



ASNR

AMERICAN SOCIETY OF
NEUROREHABILITATION



2022 Annual Meeting

ST. LOUIS • MARCH 31 – APRIL 2

Ritz Carlton St. Louis Hotel

GENERAL MEETING INFORMATION

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ANNUAL MEETING EVALUATION

Please complete the Annual Meeting survey throughout or following the meeting. The meeting evaluation can be found by scanning the QR code on the bottom of this page, or on any meeting signage. Your responses will prove crucial to the future success of ASNR. Thank you!

REGISTRATION HOURS

Thursday, March 31.....	7:00 am – 5:00 pm
Friday, April 1.....	7:00 am – 5:00 pm
Saturday, April 2.....	7:00 am – 9:00 am

FOOD INCLUDED

All food will be set up in the Pre-Function Ballroom.

Thursday, March 31.....	7:00 am – 5:00 pm
Friday, April 1.....	7:00 am – 5:00 pm
Saturday, April 2.....	7:00 am – 9:00 am

CONNECT WITH ASNR!



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#ASNR2022

WELCOME

TO THE 2022 ASNR ANNUAL MEETING

On behalf of the American Society of Neurorehabilitation (ASNR), we are excited you are joining us for the 2022 Annual Meeting. Our meeting provides interactions among neurorehabilitation clinicians, basic scientists, industry representatives, & funders in a dynamic environment of presentations & discussion. This year symposia topics include:

- Social Determinants in Health & Rehabilitation
- Racial Disparities in Neurorehabilitation Outcomes
- Biomedical Engineering/Technology in Rehabilitation
- Impact of COVID on neurorehabilitation/Tele-and virtual rehab
- Pharmacology and neurorehab trials
- Cognitive Influences on Motor Function & Cognitive-Motor Disorders (e.g., limb apraxia, spatial neglect, Parkinson's Disease, Cortico-basal Syndrome)
- Treatment of Aphasia & Motor-Speech Disorders
- Precision Rehabilitation: Understanding underlying mechanisms of deficit to develop targeted treatments

This two and a half day meeting is focused on advances in the basic and clinical science of neurorehabilitation, providing opportunities to share knowledge, experience, and developments in the field. All sessions will address methods and concepts applicable across several neurological disease entities. The scientific program will include distinguished invited speakers, engaging symposia, and poster sessions. This year ASNR will be honoring Dr. Alexander Dromerick with a memorial symposia "Stroke Recovery & Rehabilitation over time & Place - A memorial to Dr. Alexander Dromerick".

Sincerely,
Jason Carmel, MD PhD
ASNR Program Chair

MISSION

To improve the lives of people with neurological disorders through advances in basic and clinical research.

VISION - Neurorecovery through discovery

2022 PROGRAM COMMITTEE

Ahmet Arac, MD
Cathrin Buetefisch, MD, PhD, FASNR
Laurel Buxbaum, PsyD
Matthew Edwardson, MD
Kathleen Friel, PhD
Bernadette Gillick, PT, PhD, MSPT
Kate Hayward, PhD

Teresa Kimberley, PT, PhD
Sangeetha Madhavan, PT, PhD
Kelsey Potter-Baker, PhD
Heidi Schambra, MD
Lewis Wheaton, PhD
Steve Zeiler, MD, PhD

Join us!

***Attend the NIH K12
Neurorehabilitation and
Restorative Neuroscience
Symposium.***

***All are welcome
to attend!***

Neuroplasticity & Recovery Across the Translational Spectrum

Wednesday, March 30, 2022 • 3:30 – 5:30 pm • The Pavilion Room (Second Floor)

SPEAKERS: Vibhu Sahni, PhD, Matthew Edwardson, MD,
Theresa Jones, PhD, Shashwati Geed, PT, PhD.

COURSE DESCRIPTION This symposium will examine CNS plasticity & recovery across the translational spectrum from cellular & molecular, animal models & human clinical trials. We will examine where principles of repair & recovery overlap & where they differ across the platforms.

PROGRAM AT-A-GLANCE

**THURSDAY,
MARCH 31**

Professional Development Session

9am-1pm

BREAK
1pm-2pm

*Between Thinking & Doing: Cognitive
Influences on Motor Abilities*
Course Director: Laurel Buxbaum
2pm-3:30pm

BREAK
3:30pm-4pm

Keynote Speaker:
Amy Bastian, PT, PhD
4pm-5pm

Award Presentations
5pm-6pm

**Welcome Reception &
Poster Session**
6pm-8pm

**FRIDAY,
APRIL 1**

Mentoring Breakfast
7am-8am

*Invasive & Non-Invasive Brain
Stimulation in Stroke*
Course Directors: Ela Plow &
Karunesh Ganguly
8am-10am

BREAK
10am-10:30am

*Lateralizations in the Brain,
Behavior & Rehabilitation*
Course Director: Benjamin Philip
10:30am-12pm

Business Meeting & Lunch
12pm-1pm

Poster Session & Exhibit Hall
1pm-2pm

*Vagus Nerve Stimulation with
Rehabilitation for Stroke & SCI*
Course Director: Seth Hays
2pm-3:30pm

BREAK
3:30pm-4:00pm

Diversity Session
4pm-5pm

BREAK
5:00pm-5:30pm

Foundation Reception
5:30pm-7pm

**SATURDAY,
APRIL 2**

Mentoring Breakfast
7am-8am

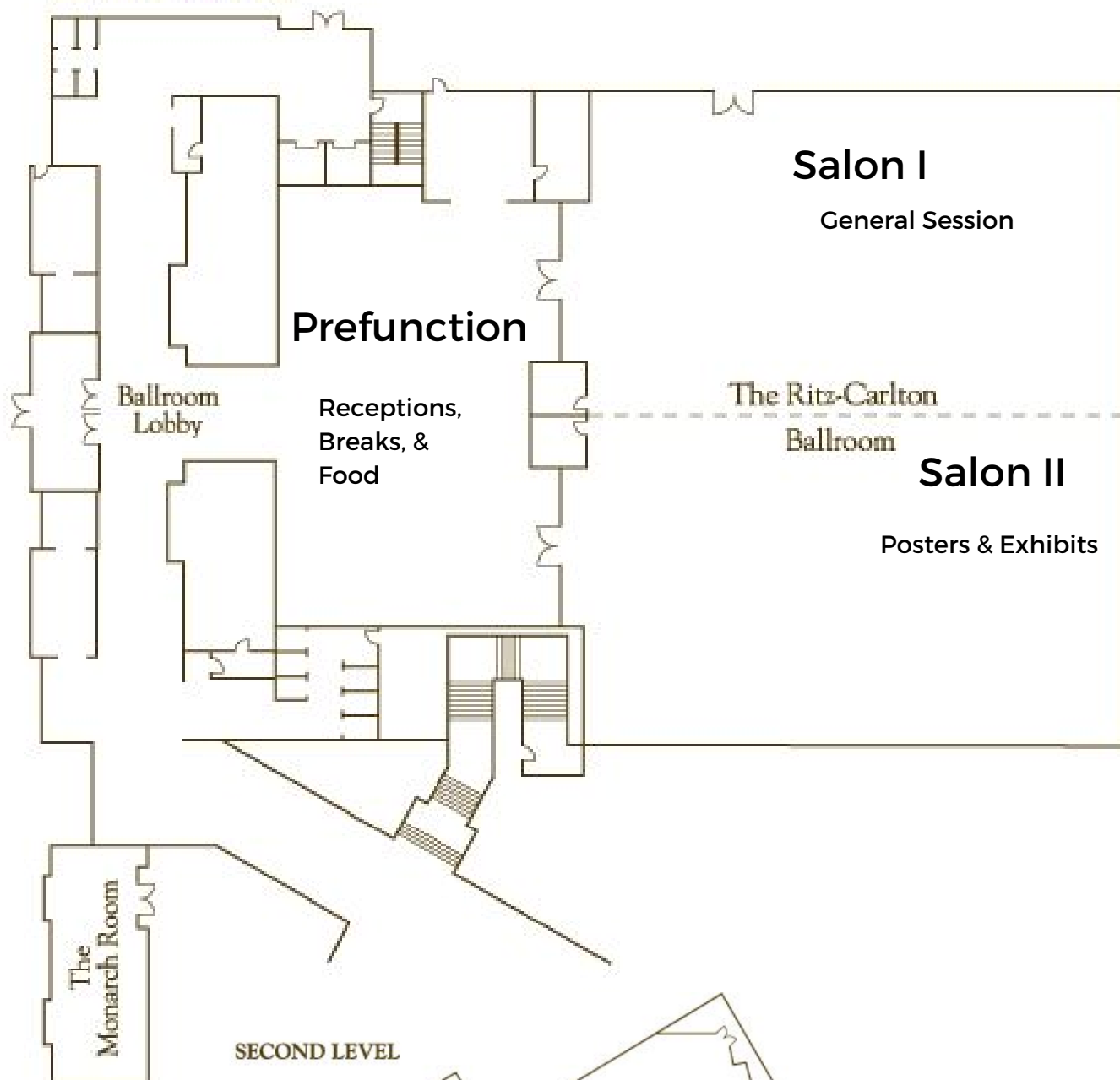
Oral Abstract Session
8am-9am

*Targeted Neurorehabilitation
Strategies in Post-Stroke Aphasia*
Course Director: Priyanka
Shan-Basak
9am-10:30am

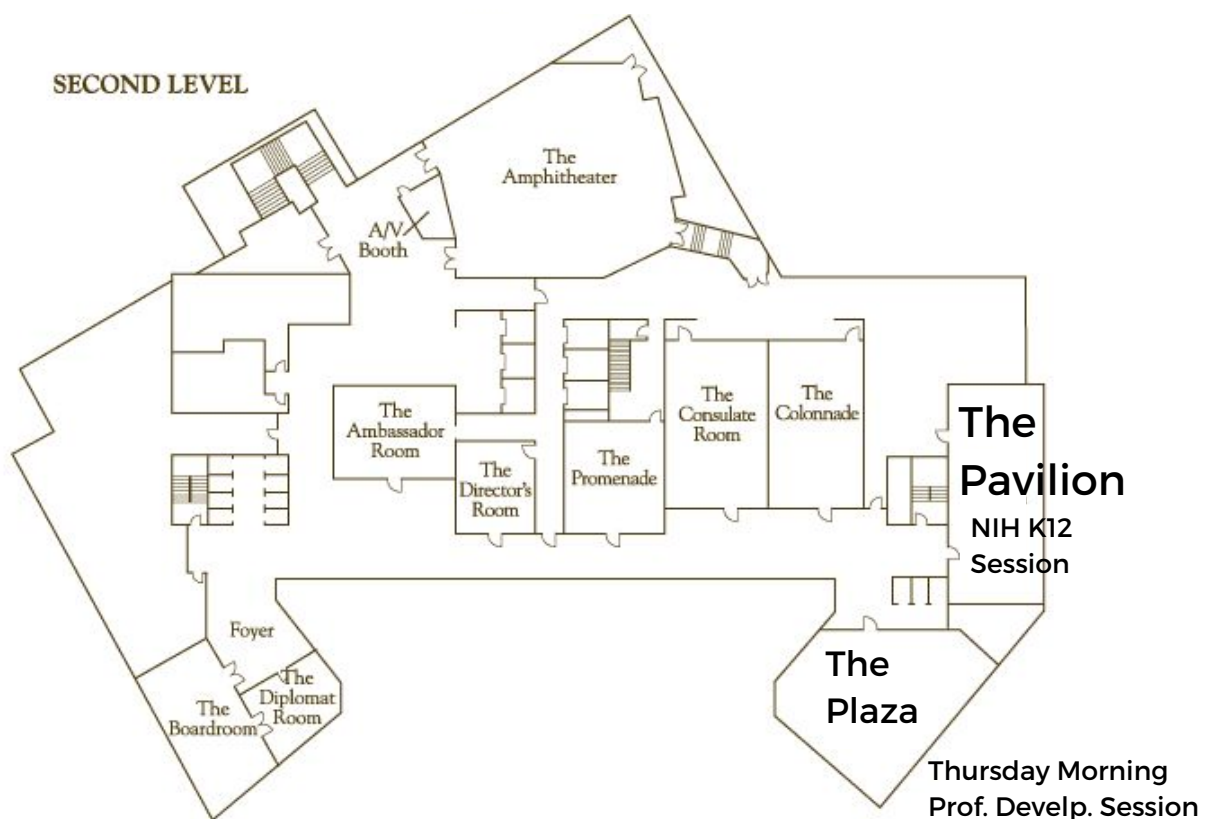
BREAK
10:30am-11:00am

*Stroke Recovery & Rehabilitation
over time & Place - A memorial to
Dr. Alexander Dromerick*
Course Director: George
Wittenberg
11am-12:30pm

