WELCOME TO THE 2018 ASNR ANNUAL MEETING

On behalf of the American Society of Neurorehabilitation (ASNR), we are excited you are joining us for the 2018 Annual Meeting. Our meeting provides interactions among neurorehabilitation clinicians, basic scientists, industry representatives, and funders in a dynamic environment of presentations and discussion. This year symposia topics include:

- Spinal Plasticity after CNS Injury: Mechanisms and molecular correlates
- Genetics and Stroke Recovery
- Approaches to Manage Sensory Misalignment to Improve Functional Rehabilitation in the Upper Limb
- The Effects of Neuromodulation on Network Oscillatory Dynamics

We return with our popular Controversies in Neurorehabilitation panel in which experts and audience members will debate Biomarkers in Neurorehabilitation and Neural Repair. An oral abstract session will feature four of the top science abstracts. A new addition this year is the option of roundtable discussions on the topics of Traumatic Brain Injury Rehabilitation, Using and Managing Big Data, and the ASNR Clinical Research Network.

We have left ample time for two poster sessions, which always generate stimulating discussion and provide outstanding opportunities for sharing science and networking.

Also, don’t miss out on the ASNR Business Meeting for a chance to see how the organization works, find out who are this year’s poster award winners, and refuel with a provided boxed lunch. Enjoy a lively and diverse two days of interaction.

Sincerely,

Catherine E. Lang PT, PhD
2018 ASNR Program Committee Chair
Washington University School of Medicine

ON BEHALF OF THE PROGRAM COMMITTEE:

Cathrin Buetefisch, MD, PhD, FASNR
Jason Camel, MD, PhD
S. Thomas Carmichael, MD, PhD
Matthew Edwardson, MD
Teresa Kimberley, PT, PhD
Albert Lo, MD
Sangeetha Madhavan, PT, PhD
Kelsey Potter-Baker, PhD
W. Zev Rymer, PhD, MD
Heidi Schambra, MD
Keith Tansey, MD, PhD
Lewis Wheaton, PhD
Steven Wolf, PhD, PT, FASNR
Steven Zeiler, MD, PhD
WELCOME TO THE 2018 
ASNRM ANNUAL MEETING

On behalf of the American Society of Neurorehabilitation (ASNRM), we are excited you are joining us for the 2018 Annual Meeting. Our meeting provides interactions among neurorehabilitation clinicians, basic scientists, industry representatives, and funders in a dynamic environment of presentations and discussion. This year symposia topics include:

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Washington University School of Medicine

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W. Zev Rymer, PhD, MD
Heidi Schambra, MD
Keith Tansey, MD, PhD
Lewis Wheaton, PhD
Steven Wolf, PhD, PT, FASNRM
Steven Zeiler, MD, PhD
The ASNR promotes: specialty training and identification of those with expertise in neurorehabilitation; professional and public education; basic science and clinical research in neurorehabilitation; communication and collaboration with people with neurological disorders and related organizations; and the mission of neurorehabilitation research.
GENERAL MEETING INFORMATION

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HANDOUTS
All attendees will receive a link to available meeting handouts. The link will be sent from info@asnr.com. There will not be any hard copies of handouts made available unless provided by the speaker.

ABSTRACTS
Abstract titles and presenters can be found on pages 16-30. Full text abstracts can be found online at www.asnr.com.

ANNUAL MEETING WIFI
Complimentary wifi will be available in the Annual Meeting space. Please visit registration for WiFi password.

ONSITE ASNR ANNUAL MEETING SURVEY
Please complete and return the Annual Meeting survey you received in your email prior to the meeting before you leave the meeting on Friday. Your responses will prove crucial to the future success of ASNR. Thank you!

ASNR TRAVEL FELLOWSHIPS FOR DIVERSITY
ASNR would like to thank the Eunice Kennedy Shriver National Institute Of Child Health & Human Development of the National Institutes of Health for their generous support of our Annual Meeting and in particular for support of the Diversity Travel Fellowship program.

JOIN THE DISCUSSION!   @ASNRehab   #ASNRehab18
THURS. NOV. 1

7:00 - 8:00 am
Exhibits

7:00 am - 6:30 pm
Registration

8:00 - 10:00 am
Spinal Plasticity after CNS Injury: Mechanisms and molecular correlates
Organizer:
Georgy Bakalkin, PhD
Speakers:
Georgy Bakalkin, PhD
James Grau, PhD
John Martin, PhD
Ian Winship, PhD

10:00 - 10:30 am
Break

10:30 am - 12:30 pm
Poster Session I

12:30 - 1:30 pm
Lunch

1:30 - 2:30 pm
Oral Abstract Sessions
Spontaneous Motor Recovery after Cerebrolysin Treatment in a Mouse Model of Stroke - Steven Zeiler, MD, PhD
Effect of Behavioral Practice Targeted at the Premotor-Prefrontal Component of the Motor Network after Stroke - Jill Stewart, PhD
Motor Cortex Inhibition with Somatosensory and Transcranial Direct Current Stimulation: A metaplasticity study - John Cirillo, PhD
Does Cognition Predict Ability to Learn a Novel Walking Pattern in Individuals Post Stroke? - Margaret French, PT, DPT, NCS

2:30 - 2:45 pm
Break

2:45 - 4:15 pm
Genetics and Stroke Recovery
Organizer:
Steven Cramer, MD, MMSc
Speakers:
Sunghee Cho, PhD
Steven Cramer, MD, MMSc
Mary Teena Joy, PhD
Jin-Moo Lee, MD, PhD

4:15 - 4:30 pm
Break

4:30 - 5:30 pm
2018 ASNR Award Lectures
Outstanding Neurorehabilitation Clinician-Scientist (ONCS) Award Recipient
Moving Research in Stroke Rehabilitation Forward.
Gert Kwakkel, PhD, PT
Kenneth Viste, Jr., MD Memorial Lectureship Recipient
The Cognitive-motor Interface: What we know, tells us where we're going.
Laurel Buxbaum, PsyD

5:30 - 8:00 pm
Foundation Lecture
Neuroscience: Data Rich, Theory Poor
Brad Voytek, PhD
Reception to follow
Reception tickets available at registration
### FRI. NOV. 2

**7:00 - 8:00 am**  
Exhibits

**7:00 am - 5:30 pm**  
Registration

**8:00 - 10:00 am**  
*Approaches to Manage Sensory Misalignment to Improve Functional Rehabilitation in the Upper Limb*  
Organizer: Lewis Wheaton, PhD  
Speakers: David Reinkensmeyer, PhD Robert Sainburg, PhD Lewis Wheaton, PhD

**10:00 - 10:30 am**  
Break

**10:30 am - 12:30 pm**  
Poster Session II

**12:30 - 1:30 pm**  
ASNR Business Meeting  
All Welcome & Lunch Provided

**1:30 - 3:00 pm**  
*The Effects of Neuromodulation on Network Oscillatory Dynamics*  
Organizer: Karunesh Ganguly, MD, PhD  
Speakers: Leonardo Cohen, MD, FASNR Flavio Frohlich, PhD Karunesh Ganguly, MD, PhD

**3:00 - 3:30 pm**  
Break

**3:30 - 5:30 pm**  
*Controversies in Neurorehabilitation: Biomarkers in Neurorehabilitation*  
Moderator: Steven Zeiler, MD, PhD  
Speakers: Winston Byblow, PhD Matthew Edwardson, MD Albert Lo, MD Sangeetha Madhavan, PT, PhD

**5:30 - 6:30 pm**  
Closing Reception
**PROGRAM DETAILS**

**Spinal Plasticity after CNS Injury: Mechanisms and molecular correlates**

*Thursday, November 1  •  8:00 - 10:00 am  •  Aqua Ballroom DEF*

**SCHEDULE:**

8:00 - 8:30 am *Introduction. Motor Cortex and Spinal Cord Neuromodulation Produces Corticospinal Structural and Functional Plasticity to Promote Motor System Repair after Brain and Spinal Cord Injury* - John Martin, PhD

8:30 - 8:55 am *Modulating neuroplasticity in the spinal cord to improve recovery from stroke* - Ian Winship, PhD

8:55 - 9:20 am *Metaplastic modulation of spinal circuits: How alternative forms of stimulation can impact spinal cord plasticity* - James Grau, PhD

9:20 - 9:45 am *Motor impairment after traumatic brain injury: neuropeptide spinal mechanisms* - Georgy Bakalkin, PhD

