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2026

JUNE

Peers Alley Media
701 West Georgia Street Suite 1500
Vancouver, V7Y 1C6, Canada

VIRTUAL MEETING

JOINT EVENT

NEUROLOGY AND NEUROLOGICAL DISORDERS

&

ADVANCES IN MENTAL HEALTH AND PSYCHIATRY

SCIENTIFIC PROGRAM

SCIENTIFIC PROGRAM

DAY 01
MONDAY

JUNE 22, 2026

BST (British Summer Time)

07:00-07:05	**Inaugural Ceremony**

Sessions: Neurology | Neurosurgery | Neuroscience | Alzheimer's Disease and Dementia | Parkinson's Disease | Epilepsy | Sleep Disorders | Central Nervous System | Neurological Disorders | Mental Health | Autism | Addiction and Addiction Medicine | Clinical Psychology | Stress, Anxiety and Depression | Pain Medicine

Distinguished Speaker Talks

07:05-07:25	Title: A Constructivist and Sociocultural Framework for Metalinguistic Development: Lessons from Children, Adolescents, and Adults **Maria Antonietta PINTO,** *University of Rome "La Sapienza", Italy*
07:25-07:45	Title: Chemokine Receptor CCR5 is a Novel Target for Repair of Traumatic Brain Injuries **Esther Shohami,** *The Hebrew University of Jerusalem, Israel*
07:45-08:05	Title: Effectiveness of Functional Analytic Psychotherapy and Future Directions **Manuel Ricardo Nazareno Tarraf,** *Universidad Nacional de Mar del Plata, Argentina*
08:05-08:25	Title: The Role of Sphingolipid Metabolism and Neuron Death in Ischemic Stroke: A New Perspective from Bioinformatics **Sen Hu,** *Zhengzhou University People's Hospital, China*
08:25-08:45	Title: My Present Vision of the Core of Medicine Based on the Message of a Painting and a Ship Travel, Made Both on the XVI Century **José Manuel Domingues Poças,** *Consulped - Offices of Pediatrics and Family, Portugal*

08:45-09:05	Title: Artificial Light at Night (ALAN), and Neurological Disorders **Nubi Leon Martinez,** *Universidad Politecnica de Madrid, Spain*
09:05-09:25	Title: The Research Progress of Cannabidiol in Delaying Aging and Treating Alzheimer's Disease **Yanying Liu,** *Qingdao Huanghai University, China*
09:25-09:45	Title: Comparative Efficacy of Three-Dimensional Transabdominal and Transvaginal Sonography for Fetal Brain Fissure Assessment **Chatuporn Duangkum,** *Khon Kaen University, Thailand*
09:45-09:55 E-Poster	Title: Spleen-Directed Focused Ultrasound Alleviates Colitis-Associated Neuroinflammation **Feng-Yi Yang,** *National Yang Ming Chiao Tung University, Taiwan*
09:55-10:15	Title: Integrating EMDR in the Multidimensional Management of PTSD and Cognitive Dysfunctions in Post-COVID-19 Syndrome: A Neuropsychological Perspective **Concetta Mezzatest,** *Psychologist, Italy*
10:15-10:35 Pre-Recording	Title: Cross-Regional Barriers to Achieving Desired Physical Activity in University Students: A Multicentre Study in Europe and the Americas with Policy Implications **Luis Moral-Moreno,** *Centro de Enseñanza Superior Don Bosco, Spain*
REFRESHMENT BREAK 10:35-10:50	
10:50-11:10	Title: Enhancing Mental Health with Artificial Intelligence: Progress, Pitfalls, and Promises **Vimala Veeraraghavan,** *Apeejay Stya University, India*
11:10-11:30	Title: Effect of Trehalose on Autophagy Induction and Genes Expression in Young and Old Mice with Genetic Model of Diabetes **Tatiana A. Korolenko,** *Institute of Neurochemistry and Medicine, Russia*

11:30-11:50	Title: miR-146A and miR-146B Promoter Methylation and Common Sequence Variations are Not Likely to be Involved in Autism Spectrum Disorder **Maha Mahmoud Ahmed Kobesiy,** *National Research Centre, Egypt*
11:50-12:10 Pre-Recording	Title: Neuropathic Pain: A Journey Through Mechanistic Discoveries and Therapeutic Horizons **Sonali Manwatkar,** *Vishwakarma University, India*
12:10-12:30	Title: Presenting a Correlational Model of Neurological Functions with Mental Disorders Through Mediation of Alexithymia in Addicts **Alireza Homayouni,** *Islamic Azad University, Iran*
12:30-12:50	Title: Blooming of a Multidisciplinary Third Wave Positive Psychology in L2WTC **Elnaz Oladrostam,** *Shahid Beheshti University, Iran*
12:50-13:10	Title: Yoga Asanas Posture Detection and Correction with Live Stream Data Using a Mobile Application **G. Rathi,** *Sri Ramakrishna Engineering College, India*
13:10-13:30 Pre-Recording	Title: Philosophy in the Birth of Physiology: Spinoza and Johannes Peter Müller on Hallucinations **Filip Adolf Buyse,** *KVCV, Belgium*
LUNCH BREAK 13:30-14:00	
14:00-14:20	Title: The 3-Second NeuroShift™ and the Dopamine Reset Method™: Rewiring Automatic Patterns to Reclaim Choice, Restore Resilience, and Redefine What's Possible **Edie Raether,** *NeuroShifts, LLC, USA*
14:20-14:40	Title: Diagnostic CNS Tumor Challenges in the Molecular Age **Michael Punsoni,** *Brown University, USA*
14:40-15:00	Title: Bridging the Gulf Between Clinical Work and Neuroscience Findings **Janet Lee Bachant,** *Psychoanalytic Institutes, USA*

