proton density mapping**

Karthik R Sreenivasan, Dietmar Cordes, Virendra R Mishra, Le H Hua  
Cleveland Clinic Lou Ruvo Center for Brain Health, Las Vegas, USA

### **P12: Acute Ischemic Stroke Management with Outcome Variations In COVID-19 Related Hypercoagulable State**

Zunir T Chaudhry, Avi Landman, Jorge Morales, Rupin Singh, Muhammad-Atif Zubairi  
University of Central Florida, Orlando, USA

### **P13: Disseminated Invasive Aspergillosis in a Patient with Neurosarcoidosis: Persistent Contrast Enhancement Despite Prolonged Antifungal Treatment**

Lakshman Arcot, Afsaneh Shirani, Mark Keiper, Kelly Cawcutt, Rana K. Zabad  
University Of Nebraska Medical Center, Omaha, USA

### **P14: Hemispherectomy Resulting in Intracranial Double-Pulse Phenomenon as Captured on TCD**

Olivia G Mattner<sup>1</sup>, Donna Serna, RVT<sup>2</sup>, Ryan Hakimi, DO, MS, NVS, RPNI, CPB, FNCS, FCCM<sup>3,4</sup>  
<sup>1</sup>Edward Via College of Osteopathic Medicine, Spartanburg, USA. <sup>2</sup>Prisma Health-Upstate Vascular Laboratory, Greenville, USA. <sup>3</sup>Prisma Health-Upstate, Greenville, USA. <sup>4</sup>USC School of Medicine-Greenville, Greenville, USA

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## **P15: Positional headache and spinal cord compression in Klippel-Feil Syndrome**

Sehar Babar<sup>1,2</sup>, Nishath Naseem<sup>3,2</sup>, Adnan Iqbal Qureshi<sup>4,2</sup>

<sup>1</sup>University of Tennessee Health Science Center, Memphis, USA. <sup>2</sup>University of Illinois and Mercyhealth, Rockford, USA. <sup>3</sup>Stanley Appel Institute of Neurological Sciences, Houston Methodist Hospital, Houston, USA. <sup>4</sup>University of Missouri, Columbia, USA

## **P16: A Mysterious Case of Cavernous Malformation Requiring Exploratory Surgical Intervention: A Case Report**

Khadija Awais

University of Tennessee, Memphis, USA

## **P17: Cavernous Malformations: A Mini-Case-Series on Diagnosis and Management**

Khadija Awais

University of Tennessee, Memphis, USA

## **P18: Prevalence of asymptomatic internal jugular venous stenosis/occlusion in the analysis of 165 cerebral angiograms**

*2022 Qureshi Award Recipient*

Sehar Babar<sup>1,2</sup>, Ahmer Asif<sup>3,2</sup>, Fawad Ishfaq<sup>2,1</sup>, Iqra Akhtar<sup>2</sup>, Adnan Iqbal Qureshi<sup>2</sup>

<sup>1</sup>University of Tennessee Health Science Center, Memphis, USA. <sup>2</sup>University of Missouri, Columbia, USA. <sup>3</sup>University of Oklahoma Health Sciences Center, Oklahoma City, USA

## **P19: Stenosis of Azygos ACA Results in Bilateral ACA Infarcts**

Diana C Yang, Brian B Miremadi, Anton Mlikotic, Kassi J Kronfeld

Harbor-UCLA Medical Center, Torrance, USA

## **P22: Coronavirus Vaccine and Cerebral Vasculitis: Case & Imaging Review with Discussion of Potential Pathophysiology**

Adam Khan Durrani<sup>1,2</sup>, Anne VanHeel<sup>2</sup>, Qasim Durrani<sup>2</sup>, Sunil Mutgi<sup>2</sup>

<sup>1</sup>Royal College of Surgeons, Al Sayh Muharrag Governorate, Bahrain. <sup>2</sup>Sanford Health System, Fargo, USA

## **P23: Cerebral Venous Sinus thrombosis masquerading as Acute Arterial Ischemic Stroke**

Muhammad Ubaid Hafeez<sup>1</sup>, Komal Hafeez<sup>1</sup>, Syeda Qasim<sup>2</sup>, Ravi Shastri<sup>1</sup>

<sup>1</sup>Baylor College of Medicine, Houston, USA. <sup>2</sup>RWJ Barnabas Health, Livingston, USA

## **P24: White Matter Alterations in Diabetes: UK Biobank Study of Neurite Orientation Dispersion and Density Imaging.**

Abdulmajeed M Alotaibi<sup>1,2</sup>, Rob Dineen<sup>2</sup>, Sieun Lee<sup>3</sup>, Cris Constantinescu<sup>4</sup>

<sup>1</sup>King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia. <sup>2</sup>University of Nottingham, Nottingham, United Kingdom. <sup>3</sup>University of Nottingham, Nottingham, United Kingdom. <sup>4</sup>Cooper University Hospital, Camden, USA

## **P25: Repetitive Head Impact (RHI) Induced Topological Reorganization of Diffusion MRI Derived Structural Connectome**

Virendra R Mishra<sup>1</sup>, Aaron Ritter<sup>1</sup>, Charles Bernick<sup>2,1</sup>

<sup>1</sup>Cleveland Clinic Lou Ruvo Center for Brain Health, Las Vegas, USA. <sup>2</sup>University of Washington Seattle, Seattle, USA

## **P26: Effect of Somatosensory and Active Motor Stimulation on Cerebral Blood Flow Response**

Benjamin Hage<sup>1</sup>, Dominique James<sup>2</sup>, Steven Barlow<sup>1</sup>, Greg Bashford<sup>1</sup>

<sup>1</sup>University of Nebraska-Lincoln, Lincoln, NE, USA. <sup>2</sup>University of Texas at Dallas, Dallas, TX, USA