9:45 - 10:00 am *Discussion*

**SPEAKERS:**

Georgy Bakalkin, PhD  
James Grau, PhD  
John Martin, PhD  
Ian Winship, PhD

Neuromodulation is an evolving therapy that targets specific neural circuits by a variety of stimuli including an electric current, a magnetic field, and chemical agents (neurohormones, growth factors, cytokines and enzymatic treatments). The speakers in this symposium, working in different experimental research areas, will focus on mechanisms and development of a translational neuromodulatory strategy to restore forelimb and hind limb function after CNS injuries. How motor cortex and spinal cord neuromodulation, alone and in combination, promotes corticospinal system functional and structural plasticity and motor function after injury will be discussed in the first talk. The second presentation will demonstrate that modulation of neuroplasticity in the spinal cord by targeted removal of plasticity-inhibiting singling, via digestion of chondroitin sulphate proteoglycans (CSPGs) with chondroitinase ABC or by blocking CSPG receptor interactions with the endogenous growth promoting molecule pleiotrophin, can induce potent plasticity of corticospinal projections to the spinal gray matter and improve recovery even during chronic stroke. The third presentation will show how stimulation affects spinal cord plasticity depending upon temporal and behavioral relations. Predictable/controllable stimulation may enable spinal cord plasticity through up-regulation of brain-derived neurotrophic factor. In contrast, noxious input that is unpredictable / uncontrollable appears to inhibit neural plasticity that is linked to up-regulation of the cytokine tumor necrosis factor. Finally, evidence that effects of unilateral brain injury on hind limb motor functions are partially mediated by opioid neurohormones will be presented suggesting a potential of selective opioid antagonists for pharmacological correction of motor deficits secondary to brain injury.
Oral Abstract Session
Thursday, November 1 • 1:30 - 2:30 pm • Aqua Ballroom DEF

1:30 pm  **Spontaneous Motor Recovery after Cerebrolysin Treatment in a Mouse Model of Stroke** - Steven Zeiler, MD, PhD

1:45 pm  **Effect of Behavioral Practice Targeted at the Premotor-Prefrontal Component of the Motor Network after Stroke** - Jill Stewart, PhD

2:00 pm  **Motor Cortex Inhibition with Somatosensory and Transcranial Direct Current Stimulation: A metaplasticity study** - John Cirillo, PhD

2:15 pm  **Does Cognition Predict Ability to Learn a Novel Walking Pattern in Individuals Post Stroke?** - Margaret French, PT, DPT, NCS
**Genetics and Stroke Recovery**  
*Thursday, November 1 • 2:45 - 4:15 pm • Aqua Ballroom DEF*

**SCHEDULE:**

2:45 - 3:03 pm  *Pre-clinical genetic targets for stroke recovery* - Mary Teena Joy, PhD  
3:03 - 3:21 pm  *Impact of BDNF val66met SNP on functional recovery after stroke* - Sunghee Cho, PhD  
3:21 - 3:39 pm  *Genetic influences on early neurological outcome after acute ischemic stroke* - Jin-Moo Lee, MD, PhD  
3:39 - 3:57 pm  *Genetic variation and stroke recovery* - Steven Cramer, MD, MMSc  
3:57 - 4:15 pm  *Discussion*

This course will examine preclinical and clinical studies of genetic factors in relation to outcomes after stroke. Genetic studies provide insights at the molecular level and can be translated bidirectionally between animals and humans. The first talk will examine how knocking down the activity of C-C chemokine receptor type 5 (CCR5) promotes stroke recovery in animals. The second talk will examine effects on stroke recovery of the val66met polymorphism in brain derived neurotrophic factor (BDNF), which is common in humans and which in mice is associated with larger acute impairments but greater adaptation and thus enhanced motor recovery. Morphological and synaptic adaptations underlying this polymorphism’s effects on recovery will be discussed. The third talk will review human genomics approaches in the acute stroke setting and will introduce the Genetics of Early Neurological Instability after Ischemic Stroke (GENISIS) Study, which uses a quantitative phenotype (change in NIHSS score between 6 and 24 hours after stroke onset) to examine genetic influences on early neurological outcome after acute ischemic stroke. The fourth talk will review genetic correlates of stroke recovery in humans, with a focus on the BDNF val66met and Apolipoprotein E polymorphisms, as well as a polygene score that models human brain dopamine neurotransmission. Genetic research stands to elucidate mechanisms of recovery after stroke, provide insights into the basis for inter-subject variability in outcomes, and inform development of treatment approaches that target neural repair following stroke.

**SPEAKERS:**

![Steven Cramer, MD, MMSc  
Organizer](image1.png)  
![Sunghee Cho, PhD](image2.png)  
![Mary Teena Joy, PhD](image3.png)  
![Jin-Moo Lee, MD, PhD](image4.png)
2018 ASNR AWARD CEREMONY
THURSDAY, NOVEMBER 1 • 4:30 - 5:30 PM • AQUA BALLROOM DEF

2018 Fellows of American Society of Neurorehabilitation Recipients

The title of Fellow of the American Society of Neurorehabilitation is reserved for individuals who have contributed significantly to the field of Neurorehabilitation, and also to the American Society of Neurorehabilitation.

Gottfried Schlaug, PhD
Keith Tansey, MD, PhD
Carolee Winstein, PhD, PT, FAPTA, FAHA

4:35 pm
2018 Outstanding Neurorehabilitation Clinician-Scientist Award Recipient

The award, based on the evaluation of his or her peers, honors scholarly achievements and contributions to knowledge about mechanisms of neural repair, translational research from mechanisms of repair to clinical practice, or clinical Neurorehabilitation. Nominations are invited from the membership of the American Society of Neurorehabilitation. The American Society of Neurorehabilitation Education Foundation Board of Directors, made up of Past Presidents of the American Society of Neurorehabilitation (ASNR) selects the recipient of the award.

Moving research in stroke rehabilitation forward.
Gert Kwakkel, PhD, PT

5:05 pm
2018 Kenneth Viste, Jr., MD Memorial Lectureship Recipient

Kenneth M. Viste, Jr., MD was a tireless advocate for Neurorehabilitation and ASNR, and was active in the organization since its inception as President, Membership Committee Chair and a member of the Practice Issues Committee. ASNR honors his memory by presenting the award annually to an individual that has supported the mission and vision of ASNR over the course of his or her career, by supporting neurorehabilitation as a field, engaging in clinical and educational work, and making our medical peers aware of the importance of neurorehabilitation.

The Cognitive-Motor Interface: What We Know Tells Us Where We’re Going
Laurel Buxbaum, PsyD
THURSDAY PROGRAM

ASNR FOUNDATION LECTURE
THURSDAY, NOVEMBER 1 • 5:30 - 6:00 PM • AQUA BALLROOM DEF

Plan to join us for a spirited presentation from Dr. Voytek. After our brains cannot take one last bit of information, we will gravitate to the Aqua Foyer and Terrace to take in some food, beverages, and relaxed conversation with colleagues.

Featured Talk:
Neuroscience: Data Rich, Theory Poor - Bradley Voytek, PhD

Neuroscience is creating data at an unprecedented rate. There is an explosion of “big data” initiatives in neuroscience, ranging from recording from thousands of neurons simultaneously, to massive repositories of thousands of peoples’ worth of human functional and structural brain imaging, to population-wide genetic data. Despite this wealth of data, major “theories of the brain” remain elusive. This has led many to lament that neuroscience is data rich, but theory poor. Here I argue that, through principled aggregation of these large, diverse neuroscience datasets, we can address critical issues in cognition and mental health. These data include textual data from the millions of peer-reviewed neuroscience publications, functional and structural brain imaging data, demographic and genetic information, neural electrophysiology, gene expression profiles, and neuronal and glial physiology. Through such aggregation and integration, we can mine the data to find missing links and gaps in our knowledge; we can algorithmically generate plausible hypotheses for us. That is, we leverage the wealth of neuroscience data to reduce the paucity of neuroscience theories.