15:00-15:20	Title: A Micronutrient Mixture with Probiotics, Collagen Peptides, Omega 3, Cannabidiol, and Diet may Reduce the Risk of Development and Progression of Post-Traumatic Stress Disorder (PTSD), and Improve its Treatment
	Kedar N Prasad, *University of Lowa, USA*
15:20-15:40	Title: Human Neural Stem Cells for Traumatic Brain Injury: Cross-Species Evidence of Circuit Integration and Functional Recovery from Rodents to Non-Human Primates
	Brian J Cummings, *University of California, USA*
15:40-16:00	Title: A Link Between Circadian Disruption and Diseases
	Xiaoyue Pan, *NYU Grossman Long Island School of Medicine, USA*
16:00-16:10 E-Poster	Title: Topological Analysis of Alzheimer's Progression with Persistence Images
	Jayanth Kande, *Southern University and A&M College, USA*
REFRESHMENT BREAK 16:10-16:20	
16:20-16:40	Title: Anatomically Interpretable Domain Adaptation for Alzheimer's Disease Diagnosis in 3D MRI
	Alejandro Patiño Bedoya, *Universidad Nacional de Colombia, Colombia*
16:40-17:00	Title: Promotion of Alzheimer's Disease-Like Tauopathy by eCIRP
	Max Brenner, *The Feinstein Institutes for Medical Research, USA*
17:00-17:20	Title: From Phantom to Practice: Stimulus Transfer in Theory and Virtuality
	Armin Grasnick, *IU International University of Applied Sciences, Germany*

17:20-17:30 E-Poster	Title: Through the Borders of “Normality”: The Construction of Mental Illness and the Work of the Psychologist **Bianca de Magalhães Athayde,** *Federal University of Bahia (UFBA), Brazil*
NETWORKING	
END OF DAY 1	

SCIENTIFIC PROGRAM

DAY 02
TUESDAY

JUNE 23, 2026

BST (British Summer Time)

07:00-07:05	**Introduction**

Sessions: Neurology | Neurosurgery | Neuroscience | Alzheimer's Disease and Dementia | Parkinson's Disease | Epilepsy | Sleep Disorders | Central Nervous System | Neurological Disorders | Mental Health | Autism | Addiction and Addiction Medicine | Clinical Psychology | Stress, Anxiety and Depression | Pain Medicine

Distinguished Speaker Talks

07:05-07:25	Title: Playing to Grow: How a Serious Game Strengthens Teachers' Professional Well-Being **Valeria Cavioni,** *Universitas Mercatorum, Italy*
07:25-07:45	Title: Transdiagnostic Eye-Tracking Biomarkers of Inattention Across Psychiatric Disorders: A Systematic Review **Anahita Khorrami Banraki,** *Institute for Cognitive Science Studies, Iran*
07:45-08:05	Title: Beyond the Surface: Deciphering CNS Pathologies through Epigenetic Liquid Biopsies of Brain Cell Death **Asael Lubotzky,** *University of Jerusalem, Israel*
08:05-08:25	Title: Long-Term Pharmaco-Surgical Management and Review of Recurrent Atypical Spreading Long Buccal and Lingual Nerve Trigeminal Neuralgia **Pushpa Kumari,** *Classified Specialist Oral & Maxillofacial Surgery, Indian Navy, India*

08:25-08:45	Title: Features of Care Facilities for People with Cognitive Impairments in Russia **Yulia Posvyatenko,** *Moscow State University of Civil Engineering (National Research University), Russia* **Bruno V.V,** *Institute of Sociology of the Federal Center of Theoretical and Applied Sociology of the Russian Academy of Sciences; Moscow State University of Civil Engineering (National Research University), Russia*
08:45-09:05	Title: A Review of the Current use of Humanities and the Arts to Address Mental Illness in the Caribbean with Recommendations for the Future **Rachael E Williams,** *Data for Development and Management, Trinidad*
09:05-09:25	Title: Reducing Anxiety and Improving MRI Experience in Pediatric Patients: Clinical Perspectives and Audiovisual Support Strategies **Seçil Oktay,** *Aydın City Hospital, Türkiye*
09:25-09:35 E-Poster	Title: A Rare Presentation of Wernicke's Encephalopathy with Internuclear Opthalmoplegia in Primi Gravida **Manimozhi.T,** *Sree Balaji Medical College and Hospital, India*
09:35-09:55	Title: Neuroprotective Effect of Low-Intensity Ultrasound Against Diabetic Neuropathy **Serap OKTAY,** *Adnan Menderes University, Türkiye*
09:55-10:15	Title: Disaccharide Trehalose Effects in C57Bl/6 Mice with Obesity Induced by a High Carbohydrate-Fat Diet and Behavior **Tatiana Korolenko,** *Novosibirsk Medical University, Russia*
10:15-10:35 Pre-Recording	Title: On Quantum-Holographic Framework of Psychosomatics & Spirituality **Dejan Raković,** *University of Belgrade, Serbia*
REFRESHMENT BREAK 10:35-10:50	