## **P27: The Prevalence of Right-to-Left Cardiac Shunt in Mechanical Embolectomy Cases**

Thomas Alexander, Amanda Holcomb, Lisa Hutchinson, Allison Hennigan, Kyna Schreiber, Paul Kowalski, George Plotkin

UTHET, Tyler, USA

## **P28: A Deep Learning Model for Grading Right-To-Left Shunts Developed with Synthetic Data**

Corey M. Thibeault, Aly Ung, Alex Zhao, Amber Y. Dorn, David Dayanim, Shankar Radhakrishnan, Robert B. Hamilton

NovaSignal Corporation, Los Angeles, USA

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## **P29: Choroid Plexus Papilloma in an Adult Female**

Laszlo Mechtler, MD, FAAN, FASN, FAHS, FEAN  
(Dent Neurologic Institute, Roswell Park  
Comprehensive Cancer Center)

Robert Fenstermaker, MD, FACS, FAANS  
(Roswell Park Comprehensive Cancer Center)  
Vincent Bargnes III (Dent Neurologic Institute)  
Said Shukri, MBA (Dent Neurologic Institute)

## **P30: Sex, resting state functional connectivity fMRI and cognition in late middle age**

*\*2022 Oldendorf Award Recipient*

Mouna Tahmil, Brady Rippon<sup>2</sup>, Priya Palta<sup>1,3</sup>,  
Luisa Soto<sup>1</sup>, Fernando Ceballos<sup>1</sup>, Michelle Pardo<sup>1</sup>,  
Greysi Sherwood<sup>1</sup>, Gabriela Hernandez<sup>1</sup>,  
Amirreza Sedaghat<sup>4</sup>, Soroush Arabshahi<sup>4</sup>,  
Krystal K Laing<sup>5</sup>, Jeanne Teresi<sup>6</sup>, Adam M  
Brickman<sup>5,7</sup>, Qolamreza Razlighi<sup>8</sup>, José A  
Luchsinger<sup>1,3</sup>

<sup>1</sup>Department of Medicine, Columbia University  
Irving Medical Center, New York, USA. <sup>2</sup>Weill  
Cornell Medicine Biostatistics and Epidemiology,  
New York, USA. <sup>3</sup>Department of Epidemiology,  
Columbia University Irving Medical Center, New  
York, USA. <sup>4</sup>Department of Biomedical  
Engineering, Columbia University, New York,  
USA. <sup>5</sup>Taub Institute for Research on Alzheimer's  
Disease and the Aging Brain, Columbia  
University Irving Medical Center, New York, USA.  
<sup>6</sup>Research Division, Hebrew Home in Riverdale,  
New York, USA. <sup>7</sup>Department of Neurology,  
Columbia University Irving Medical Center, New  
York, USA. <sup>8</sup>Department of Radiology, Weill  
Cornell Medicine, New York, USA

## **P31: Rimegepant Preference and Improved Clinical Global Impression of Change Among Adults With Triptan Treatment Failure**

Ira M. Turner<sup>1</sup>, William T. Seidel<sup>2</sup>, Jelena M.  
Pavlovic<sup>3,4</sup>, Richard B. Lipton<sup>3,4</sup>, Christopher M.  
Jensen<sup>2</sup>, Alexandra Thiry<sup>2</sup>, Meghan Lovegren<sup>2</sup>,  
Charles M. Conway<sup>2</sup>, Vladimir Coric<sup>2</sup>, Robert  
Croop<sup>2</sup>

<sup>1</sup>Island Neurological Associates, Plainview, USA.  
<sup>2</sup>Biohaven Pharmaceuticals, New Haven, USA.  
<sup>3</sup>Einstein College of Medicine, Bronx, USA.  
<sup>4</sup>Montefiore Headache Center, Bronx, USA

## **P32: Long-term Rimegepant for the Acute Treatment of Migraine Reduces Use of Analgesics and Antiemetics**

David Kudrow<sup>1</sup>, William T. Seidel<sup>2</sup>, Kate Mullin<sup>3</sup>,  
Gary Berman<sup>4</sup>, Richard B. Lipton<sup>5,6</sup>, Alexandra  
Thiry<sup>2</sup>, Robert Croop<sup>2</sup>, Meghan Lovegren<sup>2</sup>,  
Vladimir Coric<sup>2</sup>, Christopher M. Jensen<sup>2</sup>  
<sup>1</sup>California Medical Clinic for Headache, Santa  
Monica, USA. <sup>2</sup>Biohaven Pharmaceuticals, New  
Haven, USA. <sup>3</sup>New England Institute for  
Neurology & Headache, Stamford, USA. <sup>4</sup>Clinical  
Research Institute, Minneapolis, USA. <sup>5</sup>Albert  
Einstein College of Medicine, Bronx, USA.  
<sup>6</sup>Montefiore Headache Center, Bronx, USA

## **P33: Rimegepant for the Acute Treatment of Migraine With and Without a History of Triptan Failure**

Christopher M. Jensen<sup>1</sup>, William T. Seidel<sup>1</sup>,  
Richard B. Lipton<sup>2,3</sup>, Andrew Blumenfeld<sup>4</sup>,  
Robert Croop<sup>1</sup>, Alexandra Thiry<sup>1</sup>, Gilbert L'Italien<sup>1</sup>,  
Beth A. Morris<sup>1</sup>, Vladimir Coric<sup>1</sup>, Peter J.  
Goadsby<sup>5,6</sup>

