

8th International Conference on
**Neuroscience and
Neurological Disorders**

September 28, 2022 | Webinar

Scientific Tracks & Abstracts



Sessions

Session on: Neuroscience | Neurological Disorders and Management | Communication Disorders

Session Chair

Linqiu Zhou

Sidney Kimmel Medical College USA

Session Introduction

Title: Communication Disorders: An issue for Psychiatry, Neurology and Mental Health-Care professionals

Theodore A Petti | Rutgers-Robert Wood Johnson Medical School | USA

Title: Predicting response to restorative treatment in Stroke rehabilitation

Lorie Richards | University of Utah | USA

Title: Thrombin preconditioning improves the therapeutic efficacy of Mesenchymal Stem Cells in severe Intraventricular Hemorrhage induced neonatal rats

So Yoon Ahn | Sungkyunkwan University School of Medicine | South Korea

Title: The role of mindfulness in reducing the risk of Neurological Disorders

Michael Kojo Onaolapo | University of Ilorin Teaching Hospital | Nigeria

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Communication Disorders: An issue for Psychiatry, Neurology and Mental health-care professionals

Theodore A Petti

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Statement of the Problem: Communication Disorders (CDs) are highly prevalent risk factors in development and maintenance of other childhood psychopathology seen by psychiatrists, neurologists, and other health and mental health-care professionals. This is especially true for Attention-deficit/hyperactivity disorder, Autism spectrum disorder, and tic disorders, commonly seen in pediatric populations of children with Social and Emotional Disorder Symptoms (SEDs). These and related neurodevelopmental disorders are frequently overlooked or not considered in assessment, diagnosis or treatment planning. Systematic research demonstrates the high prevalence of CDs in populations of children with SEDs, i.e., psychiatry, behavioral health, and neurology clinics, partial hospital/day treatment, residential and inpatient settings, and juvenile incarceration facilities.

Methodology & Theoretical Orientation: Study, a performance improvement component to identify CDs in SED youth served in psychiatric settings, to develop a quick screening device to facilitate their identification, and determine extent to which clinicians currently identify, assess and address Language and Social (pragmatic) communication disorders in routine care. It involves record review of youth ages 11-18 years served in a spectrum of psychiatric services by a university-based state-wide program 4-months before administration of a screening survey, a later period or before sharing early results and then 6-months afterwards. Results are compared to over 500 self-reports of 11-18-year-olds perceived competency in receptive, expressive, and pragmatic language and social language receiving care across broad services.

Findings: Reviewed records mention consideration of speech and language disorders or symptoms prevalence in the general population far below that found in youth self-report or at expected levels documented by formal assessments in SED populations.

Conclusion & Significance: CDs are infrequently considered, diagnosed or treated when present in a large percentage of SED youth under care. Recommendations regarding professional education and training for screening, brief interventions and referral as indicated are offered to mitigate this situation.

Recent Publications

1. Petti, TA. Perspectives on the Further Legalization of Cannabis. *Adolescent Psychiatry*, 11(2):77-79, 2021
2. Petti, TA, Chatlos, JC. Implications of Cannabis Legalization: A National and International Perspective. *Adolescent Psychiatry*, 11(2):80-94, 2021.
3. Chatlos, JC, Petti, TA. The Effects of Cannabis with a Focus on the Adolescent and Fetal Brain. *Adolescent Psychiatry*, 11(3):169-181, 2021.

Biography

Theodore A. Petti, Professor of Psychiatry at Rutgers-Robert Wood Johnson Medical School, graduated from Case Western Reserve University Medical School, is certified in General and Child and Adolescent Psychiatry, and earned his MPH from the University of Pittsburgh. Prevention, assessment, case formulation, diagnosis and treatment of moderate to severe pediatric mental illness is his

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forte. He was trained as a pediatric psycho-pharmacologist, has had psychoanalytic training, and published original research in several areas, including neurodevelopmental disorders based upon his extensive experience across multiple service areas from pediatric outpatient clinics and units, psychiatric outpatient, acute and intermediate inpatient, partial hospital, therapeutic day school, residential care, substance abuse facilities, state prisons, school-based programs to community psychiatry and collaboration with pediatricians. He has earned research, teaching and advocacy awards and developed rating scales for pediatric depression and communication disorders.