10:50-11:10	Title: RAB3GAP1 Deficiency in Warburg Micro Syndrome: Autophagy Defects, Emerging Trafficking Involvement, and Enigmatic Mechanisms of Cortical Maldevelopment **Adeline Orts-Del'Immagine,** *Université Paris Cité, France*
11:10-11:30	Title: Yoga-Based Modulation of Autonomic Nervous System in Post-COVID Anxiety: An Integrative Therapeutic Approach **Olena Bakai,** *International Yoga Therapy Center SENSE, Ukraine*
11:30-11:50	Title: A Retrospective Five-Year Autopsy-Based Study of Suicide in Punjab Province of Pakistan **Arif Rasheed Malik,** *Forensic Medicine & Toxicology, Pakistan*
11:50-12:00 E-Poster	Title: Bad Governance and Corruption as Preludes to Insecurity, Economic Crises, National Instability and Educational Failure: Implication for Psychology of Human Development **Eric Chima NDUKWU,** *University of Nigeria, Nigeria*
12:00-12:20	Title: The Quest of Remyelination in Multiple Sclerosis: Current State of The Field **Christina Argyropoulou,** *General Hospital of Nicosia, Cyprus*
12:20-12:40	Title: Changing the Neuro Future **Luiz Abel Magro Moutinho,** *University of Suffolk, England*
12:40-12:50 E-Poster	Title: Association Between Albumin-Bilirubin Index and Severity of Hepatic Encephalopathy: Evidence from a Cross-Sectional Analysis **Annysa Ayu Martina,** *Universitas Gadjah Mada, Indonesia*
12:50-13:10	Title: Factors Contributing to Uncertainty in Self-Administered Medication Intake **Reenu Singh,** *Indian Institute of Management Mumbai, India*

13:10-13:30 Pre-Recording	Title: Systems, Methods, and Media for Predicting a Conversion Time of Mild Cognitive Impairment to Alzheimer's Disease in Patients **Mohamed Abu Sheha,** *Southeast Missouri State University, USA*
LUNCH BREAK 13:30-14:00	
14:00-14:20	Title: Collaborating with Content Area and Non-Content Area Teachers: Implictaions for Students with Disabilities **Jeffrey P. Bakken,** *Bradley University, USA*
14:20-14:40	Title: Anticonvulsant Medication Discrepancies in Paediatric Discharge Summaries for Patients Presenting with Seizures: A Two-Cycle Quality Improvement Project **Nuwanji Amarasekera,** *University Hospital Coventry and Warwickshire, UK*
14:40-15:00	Title: Practical Emotional Intelligence: Bridging Affect and Action Through the R.E.A.L. Framework **Stevie Amos Burke,** *Clean Community Inc.(CCI), USA*
15:00-15:20 Pre-Recording	Title: Disparities in Neurological Management for Parkinson's Disease in Latvia: Pilot Study Evidence **Paula Abola,** *University of Jamestown, USA*
15:20-15:40	Title: Understanding Pediatric Traumatic Brain Injury Across the Childhood Lifespan **Juliet Haarbauer-Krupa,** *Emory University School of Medicine, USA*
15:40-16:00	Title: Structural and Functional Mechanisms of Kainatetype Glutamate Receptors **Nami Tajima,** *Case Western Reserve University School of Medicine, USA*
16:00-16:10 E-Poster	Title: Controlled Local Hyperthermia and Magnetic Hiperthermia for Therapy of Cancer Diseases **Zviad Kovziridze,** *Georgian Technical University, Georgia*
REFRESHMENT BREAK 16:10-16:20	

16:20-16:40	Title: Pharmacokinetics and Pharmacodynamics of Perfluorooctane Sulfonate (PFOS) and its Role in the Development and Progression of Prostate, Ovarian and Breast Cancers
	Victor Chukwubuike Nwankwo, *Texas A&M University, USA*
16:40-17:00	Title: Targeted Treatment of Gliomas Using Boron-Containing Dyes Specific to Beta-Amyloid
	Vassiliy Tsytsarev, *Johns Hopkins University, USA*
17:00-17:20	Title: Redesigning a Dialogue Between Phenomenology, Neurology and Cognitive Sciences, Starting from the view of the Historian of Philosophy
	Bettina Bergo, *Université de Montréal, Canada*
NETWORKING	
END OF DAY 2	

SCIENTIFIC PROGRAM

DAY 03
WEDNESDAY

JUNE 24, 2026

BST (British Summer Time)