LOBBY LEVEL



SECOND LEVEL



THURSDAY PROGRAM DETAILS

PROFESSIONAL DEVELOPMENT ROUNDTABLES

Thursday, March 31, 2022 • 9:00 am – 11:00 am • The Plaza (Second Floor)

**Table 1: Work Life Balance
from the perspective of
Trainee/ Junior Faculty**



Oluwole O. Awosika,
MD, MSCR, FAAN



Jessica Cassidy,
PT, DPT, PhD

**Table 2: Work Life Balance
from the perspective of
Mid-Career Faculty**



Nicolas Schweighofer,
PhD



Kelsey Baker,
PhD

**Table 3: How to Keep Learning, Stay Abreast
New Technologies, Incorporate New
Technologies**



Michael Borich,
PT, DPT, PhD



Ela B Plow,
PhD, PT

**Table 4: Markers of Good Research: What are
things to look for in papers outside of your research
area from the perspective of Tech/Clinical Scientist**



Catherine Lang, PT,
PhD, FASNR FAPTA



Jyutika Mehta,
PhD

**Table 5: Markers of Good Research: What are things
to look for in papers outside of your research area
from the perspective of a Basic Scientist**



Karunesh Ganguly,
MD, PhD



Richard Nichols,
PhD

**Table 6: Reviewing Papers Well – Providing
Good reviews, your job as a reviewer, editor
input**



Randolph J. Nudo,
PhD, FAHA, FASNR



Teresa Kimberley,
PhD, PT, FAPTA

THURSDAY PROGRAM DETAILS

Introduction to Neurorehab Technologies

Thursday, March 31, 2022 • 11:30 am – 1:00 pm • The Plaza (Second Floor)

MODERATORS:



*Keith R. Lohse,
PhD, PStat*



*Noam Harel,
MD, PhD*

PANELISTS:



*Maria del Mar Cortes,
MD*



*Gottfried Schlaug,
MD, PhD*



*Alex Carter,
MD, PhD*

DESCRIPTION:

Experts will discuss the strengths and limitations of different rehabilitation research technologies. Our panel will focus specifically on transcranial direct current stimulation (tDCS), transcranial magnetic stimulation, structural and functional MRI. The focus is on the application of these tools rather than a lecture about their basic neurophysiological principles or recent scientific findings, making this a great session for trainees who might be new to these technologies, or investigators looking to expand their lab toolbox.

THURSDAY PROGRAM DETAILS

Between Thinking and Doing: Cognitive Influences on Motor Abilities

Thursday, March 31, 2022 • 2:00 pm – 3:30 pm • Salon 1

Course Director: Laurel J. Buxbaum, PsyD

SPEAKERS:



*Laurel J. Buxbaum,
PsyD*



*Richard Ivry,
PhD*



*Rebecca Lewthwaite,
PhD*

DESCRIPTION:

Neurorehabilitation is often conducted with separate foci on motor function and cognitive capacities. There is growing recognition, however, that cognitive factors intimately inform action selection, movement quality, and skill learning. This symposium will provide an overview of recent research on the intersection of cognition and motor function at three points along the translational neurorehabilitation continuum. Rich Ivry will review research on the role of cognition in elementary forms of motor learning. Recent work has revealed that even simple sensorimotor adaptation tasks can benefit from and may even require strategic processes. His talk will highlight how motor learning involves the interaction of multiple learning processes that respond to different types of error signals to solve distinct computational problems, drawing on a distributed neural network. Laurel Buxbaum will review research on the role of cognitive competition in the performance of skilled motor tasks. Her talk will highlight how the functional-neuroanatomic study of disorders at the cognitive-motor interface, such as limb apraxia and limb non-use, can help identify behavioral and neuroanatomic targets for treatment. Rebecca Lewthwaite will describe how the recovery of motor capabilities after neurological insult depends on motivational and attentional influences. She will discuss a pragmatic theoretical approach, OPTIMAL (Optimizing Performance through Intrinsic Motivation and Attention for Learning). This theory identifies three factors (autonomy support, enhanced expectancies for rewarding experience and outcomes, and external focus of attention) that affect motor performance and learning in healthy and clinical populations.

SCHEDULE:

2:00 - 2:20pm: *Multiple Learning Processes in Motor Learning* – Richard Ivry, PhD

2:20 – 2:40pm: *The Role of Competition in Motor Planning* – Laurel Buxbaum, PsyD

2:40 – 3:00pm: *Motivational & Attentional Influences on Motor Performance & Learning* – Rebecca Lewthwaite, PhD

3:00 -3:30pm: *Discussion* - ALL

THURSDAY KEYNOTE SPEAKER

Learning and Relearning Human Movement

Thursday, March 31, 2022 • 4:00 pm – 5:00 pm • Salon 1



*Amy J Bastian, PhD, PT
CSO Kennedy Krieger Institute
Professor of Neuroscience,
Neurology and PM&R
The Johns Hopkins School of Medicine*

DESCRIPTION:

Human motor learning depends on a suite of brain mechanisms that are driven by different signals and operate on timescales ranging from minutes to years. Understanding these processes requires identifying how new movement patterns are normally acquired, retained, and generalized, as well as the effects of distinct brain lesions. The lecture will focus on normal and abnormal motor learning, and how we can use this information to improve rehabilitation for individuals with neurological damage.

2022 ASNR AWARD CEREMONY

Thursday, March 31, 2022 • 5:00 pm – 6:00 pm • Salon 1



Albert Lo, MD, PhD

2022 FELLOW OF AMERICAN SOCIETY OF NEUROREHABILITATION RECIPIENT

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.



Michael Ellis, PT, DPT

2022 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.



*Robert Chen, MA, MSc,
MB BCh, MB BChir*

2022 KENNETH VISTE, JR., MD MEMORIAL LECTURESHIP AWARD 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.

2022 ASNR AWARD CEREMONY

Thursday, March 31, 2022 • 5:00 pm – 6:00 pm • Salon 1



Derrick Yoo

Presidential Abstract Award

P.47 A system to test forepaw touch in rodents shows stability in health and loss of function with injury

The ASNR offers the Presidential Award for the best basic science poster presented by a student, resident, post-doctoral fellow, or a clinician within five years of training. The purpose of this award is to encourage research relevant to Neurorehabilitation by young clinicians and/or investigators enrolled in training programs relevant to Neurorehabilitation. While the contestant must be the senior author of the abstract, there are no restrictions on co-authorship.



Isha Vora,
MS, OT

Fletcher H. McDowell Abstract Award

P. 55 The Use of Transcranial Magnetic Stimulation for Upper Extremity Motor Assessment at the Bedside During Acute Stroke Hospitalization: A Feasibility Study

The ASNR offers the Fletcher H. McDowell Award for the best clinical science poster presented by a student, resident, or post-doctoral fellow, or a clinician within five years of training. The purpose of this award is to encourage research relevant to Neurorehabilitation by young clinicians and/or investigators enrolled in training programs relevant to Neurorehabilitation. While the contestant must be the senior author of the abstract, there are no restrictions on co-authorship.

2022 DIVERSITY TRAVEL FELLOWSHIP RECIPIENT

This Fellowship will now support up to three underrepresented individuals, for three years. During the last year of the fellowship, each Diversity Fellow will be required to serve as a mentor to a first-year awardee. This format is designed to provide a sustained opportunity for our Diversity Fellows to become more fully immersed in the meeting & establish long-term, meaningful relationships within ASNR.



Nicole Haikalis



Ermyntude Adjei,
PhD Student

2021 DIVERSITY TRAVEL FELLOWSHIP RECIPIENT'S



Maria Bandres



Caitlin Banks, MS



Ephrem Zewdie, PhD

POSTER SESSION I

Thursday, March 31, 2022 • 6:00 pm – 8:00 pm • Salon II

P.1 Decoding speech from human motor cortex using an intracortical brain computer interface

Daniel Rubin^{1,2}, Tommy Hosman³, Anastasia Kapitonova¹, John Simeral^{4,3}, Sydney Cash^{1,2}, Leigh Hochberg^{4,3,1,2}
1Massachusetts General Hospital, Boston, USA. 2Harvard Medical School, Boston, USA. 3Brown University, Providence, USA. 4VA Providence Health Care System, Providence, USA

P.2 Worse Performance of Instrumental Activities of Daily Living Associates with Markers of Neurodegeneration

Audrey Keleman, Rebecca Bollinger, Julie Wisch, Beau Ances, Susan Stark
Washington University School of Medicine, St. Louis, MO, USA

P.3 Association between online motor-cognitive game performance and APOE e4 carrier status among older adult Mindcrowd users

Andrew Hooyman¹, Matt Huentelman², Sydney Schaefer¹
1Arizona State University, Tempe, USA. 2The Translational Genomics Research Institute, Phoenix, USA

P.4 Phonological Component Analysis augmented by anodal HD-tDCS: A case study examining behavioral and fMRI data in a patient with aphasia

Sara Pillay¹, Cindy Li¹, Priyanka Shah-Basak¹, Joe Heffernan¹, Lisa Conant¹, Anna Frieberg¹, Shelley Laitinen¹, Samantha Hudson¹, Jed Mathis¹, Sabine Heuer², Roy Hamilton³, Jeffrey Binder¹
1Medical College of Wisconsin, Milwaukee, USA. 2University Wisconsin-Milwaukee, Milwaukee, USA. 3University of Pennsylvania, Philadelphia, USA

P.5 Efficacy of Corsi Block Tapping Task as a viable visuospatial training approach: A proof-of-concept

Sydney Schaefer, Andrew Hooyman, Nicole Haikalis, Randy Essikpe, Peiyuan Wang
Arizona State University, Tempe, USA

P.6 Identifying Cognitive Predictors to Reactive Step Training in People with Parkinson's Disease