<sup>1</sup>Biohaven Pharmaceuticals, New Haven, USA.  
<sup>2</sup>Albert Einstein College of Medicine, Bronx, USA.  
<sup>3</sup>Montefiore Headache Center, Bronx, USA.  
<sup>4</sup>Headache Center of Southern California,  
Carlsbad, USA. <sup>5</sup>NIHR-Wellcome Trust King's  
Clinical Research Facility, King's College  
Hospital/SLaM Biomedical Research Centre,  
King's College London, United Kingdom.  
<sup>6</sup>University of California, Los Angeles, USA

## **P34: Phase 2/3, Randomized, Double-blind, Placebo-controlled Study Evaluating Rimegepant for the Preventive Treatment of Migraine**

Robert Croop<sup>1</sup>, William T. Seidel<sup>1</sup>, Richard B.  
Lipton<sup>2,3</sup>, David Kudrow<sup>4</sup>, David A. Stock<sup>1</sup>, Lisa  
Kamen<sup>1</sup>, Charles M. Conway<sup>1</sup>, Elyse G. Stock<sup>1</sup>,  
Vladimir Coric<sup>1</sup>, Peter J. Goadsby<sup>5,6</sup>

<sup>1</sup>Biohaven Pharmaceuticals, New Haven, USA.  
<sup>2</sup>Albert Einstein College of Medicine, Bronx, USA.  
<sup>3</sup>Montefiore Headache Center, Bronx, USA.  
<sup>4</sup>California Medical Clinic for Headache, Santa  
Monica, USA. <sup>5</sup>King's College Hospital/SLaM  
Biomedical Research Centre, King's College  
London, United Kingdom. <sup>6</sup>University of  
California, Los Angeles, USA

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## **P35: Iron Rims as an Imaging Biomarker in MS: A Systematic Mapping Review**

Amjad Ibrahim Altokhis<sup>1,2</sup>, Abdulmajeed Alotaibi<sup>1,3</sup>, Chadah Felmban<sup>3</sup>, Cris Constantinescu<sup>1</sup>, Nikos Evangelou<sup>1</sup>

<sup>1</sup>University of Nottingham, Nottingham, United Kingdom. <sup>2</sup>Princess Nourah bint Abdulrahman, Riyadh, Saudi Arabia. <sup>3</sup>King Saud bin Abdulaziz University, Riyadh, Saudi Arabia

## **P36: Susceptibility Weighted Imaging is Useful in Improving the Accuracy of DSC-MRI Parameters in Low-Grade Glioma**

Amjad Ibrahim Altokhis<sup>1,2,3</sup>, Marco Borri<sup>3</sup>, Thomas Booth<sup>3</sup>

<sup>1</sup>University of Nottingham, Nottingham, United Kingdom. <sup>2</sup>Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia. <sup>3</sup>King's College London, London, United Kingdom

## **P37: Transcranial Doppler Ultrasound Significantly Improves Identification of Acute Phase Large Vessel Occlusions**

*\*2022 McKinney Award Recipient*

Corey M. Thibeault, Amber Y. Dorn, Shankar Radhakrishnan, Robert B. Hamilton  
NovaSignal Corporation, Los Angeles, USA

## **P38: Lhermitte Duclos Disease Diagnosed with Multi-Modal MRI techniques in a patient with complex symptomatology**

*\*2022 Resident Travel Award Recipient*

Shahhan Spall, Chris Ralyea, Laszlo Mechtler  
Dent Neurological Institute, Buffalo, New York, USA

## **P39: If There is Air in the Thecal Sac, Think GI Tract**

Brittany M. Kasturiarachi, DO<sup>1</sup>, Rashi Krishnan, MD<sup>1,2</sup>, Barrett Schwartz, MD<sup>2</sup>, Jock Lillard, MD<sup>2</sup>, William Mangham, MD<sup>2</sup>, Khalid Alsherbini, MD<sup>1,3</sup>

<sup>1</sup>University of Tennessee Health Sciences Center Department of Neurology, Memphis TN, USA;  
<sup>2</sup>University of Tennessee Health Sciences Center Department of Neurosurgery, Memphis TN, USA;  
<sup>3</sup>Methodist University Hospital, Memphis, TN, USA

# AWARD WINNERS

## **Oldendorf Award**

The Oldendorf Award is for the best abstract submitted by a student, resident or fellow that is based in basic or clinical research in CT, MRI, SPECT or PET.

## **Sex, resting state functional connectivity fMRI and cognition in late middle age**

Mouna Tahmi<sup>1</sup>, Brady Rippon<sup>2</sup>, Priya Palta<sup>1,3</sup>, Luisa Soto<sup>1</sup>, Fernando Ceballos<sup>1</sup>, Michelle Pardo<sup>1</sup>, Greysi Sherwood<sup>1</sup>, Gabriela Hernandez<sup>1</sup>, Amirreza Sedaghat<sup>4</sup>, Soroush Arabshahi<sup>4</sup>, Krystal K Laing<sup>5</sup>, Jeanne Teresi<sup>6</sup>, Adam M Brickman<sup>5,7</sup>, Qolamreza Razlighi<sup>8</sup>, José A Luchsinger<sup>1,3</sup>

<sup>1</sup>Department of Medicine, Columbia University Irving Medical Center, New York, USA. <sup>2</sup>Weill Cornell Medicine Biostatistics and Epidemiology, New York, USA. <sup>3</sup>Department of Epidemiology, Columbia University Irving Medical Center, New York, USA. <sup>4</sup>Department of Biomedical Engineering, Columbia University, New York, USA. <sup>5</sup>Taub Institute for Research on Alzheimer's Disease and the Aging Brain, Columbia University Irving Medical Center, New York, USA. <sup>6</sup>Research Division, Hebrew Home in Riverdale, New York, USA. <sup>7</sup>Department of Neurology, Columbia University Irving Medical Center, New York, USA. <sup>8</sup>Department of Radiology, Weill Cornell Medicine, New York, USA

# AWARD WINNERS

## **McKinney Award**

The McKinney Award is for the best abstract submitted by a student, resident or fellow that is based in basic or clinical research in Neurosonology.