07:00-07:05	**Introduction**

Sessions: Neurology | Neurosurgery | Neuroscience | Alzheimer's Disease and Dementia | Parkinson's Disease | Epilepsy | Sleep Disorders | Central Nervous System | Neurological Disorders | Mental Health | Autism | Addiction and Addiction Medicine | Clinical Psychology | Stress, Anxiety and Depression | Pain Medicine

Distinguished Speaker Talks	
07:05-07:25	Title: Atypical Manifestation of Pituitary Crooke's Cell Tumour: A Case Report and Literature Review **Abdullah A A Alsayedomar,** *Jaber Al-Ahmad Al-Sabah Hospital, Kuwait*
07:25-07:45 Pre-Recording	Title: Shadow Perception, Embodiment and Nature-Based Psychotherapy: An Integrative Ecopsychological Model **Maayan Green,** *Independent Researcher, Israel*
07:45-08:05	Title: Drug Repurposing through Altered Cell–Cell Communication Networks in Alzheimer's Disease **Seyedeh Sedigheh Abedini,** *UNSW Sydney, Australia*
08:05-08:25	Title: Resilience as a Protective Mediator of Quality of Life in Cancer Patients in Healthcare Settings **Cristina Liviana Caldiroli,** *eCampus University, Italy*
08:25-08:45	Title: Progress in Suture-Free Nerve Repair: Integrating Novel Bioadhesives with Electrical Stimulation for Enhanced Regeneration **Peyman Esmaeili Fard Barzegar,** *Western Sydney University, Australia*

08:45-09:05	Title: Material Support Alone is Not Enough: Personal Vision and Intrinsic Motivation as Mediators of Adolescent Mental Health Outcomes in Zimbabwean Orphanages **Munashe Mhaka,** *Mighty Me Motivations, Harare, Zimbabwe*
09:05-09:25	Title: Evaluating Stress in Healthy Participants with Single-Channel EEG Features and HRV Based on Two Studies and Meta-Analysis **Neta Maimon,** *Tel Aviv University, Israel*
09:25-09:45	Title: The Cycle of Trauma: Unreconciled Prior Victimization and the Victim-Offender Overlap Among Prisoners in South India **Beulah Shekhar,** *Parul University, India*
09:45-10:05	Title: Characterization of Fission and Fusion Mitochondrial Dynamics in HD Fibroblasts According to Patient's Severity Status **Uri Sprecher,** *Tel Aviv University, Israel*
REFRESHMENT BREAK 10:05-10:20	
10:20-10:40	Title: Investigating the Effectiveness of Virtual Reality as an Educational Tool for Children with Autism: A Technical Analysis Review **Aisha Mohammed Ahmed Al-Zaabi,** *Sohar University, Oman*
10:40-10:50 E-Poster	Title: Magnetic Field–Enhanced Docosahexaenoic Acid Delivery for Acetylcholine Restoration in Alzheimer's Disease: An in Silico Study **Madhuleena Dasgupta,** *Liverpool Hope University, UK*
10:50-11:10	Title: Does Sucrose have a Beneficial Effect in the Treatment of PTSD? **Imola PLANGÁR,** *University of Pécs Medical School, Hungary*
11:10-11:20 E-Poster	Title: Reeling in Miller Fisher Syndrome: A Rare Catch in Trinidad and Tobago **Ijaz Ogeer,** *San Fernando General Hospital, Trinidad*

11:20-11:40	Title: Cognitive Assessment in Parkinson's Disease: A Cross-Sectional Comparison of Standard Clinical Scales and Visuospatial Cognitive Tests **Aleksejs Ševčenko,** *Riga Stradiņš University, Latvia*
11:40-12:00	Title: From Elixir to Enemy: The Dark Side of Mercury **Sharon Pradeeptha,** *Christian Medical College, India*
12:00-12:20 Pre-Recording	Title: tDCS may Enhance Post-Stroke Neuroplasticity Via Real-Time Motor Imagery BCI **Fernando Bermudes Cabral,** *Federal University of Espírito Santo (UFES), Brazil*
12:20-12:40	Title: Outcomes of Oberlin Transfer in Elderly Patients: A Case Series **Evelina Llorian,** *Federal University of Rio de Janeiro State (UNIRIO), Brazil*
12:40-13:00	Title: Microbiome and Neuropsychiatric Disorders **Tyler Halverson,** *University of Toronto, Canada*
LUNCH BREAK 13:00-13:30	
13:30-13:50	Title: Analysis of EEG Rhythms During Motor Imagery for Standing and Sitting Tasks **Nayid Triana-Guzman,** *Universidad Nacional Abierta y a Distancia (UNAD), Colombia*
13:50-14:10	Title: Multi-Modal AI-Powered Prediction of Ischemic Stroke Etiologies for Recurrent Stroke Prevention **William H. Lee,** *Yale University School of Medicine, USA*
14:10-14:30	Title: Unraveling Mechanisms of Muscle Atrophy in Limb-Girdle Muscular Dystrophy R1 (LGMDR1) **Sukanya Banerjee,** *Duke University School of Medicine, USA*
14:30-14:50	Title: Using Video Modeling as an Evidence-Based Practice to Teach Leisure Skills to Minor Children with Autism Spectrum Disorder in the United States **Lubna Alzayyat,** *Duquesne University, USA*