Reception Tickets:
$25 for ASNR Members
$50 for Guests
(Tickets will be available to purchase at registration for the reception.)
Approaches to Manage Sensory Misalignment to Improve Functional Rehabilitation in the Upper Limb
Friday, November 2 • 8:00 - 10:00 am • Aqua Ballroom DEF

SCHEDULE:
8:00 – 8:05 am Introduction - Lewis Wheaton, PhD
8:05 – 8:35 am Visual and proprioceptive alignment processes in basic control and stroke - Robert Sainburg, PhD
8:35 – 9:05 am Sensation, the missing limb, and prosthesis adaptation - Lewis Wheaton, PhD
9:05 – 9:35 am Robotic finger training after stroke and lost sensation - David Reinkensmeyer, PhD
9:35 – 10:00 am Questions and discussion

Significant research has identified the necessity of sensory integration, particularly visual and proprioceptive senses, to support motor control. Yet, misalignment of these sensory inputs has the potential to negatively influence motor outcomes in upper limb pathology. In this presentation, we hope to stimulate thoughts from research in healthy persons, persons with stroke, and persons with amputation that have to undergo motor learning in the upper limb to understand how sensory misalignment influences motor learning and control. These studies will consider neurophysiological, behavioral, and clinical outcomes to describe a multidimensional model of sensory misalignment in the upper limb. Further, as an extension of the 2017 ASNR Pre-meeting, we will also consider how sensory misalignment intersects with implementation of technological advances in rehabilitation robotics, such as exoskeletons and prosthetics. While these devices have great potential to promote functional rehabilitation outcomes, it is possible that the present state of technology may show limitations in persons with sensory misalignment. We will further provide insights on how variables such as level of pathology, handedness, and cognition, differently influence these outcomes. Following the presentation, we hope to engage in a conversation on whether motor rehabilitation research should additionally consider sensory misalignment to potentially yield improved motor function.

SPEAKERS:

Lewis Wheaton, PhD
Organizer

David Reinkensmeyer, PhD

Robert Sainburg, PhD

ASNR BUSINESS MEETING
Friday, November 2 • 12:30 - 1:30 pm
All welcome with lunch provided.
**The Effects of Neuromodulation on Network Oscillatory Dynamics**

*Friday, November 2 • 1:30 – 3:00 pm • Aqua Ballroom DEF*

**SCHEDULE:**

1:30 – 1:33 pm *Introduction* - Karunesh Ganguly, MD, PhD
1:33 – 1:58 pm *Direct Current Stimulation to Modulate Oscillatory Dynamics in Rodents and Non-Human Primates* - Karunesh Ganguly, MD, PhD
1:58 – 2:23 pm *Brain oscillatory activity and motor learning* - Leonardo Cohen, MD, FASNR
2:23 - 2:48 pm *Network Neuromodulation: From Target Engagement to Treatment* - Flavio Frohlich, PhD
2:48 – 3:00 pm *Discussion*

An important goal of neural engineering approaches to improving motor recovery after stroke is to develop generative models of neural circuit dynamics that may guide development of novel neuromodulatory approaches that dynamically target task-related processes. We specifically aimed to identify neurophysiological dynamics associated with skilled execution; assess whether these same dynamics are related to recovery; and finally, to evaluate whether temporally precise electrical neuromodulation of these dynamics can improve motor function post-stroke. Recent work has highlighted the importance of transient low-frequency oscillatory (LFO, < 4 Hz) activity in the healthy motor cortex (MI) during skilled upper-limb tasks. These brief bouts of oscillatory activity may establish the timing or sequencing of motor actions. Here we show that LFOs track motor recovery post-stroke and can be a physiological target for neuromodulation. In rodents, we found that reach-related LFOs, as measured in both the LFP and related spiking activity, were diminished after stroke and that spontaneous recovery was closely correlated with their restoration in perilesional cortex. Sensorimotor LFOs were also diminished in a human subject with chronic disability after stroke in contrast to two non-stroke subjects who demonstrated robust LFOs. Therapeutic delivery of electrical stimulation time-locked to the expected onset of LFOs was found to significantly improve skilled reaching in stroke animals. Moreover, we have recently conducted experiments in non-human primates that preliminarily suggest that this framework may also apply in primates. Together, our results suggest that restoration of cortical oscillatory dynamics is important for recovery of upper-limb function.

**SPEAKERS:**

![Karunesh Ganguly, MD, PhD](image1.jpg)

 организатор

![Leonardo Cohen, MD, FASNR](image2.jpg)

![Flavio Frohlich, PhD](image3.jpg)
Controversies in Neurorehabilitation: Biomarkers in Neurorehabilitation
Friday, November 2 • 3:30 - 5:30 pm • Aqua Ballroom DEF

SCHEDULE:
3:30 pm - 3:35 pm Introduction and rules of engagement - Steve Zeiler, MD, PhD
3:35 pm - 3:50 pm Blood Biomarkers of Stroke Recovery are Promising and Should be More Widely Studied by the Neurorehabilitation Community - Matthew A. Edwardson, MD
3:50 pm - 4:05 pm ALS, but What about These Great Neurophysiological Markers? - Sangeetha Madhavan, PT, PhD
4:05 pm - 4:20 pm Biomarker-based Stratification is Essential in Stroke Motor Recovery Trials - Winston Byblow, PhD
4:20 pm - 4:35 pm What Level of Evidence is Necessary for FDA Approval of a Biomarker, When ss FDA Approval Needed - Albert Lo, MD
4:35 pm- 5:30 pm Open Forum

There has been an explosion of research into biomarkers across biomedical science fields, and neurorehabilitation is no exception. New papers studying potential biomarkers for neurorehabilitation pop up in our literature searches on an almost daily basis. This leads one to wonder just what is (or could be) a biomarker, and how does a scientist or the field decide if and when a candidate biomarker moves from the research realm into clinical practice. This session will offer expert opinions in the field and stimulate debate with the audience around the following questions: What is the best source for neurorehabilitation biomarkers? Should biomarkers only come from blood/serum? What is the type and level of evidence needed before a responsible researcher should call something a biomarker? What is the level of evidence needed before a biomarker should be used to measure outcomes in trials? What is the level of evidence needed before a biomarker should be used in clinical practice? Our speakers will explore these issues across a variety of neurorehabilitation conditions and potential sources of biomarkers. We welcome invigorating audience participation in the second half of the session.

SPEAKERS:

Matthew Edwardson, MD
Organizer

Steve Zeiler, MD, PhD
Moderator

Winston Byblow, PhD

Albert Lo, MD

Sangeetha Madhavan, PT, PhD

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CLOSING RECEPTION
Aqua Ballroom Terrace • 5:30 - 6:30 pm
Keep the discussion going over small bites and cash bar.
Expanding Your Toolkit: How can you use data science to streamline your research and tackle bigger questions?

Advancing the field of neurorehabilitation requires researchers to collectively gather, store, manage, and analyze vast amounts of data. These data take many forms including medical imaging, clinical assessments, electronic health records, or even wearable devices. In this roundtable, we want to discuss how to modernize your data “ecosystem” in-line with the NIH’s “Strategic Plan for Data Science” (including advanced data storage, management, and analysis methods).

Traumatic Brain Injury (TBI) Rehabilitation

Traumatic Brain Injury (TBI) is a leading cause of adult morbidity and mortality in the US. The direct and indirect costs, including loss of productive workdays, cost the economy an average of $60 billion each year. Research has shown that individuals with TBI experience difficulty with mobility, communication and community reintegration. This roundtable discussion will provide a holistic review of the impact of TBI on functional recovery and outcomes informing rehabilitation research and practice. The roundtable moderators, all of whom have active programs of research related to TBI, will facilitate a roundtable discussion regarding issues related to developing research in this area as well as the challenges of translating this research into meaningful clinical practice.

Rocio Norman, PhD, CCC-SLP
Mary Jo Pugh, PhD, RN
Sandeep Subramanian, PT, PhD

Keith Lohse, PhD
Kenneth Ottenbacher, PhD, OT

Daofen Chen, PhD
Theresa Hayes Cruz, PhD
Albert Lo, MD
Carolee Winstein, PhD, PT, FAPTA, FAHA
Growing your Clinical Research Program: How can you use the CRN seed grant to advance your clinical research program to the next step and become a funded investigator in neurorehabilitation?

Large multi-site clinical research projects are not born fully grown. Instead they develop through carefully crafted and well thought through steps, often beginning with a small seed grant like the one ASNR offers. This round table will discuss a number of critical issues pertaining to growing your clinical research program. These issues include: lessons learned from previous clinical trials of neurorehabilitation; the importance of grantsmanship and identification of “critical knowledge gaps” for proposals; and how the seed grant mechanism can be used to grow your clinical research program.