## **Transcranial Doppler Ultrasound Significantly Improves Identification of Acute Phase Large Vessel Occlusions**

Corey M. Thibeault, Amber Y. Dorn, Shankar Radhakrishnan, Robert B. Hamilton  
NovaSignal Corporation, Los Angeles, USA

## **Qureshi Award**

The Qureshi Award is for excellence in diagnostic angiography.

## **Prevalence of asymptomatic internal jugular venous stenosis/occlusion in the analysis of 165 cerebral angiograms**

Sehar Babar<sup>1,2</sup>, Ahmer Asif<sup>3,2</sup>, Fawad Ishfaq<sup>2,1</sup>, Iqra Akhtar<sup>2</sup>, Adnan Iqbal Qureshi<sup>2</sup>

<sup>1</sup>University of Tennessee Health Science Center, Memphis, USA. <sup>2</sup>University of Missouri, Columbia, USA.

<sup>3</sup>University of Oklahoma Health Sciences Center, Oklahoma City, USA

## **Resident Awards**

The Resident Award is for excellence of abstract presented by a resident in a neurology program.

## **Lhermitte Duclos Disease Diagnosed with Multi-Modal MRI techniques in a patient with complex symptomatology**

Shahhan Spall, Chris Ralyea, Laszlo Mechtler

Dent Neurological Institute, Buffalo, New York, USA

# MEET THE EXPERTS

## Neuroimaging & Clinical Expert Faculty

---

**Andrei Alexandrov, MD, RVT, NVS**

Chairman of Department of Neurology  
University of Tennessee

**Brian Appavu, MD**

Phoenix Children's Hospital  
Phoenix, AZ

**Rohit Bakshi, MD**

Brigham & Women's Hospital  
Boston, MA

**Claudio Baracchini, MD, PhD, FESO**

Head of Stroke Unit & Neurosonology Lab  
University School of Padua School of Medicine