14:50-15:10	Title: Brain-Specific MicroRNA-Mediated Regulation of Metabolic Homeostasis in Drosophila Melanogaster
	Pushpa Verma, *Harvard Medical School, USA*
REFRESHMENT BREAK 15:10-15:20	
15:20-15:40	Title: Concurrent Validity of a Head Mounted Display Augmented Reality Device with Accelerometer for Executive Function Testing in Healthy Young Versus Older Adults
	James Buskirk, *Rosalind Franklin University, USA*
15:40-16:00	Title: A Multi-Modal Deep Learning Model for Glioma Recurrence Prediction
	Ece Uzun, *Brown University, Providence, USA*
16:00-16:20	Title: Neurophysiological Signatures of Intentional Brain State and Hormonal Modulation: A QEEG Case Report
	Yana Edelshtein, *MetaMind Consulting, UK*
NETWORKING	
END OF DAY 3	

PEERS ALLEY MEDIA

DAY 01

VIRTUAL MEETING

JOINT EVENT

NEUROLOGY AND NEUROLOGICAL DISORDERS

&

ADVANCES IN MENTAL HEALTH AND PSYCHIATRY

JUNE 22-24, 2026

SPEAKER TALKS

A Constructivist and Sociocultural Framework for Metalinguistic Development: Lessons from Children, Adolescents, and Adults

Maria Antonietta Pinto

University of Rome "La Sapienza", Italy

The development of metalinguistic awareness (MLA) is currently viewed as a metacognitive activity applied to language structures, thanks to the combined action of cognitive and linguistic development, greatly stimulated and supported by the schooling process. However, to date, no model of such development has attempted to cover the whole developmental span from early childhood to mature adulthood, accounting for both continuity and transformations of MLA in the lifespan, and with sufficient coverage of the various metalinguistic subdomains (for an overview, Melogno, Pinto, 2026). Since the 90s of the last century, Pinto (1995, 1999) created three age-level metalinguistic tests (MATs) for early childhood, middle childhood/preadolescence, and late adolescence/adulthood, each tailored to the cognitive and cultural characteristics of the respective phases, and at the same time connected to the others by a common conceptual construct. This construct draws on a constructivist conception of MLA, based on the active recomposing of conflicts between linguistic data, be they syntactic, lexical-semantic, phonological, pragmatic, or textual. The complexity of the conflicts posed by metalinguistic tasks increases as a function of age and education, but at all age and education levels, the appropriate response implies the *detection* of the conflict, the *analysis of the components* of the conflict, and the search for a consistent *integration* of these conflictual components. The nature of this processing clearly appears in the responses of children, adolescents, and adults when they are requested *to justify* their responses, as in the above MATs, much beyond the knowledge of a grammatical rule or linguistic convention. The similarity of the justification responses in the various languages into which the MATs have been translated and extensively used in bi/plurilingualism research supports the idea of MLA as based on the awareness of linguistic conflicts and a more or less consistent integration of these conflicts.

Presenter:
Maria Antonietta PINTO
University of Rome "La Sapienza", Italy

Chemokine Receptor CCR5 is a Novel Target for Repair of Traumatic Brain Injuries

Esther Shohami[1], Yael Friedman-Levi[1], Chen Shemesh[2], David last[3], Yael Mardor[3,4], Carmichael S.T[5], Silva A.J[6] and **Sigal Liraz-Zaltsman[2,7]**

[1]Department of Pharmacology, the Institute for Drug Research, The Hebrew University of Jerusalem, Israel
[2]The Joseph Sagol Neuroscience Center, Sheba Medical Center, Israel
[3]The advanced technology Center, Sheba Medical Center, Israel
[4]Sackler Faculty of Medicine, Tel-Aviv University, Israel
[5]Department of Neurology, David Geffen School of Medicine, UCLA, USA
[6]Departments of Neurobiology, Psychiatry and Biobehavioral Sciences, Psychology, Integrative Center for Learning and Memory and Brain Research Institute; UCLA, USA
[7]Institutes for Health and Medical Professions, Department of Sports Therapy, Ono Academic College, Israel

The shared mechanism between memory formation and brain repair opens a new therapeutic option for promoting functional recovery of patients with stroke and traumatic brain injury (TBI). Despite decades of basic research and clinical trials, there is still an urgent need to identify new molecular targets for neurorepair. Indeed, manipulations that enhance synaptic plasticity were shown to accelerate recovery of function after experimental stroke and TBI. We showed that blockade of chemokine receptor CCR5 by viral knockdown or pharmacological inhibitor, maraviroc (anti-HIV treatment) enhanced recovery of motor control and cognitive function in TBI mice.

We have recently reported that within 30 days after TBI, CCR5 receptors are differentially upregulated in CD11b+, astrocytes, and neurons. Here we show the effect of maraviroc on the neurovascular unit (NVU) after TBI. This functional unit controls Blood Brain Barrier (BBB) permeability, circulation of cerebrospinal fluid and cerebral blood flow and is damaged in most brain disorders, including TBI.