Discussion Questions:

- What are some of the lessons learned from the rehabilitation clinical trials attempted in the past decade and what NINDS and NCMRR can do in working with the clinical research community to move the field forward?
- As a new neurorehab clinical investigator, what role do I see myself in contributing to the neural rehabilitation clinical research enterprise?
- How do I decide what constitutes a “critical knowledge gap”, in becoming a funded investigator in neurorehabilitation?
- How can I think about using a small seed grant to advance my research program toward addressing a critical knowledge gap in neurorehabilitation?

Daofen Chen, PhD
Theresa Hayes Cruz, PhD
Albert Lo, MD
Carolee Winstein, PhD, PT, FAPTA, FAHA
Abstract titles are printed as submitted by the author. Full abstracts can be found at www.asnr.com
T8: Paired Brain and Spinal Cord Stimulation Strengthens Spared Spinal Circuits After Injury
Ajay Pal1, Aldo Garcia-Sandoval2, Shivakshavan Ratnadurai-Girdharan1, Qi Yang1, Thelma Bethea1, Aditya Ramamurthy1, Tong-Chun Wen1, Walter Voit2, Jason Carmel3
1Burke Neurological Inst., White Plains, NY, USA. 2Dept. of Mechanical Engineering, Dept.s of Materials Science and Engineering and Bioengineering, The Univ. of Texas at Dallas, Richardson, Texas, USA. 3Brain Mind Research Inst. and Dept.s of Neurology and Pediatrics, Weill Cornell Medicine, New York, NY, USA

T9: Motor Function as Predictor of Inpatient Length of Stay and Discharge Destination in Stroke Rehabilitation
Martje Tazelaar, Martine Eckhardt, Irene Ploeg, Majanka Heijenbrok, Gerard Ribbers
Rijndam Rehabilitation Centre, Rotterdam, Netherlands

T10: Pupillary Response to Dual-tasking in Parkinson’s Disease: A proof-of-concept study
Melike Kahya, Kelly Lyons, Rajesh Pahwa, Abiodun Akinwuntan, Hannes Devos
Univ. of Kansas Medical Center, Kansas City, USA

T11: History of Depression and Antidepressant Use at Stroke Onset and Post-Stroke Post-Acute Rehabilitation Care: The Brain Attack Surveillance in Corpus Christi (BASIC) Project
Eric Stulberg1,2, Liming Dong1, Alexander Zheutlin1, Sehee KIM1, Edward Claflin1, Lesli Skolarus1, Lewis Morgenstern1, Lynda Lisabeth1
1Univ. of Michigan, Ann Arbor, USA. 2Northwestern Univ. Feinberg School of Medicine, Chicago, USA

T12: Interlimb Differences during Bimanual Aiming after Stroke: Effect of target distance
Rini Varghese1, Robert Sainburg2, James Gordon1, Carolee Winstein1
1Univ. of Southern California, Los Angeles, USA. 2Dept. of Kinesiology and Neurology. Penn State Univ.

T13: Effects of the Aerobic Exercise with Limbs Compression and Body Cooling on Individuals with Post-Concussion Syndrome
Yi-Ning Wu1, Jessica Gravel1, Matthew White2, Josh Avery2, Terrie Enis2, Caroline Stark1, Robert Cantu2
1Univ. of Massachusetts Lowell, Lowell, USA. 2Emerson Hospital, Concord, USA

T14: Repeated AbobotulinumtoxinA Injections Benefit Walking Speed, Step Length and Cadence in Adults with Spastic Hemiparesis due to Stroke or Traumatic Brain Injury
Alberto Esquenazi1, Allison Brashear2, Thierry Deltombe3, Brian Carlson4, Anne-Sophie Grandoulier5, Claire Vilain6, Philippe Picaut5, Jean-Michel Gracies6
1MossRehab Gait and Motion Analysis Laboratory, Elkins Park, USA. 2Wake Forest School of Medicine, Winston-Salem, USA. 3Centre Hospitalier Universitaire UCL Namur site Mont-Godinne, Yvoir, Belgium. 4Ipsen Biopharmaceuticals, Basking Ridge, USA. 5Ipsen Pharma, Les Ulis, France. 6EA 7377 BIOTN, Université Paris-Est, Hospital Albert Chenevier-Henri Mondor, Service de Rééducation Neurolocomotrice, Créteil, France

Abstract titles are printed as submitted by the author. Full abstracts can be found at www.asnr.com
**POSTER SESSION I**

**T15: The Natural Trajectory of Upper Limb Performance in Daily Life Over the First 12-Weeks After Stroke**  
Kimberly Waddell, Michael Strube, Rachel Tabak, Catherine Lang  
Washington Univ., Saint Louis, USA

**T16: Variability of Leg Movements Across Seven Days during Early Infancy**  
Weiyang Deng, Beth Smith  
Univ. of Southern California, Los Angeles, USA

**T17: Development and Validation of Virtual Prism Adaptation Therapy in Subacute Stroke Patients with Hemispatial Neglect**  
Won-Seok Kim, Sungmin Cho, Jihong Park, Seo Hyun Park, Nam-Jong Paik  
Seoul National Univ. Bundang Hospital, Seongnam-si, Republic of Korea

**T18: Contralesional Hindlimb Motor Response Induced by Unilateral Brain Injury: Evidence for extra spinal mechanism**  
Nikolay Lukoyanov1, Liliana Carvalho1, Hiroyuki Watanabe2, Mengliang Zhang3, Daniil Sarkisyan2, Olga Kononenko2, Igor Bazov2, Tatiana Yakovleva2, Jens Schouenborg4, Georgy Bakalkin2  
1Instituto de Investigação e Inovação em Saúde, Instituto de Biologia Molecular e Celular, Departamento de Biomedicina da Faculdade de Medicina da Universidade do Porto, Porto, Portugal. 2Dept. of Pharmaceutical Biosciences, Uppsala Univ., Uppsala, Sweden. 3Dept. of Molecular Medicine, Univ. of Southern Denmark, Odense, Denmark. 4Neuronano Research Center, Dept. of Experimental Medical Science, Lund Univ., Lund, Sweden

**T19: Effects of Remote Limb Ischemic Conditioning on Motor Learning and Muscle Strength in Healthy Young Adults: Phase I randomized controlled trial**  
Swati Surkar1, Anna Mattlage1, Margheureta Bland1, Jeff Gidday2, Ling Chen1, Tamara Hershey1, Jin-Moo Lee1, Catherine Lang1  
1Washington Univ. School of Medicine, St. Louis, USA. 2LSU School of Medicine, New Orleans, USA

**T20: Stroke Recovery and the Effects of Intermittent Theta Burst Stimulation on Interhemispheric Inhibition**  
Rose Melchers, Mariana Leriche Vazquez, John Reynolds  
Otago Univ., Dunedin, New Zealand

**T21: A Systematic Review Exploring Brain Activity to Index Neural Activity in Relation to Sensorimotor Upper Limb Impairment and Activities After Stroke**  
Lisa Tedesco Triccas1, Sarah Meyer1, Kenneth Camilleri2, Dante Mantini1, Tracey Camilleri1, Geert Verheyden1  
1KU Leuven, Leuven, Belgium. 2Univ. of Malta, Msida, Malta

**T22: Is Cerebral Blood Flow a Potential Marker of Transcranial Direct Current Stimulation Induced Cortical Modulation in Chronic Stroke Survivors?**  
Pooja Iyer, Sangeetha Madhavan  
Univ. of Illinois at Chicago, Chicago, USA

**T23: High Intensity Speed-based Treadmill Training Enables Walking Capacity and Neural Plasticity in Chronic Stroke Survivors**  
Hyosok Lim, Sivaramakrishnan Anjali, Pooja Iyer, Sangeetha Madhavan  
Univ. of Illinois at Chicago, Chicago, USA

Abstract titles are printed as submitted by the author. Full abstracts can be found at www.asnr.com
T24: Recovery of Gait Speeds is not Associated with TMS Induced Lower Limb Corticomotor Responses  
Anjali Sivaramakrishnan, Sangeetha Madhavan  
Univ. of Illinois at Chicago, Chicago, USA

T25: Exercise-Dependent Upregulation of Angiogenic Proteins and Motor Function Recovery after Photothrombotic Stroke in Mice  
*Presidential Award Finalist  
Abdullah Al Shoyaib, Faisal F. Alamri, Abbie Biggers, Srinidhi Jayaraman, Fakhruil Ahsan, Taslim A. Al-Hilal, Vardan T. Karamyan  
Texas Tech Univ. Health Sciences Center, Amarillo, USA