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Predicting response to restorative treatment in stroke rehabilitation

Lorie Gage Richards
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Statement of the Problem: Stroke rehabilitation is highly varied, ranging from restorative interventions to compensatory strategies to circumvent impairments and enhance function. In most medicine areas, specific information about the targeted organ is used to guide treatment. In contrast, only gross behavioral assessment and reimbursement often guides rehabilitation treatment decisions and, to date, there have been no valid algorithms predicting response to treatment to guide rehabilitation therapists in their choice of interventions.

Methodology & Theoretical Orientation: The target organ for restorative intervention in stroke rehabilitation is the brain. Such restorative interventions depend on neuroplasticity in the respective neural circuits underlying the particular body functions that are impaired. Only when sufficient neuroplasticity within the specific neural circuit is possible with our current methods of facilitating learning based on neuroplasticity, should restorative interventions be employed. This requires the ability to identify the neural elements that are important for a function and a way to identify the critical features of damage that prevent sufficient neuroplasticity. Current work in two common areas of body function impairment post-stroke, hemiparesis and unilateral spatial neglect will be discussed.

Findings: Measures of corticospinal tract integrity seem to be the best predictor for upper extremity motor recovery. The presence of frontal, but not parietal, lesions may predict the presence of Aiming neglect and may also predict response to Prism Adaptation Treatment.

Conclusion & Significance: The development of neural biomarkers that indicate likelihood of sufficient neuroplasticity in response to restorative therapies to results in meaningful functional change is critical to bring rehabilitation into the world of precision health care. Current trials are underway to validate such biomarkers for upper extremity hemiparesis and one type of unilateral spatial neglect. Such valid predictors will increase rehabilitation efficiency and allow for more targeted clinical trials.

Recent Publications

1. Small SL, Buccino G, Solodkin A. Brain repair after stroke—a novel neurological model. *Nat Rev Neurol.* (2013) 9:698–707.
2. Stinear, C.M., Byblow, W.D., Ackerley, S.J., Smith, M.-C., Borges, V.M. and Barber, P.A. (2017), PREP2: A biomarker-based algorithm for predicting upper limb function after stroke. *Ann Clin Transl Neurol.* 4: 811-820.
3. Goedert KM, Chen P, Foundas AL, Barrett AM. Frontal lesions predict response to prism adaptation treatment in spatial neglect: A randomised controlled study. *Neuropsychol Rehabil.* 2020 Jan;30(1):32-53.

Biography

Lorie Gage Richards is an Occupational Therapist with a PhD in Experimental Psychology. She has been involved in stroke rehabilitation trials for over 27 years, particularly in clinical trials of restorative interventions for hemiparesis and now for spatial neglect. She is currently the Chair of Occupational and Recreational Therapies at the University of Utah. She has been an occupational therapy

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faculty and rehabilitation researcher previously at the University of Kansas Medical Center, the University of Florida, and the Malcom Randall VA Medical Center. She was also the Editor-in-Chief of the American Journal of Occupational Therapy and currently is co-editor of the intervention subsection of the journal Stroke. Her current research centers on testing interventions in these areas, especially interventions that increase the neuroplasticity of the brain, and in developing predictors of recovery and response to therapies for hemiparesis and spatial neglect.

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Thrombin preconditioning improves the therapeutic efficacy of mesenchymal stem cells in severe intraventricular hemorrhage induced neonatal rats

So Yoon Ahn

Sungkyunkwan University School of Medicine, South Korea

Severe intraventricular hemorrhage (IVH) remains a major cause of high mortality and morbidity in extremely preterm infants. Mesenchymal stem cell (MSC) transplantation is a possible therapeutic option, and development of therapeutics with enhanced efficacy is necessary. This study investigated whether thrombin preconditioning improves the therapeutic efficacy of human Wharton's jelly-derived MSC transplantation for severe neonatal IVH, using a rat model. Severe neonatal IVH was induced by injecting 150 μ L blood into each lateral ventricle on postnatal day (P) 4 in Sprague-Dawley rats. After 2 days (P6), naïve MSCs or thrombin-preconditioned MSCs ($1 \times 10^5/10 \mu$ L) were transplanted intraventricularly. After behavioral tests, brain tissues and cerebrospinal fluid of P35 rats were obtained for histological and biochemical analyses, respectively. Thrombin-preconditioned MSC transplantation significantly reduced IVH-induced ventricular dilatation on in vivo magnetic resonance imaging, which was coincident with attenuations of reactive gliosis, cell death, and the number of activated microglia and levels of inflammatory cytokines after IVH induction, compared to naïve MSC transplantation. In the behavioral tests, the sensorimotor and memory functions significantly improved after transplantation of thrombin-preconditioned MSCs, compared to naïve MSCs. Overall, thrombin preconditioning significantly improves the therapeutic potential and more effectively attenuates brain injury, including progressive ventricular dilatation, gliosis, cell death, inflammation, and neurobehavioral functional impairment, in newborn rats with induced severe IVH than does naïve MSC transplantation.