**John Bertelson, MD, FAAN**

UT Health Austin Clinics  
Austin, TX

**Shamik Bhattacharyya, MD**

Brigham & Women's Hospital  
Boston, MA

**Pat Capone, MD, PhD**

Director of Winchester Neuroimaging  
Winchester, VA

**Marek Czosnyka, PhD**

University of Cambridge  
Cambridge, UK

**Colleen Douville, RVT, NVS**

Swedish Neuroscience Institute  
Seattle, WA

**Brian Edlow, MD**

Massachusetts General Hospital  
Boston, MA

**Peter Ferrazzano, MD**

University of Wisconsin  
Madison, WI

**Emmaculate Fields, APRN-CNP**

University of Oklahoma  
Oklahoma City, OK

**Michael Fox, MD, PhD**

Brigham & Women's Hospital  
Boston, MA

**Zsolt Garami, MD**

Houston Methodist  
Houston, TX

**Ewart Mark Haacke, PhD**

Wayne State University  
Detroit, MI

**Ryan Hakimi, DO, MS, RPNI, NVS**

University of South Carolina  
Greenville, SC

**Robert Hamilton, PhD, MS**

Johns Hopkins Medicine  
Baltimore, MD

**Carl Herickhoff, PhD**

University of Memphis  
Memphis, TN

**Emily Ho, MD, PhD, RPNI**

Swedish Neuroscience Institute  
Seattle, WA

**JP Hughes, RVT, RVS**

Society of Vascular Ultrasound  
Wilkes Barre, PA

**Dongwoon Hyun, PhD**

Stanford Medicine  
Stanford, CA

**Ashutosh Jadhav, MD, PhD**

Barrow Neurological Institute  
Phoenix, AZ

**Ruchira Jha, MD, MSc**

Barrow Neurological Institute  
Phoenix, AZ

**Peter Kalina, MD, MBA, FACR**

Mayo Clinic College of Medicine  
Rochester, MN

**Matthew Kirschen, MD, PhD**

University of Pennsylvania  
Philadelphia, PA

# MEET THE EXPERTS

## Neuroimaging & Clinical Expert Faculty

---

**Joshua Klein, MD, PhD**  
Brigham & Women's Hospital  
Boston, MA

**Kerri LaRovere, MD**  
Boston Children's Hospital  
Boston, MA

**Marc Malkoff, MD, RPNI**  
University of Tennessee  
Knoxville, TN

**Paul Maertens, MD**  
University of South Alabama  
Mobile, AL

**Wisam E. Elmalik, MD**  
DENT Neurologic Institute  
Buffalo, NY

**Rick Magun, MD, MSc**  
University at Buffalo  
Buffalo, NY

**Joseph Masdeu, MD, PhD**  
Houston Methodist  
Houston, TX

**Jennifer McVige, MD**  
Dent Neurologic Institute  
Buffalo, NY

**Laszlo Mechtler, MD**  
Dent Neurologic Institute  
Buffalo, NY

**Robert Miletich, MD, PhD, FAAAS**  
University at Buffalo  
Buffalo, NY

**Nicole O'Brien, MD**  
Nationwide Children's Hospital  
Columbus, OH

**Marina Mir Parramon, MD**  
Montreal Children's Hospital  
Montreal, Canada

**Nandor Pinter, MD**  
Dent Neurologic  
Buffalo, NY

**Dheerendra Prasad, MD, MCh**  
Medical Director Roswell Park  
Buffalo, NY

**Brenda Rinsky, RDMS, RVT, NVS**  
Cedars Sinai  
Los Angeles, CA

**Mark Rubin, MD, RPNI, NVS**  
University of Tennessee  
Memphis, TN

**Adnan Siddiqui, MD, PhD, FAHA**  
University at Buffalo Neurosurgery  
Buffalo, NY

**Sanjeev Sivakumar, MD**  
Assistant Professor, USCSOM-Greenville  
Greenville, SC

**JD Spence, MD**  
Western University, Univ. Hospital  
Ontario, CA

**Aarti Sarwal, MD, FNCS FAAN, RPNI**  
Wake Forest School of Medicine  
Winston-Salem, NC

**Konrad Schlick, MD, RPNI**  
Cedars Sinai  
Los Angeles, CA

**Aaron Stayman, MD, RPNI**  
Swedish Neuroscience Institute  
Seattle, WA

**Charles Tegeler, IV, MD, RPNI**  
Wake Forest School of Medicine  
Winston-Salem, NC

# Meet the Experts

## BUSINESS PROGRAM EXPERT FACULTY

### **Adam Boehler**

Former Director CMMI  
CEO Rubicon Founders

### **David Evans, MBA**

CEO Texas Neurology  
Dallas, TX

### **Wendy Van Fossen, MBA**

CEO The Neurology Clinic  
Washington DC area

### **Robert Fraser, PhD**

CEO Molecular You  
University of British  
Columbia

### **Joseph Fritz, PhD**

CEO Dent Neurologic  
Institute, Buffalo NY

### **Leeann Garms, MBA**

CEO Raleigh Neurology  
Raleigh NC

### **Ron Howrigan**

Owner, Fulcrum  
Strategies Raleigh NC

### **Junaid Kalia, MD**

Founder, AI NeuroCare  
VP, VeeMed Inc

### **Herschel Jaquay, MBA**

CEO JW Neurology  
Indianapolis, IN

### **Amy Knighten, MBA**

CEO Savannah Neurology  
Spec, Savannah GA

### **Christine Mann, MBA**

COO Dent Neurologic  
Institute, Buffalo NY

### **Brian Nyquist, MPH**

CEO National Infusion  
Center Association

### **Daniel Porreca**

ED HEALTHE LINK, BOD  
Strategic HIE  
Collaborative

### **Thomas Schenk, MD**

Population Health  
Collaborative Former  
CMO, Blue Cross

# PROGRAM COMMITTEE & FACULTY DISCLOSURE STATEMENT

---

**Robert Adams, MS, MD (F)**

None

**Andrei Alexandrov, MD, RVT, NVS (F)**

Speakers Bureau - Astra Zeneca  
Consultant - NovaSignal

**Brian Appavu, MD (F)**

None

**Sheena Aurora, MD (F)**

Salary - Impel Neuropharma  
Stock - Impel Neuropharma

**Claudio Baracchini, MD, PhD, FESO (F)**

None

**John Bertelson, MD, FAAN (F)**

None

**Shamik Bhattacharyya, MD, MS (F)**

None

**Pat Capone, MD, PhD (F)**

None

**Marek Czosnyka, PhD (F)**

Royalty - Part of Licensing fee for IC+ Software (Cambridge Enterprise Ltd, UK)  
Speakers Bureau - Integra Lifescience Ltd  
Consultant - Delica Ltd (China)

**Colleen Douville, RVT, NVS (F)**

None

**Brian Edlow, MD (F)**

None

**Wisam E. Elmalik, MD**

None

**Peter Ferrazzano, MD (F)**

None

**Emmaculate Fields, APRN-CNP (F)**

None

**Joe Fritz, PhD (P)**

None

**Zsolt Garami, MD (F)**

Speakers Bureau - NovaSignal  
Consultant - NovaSignal, Siemens, Tienoviz  
Other - OrvosAI

**Ewart Mark Haacke, PhD (F)**

Salary - Wayne State University, SpinTech MRI, Inc, The MRI Institute for Biomedical Research  
Contracted Research - National Institutes of Health

**Ryan Hakimi, DO, MS, RPNI, NVS (F)**

None

**Robert Hamilton, PhD, MS**

Salary - NovaSignal  
Stock - NovaSignal

**Carl Herickhoff, PhD (F)**

None

**Emily Ho, MD, PhD, RPNI (F)**

None

**JP Hughes, RVT, RVS (F)**

None

**Dongwoon Hyun, PhD (F)**

None

**Ashutosh Jadhav, MD, PhD (F)**

None

**Ruchira Jha, MD, MSc (F)**

Consultant - Biogen

**Peter Kalina, MD, MBA, FACR (F)**

None

**Matthew Kirschen, MD, PhD (F)**

None

**Joshua Klein, MD, PhD (P)**

None

**Kerri LaRovere, MD (F/P)**

None

**Marc Malkoff, MD, RPNI (P)**

None

**KEY:**

**P** = Scientific Program Committee

**F** = Annual Meeting Faculty

# PROGRAM COMMITTEE & FACULTY DISCLOSURE STATEMENT

---

**Paul Maertens, MD (F)**

None

**Rick Magun, MD, MSc (F)**

None

**Joseph Masdeu, MD, PhD (F)**

Consultant - Biogen, Eli Lilly  
Contracted Research - Biogen, Eli Lilly,  
Abbvie, Eisai, Green Valley

**Jennifer McVige, MD (F/P)**

Contracted Research – Allergen/Abbvie,  
Biohaven, Eli Lilly, Teva, Theranica,  
Lundbeck, Currax  
Speakers Bureau – Allergen/Abbvie,  
Biohaven, Eli Lilly, Teva, Theranica,  
Neurelis

**Laszlo Mechtler, MD (F)**

Speakers Bureau - Allergan/Abbvie,  
Teva, Biohaven, Amgen, Impel  
Contracted Research - Allergan/Abbvie