T26: Transcranial Direct Current Stimulation Plus Concurrent Activity May Influence Task Prioritization During Walking in People with Parkinson’s Disease  
Jyutika Mehta1, Christina Criminger2, Chad Swank1, Sattam Alumutairi1  
1Texas Woman’s Univ., Dallas, USA. 2Winston-Salem State Univ., Winston-Salem, USA

T27: Flexion Synergy Dependent Cortical Activity and Associated White Matter Changes During Attempted Paretic Hand Opening in Moderate to Severe Chronic Stroke  
Kevin Wilkins, Jun Yao, Meriel Owen, Carson Ingo, Julius Dewald  
Northwestern Univ., Chicago, USA

T28: The Cellular Effects of rTMS in Healthy and Stroke-Damaged Brains: An in vivo intracellular electrophysiological study in the rat  
Natalie Matheson1, Simon Fisher2, Jon Shemmell1, John Reynolds1  
1Univ. of Otago, Dunedin, New Zealand. 2Univ. of Otago

T30: AbobotulinumtoxinA Using 2-mL Dilution Maintains Durable Functional Improvements Across Multiple Treatment Cycles  
Khashayar Dashtipour1, Gustavo Suarez2, Pascal Maisonneuve3, Laxman Bahroo4, Daniel Truong5, Richard Trosch6  
1Loma Linda Univ. School of Medicine, Loma Linda, USA. 2Ipsen Biopharmaceuticals, Basking Ridge, USA. 3Ipsen Pharma, Boulogne-Billancourt, France. 4Georgetown Univ. Hospital Pasquerilla Healthcare Center, Washington DC, USA. 5The Parkinson and Movement Disorder Inst., Fountain Valley, USA. 6Parkinson’s and Movement Disorders Center, Farmington Hills, USA

T31: Can Paired Associative Stimulation be used to Modulate Resting-state Intracortical Connectivity?  
*Presidential Award Finalist  
Andrew Hooyman, Alex Garbin, Beth Fisher, Jason Kutch, Carolee Weinstein  
Univ. of Southern California, Los Angeles, USA

T33: Chronic Stroke Patients Using a Brain-Computer Interface for Motor Rehabilitation: A group study  
Christoph Guger1,2,3, Fan Cao1,2, Katrin Mayr1, Günter Edlinger1,2,3  
1Guger Technologies OG, Graz, Austria. 2g.tec medical engineering GmbH, Schiedlberg, Austria. 3g.tec neurotechnology Inc., Albany, USA

Abstract titles are printed as submitted by the author. Full abstracts can be found at www.asnr.com
T34: Exploring the Use of Visuospatial Tests to Predict Motor Learning Capacity in Older Adults
Jennapher Lingo VanGilder1, Keith Lohse2, Sydney Schaefer1
1Arizona State Univ., Tempe, USA. 2Univ. of Utah, Salt Lake City, USA

T35: Convergence of Biological and Artificial Learning: Electroencephalography-Infomed Adaptation of Neurorehabilitation Robots to Maximize Cognitive Engagement
Neellesh Kumar1, Nick Georgiou1,2, Konstantinos Michmizos1
1Rutgers Univ., Piscataway, USA. 2Univ. of Virginia, Charlottesville, USA

T37: Non-invasive Cervical Root Stimulation for Spinal Cord Injury
Jonah Levine1, Yu-Kuang Wu21, Sana Saeed1, James Limonta1, Matthew Maher1, Eric Bailey1, Jaclyn Wecht1, Noam Y. Harel1,2
1James J. Peters VAMC, New York, USA. 2Icahn School of Medicine, New York, USA

T38: Simultaneous tDCS and Gait Rehabilitation in Chronic Stroke, A Pilot Study
Jessica McCabe1, Margaret Skelly1, Elizabeth Hardin1, Marom Bikson2, Svetlana Pundik1,3
1Louis Stokes Cleveland VA Medical Center, Cleveland, USA. 2The City College of New York of the City Univ. of New York, New York, USA. 3Case Western Reserve Univ., Cleveland, USA

T39: Surface EMG-triggered Closed Loop Stimulation for Individuals with Spinal Cord Injury: A case report
Yu-Kuang Wu1,2, Jonah Levine1, Jaclyn Wecht1, James Limonta1, Matthew Maher1, Eric Bailey1, Sana Saeed1, Noam Harel1,2,3
1Bronx Veterans Medical Research Foundation, Bronx, USA. 2Dept. of Rehabilitation Medicine Icahn School of Medicine at Mount Sinai, New York, USA. 3Dept. of Neurology Icahn School of Medicine at Mount Sinai, New York, USA. 4Dept. of Rehabilitation Medicine Icahn School of Medicine at Mount Sinai, New York, USA

T40: Surface EMG-triggered Closed Loop Stimulation for Individuals with Spinal Cord Injury: A case report
Jonah Levine1, Yu-Kuang Wu2,1, Sana Saeed1, James Limonta1, Matthew Maher1, Eric Bailey1, Jaclyn Wecht1, Noam Y. Harel1,2
1Univ. of California, Davis, Davis, CA, USA. 2VA Northern California Healthcare System, Martinez, CA, USA. 3UC Davis School of Medicine, Sacramento, CA, USA

T41: Inpatient Cognitive Rehabilitation following Traumatic Brain Injury: Main Effects and Patient by Therapy Interactions using Causal Inference Models
Keith Lohse, Tianyu Zheng, Tom Greene, Jacob Kean, Angela Presson, Jincheng Shen
Univ. of Utah, Salt Lake Cty, USA

T42: Identifying the Optimal Resistance to Increase Unilateral Propulsion Force with a Novel Mechanical Gait Training Device
Krista Fjeld1, Terence Thomas1, Siyao Hu2,3, Katherine Kuchenbecker4,3
1SUNY Stony Brook, Stony Brook, NY, USA. 2Schlumberger-Doll Research Center, Cambridge, MA, USA. 3Univ. of Pennsylvania, Philadelphia, PA, USA. 4Max Planck Inst. for Intelligent Systems, Stuttgart, Germany

T43: Cortical Inhibitory/Excitatory Balance during Dynamic Plantarflexion Scales with Walking Speed
Caitlin Banks1,2, Virginia Little3, Qian Ding1,2, Carolynn Patten2,1
1Univ. of California, Davis, Davis, CA, USA. 2VA Northern California Healthcare System, Martinez, CA, USA. 3UC Davis School of Medicine, Sacramento, CA, USA
T45: Astrocytic Mechanisms of Neuronal Synchronization and Local Plasticity in Motor Learning: A Computational Study
Ioannis Polykretis, Vladimir Ivanov, Konstantinos Michmizos
Rutgers Univ., Piscataway, USA

T46: A Three-dimensional Quantitative Model of Finger and Hand Kinematics During Functional Tasks
Tomas Oppenheim1, Jenny Trieu2, Adelyn Tu-Chan2, Karunesh Ganguly2
1California State Univ. Maritime Academy, Vallejo, USA. 2Univ. of California San Francisco, San Francisco, USA

T47: Changes in Corticomotor Excitability Associated with Successful Recovery of Upper Extremity Motor Function Post Stroke
Shashwati Geed1,2, Farhanaz Nowshin3, Jessica Barth2, Michelle Harris-Love3, Peter Lum4, Alexander Dromerick2,1
1Georgetown Univ. Medical Center, Washington, DC, USA. 2MedStar National Rehabilitation Hospital, Washington, DC, USA. 3George Mason Univ., Fairfax, VA, USA. 4The Catholic Univ. of America, Washington, DC, USA

T48: Home-based Daily Exercises Using Wearable Motion Sensors for Community Dwelling Stroke Survivors with Hemiparesis
Jeremy Fidock, Marissa Wuenemann, Avrielle Rykman Peltz, Dylan Edwards
Burke Neurological Inst., White Plains, USA

T49: Concurrent Reorganization in Cortex and Striatum During Motor Recovery after Stroke
Ling Guo1,2, Seok-Joon Won2, Karunesh Ganguly1,2
1Univ. of California, San Francisco, San Francisco, USA. 2San Francisco Veterans Affairs Medical Center, San Francisco, USA

T50: Corticospinal Tract Wiring and Brain Lesion Characteristics in Unilateral Cerebral Palsy: Determinants of upper limb motor and sensory function
Cristina Simon-Martinez1, Ellen Jaspers2, Lisa Mailloux1, Els Ortibus1, Katrijn Klingels1,3, Nicole Wenderoth1, Hilde Feys1
1KU Leuven, Leuven, Belgium. 2ETH Zurich, Zurich, Switzerland. 3Hasselt Univ., Hasselt, Belgium