Recent Publications

1. So Yoon Ahn, et al. Intratracheal transplantation of mesenchymal stem cells attenuates hyperoxia-induced microbial dysbiosis in the lungs, brain, and gut in newborn rats *International Journal of Molecular Sciences*, 2022, 23 (12), 6601.
2. Ahn, S.Y.; Sung, D.K.; Chang, Y.S.; Sung, S.I.; Kim, Y.E.; Kim, H.-J.; Lee, S.M.; Park, W.S. BDNF-Overexpressing engineered mesenchymal stem cells enhances their therapeutic efficacy against severe neonatal hypoxic ischemic brain injury *International Journal of Molecular Sciences*, 2021, 22 (21), 11395.
3. So Yoon Ahn, Hyesoo Jie, Won-Beom Jung, Ji-Hyun Jeong, Sukjin Ko, Geun Ho Im, Won Soon Park, Jung Hee Lee, Yun Sil Chang, Seungsoo Chung. Stem cell restores thalamocortical plasticity to rescue cognitive deficit in neonatal intraventricular hemorrhage *Experimental Neurology*, Vol. 342, August 2021, 113736, ISSN 0014-4886.

Biography

So Yoon Ahn is currently working as a Clinical Associate Professor at Sungkyunkwan University School of Medicine, South Korea. She has an incredible experience in various fields of medicine. She has bagged various awards including the Academic Award, Korean Society of Perinatology (2019), Best Research Award, Pediatric Academic Societies and Asian Society for Pediatric Research Joint Meeting (2014) and more.

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The role of Mindfulness in reducing the risk of Neurological Disorders

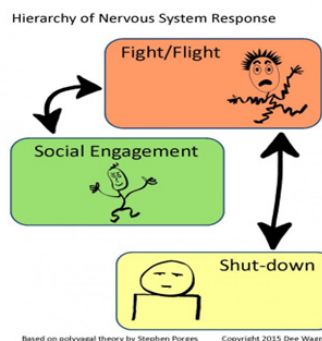
Michael Kojo Onaolapo

University of Ilorin Teaching Hospital, Nigeria

Statement of problem: Exposure to adverse experiences during the growth and development of an individual has a great potential to damage an individual's mental functioning. Example is exposure to violence. This factor has the potential to reduce the quality of life of an individual and in addition to the psychological toll, a toxic stress situation may effect in the body through increased allostatic load, the physiologic burden of such stress that may manifest as neuroanatomical changes, increased levels of inflammation, and dysfunction of the hypothalamic-pituitary-adrenal axis. With these changes effected, the quality of life is reduced and the individual is left with a struggling mental health.

Methodology and theoretical orientation: More recent findings have been able to prove that mindfulness and polyvagal theories might be useful in saving the quality of our health and improve the health of our mind. Polyvagal theories founded by Stephen Porges are based on the functionality of the Vagus nerve. He called it our social engagement system. The ventral branch of the vagus nerve controls the happy playful feeling we have but the other branch controls fight and flight, and the shutting down process of the body. The ventral vagal nerve affects the middle ear (filters out background noises to make it easier to hear the human voice, affects facial muscles and thus the ability to make communicative facial expressions, affects the larynx and thus vocal tone and vocal patterning-helping humans create sounds that soothe one another).

Conclusion and Significance: Since mindfulness, Yoga and other forms of art therapy can tap into the vagal power; it should be considered a way to improve the quality of our minds and life as a whole. An example of its application is the use of Yoga and Tai chi in the management of a patient with Parkinson's disease.



Recent Publications

1. Mindfulness-based movement; a polyvagal perspective. (Dec. 2016).
2. The science behind mindfulness (from a polyvagal junkie).
3. The role of mindfulness in Reducing the Adverse Effects of Childhood Stress and Trauma.