**Robert Miletich, MD, PhD, FAAAS (F)**

None

**Marina Mir Parramon, MD (F)**

None

**Nandor Pinter, MD (F)**

None

**Dheerendra Prasad, MD, MCh (F)**

Consultant - Elekta AB, Sweden

**Brenda Rinsky, RDMS, RVT, NVS (F)**

None

**Mark Rubin, MD, RPNI, NVS (F/P)**

None

**Sanjeev Sivakumar, MD (F)**

None

**J. David Spence, MD**

Other – Unpaid Officer of Vascularis  
Royalty – Small Royalties on a patent  
for 3D Ultrasound  
Consultant - Advisory boards of Amgen,  
Orphan Technologies  
Speakers Bureau - Lecture fees from  
Pfizer, BMS, Amgen

**Adnan Siddiqui, MD, PhD, FAHA (F)**

Stock - Adona Medical, Inc., Amnis  
Therapeutics, Bend IT Technologies, Ltd.,  
BlinkTBI, Inc., Buffalo Technology  
Partners, Inc., Cardinal Consultants, LLC,  
Cerebrotech Medical Systems, Inc.,  
Cerevatech Medical, Inc., Cognition  
Medical, CVAID Ltd., E8, Inc., Endostream  
Medical, Ltd, Imperative Care, Inc., Instylla,  
Inc., International Medical Distribution  
Partners, Launch NY, Inc., NeuroRadial  
Technologies, Inc., Neurotechnology  
Investors, Neurovascular Diagnostics, Inc.,  
PerFlow Medical, Ltd., Q'Apel Medical, Inc.,  
QAS.ai, Inc., Radical Catheter  
Technologies, Inc., Rebound Therapeutics  
Corp. (Purchased 2019 by Integra  
Lifesciences, Corp), Rist Neurovascular, Inc.  
(Purchased 2020 by Medtronic), Sense  
Diagnostics, Inc., Serenity Medical, Inc.,  
Silk Road Medical, SongBird Therapy,  
Spinnaker Medical, Inc., StimMed, LLC,  
Synchron, Inc., Three Rivers Medical, Inc.,  
TruVic Medical, Inc., Tulavi Therapeutics,  
Inc., Vastrax, LLC, VICIS, Inc., Viseon  
Consultant - Amnis Therapeutics, Apellis  
Pharmaceuticals, Inc., Boston Scientific,  
Canon Medical Systems USA, Inc., Cardinal  
Health 200, LLC, Cerebrotech Medical  
Systems, Inc., Cerenovus, Cerevatech  
Medical, Inc., Cordis, Corindus, Inc.,  
Endostream Medical, Ltd, Imperative Care,  
Integra, IRRAS AB, Medtronic,  
MicroVention, Minnetronix Neuro, Inc.,  
Penumbra, Q'Apel Medical, Inc., Rapid  
Medical, Serenity Medical, Inc., Silk Road  
Medical, StimMed, LLC, Stryker  
Neurovascular, Three Rivers Medical, Inc.,  
VasSol, Viz.ai, Inc., W.L. Gore & Associates  
Other - Cerenovus EXCELLENT and ARISE  
II Trial; Medtronic SWIFT PRIME, VANTAGE,  
EMBOLISE and SWIFT DIRECT Trials;  
MicroVention FRED Trial & CONFIDENCE  
Study; MUSC POSITIVE Trial; Penumbra 3D  
Separator Trial, COMPASS Trial, INVEST  
Trial, MIVI neuroscience EVAQ Trial; Rapid  
Medical SUCCESS Trial; InspireMD C  
GUARDIANS IDE Pivotal Trial

**Aarti Sarwal, MD, FNCS FAAN, RPNI (F)**

None

**Konrad Schlick, MD, RPNI (F)**

None

**Aaron Stayman, MD, RPNI (F)**

None

# THANK YOU TO OUR SPONSORS

## GOLD



THERAPEUTICS

## SILVER



## BRONZE



# ABOUT OUR SPONSORS

## GOLD



AbbVie's mission is to discover and deliver innovative medicines that solve serious health issues today and address the medical challenges of tomorrow. We strive to have a remarkable impact on people's lives across several key therapeutic areas: immunology, oncology, neuroscience, eye care, virology, women's health and gastroenterology, in addition to products and services across its Allergan Aesthetics portfolio.



At Biogen, our mission is clear: we are pioneers in neuroscience. One of the world's first global biotechnology companies, Biogen discovers, develops, and delivers worldwide innovative therapies for people living with serious neurological and neurodegenerative diseases. Biogen has a portfolio of medicines to treat certain types of multiple sclerosis, has introduced an approved treatment for spinal muscular atrophy, developed five treatments for multiple sclerosis, and is focused on advancing neuroscience research programs for various diseases, including Alzheimer's disease.



Biohaven is a clinical-stage biopharmaceutical company with proven leadership in industry and academic settings. Our portfolio is comprised of innovative, late-stage product candidates targeting neurological and neuropsychiatric diseases, including rare disorders.

Nurtec<sup>™</sup> ODT (Rimegepant 75 mg) received FDA approval in February 2020 and is quickly gaining traction as the only orally disintegrating CGRP antagonist for acute treatment of migraine. At the same time, Biohaven is advancing novel acute and preventive treatments for migraine with zavegepant and rimegepant. In addition to continued exploration of our CGRP receptor antagonists, multiple clinical trials are ongoing for product candidates across our neuroinnovative platforms.

# ABOUT OUR SPONSORS

## GOLD

# PHILIPS

Philips works as trusted partners to our customers, helping them to adapt to healthcare's evolving world and to advance digital health transformation at defining moments in a patient's journey. Our solutions deliver optimized imaging service lines and enable enterprise imaging across sites, specialties and technologies to simplify medical image management, enable effective collaboration and enhance patient care. Philips IntelliSpace Cognition is a digital cognitive assessment solution that helps neurologists gain insight into their patients' cognition, empowering them to make more appropriate referral and treatment decisions. Talk to us at the ASN/NeuroNet show to learn more!