Andrew Monaghan¹, Jessica Trevino¹, Jordan Barajas¹, Lee Dibble², Shyamal Mehta³, Daniel Peterson^{1,4}
1Arizona State University, Phoenix, USA. 2University of Utah, Salt Lake City, USA. 3Mayo Clinic, Scottsdale, USA. 4Phoenix VA Health Care Center, Phoenix, USA

P.7 Paired stimulation targeting spinal cord is more effective than targeting sensorimotor cortex

Ahmet Asan, Ajay Pal, Jason Carmel
Columbia University, New York, USA

P.8 Improvement in capacity for activity vs. improvement in performance of activity in daily life during outpatient neurorehabilitation

Catherine E. Lang¹, Carey L. Holleran¹, Michael J Strube¹, Terry D. Ellis², Caitlin A. Newman³, Meghan Fahey³, Tamara R. DeAngelis², Timothy Nordahl², Darcy S. Reisman⁴, Gammon M. Earhart¹, Keith R. Lohse¹, Marghuretta D. Bland¹
1Washington University School of Medicine, Saint Louis, USA. 2Boston University, Boston, USA. 3Shirley Ryan Ability Lab, Chicago, USA. 4University of Delaware, Newark, USA

P.9 A Novel Trunk-based Index of Performance as a Biomarker of Upper Limb Motor Impairment in Stroke

Daniele Piscitelli^{1,2}, Melanie C. Baniña^{1,2}, Timothy K. Lam³, Kay-Ann Allen³, Joyce L. Chen^{3,4}, Mindy F. Levin^{1,2}
1School of Physical and Occupational Therapy, McGill University, Montreal, Canada. 2Feil/Oberfeld Jewish Rehabilitation Hospital/CRIR Research Centre, Laval, Canada. 3Hurvitz Brain Sciences Research Program, Sunnybrook Research Institute, Toronto, Canada. 4Faculty of Kinesiology and Physical Education, University of Toronto, Toronto, Canada

P.10 Willed movements versus passive observation during Mirror Therapy and Video Therapy in hemiplegic patients: a behavioral and EEG maps comparison.

Davy Luneau, Pascal Giroux^{1,2}, Ahmed Adham², Clara Pfenninger³, Diana Rimaud¹, Julia Touly¹
1Adult PRM department, University Hospital of Saint-Etienne, Saint-Etienne, France. 2Lyon Neuroscience Research Center (CRNL), Trajectoires team, INSERM UMR-S U1028, CNRS UMS 5292, Lyon, France. 3Laboratoire Inter-Universitaire de Biologie de la Motricité, EA 7424, Univ Lyon, UJM-Saint-Etienne, Saint-Etienne, France

POSTER SESSION I

Thursday, March 31, 2022 • 6:00 pm – 8:00 pm • Salon II

P.12 Relating Reactive Step Length and Step Latency to Falls in People with Multiple Sclerosis

Andrew Monaghan¹, Avril Mansfield^{2,3,4}, Jessie Huisinga⁵, Daniel Peterson^{1,6}

¹Arizona State University, Phoenix, USA. ²KITE- Toronto Rehabilitation Institute, Toronto, Canada. ³University of Toronto, Toronto, Canada. ⁴Sunnybrook Research Institute, Toronto, Canada. ⁵University of Kansas Medical Center, Kansas City, USA. ⁶Phoenix VA Health Care Center, Phoenix, USA

P.13 Sensor-based categorization of upper limb performance in daily life.

Jessica Barth, Keith Lohse, Jeffrey Konrad, Margherita Bland, Catherine Lang

Washington University in St. Louis, St. Louis, USA

P.14 A Systematic Decomposition of Upper-Body Dressing

Emily Fokas¹, Avinash Parnandi¹, Zuha Ahmed¹, Anita Venkatesan¹, Natasha Pandit¹, Audre Wirtanen¹, Dawn Nilsen², Heidi Schambra¹

¹NYU Langone, New York, USA. ²Columbia University, New York, USA

P.15 Comparing the accuracy of open-source pose estimation methods for measuring gait kinematics

Edward Washabaugh^{1,2}, Thanikai Adhithyan Shanmugam², Rajiv Ranganathan³, Chandramouli Krishnan^{2,4}

¹Wayne State University, Detroit, USA. ²Michigan Medicine, Ann Arbor, USA. ³Michigan State University, East Lansing, USA. ⁴Michigan Robotics Institute, Ann Arbor, USA

P.16 Exoskeletons increase paretic limb use in stroke survivors during a bimanual virtual reality reaching task

Alexander Brunfeldt¹, Barbara Bregman¹, Peter Lum²

¹Georgetown University, Washington, USA. ²Catholic University of America, Washington, USA

P.17 Motor Imagery has Variable Effects on Peripheral Nerve Recovery

Taewon Kim¹, Susan Mackinnon¹, Jana Dengler^{2,3}, Benjamin Philip¹

¹Washington University School of Medicine, Saint Louis, USA. ²Sunnybrook Health Sciences Centre, Toronto, Canada. ³University of Toronto, Toronto, Canada

P.18 Feasibility and Impact of transcranial photobiomodulation on fine hand motor skill learning in non-disabled young adults.

Alexandra Messur, Jocelyn Penteck, Bokkyu Kim

SUNY Upstate Medical University, Syracuse, USA

P.19 Predicting a functional rehabilitation outcome in chronic stroke survivors via a hierarchical Bayesian model of motor learning.

Nicolas Schweighofer¹, Dongze Ye², David, Z. D'Argenio³, Carolee Winstein¹

¹Biokinesiology and Physical Therapy, University of Southern California, Los Angeles, USA. ²Computer Science, University of Southern California, Los Angeles, USA. ³Biomedical Engineering, University of Southern California, Los Angeles, USA

P.20 Targeted Plasticity Therapy for Upper Limb Rehabilitation in Spinal Cord Injury

Emmanuel Adehunoluwa^{1,2}, Joe Epperson^{1,3}, Chad Swank⁴, Christie Stevens⁴, Dannae Arnold⁴, Jaime

Gillespie⁴, Erina Sarker⁴, Jane Wigginton¹, Michael Foreman⁴, Richard Naftalis⁴, Rita Hamilton⁴, Amy

Porter¹, Robert Rennaker^{1,2}, Seth Hays^{1,3}, Michael Kilgard^{1,2}

¹Texas Biomedical Device Center, University of Texas at Dallas, Richardson, USA. ²School of Behavioral and Brain Sciences, University of Texas at Dallas, Richardson, USA. ³Erik Jonsson School of Engineering and Computer Science, University of Texas at Dallas, Richardson, USA. ⁴Baylor Scott & White Institute for Rehabilitation, Dallas, USA

P.21 Improved Post-Stroke Motor Recovery with Alternate Day Fasting in Mice.

Mahlet Mersha, Robert Hubbard, Steven Zeiler

Johns Hopkins, Baltimore, USA

POSTER SESSION I

Thursday, March 31, 2022 • 6:00 pm – 8:00 pm • Salon II

P.22 A preliminary investigation of the neural correlates of balance performance in healthy adults.

Vyoma Parikh, Ann Medley, Hui-Ting Goh
Texas Woman's University, Dallas, USA

P.23 Interaction of transcranial direct current stimulation (tDCS) & visual feedback in an ankle motor control task

Mark Cummings, Aditi Doshi, Farid Ihmoud, Lubna Shah, Sangeetha Madhavan
University of Illinois at Chicago, Chicago, USA

P.24 Feasibility of error augmentation feedback for upper limb rehabilitation in stroke survivors

Caroline Rajda¹, Sigal Berman², Shelly Levy-Tzedek², Philippe Archambault¹, Farnaz Ghazali Jahromi¹, Mindy Levin¹
¹McGill University, Montreal, Canada. ²Ben-Gurion University, Negev, Israel

P.25 Sing for your Saunter: Musical Cues to Improve Gait in People With Parkinson Disease With and Without Dementia

Lauren Tueth, Gammon Earhart, Elinor Harrison
Washington University School of Medicine, St Louis, USA

P.26 An objective method for analyzing ipsilateral motor evoked potentials (iMEPs) in stroke survivors with severe upper limb hemiplegia

Akhil Mohan¹, Xin Li¹, Jayme S Knutson², Morgan Widina¹, Bei Zhang³, Ela B Plow¹, David A Cunningham²
¹Cleveland Clinic Lerner Research Institute, Cleveland, USA. ²MetroHealth Rehabilitation Institute, Cleveland, USA. ³Case Western Reserve University, Cleveland, USA

P.27 Multimodal Longitudinal Assessment of Infant Brain Organization and Recovery in Perinatal Brain Injury

Ellen Sutter^{1,2}, Catarina Saiote², Ryan McAdams², Douglas Dean III², Raghavendra Rao¹, Michael Georgieff¹, Bernadette Gillick^{2,1}
¹University of Minnesota, Minneapolis, USA. ²University of Wisconsin-Madison, Madison, USA

P.28 Enabling Unsupervised Closed-loop Vagus Nerve Stimulation During Rehabilitation for Stroke or Spinal Cord Injury

Joseph Epperson^{1,2}, Eric Meyers¹, David Pruitt¹, Joel Wright¹, Rachael Hudson^{1,3}, Emmanuel Adehunoluwa^{1,3}, Y-Nhy Nguyen-Duong^{1,3}, Chad Swank⁴, Christi Stevens⁴, Jaime Gillespie⁴, Dannae Arnold⁴, Jane Wigginton^{1,4}, Robert Rennaker^{1,2,3}, Michael Kilgard^{1,3}, Seth Hays^{1,2}
¹Texas Biomedical Device Center, Richardson, USA. ²Erik Jonsson School of Engineering and Computer Science, Richardson, USA. ³School of Behavioral and Brain Sciences, Richardson, USA. ⁴Baylor Scott and White Institute for Rehabilitation, Dallas, USA

P.29 Unraveling neuro-motor control deficits in healthy aging: Implications for neurorehabilitation

Daniele Piscitelli¹, Rachael Walton-Mouw², Stanislaw Solnik^{2,3}
¹School of Physical and Occupational Therapy, McGill University, Montreal, Canada. ²University of North Georgia, Dahlonega, USA. ³University of Health and Sport Sciences in Wrocław, Wrocław, Poland

P.30 Effects of Rhythmic-Based and Tonal-Based Music Interventions on Upper Extremity Movements in Individuals with Parkinson's Disease: A Scoping Review

Yi-An Chen, Emily Bell, Julia Baker, Meredith Parrott, Jessica Rosales
Georgia State University, Atlanta, USA

P.31 Age Related Differences in Kinematic Responses While Walking Over A Compliant Surface

Nesreen Alissa, Woohyoung Jeon, Ruth Akinlosotu, Kelly Westlake
University of Maryland, Baltimore, USA

P.32 The Impact of SSRIs on Motor and Visual Recovery in Stroke Patients Undergoing BCI Intervention

Anthony Bui¹, Alexander Remsik², Vivek Prabhakaran²
¹University of Wisconsin School of Medicine and Public Health, Madison, USA. ²University of Wisconsin School of Medicine and Public Health - Department of Radiology, Madison, USA

POSTER SESSION I

Thursday, March 31, 2022 • 6:00 pm – 8:00 pm • Salon II

P.33 NeuroCuresNY: A Novel Clinical Trial Platform to Find Treatments for Chronic Neurologic Disability