T51: Case Study - The effect of the use of an EMG-driven FES device for finger extension on the expression of the flexion synergy in an individual with severe hemiparetic stroke
Dylan Fitzsimons1, Carolina Carmona1, Kevin B. Wilkins1, Justin Drogos1, Julius P. A. Dewald2,3,1, Jun Yao1
1Dept. of Physical Therapy and Human Movement Sciences, Northwestern Univ., Chicago, USA. 2Dept. of Biomedical Engineering, Northwestern Univ., Chicago, USA. 3Dept. of Physical Med & Rehab., Northwestern Univ., Chicago, USA

T52: Brain Source Analysis of Motor Planning for Initiating Stepping in Individuals with Subacute Stroke: A case series
Sue Peters1, S. Jayne Garland2, Bimal Lakhani3, Anthony Herdman1, Lara Boyd4
1Univ. of British Columbia, Vancouver, Can.. 2Western Univ., London, Can.
T53: Paired Associative Stimulation as a Tool to Assess Plasticity Enhancers in Chronic Stroke
Joshua Silverstein1, Mar Cortes1, Katherine Tsagaris1, Alejandra Climent1,2, Linda Gerber3, Clara Oromendia3, Pasquale Fonzetti4,3, Rajiv Ratan3,1, Tomoko Kitago1,3, Marco Iacoboni5,6, Allan Wu6,7, Bruce Dobkin8,9, Dylan Edwards3,1
1Burke Neurological Inst., White Plains, USA. 2Sant Joan de Deu Hospital, Barcelona, Spain. 3Weill Cornell Medical College, New York, USA. 4Burke Rehabilitation Hospital, White Plains, USA. 5UCLA Semel Inst. for Neuroscience and Human Behavior, Los Angeles, USA. 6Ahmanson-Lovelace Brain Mapping Center, Los Angeles, USA. 7Univ. of California, Los Angeles, USA. 8Geffen School of Medicine, Los Angeles, USA. 9Reed Neurologic Research Center, Los Angeles, USA

T54: Severity of Impairment is Important When Exploring Biomarkers of Upper Limb Outcome Post-Stroke
* Fletcher H. McDowell Award Finalist
Kate Hayward1,2, Jennifer Ferris2, Keith Lohse3, Michael Borich4, Steve Cramer5, Alexandra Borstad6,7, Jill Stewart8, Sean Dukelow9, Jessica Cassidy5, Sonja Findlater9, Jason Neva2, Lara Boyd2
1Florey Inst. of Neuroscience and Mental Health, Melbourne, Australia. 2Univ. of British Columbia, Vancouver, Can. 3Univ. of Utah, Salt Lake City, USA. 4Emory Univ., Atlanta, USA. 5Univ. of California, Irvine, USA. 6College of St. Scholastica, Duluth, USA. 7Ohio State Univ., Columbus, USA. 8Univ. of South Carolina, Columbia, USA. 9Univ. of Calgary, Calgary, Can.

T55: The Importance of Edinburgh Handedness Inventory Short Form to Determine Handedness in Seventeen Indonesian Stroke Patients - A case series
Widjajalaksmi Kusumaningsih, Herry Hong
Dept. of Physical Medicine and Rehabilitation, Faculty of Medicine, Univ. of Indonesia, Ciptomangunkusumo Hospital, Jakarta, Indonesia
POSTER SESSION II
FRIDAY, NOVEMBER 2 • 10:30 - 12:30 PM • AQUA BALLROOM ABC

Daniel Peterson1, Keith Lohse2, Martina Mancini3
1Arizona State Univ., Tempe, AZ, USA. 2Univ. of Utah, Salt Lake City, UT, USA. 3Oregon Health Sciences Univ., Portland, OR, USA

F2: Asymmetric Hindlimb Posture and Withdraw Reflexes Induced by Unilateral Brain Injury areEncoded in Spinal Cord
Mengliang Zhang1, Hiroyuki Watanabe2, Daniil Sarkisyan2, Jonas Thelin3, Jens Schouenborg3, Georgy Bakalkin2
1Dept. of Molecular Medicine, Univ. of Southern Denmark, Odense, Denmark. 2Dept. of Pharmaceutical Biosciences, Uppsala Univ., Uppsala, Sweden. 3Neuronano Research Center, Dept. of Experimental Medical Science, Lund Univ., Lund, Sweden

F3: Assessing Task Execution Abilities for Communication of Patients with Unresponsive Wakefulness Syndrome Using a Vibro-Tactile P300 Brain-computer Interface
Christoph Guger1, Rossella Spataro3, Katrin Mayr1, Günter Edlinger1,2
1Guger Technologies OG, Graz, Austria. 2g.tec medical engineering GmbH, Schiedberg, Austria. 3ALS Clinical Research Center, BioNeC, Univ. of Palermo, Palermo, Italy

F4: Treatment Frequency for Long-Term Efficacy of AbobotulinumtoxinA Injections: A phase 3 study in patients with upper limb spasticity following stroke or traumatic brain injury
Jean-Michel Gracies1, Allison Brashear2, Svetlana Khatkova3, Brian Carlson4, Anne-Sophie Grandoulier5, Philippe Picaut5
1EA 7377 BIOTN, Université Paris-Est, Hospital Albert Chenevier-Henri Mondor, Service de Rééducation Neurolocomotrice, Créteil, France. 2Wake Forest School of Medicine, Winston-Salem, USA. 3Center of Ministry of Health and Social Development of Russian Federation, Moscow, Russian Federation. 4Ipsen Biopharmaceuticals, Basking Ridge, USA. 5Ipsen Pharma, Les Ulis, France

F5: Effect of the Gait Imagery Related Supplementary Motor Area Facilitation Using Functional Near Infrared Spectroscopy Mediated Neurofeedback on Post Stroke Balance and Upper Limb Function
Masahito Mihara1, Hiroaki Fujimoto2, Hironori Otomune2,3, Noriaki Hattori2,3, Yoshiyuki Watanabe2, Teiji Kawano3, Megumi Hatakenaka3, Hajime Yagura3, Ichiro Miyai3, Hideki Mochizuki2
1Kawasaki Medical School, Kurashiki, Japan. 2Osaka University Graduate School of Medicine, Suita, Japan. 3Morinomiya Hospital, Osaka, Japan

F6: Transcranial Direct Current Stimulation Effects on Cerebral Blood Flow and Motor Learning
Anant Shinde1, Fanny Munsch2, David Alsop2,1, Gottfried Schlaug2,1
1Harvard Medical School, Boston, USA. 2Beth Israel Deaconess Medical Center, Boston, USA

Abstract titles are printed as submitted by the author. Full abstracts can be found at www.asnr.com
F7: Towards Real-Time Prediction of Freezing of Gait in Parkinson's Disease Using Spectral and Temporal Features from Acceleration of Lower-Body Segments
Nader Naghavi, Eric Wade
Univ. of Tennessee, Knoxville, Knoxville, USA

F8: Increased Resting Motor Network Connectivity is Associated with Positive Outcomes in Chronic Stroke
Daniel Lench, Akash Mishra, Colleen Hanlon
Medical Univ. of SC, Charleston, USA

F9: Predictors of Recovery from Acute Aphasia
Julius Kernbach¹, Andrea Norton², Karen Chenausky³, Sarah Marchina¹, Gottfried Schlaug¹
¹Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, USA. ²Beth Israel Deaconess Medical Center, Boston, USA. ³Boston Univ., Boston, USA

F10: Clinical Translation of Early Clinical and Neuroimaging Biomarkers to Predict Upper Extremity Stroke Motor Recovery
David Lin¹, Alison Cloutier¹, Samuel Snider¹, Fabio Giatsidis¹, Jessica Ranford¹, Kristin Parlman¹, Susan Fasoli³, Teresa Kimberley³, Steven Cramer³, Seth Finklestein¹, Leigh Hochberg¹
¹Massachusetts General Hospital, Boston, USA. ²MGH Inst. of Health Professions, Boston, USA. ³Univ. of California Irvine, Irvine, USA

F11: Grey Matter Hypertrophy in the Right Hemisphere Explains Variance in Speech-Motor Outcomes in Chronic Aphasia
Sebastien Paquette, Andrea Norton, Gottfried Schlaug
Beth Israel Deaconess Medical Center / Harvard Medical School, Boston, USA