## THERAPEUTICS

As a global leader in neurosciences, Merz Therapeutics is committed to improving the lives of patients who suffer from movement disorders, spasticity and other neurological conditions. Since 1908, Merz has strived to understand the complex realities that patients, caregivers and physicians face. Our mission is to deliver meaningful treatment options and a better patient experience to meet the unique needs of each person we serve. Merz Therapeutics is dedicated to providing leading therapeutic treatment options for patients. Our focus on advancing neurotoxin technology has given way to a clinically-proven and time-tested therapy that's helped more than three million patients worldwide for various conditions. With trusted therapies and an unwavering commitment to helping patients achieve better experiences, Merz Therapeutics continues to address many unmet needs for pediatric and adult patients.

# ABOUT OUR SPONSORS

## SILVER



Amgen is one of the world's leading biotechnology companies. Amgen is a values-based company, deeply rooted in science and innovation to transform new ideas and discoveries into medicines for patients with serious illnesses. Amgen focuses on areas of high unmet medical need and leverages its expertise to strive for solutions that improve health outcomes and dramatically improve people's lives. A biotechnology innovator since 1980, Amgen has grown to be one of the world's leading independent biotechnology companies, has reached millions of patients around the world and is developing a pipeline of medicines with breakaway potential.



Impel NeuroPharma is focused on developing transformative therapies for people living with central nervous system (CNS) disorders through the pioneering of an optimized approach to drug delivery. Our therapies are enabled by the Company's proprietary upper nasal delivery technology, known as the Precision Olfactory Delivery, or POD®, device. The upper nasal space is surrounded by a rich vasculature that has the potential for injection-like absorption, resulting in more rapid and consistent bioavailability and clinical response. While an ideal target for drug delivery, to date no technology has been able to consistently deliver drugs predictably and consistently to the upper nasal area.



McKesson helps specialty providers run profitable, independent businesses by clearing the path so they can focus on patient care. Our Onmark® Group Purchasing Organization helps providers maximize their purchasing power, while our support services go above and beyond the essentials of pharmaceutical distribution. Our broad portfolio of solutions makes practice management more manageable by increasing efficiency, productivity, and profitability for specialty providers. We take a collaborative "all-in" approach to understanding each practice's unique needs which informs the business insights, strategies, and resources we offer, including regulatory guidance and advocacy. We invite you to discover and explore the McKesson difference.



Our purpose is to reimagine medicine to improve and extend people's lives. We use innovative science and technology to address some of society's most challenging healthcare issues. We discover and develop breakthrough treatments and find new ways to deliver them to as many people as possible. Novartis was created in 1996 through a merger of Ciba-Geigy and Sandoz. Novartis and its predecessor companies trace roots back more than 250 years, with a rich history of developing innovative products.

# ABOUT OUR SPONSORS

## SILVER



PatientPoint is the patient engagement platform for every point of care. Our innovative, tech-enabled solutions create more effective doctor-patient interactions and deliver high value for patients, providers & healthcare sponsors. Through our nearly 140 unique healthcare provider relationships, PatientPoint's solutions impact roughly 750 million patient visits each year, further advancing our mission of making every doctor-patient engagement better. Learn more at [patientpoint.com](http://patientpoint.com)



Theranica has a highly experienced team that has set a goal to translate our technological and business knowledge in mobile digital solutions to the field of pain therapeutics. We develop non-invasive, drug-free, personalized and affordable wearable therapeutic products for the treatment of pain by integrating the latest neuroscience research with notable technological expertise.

Theranica's novel smartphone-controlled prescription migraine wearable device, Nerivio®, was recognized in TIME Magazine's 2019 annual list of the 100 Best Inventions.



*Partners in Health Since 1919*

Upsher-Smith Laboratories, LLC is a trusted U.S. pharmaceutical company. We offer a suite of branded central nervous system (CNS) medications to help patients living with migraine headaches and seizure disorders.

For more information, visit [www.upsher-smith.com](http://www.upsher-smith.com).

# ABOUT OUR SPONSORS

## BRONZE



Acadia is trailblazing breakthroughs in neuroscience to elevate life. For more than 25 years we have been working at the forefront of healthcare to bring vital solutions to people who need them most. We developed and commercialized the first and only approved therapy for hallucinations and delusions associated with Parkinson's disease psychosis. Our late-stage development efforts are focused on dementia-related psychosis, negative symptoms of schizophrenia and Rett syndrome, and in early-stage clinical research we are exploring novel approaches to pain management, and cognition and neuropsychiatric symptoms in central nervous system disorders.



Ceras Health Connected Care services grow and improve the healthcare industry for patients and practices around the globe. Ceras provides digital care with a human touch, through innovative smart devices and a full clinically trained support staff.



For more than 40 years, Genentech has pursued groundbreaking science to discover and develop innovative medicines for people facing serious and life-threatening diseases. Our transformational discoveries include the first targeted antibody for cancer and the first medicine for primary progressive multiple sclerosis. Genentech became a member of the Roche Group in 2009.



Horizon is focused on researching, developing and commercializing medicines that address critical needs for people impacted by rare and rheumatic diseases. Our pipeline is purposeful: we apply scientific expertise and courage to bring clinically meaningful therapies to patients. We believe science and compassion must work together to transform lives. For more information on how we go to incredible lengths to impact lives, please visit [www.horizontherapeutics.com](http://www.horizontherapeutics.com), follow us @HorizonNews on Twitter, like us on Facebook or explore career opportunities on LinkedIn.