M. Cristina Falo¹, Marissa Wuennemann¹, Amy Bialek¹, Susan Wortman-Jutt¹, Jeremy Hill^{2,3}, Russell Hardesty², Timothy Fake², Jonathan Wolpaw^{2,3}, Bradford Berk^{4,5}, Rajiv Ratan^{1,6}, Tomoko Kitago^{1,7}
1Burke Neurological Institute, White Plains, USA. 2National Center for Adaptive Neurotechnologies, Stratton VA Medical Center, Albany, USA. 3State University of New York at Albany, Albany, USA. 4Aab Cardiovascular Research Institute, Department of Medicine, University of Rochester School of Medicine and Dentistry, Rochester, USA. 5University of Rochester Neurorestoration Institute, University of Rochester School of Medicine and Dentistry, Rochester, USA. 6Feil Family Brain and Mind Research Institute, Weill Cornell Medicine, New York, USA. 7Department of Neurology, Weill Cornell Medicine, New York, USA

P.34 Absence of perilesional neuroplastic recruitment in chronic post-stroke aphasia

Andrew DeMarco, Candace van der Stelt, Sachi Paul, Elizabeth Dvorak, Elizabeth Lacey, Sarah Snider, Peter Turkeltaub
Georgetown University, Washington, DC, USA

P.35 Magnetic and electrical stimulation of the corticospinal pathway to assess residual connectivity in individuals with severe hemiparesis post-stroke: Preliminary results of a feasibility study

Mary Ellen Stoykov^{1,2}, Carley Butler², George F Wittenberg^{3,4}, Carolee J Winstein⁵, Monica Perez^{1,2}
1Shirley Ryan Abilitylab, Chicago, USA. 2Northwestern University, Chicago, USA. 3University of Pittsburgh, Pittsburgh, USA. 4VA Pittsburgh HS, Pittsburgh, USA. 5University of Southern California, Los Angeles, USA

P.36 Identifying racial and ethnic outcome disparities after discharge from acute inpatient rehabilitation.

Amanda Herrmann^{1,2}, Ella Chrenka^{1,2}, Marny Farrell^{1,3}, Leah Hanson^{1,2}, Steven Jackson^{1,2,3}
1HealthPartners Neuroscience Center, St. Paul, USA. 2HealthPartners Institute, Bloomington, USA. 3Regions Hospital, St. Paul, USA

P.37 Expectation- and suggestibility-related placebo effects of tDCS on cognitive and motor training

Nicole Haikalis, Andrew Hooyman, Peiyuan Wang, Sydney Schaefer
Arizona State University, Tempe, USA

P.38 Wearable activity monitors as part of physical activity intervention for people with neurodegenerative diseases: opportunities and considerations

Hai-Jung Steffi Shih¹, Philippa Morgan-Jones², Katrina Long³, Abigail Schreier¹, Lori Quinn^{1,4}, Ciaran Friel⁵
1Teachers College, Columbia University, New York, USA. 2Cardiff University, Cardiff, United Kingdom. 3San Jose State University, San Jose, USA. 4Columbia University Irving Medical Center, New York, USA. 5Northwell Health, New York, USA

P.39 Higher amyloid correlates to greater loneliness during the COVID-19 pandemic

Abigail Kehrer-Dunlap, Rebecca Bollinger, Beau Ances, Susan Stark
Washington University in St. Louis, St. Louis, MO, USA

P.40 Ecological momentary assessment of post-amputation pain as an accurate and complementary alternative to traditional pain assessment

Kelli Buchanan, Binal Motawar, Scott Frey
University of Missouri, Columbia, USA

P.41 Taking the Assessment of Freezing of Gait from the Lab into the Clinic and the Real World

David May, Gammon Earhart, Pietro Mazzoni
Washington University in St. Louis, St. Louis, MO, USA

P.42 Evidence of excessive hip extension during a step-up task as compensation for distal joint impairment in individuals with bilateral cerebral palsy

Vatsala Goyal, Theresa Sukal-Moulton
Northwestern University, Chicago, IL, USA

P.43 Development of a rehabilitation data repository: the first step to creating a learning health system focused on precision rehabilitation

Margaret French¹, Kelly Daley², Preeti Raghavan¹, Stephen Wegener³, Pablo Celnik¹
1Johns Hopkins University, Baltimore, USA. 2Johns Hopkins Hospital, Baltimore, USA. 3Johns Hopkins University, Baltimore, USA

POSTER SESSION I

Thursday, March 31, 2022 • 6:00 pm – 8:00 pm • Salon II

P.44 Healthcare Resource Utilization and Costs in Adult Patients With Spasticity – A Matched Cohort Analysis

Michael Hull¹, Vamshi Ruthwik Anupindi¹, Jing He¹, Natalya Danchenko², Mitchell DeKoven¹, Jonathan Bouchard³
¹IQVIA, Falls Church, USA. ²Ipsen, Boulogne-Billancourt, France. ³Ipsen, Cambridge, USA

P.45 Daily life upper limb use asymmetric in below-elbow amputees

Binal Motawar, Kelli Buchanan, Scott Frey
University of Missouri, Columbia, USA

P.46 Role of the Vestibular System in the control of locomotion

Carl Tchoum¹, Mindy Levin¹, Anatol Feldman²
¹McGill University, Montreal, Canada. ²Université de Montreal, Montreal, Canada

P.47 A system to test forepaw touch in rodents shows stability in health and loss of function with injury

Derrick Yoo¹, Aditya Ramamurthy¹, Justin Lee¹, Tong Chun Wen¹, Andrew Sloan², Jason Carmel¹
¹Columbia University, New York, USA. ²Vulintus Inc, Lafayette, USA

EXHIBIT HOURS

OPEN HOURS

Thursday, March 31st

6:00 - 8:00 pm --- Opening Reception & Poster Session

Friday, April 1st

7:00 - 8:00 am --- Mentoring Breakfast

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

1:00 - 2:00 pm --- Poster Session & Lunch

3:30 - 4:00 pm --- Break

5:00 - 5:30 pm --- Break

Saturday, April 2nd

07:00 - 8:00 am --- Mentoring Breakfast

10:30 - 11:00 am --- Break

FRIDAY MORNING PROFESSIONAL DEVELOPMENT SESSION

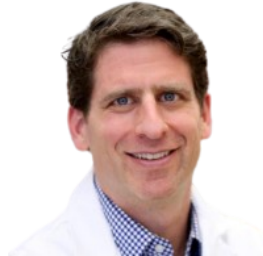
Lessons Learned: Lab Leadership and Management

Friday, April 1, 2022 • 7:00 am – 8:00 am • Salon 1

MODERATORS:



*Heidi Schambra,
MD*



*Jason Carmel,
MD, PhD*

SPEAKERS:



*Teresa Jones, PhD
Basic Scientist*



*Jill Stewart, PT, PhD
Clinical Scientist*



*Eric Leuthardt, MD
Translational/Engineering Scientist*

DESCRIPTION:

Join our discussion with several very successful investigators from different avenues of research (from basic science, to clinical research, to translational research and engineering). These investigators will discuss issues they have faced as lab leaders, the evolution of their management style, and lessons they have learned along the way.

FRIDAY PROGRAM DETAILS

Invasive & Non-invasive Brain Stimulation in Stroke: How Can We Improve Efficacy?

Friday, April 1, 2022 • 8:00 am – 10:00 am • Salon 1

Course Directors: Karunesh Ganguly, MD, PhD & Ela Plow, PT, PhD

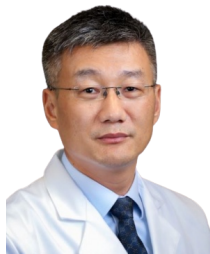
SPEAKERS:



Karunesh Ganguly,
MD PhD



Ela B Plow,
PhD, PT



Wuwei (Wayne) Feng,
MD



Charlotte Stagg,
MRCP, DPhil



Kenneth Baker
PhD

DESCRIPTION:

Variety of brain-modulation technologies have been integrated into neuro-psychiatric practice, including rTMS for medication-refractory depression and basal-ganglia DBS for movement disorders. There is greater need to expand indications to stroke. A large body of literature has examined the effects of brain-modulation using electrical or magnetic fields on motor behavior in stroke. However, it remains unclear precisely how such fields affect nervous system function; what are the optimal parameters; who benefits from what type of targeting and alternate/novel targets and underlying rationale. Such knowledge is important for refining neuromodulatory approaches as well as improving efficacy. This expert panel will help address these research goals by examining the effects of both invasive and non-invasive approaches to brain stimulation.

SCHEDULE:

8:00 – 8:05 am: *Introduction* – Karunesh Ganguly, MD, PhD & Ela Plow, PhD, PT

8:06 – 8:23am: *Transcranial Direct Current for post-stroke motor recovery: Translation from Phase I to multi-center phase II clinical trial* – Wayne Feng, MD

8:24 – 8:41 am: *Direct Current Stimulation to Modulate Cortical Dynamics in Rodents and Non-Human Primates* – Karunesh Ganguly, MD, PhD

8:42 – 8:59am: *Theta-gamma coupling stimulation patterns enhance plasticity in rodents and humans: behavioural and physiological evidence* – Charlotte Stagg, MRCP, DPhil

9:00 – 9:17am: *Severity-Specific rTMS for post-stroke upper limb motor recovery* – Ela Plow, PhD, PT

9:18 – 9:35am: *Phase I trial investigating safety, feasibility, preliminary efficacy & mechanisms of dentato-thalamocortical pathway (cerebellar) DBS to promote post-stroke rehabilitation outcome* – Kenneth Baker, PhD

9:36 – 10:00am: *Panel Discussion* – ALL

FRIDAY PROGRAM DETAILS

Lateralizations in the Brain, Behavior, and Rehabilitation

Friday, April 1, 2022 • 10:30 am – 12:00 pm • Salon 1

Course Director: Benjamin Philip, PhD

SPEAKERS:



*Benjamin Philip,
PhD*



*Robert Sainburg,
PhD, OTR*



*Rachael Seidler,
PhD*

DESCRIPTION:

Lateralization is a fundamental organizing principle of the human brain and behavior. However, rehabilitation science and practice have frequently under-emphasized the role of lateralization in human movement and cognition. Of the many lateralizations in the brain, at least three aspects are relevant for rehabilitation: motor control (“limb dominance”), hand preference, and interhemispheric compensation. In motor control, the left and right hemisphere are specialized for different aspects of movement, leading to asymmetric patterns of motor deficits after unilateral stroke. Hand preference appears relatively fixed, even after impairment or forced use: when asymmetrical deficits change which hand is more functional, patients rarely compensate by changing which hand they prefer. Interhemispheric compensation may provide a route by which the non-dominant hand can improve via the “non-dominant hemisphere” drawing on mechanisms in the “dominant hemisphere,” a process that also models some compensatory and maladaptive changes in the aging brain. In this symposium, we will explore how brain lateralization serves as a fundamental evolutionary and functional perspective that is broadly recognized in other scientific fields, and how to measure and apply this principle to improve clinical research and practice.