TBI mice were treated with maraviroc. Subtle BBB disruption was measured using delayed contrast MRI, immune cells population in blood and brain was assessed by FACS and expression of tight-junction molecules and efflux transporters in isolated brain micro-blood vessels by IHC.

In maraviroc-treated mice infiltrating immune cells to the cortex was reduced at 3d. Also, reduced leakage of the BBB was observed by MRI 17 and 52d post TBI. At 30d, maraviroc reduced the percent of Zonula occludens-1 (ZO-1) gaps in micro-blood vessels to near basal levels in the cortex and hippocampus.

In-conclusion, we showed that maraviroc is a multi-target drug affecting cognition, neuroinflammation and the BBB via various mechanisms. In particular, at the NVU the permeability and function of endothelial cells leading to reduced immune cells infiltration and inflammatory response. This drug is FDA approved and should therefore be considered for treatment for TBI patients.

This study was supported by a grant from the Dr. Miriam and Sheldon Adelson Foundation (AMRF)

Presenter:
Esther Shohami
The Hebrew University of Jerusalem, Israel

Effectiveness of Functional Analytic Psychotherapy and Future Directions

Manuel Tarraf[1], Gabriela López Elias[2], Savannah Stidhams[3] and **Mavis Tsai[4]**

[1]Universidad Nacional de Mar del Plata, Argentina
[2]Universidad de Belgrano, Argentina
[3]Marquette University, USA
[4]University of Washington, USA

Functional Analytic Psychotherapy (FAP) focuses on in-session interpersonal behaviors to create meaningful, lasting client change. Central to FAP is its focus on clients' in-session clinically relevant behaviors (CRBs) and the therapist's contingent natural and authentic reinforcement strengthens target behaviors while decreasing problematic ones. Despite challenges in empirical research due to FAP's idiographic focus, the available evidence supports its effectiveness in using the therapeutic relationship to facilitate meaningful and lasting change. The future of FAP holds significant promise as it continues to evolve by incorporating advances in Relational Frame Theory (RFT), building on Process-Based Therapy (PBT) principles, and integrating concepts from Interbehaviorism. In addition to innovations that enhance FAP's efficacy as a therapeutic intervention, a major future direction is extending its principles beyond the therapy setting to address global mental health challenges through the Awareness, Courage & Love (ACL) Global Project. Thus, the ongoing development of FAP carries the promise of not only elevating therapeutic impact, but creating a future where behavioral well-being resources are universally accessible.

Presenter:
Manuel Ricardo Nazareno Tarraf
Universidad Nacional de Mar del Plata, Argentina

The Role of Sphingolipid Metabolism and Neuron Death in Ischemic Stroke: A New Perspective from Bioinformatics

Sen Hu[1], Fanbiao Xu[2], Zhongcan Chen[1] and **Ge Li[1]**

[1]Henan Provincial People's Hospital, Zhengzhou University People's Hospital, China
[2]The First Affiliated Hospital of Zhengzhou University, China

Background: Ischemic stroke (IS) is a major cause of death and disability, but traditional risk factors don't fully explain its mechanisms. Neuronal death involves pathways like sphingolipid metabolism, which impacts cell survival. Ceramides are key sphingolipids involved in neuronal functions, including cell death. This study explored the link between sphingolipid metabolism and neuronal death in IS using bulk and single-cell transcriptomics.

Methods: Sphingolipid metabolism gene sets were sourced from the GeneCard database. Differential gene expression was analyzed in IS datasets from GEO, including human peripheral blood data (GSE16561) and MCAO mouse scRNA-seq data (GSE225948). Analyses included GSEA, immune infiltration with CIBERSORT, and protein-protein interaction network construction. scRNA-seq data identified key genes and characterized cellular heterogeneity, differentiation, and interactions. In vivo validation of key gene expression was conducted in MCAO rats.

Results: GSEA revealed significant changes in sphingolipid metabolism in IS patients. Immune infiltration analysis showed decreased CD8 T cells and increased monocytes and neutrophils. Enrichment of sphingolipid-related genes pointed to ceramide pathways. Protein interaction networks identified 19 key genes linked to sphingolipid metabolism and neuronal death. scRNA-seq indicated notable shifts in monocytes and neutrophils, especially in App gene expression. Pseudotime analysis suggested diverse monocyte differentiation paths. Cell communication analysis implied interactions between monocytes and B cells. In vivo, the App gene was more expressed in MCAO rats than in controls.