Biography

Michael Kojo Onaolapo is a student at the university of Ilorin, Nigeria and is currently an intern in the clinical psychology of the school's teaching hospital. Mike is a curious and passionate individual who reads and often writes about mental health and well-being. He has a growing desire to improve mental health, wellbeing and management in Africa. His openness to learning drove him to find his paths in the world of psychology, by making researches on mindfulness and how well psychotherapy can help reduce the alarming rate of mental illnesses He made this research after months of learning about ways to improve mental health in research, learning, and observation in the hospital. The foundation is based on the use of mindfulness and other art therapy to reduce the risk of mental illness in Africa.

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Sessions

Session on: Neurogenetics | Neurochemistry

Session Chair

Joseph Nicolosi Jr
The Breakthrough Clinic | USA

Session Introduction

Title: **Increased Telomerase improves motor function and alpha-synuclein pathology in a transgenic mouse model of Parkinson's disease associated with enhanced autophagy**

Gabriele Saretzki | Newcastle University | UK

Title: **Pathogenesis of Epilepsy and Mental diseases in the context of neurochemical theories**

Alexander Kharibegashvili | Telavi State University | Georgia

Title: **Valproic acid neuroprotective in mouse models of Parkinson's disease**

Amos Gelbard | Independent Researcher | Israel

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Increased telomerase improves motor function and alpha-synuclein pathology in a transgenic mouse model of Parkinson's disease associated with enhanced autophagy

G Saretzki, T Wan
Newcastle University, UK

Protective effects of the telomerase protein TERT have been shown in neurons and brain. We previously demonstrated that TERT protein can accumulate in mitochondria of Alzheimer's disease (AD) brains and protect from pathological tau in primary mouse neurons. This prompted us to employ telomerase activators in order to boost telomerase expression in a mouse model of Parkinson's disease (PD) overexpressing human wild type α -synuclein. Our aim was to test whether increased Tert expression levels were able to ameliorate PD symptoms and to activate protein degradation.

We found increased Tert expression in brain for both activators which correlated with a substantial improvement of motor functions such as gait and motor coordination while telomere length in the analysed region was not changed. Interestingly, only one activator (TA-65) resulted in a decrease of reactive oxygen species from brain mitochondria. Importantly, we demonstrate that total, phosphorylated and aggregated α -synuclein were significantly decreased in the hippocampus and neocortex of activator-treated mice corresponding to enhanced markers of autophagy suggesting an improved degradation of toxic α -synuclein. We conclude that increased Tert expression caused by telomerase activators is associated with decreased α -synuclein protein levels either by activating autophagy or by preventing or delaying degradation mechanisms which are impaired during disease progression. This encouraging preclinical data could be translated into novel therapeutic options for neurodegenerative disorders such as PD.

Recent Publications

1. Tengfei Wan, Emma J. Weir, Mary Johnson, Viktor I. Korolchuk, Gabriele C. Saretzki, Increased telomerase improves motor function and alpha-synuclein pathology in a transgenic mouse model of Parkinson's disease associated with enhanced autophagy, *Progress in Neurobiology*, Volume 199, 2021, 101953, ISSN 0301-0082,
2. Martin-Ruiz C, Williams-Gray CH, Yamall AJ, Boucher JJ, Lawson RA, Wijeyekoon RS, Barker RA, Kolenda C, Parker C, Burn DJ, Von Zglinicki T, Saretzki G. Senescence and Inflammatory Markers for Predicting Clinical Progression in Parkinson's Disease: The ICICLE-PD Study. *J J Parkinsons Dis.* 2020;10(1):193-206.
3. Martens A, Schmid B, Akintola O, Saretzki G. Telomerase Does Not Improve DNA Repair in Mitochondria upon Stress but Increases MnSOD Protein under Serum-Free Conditions. *International Journal of Molecular Sciences.* 2020; 21(1):27.

Biography

G Saretzki was born in Berlin, graduated from Sankt Petersburg (Russia) University 1982 and did her PhD at the Department of Genetics at the Humboldt-University Berlin (Germany) in 1990. Since 1990 she was involved in ageing research and worked on telomeres, telomerase, oxidative stress, DNA damage and cellular senescence. Since 2001 she worked at Newcastle University (UK) where she became a lecturer in ageing research in 2002. In particular, her research interests were functions of telomerase in cancer and stem cells as well as non-canonical functions of the telomerase protein TERT in mitochondria. She extended this work to non-canonical functions of TERT in brain with an interest in neurodegenerative diseases. She is now retired but still a visiting lecturer at Newcastle University. She published around 105 papers and has an H-index of 49.