F12: Differential Effects of Low-Frequency rTMS on Cortical Excitability and Inhibition in Aged Healthy Participants
Lauren Edwards¹, Miles Wischnewski¹, Deborah Barany¹, Isabelle Vernon¹, Daniel Drake², Gerry Hobbs³, Cathrin Buetefisch¹
¹Emory Univ., Atlanta, USA. ²Columbia Univ., New York, USA. ³West Virginia Univ., Morgantown

F13: A Novel Method for Quantifying Interlimb Coordination in Persons with Hemiparesis Post-Stroke
*2016 Clinical Research Network (CRN) Grant Recipient
Susan Duff¹, Aaron Miller², Lori Quinn³, Lauri Bishop³, Gregory Youdan³, Heather Ruthrauff³, Eric Wade²
¹Chapman Univ., Irvine, USA. ²Univ. of Tennessee, Knoxville, USA. ³Teachers College, Columbia Univ., New York, USA. ⁴Children’s Hospital of Philadelphia, Philadelphia, USA

F14: Proprioception After Stroke - Examining Diffusion Properties in Sensory and Motor Pathways
* Fletcher H. McDowell Award Finalist
Sonja Findlater, Erin Mazzerole, G. Bruce Pike, Sean Dukelow
Univ. of Calgary, Calgary, Canada

Abstract titles are printed as submitted by the author. Full abstracts can be found at www.asnr.com
F15: Alterations in Cortical Excitability and Motor Skill Practice Following a 3-Month Aerobic Exercise Program in Individuals with Parkinson’s Disease
Jason Neva1, Bimal Lakhani1, Matthew Sacheli2, Nicole Nielson2, Jassamyn McKenzie2, A. Jonathan Stoessl1, Lara Boyd1
1Univ. of British Columbia, Vancouver, Can. 2Parkinson’s Research Ctr., Vancouver, Can.

F16: Effects of Different Transcranial Direct Current Stimulation Devices on Motor Cortical Excitability
Aviroop Dutt-Mazumder, Scott Brown, Aastha Dharia, Amanda Vogel, Reesha Talati, Adam Gardi, Chandramouli Krishnan
Univ. of Michigan, Ann Arbor, USA

F17: The Potential of Exercise Combined with an Exercise Mimetic Drug to Promote Functional Recovery Following Hindlimb Stroke
*Presidential Award Finalist
Matthew McDonald1,2, Anthony Carter2, Angela Dykes1,2, Matthew Jeffers1,2, Florance Franko1, Baptiste Lacoste1,2,3, Dale Corbett1,2
1Univ. of Ottawa, Ottawa, Canada. 2Canadian Partnership for Stroke Recovery, Ottawa, Canada. 3Ottawa Hospital Research Inst., Ottawa, Canada

F18: Proportional Recovery: How it Arises and Implications for Stroke Rehabilitation
Merav Rachel Senesh, David J. Reinkensmeyer
Univ. of California Irvine, Irvine, USA

F19: Cortical-cerebellar Excitability Changes During Visuomotor Adaptation in Individuals with Middle Cerebral Artery (MCA) Stroke and Healthy Older Individuals
Samantha Feldman1, Katlyn Brown2, Julia Schmidt3, Jennifer Ma1, Jason Neva1, Lara Boyd1
1Univ. of British Columbia, Vancouver, Canada. 2Univ. College London, London, UK. 3La Trobe Univ., Melbourne, Australia

F20: Using Exploratory Learning to Encourage Selective Hip-Knee Joint Movement in Infants Born Full-Term and Preterm
Jeongah Kim, Barbara Sargent, Linda Fetters
Univ. of Southern California, Los Angeles, USA

F21: A Mouse Model of Perinatal Stroke That Produces Targeted Injury in Sensorimotor Cortex and ContraLateral Impairments in Forelimb Function
Isabelle Takoff, Mariana Gomez-Smith, Julian Pitney, Greg Silasi
Univ. of Ottawa, Ottawa, Canada

F22: Neural Correlate of Movement Proficiency in Infants Learning Prone Locomotion
Thubi H. A. Kolobe1, Andrew H. Fagg2, David P. Miller2, Lei Ding2
1Univ. of Oklahoma Health Sciences Center, Oklahoma City, USA. 2Univ. of Oklahoma, Norman, USA

Abstract titles are printed as submitted by the author. Full abstracts can be found at www.asnr.com
F23: Exploring the Relationship Between Impaired Motor Coordination During Walking and Damage to Motor Pathways Following Stroke
Shraddha Srivastava1, Bryant Seamon1,2, Joshua Teves1, Mark Bowden1,2, Chris Gregory1,2, Colleen Hanlon1, Leonardo Bohnila1, Truman Brown1, Rick Neptune3, Steven Kautz1,2
1Medical Univ. of South Carolina, Charleston, USA. 2Ralph H. Johnson VA Medical Center, Charleston, USA. 3The Univ. of Texas, Austin, USA

F24: Acoustic Stimulation During a Daytime Nap to Enhance Sensorimotor Skill Performance in Older Adults With and Without a History of Stroke
Brian Johnson, Kelly Westlake
Univ. of Maryland School of Medicine, Dept. of Physical Therapy & Rehabilitation Science, Baltimore, USA

F25: Functional Neuroimaging Predicts Motor Recovery in Early Stroke Rehabilitation
Jessica M. Cassidy, Kiranjot Kaur, Ashley K. Masuda, Ramesh Srinivasan, Steven C. Cramer
Univ. of California, Irvine, Irvine, USA

F26: Chronic Stroke and Force: A Novel Assessment Tool
Berkenesh Gebrekristos1, Daniel Neumaier2, Adelyn Tu-Chan1, Karunesh Ganguly1
1Univ. of California, San Francisco, San Francisco, USA. 2California State Univ., Maritime Academy, Vallejo, USA

F27: Severity-specific Brain Stimulation for Promoting Paretic Upper Limb Motor Function in Chronic Stroke Patients
Yin-Liang Lin1, Kelsey Potter-Baker1,2, Vishwanath Sankarasubramanian3, David Cunningham4,5,6, Adriana Conforito6, Nicole Varnerin1, Xiaofeng Wang1, Ken Sakaie1, Jayme Knutson7, Andre Machado1, Ela Plow1
1Cleveland Clinic, Cleveland, USA. 2Louis Stokes Cleveland Dept. of Veteran’s Affairs, Cleveland, USA. 3Univ. of Michigan, Ann Arbor, USA. 4Case Western Reserve Univ., Cleveland, USA. 5MetroHealth Medical Center, Cleveland, USA. 6Sao Paulo Univ., Sao Paulo, Brazil. 7MetroHealth Rehabilitation Inst., Cleveland, USA

F28: Assessing the Clinical- and Laboratory-based Criterion Validity of Four Methods for Flexion Synergy Quantification
Grace C. Bellinger, Michael D. Ellis
Northwestern Univ., Chicago, IL, USA

F29: Patterns of Behavioural Impairment and Recovery Differ Based on Regionalization of Cortical Infarcts in Rats
Matthew Jeffers1,2, Gillian Lahey3, Boris Touvykine4, Numa Dancause4, Dale Corbett1,2
1Univ. of Ottawa, Ottawa, Canada. 2Canadian Partnership for Stroke Recovery, Ottawa, Canada. 3Carleton Univ., Ottawa, Canada. 4Université de Montréal, Montréal, Canada

F30: Using Multi-channel Visual Feedback to Learn a New Walking Pattern
Kevin Day1,2, Amy Bastian1,2
*Presidental Award Finalist
1Johns Hopkins Medical Inst., Baltimore, USA. 2Kennedy Krieger Inst., Baltimore, USA

Abstract titles are printed as submitted by the author. Full abstracts can be found at www.asnr.com
F31: Evidence of Altered Interhemispheric Communication in Paediatric Mild Traumatic Brain Injury
Julia Schmidt1,2, Katlyn E. Brown3,4, Samantha J. Feldman3, Shelina Babul6,7,8, Jill G. Zwicker6,9,10, Lara A. Boyd2,8
1Dept. of Occupational Therapy, La Trobe Univ., Melbourne, Australia. 2Dept. of Physical Therapy, Univ. of British Columbia, Vancouver, Can. 3Sobell Dept. of Motor Neuroscience and Movement Disorders, Univ. College London, London, UK. 4Graduate Program in Rehabilitation Sciences, Univ. of British Columbia, Vancouver, Can. 5Graduate Program in Neuroscience, Univ. of British Columbia, Vancouver, Can. 6Dept. of Pediatrics, Univ. of British Columbia, Vancouver, Can. 7BC Children’s Hospital, Vancouver, Can. 8Djavad Mowafaghian Centre for Brain Health, Univ. of British Columbia, Vancouver, Can. 9BC Children’s Hospital Research Inst., Vancouver, Can. 10Dept. of Occupational Science & Occupational Therapy, Univ. of British Columbia, Vancouver, Can.