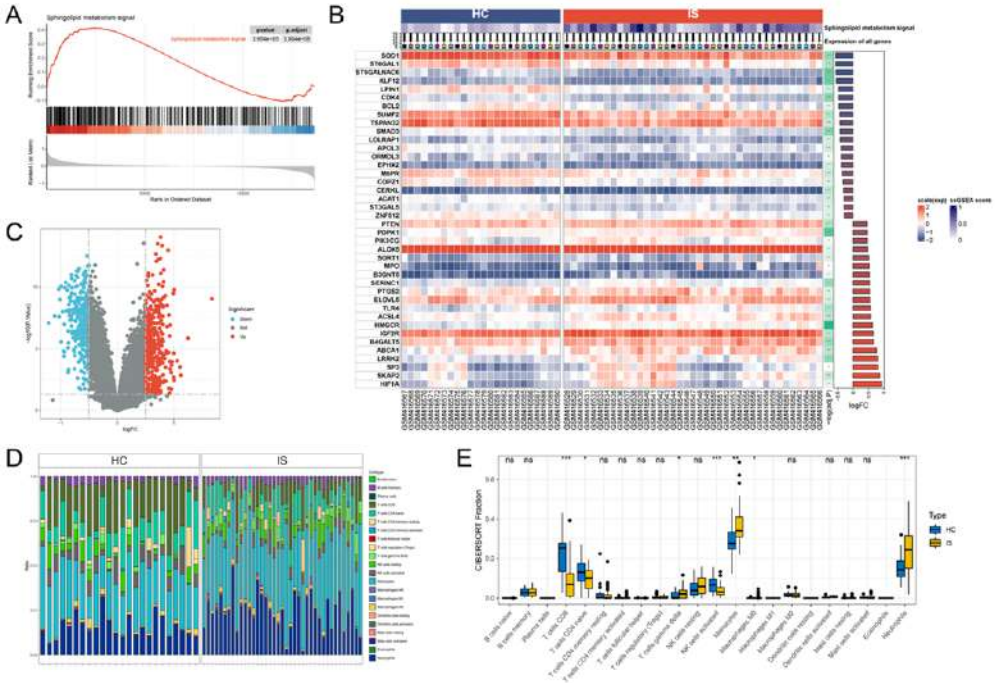


Figure 1. Sphingolipid metabolism significantly changes in stroke. (A) GSEA analysis. (B) Top 20 genes with the most significant upregulation and downregulation fold changes. (C) Differential volcano plot. (D) Relative content of 22 cell types by CIBERSORT. (E) Box plots showing inter-group differences.

Conclusion: This study offers comprehensive insights into the role of sphingolipid metabolism in ischemic stroke, highlighting the key genes and cellular mechanisms involved in neuronal death. These findings suggest that sphingolipid metabolism, particularly via the App gene, may be a potential therapeutic target for IS. Further investigation into the molecular mechanisms and cellular interactions involving sphingolipid metabolism could pave the way for novel therapeutic strategies for ischemic stroke.

Presenter:
Sen Hu
Zhengzhou University People's Hospital, China

My Present Vision of the Core of Medicine based on the Message of a Painting and a Ship Travel, Made Both on the XVI Century

José MD Poças

Consulped, Setúbal, Portugal

Modern medicine faces several important challenges, among which I highlight access to therapeutic innovation and the proper integration of technological advances into healthcare systems and clinical practice. With this as a key focus of reflection, I have published several texts and books, both in Portugal and abroad, whose ideas will serve as the basis for this presentation, taking as an example my personal perspective on the possible interpretation of Michelangelo's painting "The Creation of Adam" in the Sistine Chapel of the Vatican and the work of Luís de Almeida in Japan.

Presenter:
José Manuel Domingues Poças
Consulped, Setúbal, Portugal

Artificial Light at Night (ALAN) And Neurological Disorders

Nubi Leon Martinez

Universidad Politecnica de Madrid, Spain
Academy of Neuroscience for Architecture, USA
Illumination Engineering Society, USA

This research explores the visual and non-visual (circadian) perception of light in humans and their brain responses in the urban spaces of two contrasted cities: Madrid and Toledo, in Spain. Lighting has been demonstrated to induce the synthesis of neurotransmitters, which can function as regulators or disruptors of our biological system, and specifically referring to ALAN (artificial light at night) might cause diseases due to the alteration in our circadian rhythms; these responses are contingent upon the technical properties of the lighting (type of incidence, intensity, colour temperature, and primarily, wavelength), as well as the time and duration of exposure. Some cities, mostly metropolises, have an excess of illumination, which has a notable impact on the night environment and, in particular, on the biology of human beings who transit and inhabit these areas. In Madrid and Toledo, measurements of both lux and light spectrum, using a luxmeter and photospectrometer, were taken to evaluate the light and wavelength incidence. In Madrid, the measurements demonstrated high light incidence along with the high emission of short-wavelength light produced by LED screens, which, at night, disrupt our circadian cycle. In Toledo, measurements indicated a much lower level of artificial light incidence. Interviews to inhabitants of both cities accompanied these lighting measurements. Along with this “in situ” research, documentary analyses about some cities' Master plans were performed. This study demonstrates how artificial light at night (ALAN) affects human circadian rhythms with consequences to our neuroendocrine and neurobehavioral systems. Furthermore, the author suggests actions to prevent damage to our organism due to lighting exposure.