SCHEDULE:

10:30 – 10:35am: *Introduction* – Benjamin Philip, PhD

10:35 – 10:55am: *The impact of motor lateralization on deficits & recovery following stroke* – Robert Sainburg, PhD

10:55 – 11:15am: *Compensation with non-dominant hand, & how people don’t do it after peripheral nerve injury unless forced* – Benjamin Philip, PhD

11:15 – 11:35am: *Lateralization & compensation over aging* – Rachael Seidler

11:35 – 12:00pm: *Discussion* -ALL

POSTER SESSION II

Friday, April 1, 2022 • 1:00 pm – 2:00 pm • Salon II

P.48 Assessing sensorimotor function after stroke. A survey of neurorehabilitation clinicians

Joanna Eskander^{1,2}, Michael Borich³, Trisha Kesar³, Darcy Reisman^{1,4}, Jennifer Semrau^{1,2}

¹Department of Biomechanics and Movement Science Program, University of Delaware, Newark, DE, USA. ²Department of Kinesiology and Applied Physiology, University of Delaware, Newark, DE, USA. ³Division of Physical Therapy, Department of Rehabilitation Medicine, Emory University, Atlanta, GA, USA. ⁴Department of Physical Therapy, University of Delaware, Newark, DE, USA

P.49 Mapping the Human Cervical Spinal Cord with Electrical Stimulation for Neurorehabilitation

James R. McIntosh^{1,2}, Evan F. Joiner¹, Jacob L. Goldberg², Lynda M. Murray^{3,4}, Bushra Yasin^{1,2}, Anil Mendiratta¹, Steven C. Karceski², Earl Thuet⁵, Oleg Modik², Evgeny Shelkov², Christopher Mandigo^{1,5}, K. Daniel Riew^{1,2,5}, Noam Y. Harel^{3,4}, Michael S. Virk^{2,5}, Jason B. Carmel^{1,2}

¹Columbia University, New York, USA. ²Weill Cornell Medicine, New York, USA. ³Icahn Sch. of Med. at Mount Sinai, New York, USA. ⁴James J. Peters VA Med. Ctr., Bronx, USA. ⁵New York Presbyterian, New York, USA

P.50 Spinal Cord Injury: Do Residual Tissue Bridges Effect Neurophysiology and Functional Recovery?

Alyssa Canales, Marylu Cabello, Alondra Medina, Kelsey Baker

University of Texas Rio Grande Valley, Edinburg, USA

P.51 Motor Cortical Map Reorganization in Persons with Cervical Spinal Cord Injury (SCI) is Related to Upper Limb Prehension Capability

Jia Liu¹, Tarun Arora², Kyle O'Laughlin¹, Gail Forrest³, Svetlana Pundik⁴, Kevin Kilgore⁵, Anne Bryden⁵, Steven Kirshblum³, Ela Plow¹

¹Cleveland Clinic, Cleveland, USA. ²University Health Network, Toronto, Canada. ³Kessler Foundation, West Orange, USA. ⁴Louis Stokes Cleveland VA Medical Center, Cleveland, USA. ⁵MetroHealth System, Cleveland, USA

P.52 Intraspinal microstimulation intended for motor rehabilitation modulates spinal nociceptive neural transmission.

Maria Bandres, Jefferson Gomes, Jacob McPherson

Washington University in St. Louis, St. Louis, USA

P.53 Evaluating the Microbiome to Boost Recovery from Stroke: The EMBRS Study

Tyler Hammond¹, Arnold Stromberg¹, Lumy Sawaki¹, Ai-Ling Lin²

¹University of Kentucky, Lexington, KY, USA. ²University of Missouri, Columbia, MO, USA

P.54 Aphasia outcomes are modulated by lesion size and race in chronic stroke survivors

Davetrina Gadson, Candace van der Stelt, Elizabeth Lacey, Andrew DeMarco, Sarah Snider, Peter Turkeltaub

Georgetown University School of Medicine, Washington DC, USA

P.55 The Use of Transcranial Magnetic Stimulation for Upper Extremity Motor Assessment at the Bedside During Acute Stroke Hospitalization: A Feasibility Study

Isha Vora¹, David Lin^{2,3,4}, Yi-Ling Kuo⁵, Russell Banks⁶, Julie DiCarlo^{2,3,4}, Leigh Hochberg^{2,3,4}, Teresa Kimberley¹

¹MGH Institute of Health Professions, Boston, USA. ²MGH Center for Neurotechnology and Neurorecovery, Massachusetts General Hospital, Boston, USA. ³Department of Neurology, Massachusetts General Hospital, Boston, USA. ⁴RR&D Center for Neurorestoration and Neurotechnology, Providence VA Medical Center, Providence, USA. ⁵SUNY Upstate Medical University, Syracuse, USA. ⁶Linus Health, Boston, USA

P.56 Abnormal motor control in the arm and not in the finger is linked to increased CReST activity during an arc pointing task in chronic stroke patients

Myriam Taga¹, Yoon N. G. Hong², Charalambos C. Charalambous³, Sharmila Raju¹, Jing Lin¹, Pietro Mazzoni⁴, Jinsook Roh², Heidi M. Schambra¹

¹Department of Neurology, NYU Langone, School of Medicine, New York, USA. ²Department of Biomedical Engineering, University of Houston, Houston, USA. ³Department of Basic and Clinical Sciences, Medical School, University of Nicosia, Nicosia, Cyprus. ⁴Department of Neurology, Washington University, School of Medicine in St. Louis, St. Louis, USA

POSTER SESSION II

Friday, April 1, 2022 • 1:00 pm – 2:00 pm • Salon II

P.57 Polarity dependent effects of bi-hemispheric tDCS when paired with contralaterally controlled functional electrical stimulation (CCFES) on chronic post stroke corticospinal output: A TMS study

David A. Cunningham^{1,2}, Kevin H. Cheng^{1,2}, Amy Friedl², Ela B. Plow³, Kenneth B. Baker³, Richard D. Wilson^{1,2}, Jayme S. Knutson^{1,2}

¹Case Western Reserve University, Cleveland, USA. ²MetroHealth Center for Rehabilitation Research, Cleveland, USA. ³Cleveland Clinic, Cleveland, USA

P.58 Transcallosal Inhibition in hand and arm muscles of chronic stroke and healthy controls

Leticia Hayes¹, Myriam Taga¹, Charalambos Charalambous^{2,3}, Sharmila Raju¹, Jing Lin¹, Elisa Stern¹, Heidi Schambra¹

¹Department of Neurology, NYU Langone, School of Medicine, New York, USA. ²Department of Basic and Clinical Sciences, Medical School, University of Nicosia, Nicosia, Cyprus. ³Center for Neuroscience and Integrative Brain Research (CENIBRE), Medical School, University of Nicosia, Nicosia, Cyprus

P.59 Sensitivity to change & responsiveness of the upper-extremity Fugl-Meyer in individuals with acute stroke

Baothy Huynh¹, David Lin², Julie DiCarlo², Teresa Kimberley¹, Perman Gochyyev¹, Jessica Ranford²

¹MGH Institute of Health Professions, Boston, USA. ²Massachusetts General Hospital, Boston, USA

P.60 Effects of repetitive transcranial magnetic stimulation of contralesional dorsal premotor cortex on interhemispheric functional connectivity in severe chronic stroke

Xin Li¹, David Cunningham^{1,2,3,4}, Ken Sakaie⁵, Mark Lowe⁵, Yin-Liang Lin^{1,6}, Steven Wolf⁷, Adriana Conforto⁸, Andre Machado⁹, Akhil Mohan¹, Kyle O'Laughlin¹, Xiaofeng Wang¹⁰, Morgan Widina¹, Ela Plow^{1,9}

¹Cleveland Clinic Lerner Research Institute, Cleveland, USA. ²Case Western Reserve University, Cleveland, USA. ³MetroHealth Medical Center, Cleveland, USA. ⁴Cleveland Functional Electrical Stimulation Center, Cleveland, USA. ⁵Cleveland Clinic Imaging Institute, Cleveland, USA. ⁶National Yang Ming Chiao Tung University, Taipei, Taiwan. ⁷Emory University School of Medicine, Atlanta, USA. ⁸Hospital Das Clínicas/São Paulo University, São Paulo, Brazil. ⁹Cleveland Clinic Neurological Institute, Cleveland, USA. ¹⁰Cleveland Clinic Quantitative Health Sciences, Cleveland, USA

P.61 Contributions of the more affected arm and hand for bimanual tasks: insights about action selection and performance in chronic stroke survivors

Marika Demers¹, Lauri Bishop¹, Amelia Cain¹, Nicholas Schweighofer¹, Carolee Winstein¹

University of Southern California, Los Angeles, USA

P.62 Contralesional M1 reorganization depends on stroke lesion volume and functional output of M1 of the lesioned hemisphere.

Cathrin Buetefisch¹, Marc Haut², Kate Revill³, Scott Shaeffer⁴, Lauren Edwards⁴, Deborah Barany^{4,5}, Samir Belagaje^{4,6}, Fadi Nahab⁴, Neeta Shenvi⁷, Kirk Easley⁷

¹Departments of Neurology, Rehabilitation Medicine, Radiology, Emory University, Atlanta, USA. ²Departments of Behavioral Medicine and Psychiatry, Neurology, Radiology West Virginia University, Morgantown, USA. ³Department of Psychology, Emory University, Atlanta, USA. ⁴Department of Neurology, Emory University, Atlanta, USA. ⁵Department of Kinesiology, University of Georgia, Athens, USA. ⁶Marcus Stroke and Neuroscience Center, Grady Memorial Hospital, Atlanta, USA. ⁷Rollins School of Public Health, Emory University, Atlanta, USA

P.63 Estimated functional connectivity derived from clinical MRI predicts performance on a cognitive-IADL measure after acute stroke

Abhishek Jaywant¹, Joan Toglia², Zijin Gu³, Keith Jamison¹, Faith Gunning¹, Amy Kuceyeski¹

¹Weill Cornell Medicine, New York, USA. ²Mercy College, Dobbs Ferry, USA. ³Cornell University, Ithaca, USA

P.64 Persistent asymmetry of aperiodic resting-state neural activity in both cortical and sub-cortical strokes

Richard Hardstone¹, Lauren Ostrowski¹, Aliceson N. Dusang², Catherine Chu¹, Sydney S. Cash¹, Steven C. Cramer^{3,4}, Leigh R. Hochberg^{1,2}, David J. Lin^{1,2}

¹Center for Neurotechnology and Neurorecovery, Department of Neurology, Massachusetts General Hospital, Boston, MA, USA. ²VA RR&D Center for Neurorestoration and Neurotechnology, Department of Veterans Affairs Medical Center, Providence, RI, USA. ³Department of Neurology, University of California, Los Angeles, CA, USA. ⁴California Rehabilitation Institute, Los Angeles, CA, USA

POSTER SESSION II

Friday, April 1, 2022 • 1:00 pm – 2:00 pm • Salon II

P.65 Examining the Relationships between Measures of Activity Behavior and Physical Health in Individuals with Chronic Stroke

Allison Miller, Zachary Collier, Darcy S. Reisman
University of Delaware, Newark, USA

P.66 Comorbid anxiety disorder as the strongest predictor of post-stroke depression

Amber Criswell, BA, Timea Hodics, MD, Camila Quintero, BS, Mario Dulay, PhD
Houston Methodist Neurological Institute, Houston, USA

P.67 The fastest may not be the best: Analysis of the effects of gait speed on multiple biomechanical gait variables post-stroke