F32: Does Matching Task-challenge to Patient-ability during Stroke Rehabilitation Promote Greater Post-Stroke Arm Motor Recovery Than Usual Care? The MATching Task ChALLENGe (MATCH) Trial
Michelle Woodbury, Scott Hutchison, Christian Finetto, Andrew Fortune, Kelly Anderson, Abigail Lauer-Kelly, Viswanathan Ramakrishnan
Medical Univ. of South Carolina, Charleston SC, USA

F33: Dual-tasking during Initial Learning Interferes with Savings of a Novel Walking Pattern
Kristan Leech1,2, Amy Bastian1,2
1Kennedy Krieger Inst., Baltimore, USA. 2Johns Hopkins Univ., Baltimore, USA

F34: A Preliminary Study on Fatigue Severity Scale in Subacute and Chronic Post Stroke Patients Using Two Minute Walking Test: The Indonesian Experience
Widjajalaksmi Kusumaningsih, Teinny Suryadi
Dept. of Physical Medicine and Rehabilitation, Faculty of Medicine, Univ. of Indonesia, Ciptomangunkusumo Hospital, Jakarta, Indonesia

F35: Neuroplasticity Following Interlimb Training with a Prosthesis Simulator in Intact Participants
Bennett Alterman, Shuo Wang, James Kling, Lewis Wheaton
Georgia Inst. of Technology, Atlanta, USA

F36: MoTaStim-Foot, a Randomized, Single-blinded, Mixed-methods, Feasibility Study Exploring Sensory Stimulation of the Foot and Ankle Early Post-stroke
Alison M. Aries1, Valerie M. Pomeroy2, Julius Sim1, Sue Read1, Susan M. Hunter1
1Faculty of Medicine and Health Sciences, Keele Univ., Keele, Staffordshire, UK. 2Acquired Brain Injury Rehabilitation Alliance (ABIRA), School of Health Sciences, Univ. of East Anglia, Norwich, UK

F37: Using a Novel Lever-drive Wheelchair to Increase Arm Movement Practice Early After Stroke: Preliminary Results of a Randomized Controlled Trial
Joan Lobo Prat1, Daniel K. Zondervan3, Christopher Lew1, Brendan W. Smith1, Vicky Chan1, Cathy Chou1, Susan Shaw4, David J. Reinkensmeyer2, Steven C. Cramer1
1Univ. of California, Irvine, Irvine, USA. 2Flint Rehabilitation Devices, LLC, Irvine, USA. 3Loyola Marymount Univ., Los Angeles, USA. 4Rancho Los Amigos National Rehabilitation Center, Downey, USA

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POSTER SESSION II

F38: Using the Manumeter for Continuous Feedback on Hand Activity After Stroke: Preliminary Results
Diogo S. de Lucena1,2, Justin B. Rowe3, Vicky Chan1, Steven C. Cramer1, David J. Reinkensmeyer1
1Univ. of California, Irvine, Irvine, USA. 2CAPES Foundation, Ministry of Education of Brazil, Brasilia, Brazil. 3Flint Rehabilitation Devices, LLC, Irvine, USA

Avantika Naidu, David Brown
Univ. of Alabama At Birmingham, Birmingham, USA

F40: Generalizability of Muscle Synergies During Static and Dynamic Motor Tasks in the Arm Workspace of Stroke Survivors
Christopher Taylor, Lei Ma, Manuel Portilla-Jiménez, Jinsook Roh
Temple Univ., Philadelphia, USA

F41: Influence of Descending Cortical Projections on Spinal Reflex Excitability in Post-stroke Individuals
Alejandro Lopez, Jiang Xu, Steven Eicholtz, Michael Borich, Trisha Kesar
Emory Univ., Atlanta, USA

F42: Predicting Recovery of Upper Limb Function 6 Months after Middle Cerebral Artery Infarction Using Diffusion Tensor Imaging
Doo Young Kim1, Junsoo Noh2, Woo-Suk Tae3,2, Yu Mi Hwang3, Yoonhye Na3,2, Sung Bom Pyun3,3
1Catholic Kwandong Univ. International St Mary’s Hospital, Seoul, Republic of Korea. 2Korea Univ. College of Medicine, Seoul, Republic of Korea. 3Brain Convergence Research Center, Seoul, Republic of Korea

F43: Understanding the Determinants of Reactive Step Choice in Parkinson’s Disease
Niveditha Muthukrishnan, Daniel S. Peterson
Arizona State Univ., Tempe, USA

F44: Effects of Visual Feedback on the Coordination of Pointing with a Prosthesis
Daniela Junckes da Silva Mattos, Scott Frey
Univ. of Missouri, Columbia, USA

F45: Prediction of Aphasia Severity in Early and Later Subacute Phase of Stroke
Sekwang Lee1, Yoonhye Na1, Woo Suk Tae2,3, Sung Bom Pyun1
1Korea Univ. College of Medicine, Seoul, Republic of Korea. 2Brain Convergence Research Center, Seoul, Republic of Korea.

Christopher Perry, Adam Harrison, Troy Herter
Univ. of South Carolina, Columbia, USA

Abstract titles are printed as submitted by the author. Full abstracts can be found at www.asnr.com
F47: Non-Paretic Hand Exercise to Task-Failure Increases Functional Connectivity to Paretic Hand in Chronic Stroke
Qian Ding1,2, Theresa McGuirk1,2, Elliott Perry1,2, Carolynn Patten1,2
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F48: Targeted Neuromodulation of Interhemispheric Connectivity after Stroke
Shiyu Lin, Jacqueline Palmer, Michael Borich
Emory Univ., Atlanta, USA

F49: Backward Locomotor Treadmill Training Combined with Transcutaneous Spinal Direct Current Stimulation (tsDCS) in Stroke: A Pilot Feasibility and Safety Study
Oluwole Awosika1, Saira Matthews2, Emily Staggs1, Christina Zhang1, Nirguna Thalla1, Rohitha Moudgal1, Pierce Boyne3, Kari Dunning3, Daniel Woo1, Brett Kissela1
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F50: A Novel EMG-based Robotic Control for Restoring Normal Synergies after Stroke
Thomas Augenstein, Edward Washabaugh, Christian Remy, Chandramouli Krishnan
Univ. of Michigan, Ann Arbor, USA

F51: Validity of Subjective Sleep Inventories for Assessment of Sleepiness in Inpatient Rehabilitation for Stroke
Heather Johns1, Elaina Cummer2, Ellie Flack3, Sarah Neveux3, Elena Skornyakov3, Douglas Weeks4
1Univ. of Washington, Seattle, USA. 2Wake Forest Univ., Winston-Salem, USA. 3Eastern Washington Univ., Spokane, USA. 4St. Luke’s Rehabilitation Inst., Spokane, USA

F52: Interventions to Augment Upper Extremity Motor Improvement in Individuals with a Traumatic Brain Injury – A Systematic Review
Sandeep Subramanian, Melinda Fountain, Ashley Hood
Dept. of Physical Therapy, UT Health San Antonio, San Antonio, USA

F53: Does Haptic Feedback Support Motor Learning with a Prosthesis? A Neurobehavioral Evaluation
John Johnson, Lewis Wheaton
Georgia Inst. of Technology, Atlanta, USA

F54: Development of an Electromyographically-controlled Virtual Arm for Post-stroke Motor Rehabilitation
Mingjian Zhang1, Reza Rawassizadeh2, Ehsan Hoque2, Ania Busza1
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F55: Assessment of Reflex and Nonreflex Components of Spasticity in Cerebral Palsy
Dali Xu¹, Yi-Ning Wu², Yupeng Ren³, Deborah Gaebler-Spira⁴, Fan Gao⁵, Mauricio Delgado⁶, Li-Qun Zhang⁷
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F56: Effects of Gait Training on Spinal Excitability and Gait Biomechanics in Individuals Post-stroke
Jiang Xu, Steven Eicholtz, Justin Liu, Morgan Trees, Alejandro Lopez, Trisha Kesar
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Friday, November 2, 2018, 10:30-12:30

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