Lilly was founded in 1876 by Colonel Eli Lilly, a man committed to creating high-quality medicines that met real needs in an era of unreliable elixirs peddled by questionable characters. His charge to the generations of employees who have followed was this: "Take what you find here and make it better and better." More than 140 years later, we remain committed to his vision through every aspect of our business and the people who serve starting with those who take our medicines, and extending to health care professionals, employees and the communities in which we live.

# ABOUT OUR SPONSORS

## BRONZE



Luma Health was founded on the idea that healthcare should work better for all patients. We empower providers to make this a reality through digital health solutions, designed to boost access, streamline patient-provider communications, and drive increased revenues. Luma Health's Healthcare Engagement Engine™ is accelerating the digital transformation in healthcare, partnering with 600+ health systems, hospitals, specialty networks, federally qualified health systems, and ACOs – connecting 50 million patients in the US to care.



A Subsidiary of Samsung Electronics Co., Ltd

NeuroLogica, a subsidiary of Samsung Electronics Co., brings the power of innovative imaging to your patients. With a strong foundation of expertise in CT design, development and manufacturing, NeuroLogica transforms fixed CT technologies into portable platforms. Our growing portfolio of advanced imaging medical technologies are used throughout the world in intensive care units, neurosurgical operating rooms, emergency departments, stroke centers and other key clinical areas. For more information, please visit [www.NeuroLogica.com](http://www.NeuroLogica.com)



NovaSignal is a medical technology and data company that is revolutionizing transcranial Doppler ultrasound through the application of robotics, artificial intelligence, and cloud computing. The NovaSignal Platform, including the FDA cleared NovaGuide 2 Intelligent Ultrasound and cloud-based NovaGuide View, assesses cerebral hemodynamics in real time to support physicians in their clinical decision making.



SK Life Science, Inc., the U.S. subsidiary of SK Biopharmaceuticals, is an innovative global pharmaceutical company focused on the research, development, and treatment of central nervous system (CNS) disorders. The company has a pipeline of seven compounds in development for CNS disorders including epilepsy. XCOPRI is indicated for the treatment of partial-onset seizures in adult patients.



TSI Healthcare is a leading EHR in the U.S., focused on Neurology. TSI Healthcare's solutions are designed to meet the unique needs of the community Neurology practice through specialty-specific content, including, Sleep Medicine content, a built in Infusion Suite, and Prior Authorization/Therapy tracking dashboards. We have built in questionnaires, such as the MIDAS, QOLIE, SSQ, Epworth, plus many more! TSI Healthcare also offers an integrated Practice Management System, Patient Portal, Mobile App, Revenue Cycle Management, cloud hosting, and more.

# Don't Miss This Opportunity!

## INTENDED AUDIENCE FOR ASN CLINICAL IMAGING & PRECISION MEDICINE SESSIONS

ASN welcomes providers of all levels: attendings, students, residents, fellows, technologists, advanced practice providers. We gather & discuss all modalities of neuroimaging (CT, MRI, US), how they make our patients & practice better, & meet with industry partners who bring us the latest in neurological diagnostic technology.

We believe neuroimaging training produces better neurologists, & have increased emphasis on refresher courses & clinical plenaries that relate imaging to clinical decision making & therapy management.

While the focus of the ASN conference remains on clinical neuroimaging & patient benefit, we will be working with our NeuroNet partners to bring economic & business perspectives, & inviting engineers to bring us leading-edge diagnostic technology updates, including topics related to informatics, data management & AI, thus expanding an already robust meeting to even more related professions & professionals.



## INTENDED AUDIENCE FOR NEURONET PRO BUSINESS SESSIONS

Business sessions welcome all those involved in practice management to interact with expert peers as we roll up our sleeves to identify solutions for common hurdles that affect the sustainability of the neurology practice.

Topic areas will appeal to those involved in revenue cycle management & payment reform, human resources & retention/recruiting, compliance & ethics, and process improvement & intelligent automation.

Shared keynotes & panel discussions alongside clinical teammates offer a unique opportunity to align all stakeholders in integrating 21st-century tools & business models to develop a vision for transformative changes in healthcare delivery.





# The American Society of Neuroimaging

(ASN) invites attending physicians, residents, fellows, advanced practice providers and neurovascular technologists to join our community.

**Education.** We offer the only conference in the US focused specifically on Neuroimaging education, including opportunities to earn CME credits specific to MR/CT and Neurovascular ultrasound.

**Advocacy.** We represent the interests of neuroimagers in the American Medical Association's House of Delegates and tackle issues that threaten self-referral.

**Certification.** We offer the only physician and neurovascular technologist certification programs in Neurosonology allowing you to elevate your practice and recognize your expertise in Applied Principles of Physics and Fluid Dynamics, Carotid Duplex, Transcranial Doppler. A Certification program for Neurovascular Technologists is a brand new certification, launched in 2018.

**Networking.** We connect you to other medical professionals who use neuroimaging in their day-to-day clinical practice via our Annual Meeting and membership directory.

**Professional Development.** We have opportunities for you to get involved on committees, which allow you to sharpen your volunteer skills.

**Become a member at [asnweb.org](http://asnweb.org)**

# NOTES

A blank sheet of lined paper with horizontal cyan lines and vertical red margin lines. The page is designed for taking notes, with a wide central area for writing and narrow margins on the left and right sides. There are 20 horizontal cyan lines and two vertical red lines, one on the left and one on the right, defining the writing area.

# WEBSITE QR CODES

Visit the ASN & NeuroNet Pro websites for the further program & meeting information.



[ASNWeb.org](https://ASNWeb.org)



[NeuroNetPro.com](https://NeuroNetPro.com)

**SAVE THE DATE | ASN ANNUAL MEETING**

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SCOTTDALE IN 2023**



**AUGUST 10-13, 2023**