Michael Rosenberg¹, Justin Liu¹, Taniel Winner^{1,2}, Gordon Berman¹, Lena Ting^{1,2}, Trisha Kesar¹
¹Emory University, Atlanta, USA. ²Georgia Institute of Technology, Atlanta, USA

P.68 Motor overflow in the leg after stroke: minimal role for corticomotor pathways

Brice Cleland, Sangeetha Madhavan
University of Illinois at Chicago, Chicago, USA

P.69 Impairment estimation from high dimensional motion data during functional task performance

Avinash Parnandi¹, Anita Venkatesan¹, Natasha Pandit¹, Audre Wirtanen¹, Emily Fokas¹, Grace Kim², Dawn Nilsen³, Heidi Schambra¹
¹NYU Langone, New York, USA. ²NYU Steinhardt, New York, USA. ³Columbia University Medical Center, New York, USA

P.70 Detection of Stroke-Induced Spatial Neglect and Prediction of Neglected Visual Targets with an Augmented Reality (AR)-Encephalography (EEG) System

Jennifer Mak¹, Deniz Kocanaogullari¹, Xiaofei Huang², Minmei Shih¹, Emily Grattan¹, Sarah Ostadabbas², George F. Wittenberg¹, Elizabeth Skidmore¹, Murat Akcakaya¹
¹University of Pittsburgh, Pittsburgh, USA. ²Northeastern University, Boston, USA

P.71 Effect of Gamification with Social Incentives on Increasing Daily Steps after Stroke: A Randomized Clinical Trial

Kimberly Waddell^{1,2}, Mitesh Patel^{1,3}, Kayla Clark¹, Tory Harrington^{1,4}, S. Ryan Greysen^{1,2}
¹University of Pennsylvania, Philadelphia, USA. ²Crescenz VA Medical Center, Philadelphia, USA. ³Ascension Health, St. Louis, USA. ⁴Continuum Clinical, Philadelphia, USA

P.72 Virtual Reality Assessment of Arm Choice Under Cognitive Load

Cory Potts¹, Shailesh Kantak^{1,2}, Laurel Buxbaum¹
¹Moss Rehabilitation Research Institute, Jefferson University, Elkins Park, USA. ²Department of Physical Therapy, Arcadia University, Elkins Park, USA

P.73 The impact of the COVID-19 pandemic on rehabilitation outcomes and care post-stroke in Quebec

Palak Vakil^{1,2,3}, Perrine Ferré, Johanne Higgins^{2,5,6}, Louis-David Beaulieu⁷, Claude Vincent^{8,9}, Kimberley Singerman³, Diana Zidarov^{2,5,6}, Marie-Hélène Milot¹⁰, Marie-Hélène Boudrias^{1,2,3}
¹McGill University, Montreal, Canada. ²Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal, Montreal, Canada. ³Jewish Rehabilitation Hospital, CISSS-Laval, Laval, Canada. ⁴Villa Medica Rehabilitation Hospital, Montreal, Canada. ⁵University of Montreal, Montreal, Canada. ⁶Institut de réadaptation Gingras-Lindsay-de-Montréal, CIUSSS-CSMTL, Montreal, Canada. ⁷University of Quebec at Chicoutimi, Saguenay, Canada. ⁸Center for Interdisciplinary Research in Rehabilitation and Social Integration, Quebec, Canada. ⁹Laval University, Quebec, Canada. ¹⁰Centre de recherche sur le vieillissement, University of Sherbrooke, Sherbrooke, Canada

POSTER SESSION II

Friday, April 1, 2022 • 1:00 pm – 2:00 pm • Salon II

P.74 Structural Neural Correlates of Objective and Patient-Reported Measures of Function and Health Status After Stroke

Julie DiCarlo^{1,2}, Kimberly Erler³, Abhishek Jaywant⁴, Perman Gochyyev³, Jessica Ranford¹, Steven Cramer^{5,6}, David Lin^{1,2}
¹Massachusetts General Hospital, Boston, USA. ²Department of VA Medical Center, Providence, USA. ³MGH Institute for Health Professions, Boston, USA. ⁴Weill Cornell Medicine, New York, USA. ⁵University of California, Los Angeles, USA. ⁶California Rehabilitation Hospital, Los Angeles, USA

P.75 The Feasibility of a Remote Physical Activity Monitoring Program for Rural Veterans with Stroke or Parkinson's Disease

Kimberly Waddell^{1,2}, Mitesh Patel^{2,1,3}, Jayne Wilkinson^{1,2}, Robert Burke^{1,2}, Sreelatha Koganti¹, Stephanie Wood¹, James Morley^{1,2}
¹Crescenz VA Medical Center, Philadelphia, USA. ²University of Pennsylvania, Philadelphia, USA. ³Ascension Health, St. Louis, USA

P.76 Functional Implications of Lower Extremity Transcortical Reflex Responses Post-Stroke

Caitlin Banks^{1,2,3,4}, Elliott Perry^{1,2,4}, Wandasun Sihanath^{1,2}, Theresa McGuirk^{1,2,4}, Carolyn Patten^{1,2,3,4}
¹Biomechanics, Rehabilitation, and Integrative Neuroscience Lab, Department of Physical Medicine & Rehabilitation, UC Davis Health, Sacramento, CA, USA. ²UC Davis Center for Neuroengineering & Medicine, Davis, CA, USA. ³UC Davis Biomedical Engineering Graduate Group, Davis, CA, USA. ⁴VA Northern California Health Care System, Martinez, CA, USA

P.77 The Anatomical Tracings of Lesions After Stroke (ATLAS) Dataset – Release 2.0

Sook-Lei Liew¹, Bethany Lo¹, Miranda Donnelly¹, Artemis Zavaliangos-Petropulu¹, Jessica Jeong¹, Giuseppe Barisano¹, Alexandre Hutton¹, Julia Simon¹, Julia Juliano¹, Anisha Suri², Tyler Ard¹, Nerisa Banaj³, Michael Borich⁴, Lara Boyd⁵, Amy Brodtmann⁶, Cathrin Buetefisch⁷, Lei Cao⁸, Jessica Cassidy⁹, Valentina Ciullo³, Adriana Conforto^{10,11}, Steven Cramer¹², Rosalia Dacosta-Aguayo¹³, Ezequiel de la Rosa^{14,15}, Martin Domin¹⁶, Adrienne Dula¹⁷, Wuwei Feng¹⁸, Alexandre Franco^{8,19,20}, Fatemeh Geranmayeh²¹, Alexandre Gramfort²², Chris Gregory²³, Colleen Hanlon²⁴, Brenton Hordacre²⁵, Steven Kautz^{23,26}, Mohamed Salah Khelif²⁷, Hosung Kim¹, Jan Kirschke²⁸, Jingchun Liu²⁹, Martin Lotze¹⁶, Bradley MacIntosh^{30,31}, Maria Mataró^{13,32}, Feroze Mohamed³³, Jan Nordvik^{34,35}, Gilsoon Park¹, Amy Pienta³⁶, Fabrizio Piras³⁷, Shane Redman³⁶, Kate Revill⁷, Mauricio Reyes³⁸, Andrew Robertson^{39,40}, Na Jin Seo⁴¹, Surjo Soekadar⁴², Gianfranco Spalletta³, Alison Sweet³⁶, Maria Telenczuk²², Gregory Thielman⁴³, Lars Westlye^{44,45}, Carolee Winstein¹, George Wittenberg^{46,2}, Kristin Wong⁴⁷, Chunshui Yu^{29,29}
¹University of Southern California, Los Angeles, USA. ²University of Pittsburgh, Pittsburgh, USA. ³IRCCS Santa Lucia Foundation, Rome, Italy. ⁴Emory University School of Medicine, Atlanta, USA. ⁵University of British Columbia, Vancouver, Canada. ⁶University of Melbourne, Melbourne, Australia. ⁷Emory University, Atlanta, USA. ⁸Child Mind Institute, New York, USA. ⁹University of North Carolina at Chapel Hill, Chapel Hill, USA. ¹⁰São Paulo University, Sao Paulo, Brazil. ¹¹Hospital Israelita Albert Einstein, Sao Paulo, Brazil. ¹²University of California Los Angeles, Los Angeles, USA. ¹³University of Barcelona, Barcelona, Spain. ¹⁴icometrix, Leuven, Belgium. ¹⁵Technical University of Munich, Munich, Germany. ¹⁶University of Greifswald, Greifswald, Germany. ¹⁷The University of Texas Austin, Austin, USA. ¹⁸Duke University School of Medicine, Durham, USA. ¹⁹Nathan Kline Institute for Psychiatric Research, Orangeburg, USA. ²⁰NYU Grossman School of Medicine, New York, USA. ²¹Imperial College London, London, United Kingdom. ²²Université Paris-Saclay, Palaiseau, France. ²³The Medical University of South Carolina, Charleston, USA. ²⁴Wake Forest School of Medicine, Winston Salem, USA. ²⁵University of South Australia, Adelaide, Australia. ²⁶Ralph H Johnson VA Medical Center, Charleston, USA. ²⁷The Florey Institute of Neuroscience and Mental Health, Heidelberg, Australia. ²⁸Technical University Munich, Munich, Germany. ²⁹Tianjin Medical University General Hospital, Tianjin, China. ³⁰University of Toronto, Toronto, Canada. ³¹Hurvitz Brain Sciences Program, Toronto, Canada. ³²Institut de Recerca Sant Joan de Déu, 08950 Esplugues de Llobregat, Spain. ³³Jefferson Magnetic Resonance Imaging Center, Philadelphia, USA. ³⁴CatoSenteret Rehabilitation Center, SON, Norway. ³⁵Oslo Metropolitan University, Oslo, Norway. ³⁶University of Michigan, Ann Arbor, USA. ³⁷IRCCS Santa Lucia Foundation, Rome, USA. ³⁸University of Bern, Bern, Switzerland. ³⁹University of Waterloo, Waterloo, Canada. ⁴⁰Sunnybrook Research Institute, Toronto, Canada. ⁴¹Medical University of South Carolina, Charleston, USA. ⁴²Charité - Universitätsmedizin Berlin, Berlin, Germany. ⁴³University of the Sciences, Philadelphia, USA. ⁴⁴University of Oslo, Oslo, Norway. ⁴⁵Oslo University Hospital, Oslo, Norway. ⁴⁶Department of Veterans Affairs, Pittsburgh, USA. ⁴⁷University of Texas at Austin, Austin, USA

P.79 Feasibility and compliance of remote monitoring of physical, cognitive, and emotional function in individuals after stroke

Margaret French¹, Junyao Li², Ryan Roemmich¹, Meghan Beier¹, Peter Seanson¹, Stephen Wegener¹, Pablo Celnik¹, Preeti Raghavan¹
¹Johns Hopkins University, Baltimore USA. ²Johns Hopkins University, Baltimore, USA

POSTER SESSION II

Friday, April 1, 2022 • 1:00 pm – 2:00 pm • Salon II

P.80 Pre-training neural correlates for predicting gains from robot-assisted finger training after stroke

Sebastian Rueda Parra¹, Joel C. Perry², Eric T. Wolbrecht³, David Reinkensmeyer^{4,5}, Disha Gupta^{6,7}