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Pathogenesis of Epilepsy and mental diseases in the context of neurochemical theories

Alexander Kharibegashvili
Telavi State University, Georgia

In the article, in light of the hypothesis about the pathogenesis of epilepsy the author considers certain clinical manifestations of epilepsy, touches upon the neurochemistry of behaviour, as well as neurotransmitter hypothesis of schizophrenia. According to the hypothesis, in epileptic patients, epileptogenic substances are permanently accumulating in the brain, which in the course of epileptic activity in the brain undergo metabolic changes requiring their removal from the organism. When the concentration of epileptogenic substances in the brain reaches a threshold value, they cause a seizure, and in lower concentrations, they cause epileptic activity typical for the interictal period. In the context of this hypothesis, there are discussed the clinical signs of epilepsy such as forced normalization, reinforcement epilepsy activity during the sleep deprivation and one of the paradoxical effect of antiepileptic drugs such as phenomenon when antiepileptic drugs prescribed cause an improvement of the electroencephalographic image but the clinical deterioration and increasing frequency of seizures, and the change of antiepileptic drugs give us the opposite results, improvement of the clinical picture and the deterioration of the electroencephalographic image. The author suggests names for various types of dissociation between the clinical and electroencephalographic pictures of epilepsy. The mental manifestations of epilepsy and mental illness are considered. The modern principles of epilepsy and mental diseases treatment are discussed. Forced normalization is considered as one of the manifestations of epilepsy aggravation and “clinical-electroencephalographic dissociation”. Biological antagonism of schizophrenia and epilepsy, the significance of the blood-brain barrier are considered. In addition to the antiepileptic and antipsychotic system of the brain, the concepts of the borderline and extracerebral antiepileptic and antipsychotic systems are proposed, where the blood-brain barrier is presented as the borderline antiepileptic and antipsychotic system.

Recent Publications

1. Kaculini C M, Tate-Looney A J, Seifi A (March 17, 2021) The History of Epilepsy: From Ancient Mystery to Modern Misconception. *Cureus* 13(3): e13953. DOI 10.7759-cureus.13953
2. Alexander Kharibegashvili, Neurochemical Theory of Epilepsy Pathogenesis in It's Neurological and Mental Manifestations, *American Journal of Psychiatry and Neuroscience*. Volume 8, Issue 2, June 2020 , pp. 33-39. doi: 10.11648/j.ajpn.20200802.13
3. Choudhury A., Sahu T. Et al., Neurochemicals, Behaviours and Psychiatric Perspectives of Neurological Diseases *Neuropsychiatry (London)* (2018)8(1) P 396-424.

Biography

Alexander Kharibegashvili graduated from Tbilisi State Medical University. He completed his clinical residency in epilepsy at the Institute of Clinical and Experimental Neurology of Tbilisi and an internship in electromyography at the Second Moscow State Medical Institute. He currently works in the Telavi Regional Hospital as a neurologist.

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Valproic acid neuroprotective in mouse models of Parkinson's disease

Amos Gelbard
Independent Researcher, Israel

Valproic acid, in several studies done on animal models of Parkinson's disease, show excellent neuroprotection against Parkinson's Disease-like enhancers. The toxin these mice got is usually rotenone but there were other models examined as well. In all the few studies done to mimic Parkinson's Disease treating it with VPA showed great results. It showed to counter the loss of dopaminergic neurons in the substantia nigra seen in Parkinson's disease. And to alter or dis-alter several other markers normally hurt by the toxin. We will discuss several of these studies.

Recent Publications

1. Baumgart DC, Sandborn WJ (2012) 'Crohn's Disease'. The Lancet 380: 1590- 1605.
2. Ponziani FR, Cazzato IA, Danese S, Fagioli S, Gionchetti P, et al. (2012) 'Folate in gastrointestinal health and disease'. Division of Internal Medicine and Gastroenterology, School of Medicine, Catholic University of the Sacred Heart, Agostino Gemelli Hospital, Rome, Italy.
3. Hoffbrand AV, Stewart JS, Booth CC, Mollin DL (1968) 'Folate deficiency in Crohn's disease: Incidence, pathogenesis and treatment'.

Biography

Amos Gelbard is an independent researcher studying several diseases and how to find ways to combat them. Besides Valproic Acid and Parkinson's disease, he already identified cancer as a Zinc deficiency (see article called "Zinc in cancer therapy revisited") and is currently working on an essay suggesting dementia as caused by glucose deficiency. He uses current literature and studies already made to reach new conclusions and explain them.

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