¹Electrical Engineering, University of Idaho, Moscow, ID, USA. ²Mechanical Engineering, University of Idaho, Moscow, ID, USA. ³Mechanical Engineering, University of Idaho, Moscow, ID, USA. ⁴Biomedical Engineering, University of California, Irvine, CA, USA. ⁵Anatomy and Neurobiology, University of California, Irvine, CA, USA. ⁶National Center for Adaptive Neurotechnology, Stratton Veterans Affairs Medical Center, Albany, NY, USA. ⁷Electrical and Computer Engineering, University of Albany, State University of NY, Albany, NY

P.81 Different cortical oscillatory signatures during reactive balance are associated with distinct aspects of balance control post-stroke

Jasmine Mirdamadi¹, Jacqueline Palmer¹, Aiden Payne¹, Lena Ting^{1,2}, Michael Borich¹

¹Emory University, Atlanta, USA. ²Georgia Tech, Atlanta, USA

P.82 Wearable Myoelectric Interface for Neurorehabilitation (MINT) of Arm Function in Chronic Stroke

Abed Khorasani, Vivek Paul, Nathan Hung, Prashanth Prakash, Torin Kovach, Joel Hulsizer, Marc Slutzky

Northwestern University, Chicago, USA

P.83 Towards individualized Transcranial Magnetic Stimulation for motor recovery from hemiparesis: study of Corticomuscular Network

Gansheng Tan^{1,2}, Jixian Wang¹, Jinbiao Liu¹, Yixuan Sheng¹, Qing Xie¹, Peter Brunner², Honghai Liu³

¹Shanghai Jiao Tong University, Shanghai, China. ²Washington University in St. Louis, St. Louis, USA. ³Harbin Institute of Technology (Shenzhen), Shenzhen, China

P.84 Validating the measurement of upper extremity sensorimotor behavior utilizing a tablet device in neurologically intact and stroke populations

Devin S Austin, Makenna Dixon, Joshua GA Cashaback, Jennifer A Semrau

University of Delaware, Newark, DE, USA

P.85 Are there wrist-worn sensor metrics that are a better proxy for functional arm/hand behaviors than “activity counts” for chronic stroke survivors?

Marika Demers¹, Lauri Bishop¹, Justin Rowe², Daniel Zondervan², Carolee Winstein¹

¹University of Southern California, Los Angeles, USA. ²Flint Rehabilitation Devices, Irvine, USA

P.86 Voluntary Muscle Activation Increases the Threshold at which an Electrical Stimulus Is Detected Post-Hemiparetic Stroke: Preliminary Findings

Ninghe Cai, Alan Duong, Eileen Medina, Netta Gurari

Northwestern University, Chicago, USA

P.87 Characterizing upper extremity movement smoothness in patients with acute stroke

Sarah Cavanagh^{1,2}, Taya Hamilton², Nicole Dusang^{1,2}, Perman Gochyyev², Julie DiCarlo^{1,2}, Sydney McKiernan², Hannah Jacobs², Rashida Nayeem³, Steven Kautz^{4,5}, Dagmar Sternad³, Leigh Hochberg^{1,2}, David Lin^{1,2}

¹VA Medical Center, Providence, USA. ²Massachusetts General Hospital, Boston, USA. ³Northeastern University, Boston, USA. ⁴Medical University of South Carolina, Charleston, USA. ⁵VA Medical Center, Charleston, USA

P.88 Understanding the effects of cross-priming using non-paretic leg movement in severe stroke

Hyosok Lim^{1,2}, Sangeetha Madhavan¹

¹Brain Plasticity Laboratory, Department of Physical Therapy, University of Illinois at Chicago, Chicago, USA. ²Graduate program in Rehabilitation Sciences, College of Applied Health Sciences, University of Illinois at Chicago, Chicago, USA

P.89 Motor control and cognitive deficits impact gait coordination in individuals with stroke

Prakruti Patel, Neha Lodha

Colorado State University, Fort Collins, USA

POSTER SESSION II

Friday, April 1, 2022 • 1:00 pm – 2:00 pm • Salon II

P.90 A Case Study – The effect of the use of an EMG-driven FES device for Hand function recovery in an individual with moderate hemiparetic stroke

Jasmine Benitez¹, Justin Drogos, PT, DPT¹, Ray Arceo¹, Carolina Carmona, PT, DPT, NCS1, Julius P.A. Dewald, PT, PhD^{1,2,3}, Jun Yao, PhD¹

¹Department of Physical Therapy and Human Movement Sciences. ²Department of Biomedical Engineering. ³Department of Physical Med & Rehab., Northwestern University

P.91 A gamified electromyographic computer interface to measure specific motor control abnormalities in healthy controls and individuals with arm impairment due to stroke

Danielle Marouni¹, Yiyun Wang¹, David Cunningham², Ania Busza³

¹University of Rochester, Rochester, USA. ²Case Western, Cleveland, USA. ³University of Rochester, Rochester, USA

P.92 Bilateral upper extremity motor priming (BUMP) plus task specific training for severe, chronic upper limb hemiparesis: Study protocol for a randomized clinical trial.

Mary Ellen Stoykov, Olivia M. Biller, Alexandra Wax, Erin King, Jacob M. Schauer, Louis F. Fogg, Daniel M. Corcos

¹Northwestern University, Chicago, USA. ²Northwestern University, Chicago. ³Shirley Ryan Ability Lab, Chicago, USA

P.93 Corticomuscular Coherence and Corticospinal Tract Injury Associations During Early Stroke Recovery

Rachana Gangwani, Jasper Mark, Rachel Vaughn, Jessica Cassidy

University of North Carolina at Chapel Hill, Chapel Hill, USA

P.94 Early diagnosis of spasticity in acute post-stroke patients.

Mindy F. Levin^{1,2}, Alice Misana^{1,2}, Marie-Hélène Boudrias^{1,2}, Alexander Thiel^{3,4}, Theodore Wein^{3,5,6}

¹School of Physical and Occupational Therapy, McGill University, Montreal, Canada. ²Centre for Interdisciplinary Research in Rehabilitation, Montreal, Canada. ³Department of Neurology and Neurosurgery, McGill University, Montreal, Canada. ⁴Jewish General Hospital, Montreal, Canada. ⁵Montreal Neurological Hospital, Montreal, Canada. ⁶McGill University Health Center, Montreal, Canada

FRIDAY PROGRAM DETAILS

Vagus Nerve Stimulation with Rehabilitation for Stroke and SCI

Friday, April 1, 2022 • 2:00 pm – 3:30 pm • Salon 1

Course Director: Seth Hays, PhD

SPEAKERS:



*Seth Hays,
PhD*



*Teresa Kimberley,
PhD, PT, FAPTA*



*Michael Kilgard,
PhD*

DESCRIPTION:

This symposium will focus on the use of vagus nerve stimulation to improve hand function in chronic ischemic stroke patients. The first presenter will describe the preclinical studies that revealed the potential of vagus nerve stimulation to improve outcomes in animal models of brain and spinal cord injury. These studies also demonstrate how vagus nerve stimulation promotes the formation of new synaptic connections through the release of pro-plasticity neurotransmitters during therapeutic exercises. The second presenter will describe the randomized human trials that confirmed the clinical benefits of vagus nerve stimulation and led the U.S. Food and Drug Administration to approve vagus nerve stimulation during rehabilitation therapy to treat moderate to severe upper extremity motor deficits associated with chronic ischemic stroke. The third presenter will explain ongoing studies of vagus nerve stimulation in people with stroke and spinal cord injury. These studies are designed to optimize clinical benefits and to facilitate therapy delivery in patient homes using telerehabilitation.

SCHEDULE:

2:00 - 2:25pm: Preclinical VNS studies – Seth Hays, PhD

2:25 – 2:50pm: Clinical VNS stroke studies – Teresa Kimberley, PhD, PT, FAPTA

2:50 – 3:15pm: Ongoing VNS clinical trials – Michael Kilgard, PhD

3:15 – 3:30pm: Discussion - ALL

DIVERSITY, EQUITY, & INCLUSIVITY (DEI) STRATEGY & IMPLEMENTATION PROCESS

GOALS

To foster greater engagement & enhanced communication in issues of DEI within the ASNR



To enhance training & support for members & trainees to better develop diversity in the ASNR



STRATEGIES

(the overall goal & longer term approach)

Build networks of members & scientists with direct connection to DEI or disability issues



Leverage the connections & un-explored resources of current ASNR leaders who work at minority institutions (with focus on true partnership)



Consider diversity in terms of neuro-disabilities (the people we exist to serve) in addition to ethnic & racial diversity



Explore opportunities for outreach in conjunction with the Annual Meeting



Collaborate, present or exhibit in programs that are geared towards underrepresented individuals in STEM

TACTICS

(individual steps & actions that will get the strategy accomplished)

Invite scientists with personal experience in neurological disease for NNR or meeting



Identify these organizations & be present—submit proposal & attend meeting & be available for activities of that meeting



Develop social media to convey these efforts—such as orgs. that we have partnerships with, meeting features in the DEI space—appoint social media communicator that is dedicated to this



NNR questions of special issue or invited articles—for Health Serv Research in disparities, social determinants of health in neurorehab

NNR highlight of individual scientists

Engagement at the meeting, & also to see that the science addresses their needs, National MS Society, Park Dz, Alz Assoc (with advent of new drugs), TBI, ALS, Amputee assoc's, CP, SCI, State vocational rehab org's

Advocacy that is direct to patients & invite to meeting (support groups), national orgs & local chaps of national orgs, State Vocational Rehab Agency



Identify these institutions & its members in ASNR

Structure a registration deal for the meeting in which colleagues of ASNR members at these institutions can attend

Structure this as elements (sequential?) in engagement so that this collaborative/participatory (such as mentorship activities)—tactic is to start dialog with Chairs/Leaders of these institutions to identify common values/needs are

Explore partnerships with neurorehabilitation training & program grants (R25, P2Cs)



Incorporate specific needs of URM members, trainees & faculty in mentorship & membership



Program of review & interaction with specific scientists around career progression

Diversity fellowship as a program, with the progression from trainee to mentor over three years (see one, do one, teach one) could be on some of the ASNR committees

Develop mentorship programming specifically around DEI & the experience of this, instead of around the science; additional idea is to identify scientific topics that might align with some DEI areas of scientific focus (ex. imp of self-promotion)



FRIDAY FOUNDATION LECTURE

From Anxiety to Impact: Channeling Parental Energy into Advancing Research

Friday, April 1, 2022 • 5:30 pm – 6:00 pm • Salon 1



*Paul Gross, BA
President & CEO
Cerebral Palsy Research Network*

DESCRIPTION:

Paul Gross is a former Microsoft executive who had retired young (40) and had his first kid at age 42. When his son William was born at 30 weeks, he had a rough start in the NICU including a pulmonary hemorrhage, medical NEC and a bilateral grade III intraventricular hemorrhage. When his son began being treated for the resultant hydrocephalus, Mr. Gross and his wife, both highly analytical from their tech jobs, were mortified by the lack of scientific evidence behind the treatment decisions. Mr. Gross came out of retirement to alter the pace of discovery in neuroscience -- a field he knew nothing about. Now, 17 years later, he has a track record for innovating in the process of advancing clinical and translational research. He has founded three clinical research networks and one basic and translational network and continues to advise NIH after a four-year term on the advisory council to the National Institute of Neurological Disorders and Stroke. His presentation is about his family story and how the fear of the unknown drove him to innovate in neuroscience.

FRIDAY FOUNDATION RECEPTION

Friday, April 1, 2022 • 6:00 pm • Prefunction

JOIN US FOR AN EVENING OF NETWORKING AND SNACKS!

Ticketed Event

RECEPTION TICKETS:

\$75 for Guests

\$25 for Student, Postdoc, and Resident

(Tickets will be available to purchase at registration for the reception.)

MORNING PROFESSIONAL DEVELOPMENT SESSION

Designing Pre-Clinical Studies for Clinical Translation

Saturday, April 2, 2022 • 7:00 am – 8:00 am • Salon 1

MODERATORS:



*Seth Hays,
PhD*



*Ahlam Salameh,
PhD, MSc*

SPEAKERS:



*Tom Carmichael,
MD, PhD*



*Steve Zeiler,
MD, PhD*

DESCRIPTION:

A major concern in biomedical research is successful translational from pre-clinical animal research, to early phase studies, to large efficacy and effectiveness trials. Although we all agree this is a concern, there is less consensus about how to approach these problems and how to design pre-clinical research to facilitate translation and broader impact. Our expert panel will discuss some of the issues and implications of this problem and how they have successfully improved clinical translation in their own work.

ORAL ABSTRACT PRESENTATIONS

Saturday, April 2, 2022 • 8:00 am – 9:00 am • Salon 1

AUTHORS:



Daniel Rubin, MD, PhD



Andrew Monaghan, MS



Ahmet Asan, PhD



Andrew DeMarco, PhD, CCC-SLP



Amanda Herrmann, PhD



Tyler Hammond, MD, PhD Student



Davetrina Seles Gadson, PhD, CCC-SLP

TITLE OF ABSTRACTS:

P.1 Decoding speech from human motor cortex using an intracortical brain computer interface

- Daniel Rubin, MD, PhD

P.6 Identifying Cognitive Predictors to Reactive Step Training in People with Parkinson's Disease

- Andrew Monaghan

P.7 Paired stimulation targeting spinal cord is more effective than targeting sensorimotor cortex

- Ahmet Asan

P.34 Absence of perilesional neuroplastic recruitment in chronic post-stroke aphasia

- Andrew DeMarco, PhD

P.36 Identifying racial and ethnic outcome disparities after discharge from acute inpatient rehabilitation.

- Amanda Herrmann

P.53 Evaluating the Microbiome to Boost Recovery from Stroke: The EMBRS Study

-Tyler Hammond

P.54 Aphasia outcomes are modulated by lesion size and race in chronic stroke survivors

- Davetrina Seles Gadson, PhD

SATURDAY PROGRAM DETAILS

Targeted Neurorehabilitation Strategies in Post-Stroke Aphasia

Saturday, April 2, 2022 • 9:00 am – 10:30 am • Salon 1

Course Director: Priyanka Shah-Basak, PhD

SPEAKERS:



*Olga Boukrina,
PhD*



*Aneta Kielar,
PhD*



*Priyanka Shah-Basak,
PhD*

DESCRIPTION:

This symposium will cover topics related to neural and physiological correlates of language deficits in stroke survivors with aphasia. The neural correlates are explored from the subacute into more chronic post-stroke period and using different spatiotemporally resolved neuroimaging and electrophysiological methods. Using data gathered across timepoints and methods, we will discuss how targeted and personalized neuromodulation strategies (e.g., real-time fMRI neurofeedback, transcranial electrical and magnetic stimulation) can be used to promote post-stroke language recovery. We will discuss the current evidence and evolving strategies for aphasia treatment approaches using transcranial direct current (tDCS) and transcranial magnetic stimulation (TMS). We will summarize the existing literature (including our own studies) using one-size-fits-all approach, and recent advancements (e.g., high-definition tDCS) to promote targeted and personalized treatments in individual survivors. Subtopics will include a detailed discussion on current theories of language recovery after stroke, empirical evidence from fMRI and electrophysiological studies of recovery, and pertinent tDCS/TMS study design characteristics. Finally, we will discuss a recently developed framework for personalized stimulation therapies that is guided by fMRI or EEG/MEG correlates of linguistic abilities, paired with targeted language therapies, for the most optimal results.

SCHEDULE:

9:00 – 9:20am: *Neural correlates of reading deficits in aphasia* – Olga Boukrina, PhD

9:20 – 9:40am: *Reorganization of language networks after stroke: Evidence from MEG* – Aneta Kielar, PhD

9:40 – 10:00am: *Individualized neurorehabilitation of post-stroke aphasia* – Priyanka Shah-Basak, PhD

10:00 – 10:30am: *Discussion* – ALL

SATURDAY PROGRAM DETAILS

Stroke recovery and rehabilitation over time and place: A memorial to Dr. Alexander Dromerick, Jr.

Saturday, April 2, 2022 • 11:00 am – 12:30 pm • Salon 1

Course Director: George Wittenberg, MD, PhD

SPEAKERS:



Steven Wolf,
PT, PhD



George Wittenberg,
MD, PhD



Lisa Tabor Connor,
PhD, MSOT, OTR/L



Shashwati Geed,
PT, PhD



Matthew Edwardson,
MD



Alex Carter,
MD, PhD



Tom Carmichael,
MD, PhD



Catherine Lang, PT,
PhD, FASNR, FAPTA



Jessica Barth,
PhD Candidate



Dorothy Edwards,
PhD



Peter Turkeltaub,
MD, PhD

DESCRIPTION:

This is a symposium with the goal of memorializing Dr. Alex Dromerick's legacy in the areas of mentorship by featuring Dr. Dromerick's mentees from different times in his career. By doing so, we will present work that addresses timing and mechanisms of recovery after stroke, with an emphasis on optimizing practice and impact on patient lives. Themes will include: 1. Changes in brain activation after stroke over time and prediction of recovery, 2. The effect of rehabilitation interventions at different times after stroke onset, 3. Molecular markers of recovery, and 4. Cognitive and social factors influencing activity and participation. The core presentations will be approximately 20' by four investigators who worked with Dr. Dromerick at different stages of his academic career. The symposium will conclude with a series of short presentations (1-2 slides) by some of Dr. Dromerick's mentees and collaborators that highlight his effect on their research and careers.

SCHEDULE:

11:00 - 11:05 am: *Introduction* – Steven Wolf, PhD, PT

11:05 – 11:25 am: *Remapping of motor function after stroke and rehabilitation* – George Wittenberg, MD, PhD, FASNR

11:25 – 11:45 am: *Advancing the science of daily living after stroke & community reintegration* – Lisa Connor, PhD, MSOT, OTR/L

11:45 – 12:05 pm: *Critical periods for interventions after stroke* – Shashwati, Geed, PT, PhD

12:05 – 12:25pm: *Molecular markers of stroke recovery and mentorship in rehab* – Matthew Edwardson, MD,
Former Mentees share a few words: Alex Carter, MD, PhD, Tom Carmichael, MD, PhD, Catherine Lang, PT, PhD, FASNR, Jessica Barth, & Peter Turkeltaub, MD, PhD

12:25 - 12:30pm: *Closing Remarks* - Dorothy Edwards, PhD

MEET THE EXPERTS

Speakers, Panelists, Moderators, & Program Committee



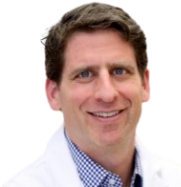
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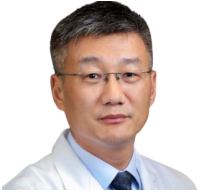
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MEET THE EXPERTS

Speakers, Panelists, Moderators, & Program Committee



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MEET THE EXPERTS

Speakers, Panelists, Moderators, & Program Committee



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Charlotte Stagg, MRCP, DPhil
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MEET THE EXPERTS

Speakers, Panelists, Moderators, & Program Committee



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Lewis Wheaton, PhD
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Steve Zeiler, MD, PhD
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THANK YOU

TO OUR

**SPEAKERS,
PANELISTS,
MODERATORS &
PROGRAM
COMMITTEE**

**THAT MADE THIS
MEETING
HAPPEN!**

EXHIBITORS



Created within a public-private cooperation ecosystem, Dessintey develops intensive rehabilitation technologies to help patients recover and regain improved levels of autonomy. Our solutions aim at increasing, diversifying & personalizing their daily practice program from the moment they join the rehabilitation center until they return home. The system IVS3 is based on the fundamental principles of visuomotor simulation training. It replaces the image of the paralyzed arm with a positive image of movement performed by the healthy arm. Reinstating coherence between what the patient intends to do & what sensations they perceive, improves motor command & prompts relearning.



The MotionMonitor integrated system provide real-time visualization, synchronous data collection & analysis with support for motion capture, EMG, force, eye-tracking, EEG, virtual reality & more. The MotionMonitor provides the ability to present user-defined visual & auditory biofeedback, without programming efforts, in a flexible, student-friendly interface. A wide variety of technologies are integrated, including markerless motion capture, cameras, IMUs & electromagnetics. Any technology can be used standalone or in combination, providing unique hybrid motion capture solutions. The MotionMonitor team provides full systems complete with hardware, software & training, or can work you to integrate existing technologies into a software-only package



Aretech is an advanced rehabilitation technologies leader with a strong commitment to quality, innovation, & developing technology based on evidence-based research. Aretech's ZeroG Gait & Balance System is a robotic body-weight support system that offers safety to patients as they practice balance & functional activities with dynamic body-weight support & fall protection. Aretech also offers Ovation, an interactive treadmill system designed for patients up to 700 lbs.



Baseline rapid 15-minute EEG and P300 plus standard testing for NeuroRehab

Acquired Brain Injury Tracking: Pre and Post Intervention

- Cortical auditory P300 voltage amplitude plus brainstem N100
- P300 cortical processing delay time
- Physical reaction time
- Left – right frontal processing ratios
- Coherence – cortical region comparison
- PLUS: Standardized tests incl. Trails A&B, MoCA, SCAT, Depression/Anxiety

Objective testing for CVA, TBI, MS, Parkinson's, Concussion, Cognitive Decline, Depression, Chronic Pain, PTSD as well as Wellness, Behavioral and Aging.



The National Center of Neuromodulation for Rehabilitation works to develop the emerging science of neuromodulation, focusing this knowledge on enhancing rehabilitation. To that end, the Center offers a range of learning opportunities, such as workshops, conferences, and webinars. We invite researchers to visit the Center and make use of our extensive facilities to conduct research or to consult or collaborate with our faculty. We also provide several funding opportunities to support work in neuromodulation for rehabilitation.



The Medical Rehabilitation Research Resource (MR3) Network comprises six Rehabilitation Research Resource Centers that provide infrastructure and access to expertise, technologies, and resources to foster clinical and translational research in medical rehabilitation. MR3 Network centers offer expertise from the cell to whole body across the lifespan to implementation into practice with expertise in regenerative rehabilitation, neuromodulation, pediatric rehabilitation, technology for real-world assessment, and translation/ dissemination research.

ASNR FINANCIAL DISCLOSURES

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None

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None

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Stock - Enspire, DBS

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None

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Lewis Wheaton, PhD

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George Wittenberg, MD, PhD

Consultant - Myomo, Inc

Steven Wolf, PT, PhD

None

Steve Zeiler, MD, PhD

None



Be sure to Join us

2023 ASNR Annual Meeting

Charleston, South Carolina

Coming Spring 2023 | Dates are TBD