Presenter:
Nubi Leon Martinez
Universidad Politecnica de Madrid, Spain

The Research Progress of Cannabidiol in Delaying Aging and Treating Alzheimer's Disease

Yanying Liu

Qingdao Huanghai University, China

Alzheimer's disease (AD) is the most common neurodegenerative disease. Its characteristics are progressive memory loss, neurodegenerative diseases, and cognitive dysfunction in patients. Although the etiology of AD is complex and there is currently no unified theory, extensive research has shown that aging is one of the risk factors for AD. Aging is an inevitable process in which organisms undergo structural degeneration and functional decline over time, with reduced adaptability and resistance, ultimately leading to death. Aging is inevitable, but delaying aging is indeed possible. There are some common features between aging and AD, such as both containing oxidative stress and chronic inflammation. Cannabidiol (CBD) is the main non-psychoactive plant cannabinoid extracted from cannabis. Recently, due to its antioxidant and anti-inflammatory properties, it may become a potential candidate for delaying aging and a valuable therapeutic tool for treating age-related neurodegenerative diseases. Here, we summarize the literature on AD, aging and CBD treatment for both AD and aging during the past years. By analyzing these published data, we try to explore the complex correlations among aging, Alzheimer's disease, and CBD treatment, elucidate the positive feedback effect between neuronal aging and Alzheimer's disease, and summarize the role and possible molecular mechanisms of CBD in preventing aging and treating AD. These data may provide new ideas on how to effectively prevent and delay aging, and develop effective treatment strategies for age-related diseases such as Alzheimer's disease.

Presenter:
Yanying Liu
Qingdao Huanghai University, China

Comparative Efficacy of Three-Dimensional Transabdominal and Transvaginal Sonography for Fetal Brain Fissure Assessment

Chatuporn Duangkum, Thanida Thanoorat and **Termtem Waidee**

Division of Maternal Fetal Medicine, Department of Obstetrics and Gynecology, Faculty of Medicine, Khon Kaen University, Thailand

Objective: This study aimed to compare the depth of the fetal deep brain sulcus between 3D transabdominal sonography (3D-TAS) and 3D transvaginal sonography (3D-TVS).

Designs: This prospective, cross-sectional study was conducted at Srinagarind Hospital between August 2024 and September 2025.

Methods: There were 108 singleton pregnant women at 24-34 weeks of gestation who underwent both 3D-TAS and 3D-TVS to measure the fetal brain fissures, including the Sylvian fissure, insular depth, and cavum septi pellucidi.

Results: The mean Sylvian fissure depths measured by 3D-TAS and 3D-TVS were 12.2 ± 2.3 mm and 12.9 ± 1.9 mm, respectively. It was significantly higher when measured by 3D-TVS, with a mean difference of 0.7 mm (95% confidence interval, CI 0.4 to 1.1), p< 0.001. The mean cavum septi pellucidi length measured by 3D-TAS and 3D-TVS was 3.9 ± 2.8 mm and 4.5 ± 2.7 mm, respectively. It was significantly higher when measured by 3D-TVS, with a mean difference of 0.7 mm (95% CI 0.1 to 1.2), p < 0.026. The mean insular depths measured by 3D-TAS and 3D-TVS were 20.7 ± 2.4 mm and 20.5 ± 2.2 mm, respectively, p = 0.429. Both 3D-TAS and 3D-TVS demonstrated good to excellent intra-rater reliability for reproducible measuring of brain fissure depth (IRR > 0.84).

Conclusion: Three-dimensional transvaginal sonography yielded significantly more accurate measurements of the Sylvian fissure and cavum septum than 3D-TAS. However, the generalized utilization should be further investigated.

Figure 1 demonstrates the anatomical brain landmarks of the coronal plane by three-dimensional sonography. The Sylvian depth (red), insular depth (white dot), CSP length (yellow), and frontal horn of the lateral ventricle (*).

Abbreviation; Corpus callosum; CC, inferior portion of cavum septum pellucidum; CSP, insula lobe; IS, interhemispheric fissure; IHF, frontal horn of the lateral ventricle; FH-LV, IN; insular depth, third ventricle; TV, Sylvian fissure; SF

Parameters	Coronal TAS (N=108)		Coronal TVS (N=108)		Mean difference* (95%CI)		P value
Sylvian fissure depth (mm)	12.2	± 2.3	12.9	± 1.9	0.7	(0.4 to 1.1)	<0.001
Insula depth (mm)	20.7	± 2.4	20.5	± 2.2	-0.2	(-0.6 to 0.3)	0.429
Cavum septi pellucidi (mm)	3.9	± 2.8	4.5	± 2.7	0.7	(0.1 to 1.2)	0.026

Table 1 Comparison of brain fissure lengths in the coronal view between three-dimensional transabdominal and transvaginal ultrasonography

The data are expressed as mean ± standard deviation for continuous data.

Abbreviation: CI; confidence interval, TAS; trans abdominal ultrasonography, TVS; trans vaginal ultrasonography.

*Adjusted by pre-pregnancy body mass index

Parameters	Coronal TAS (N=108)				Coronal TVS (N=108)			
	Intra-rater reliability		Inter-rater reliability		Intra-rater reliability		Inter-rater reliability	
	(95%CI)		(95%CI)		(95%CI)		(95%CI)	
Sylvian fissure depth (mm)	0.93	(0.90 to 0.95)	0.37	(0.27 to 0.71)	0.95	(0.92 to 0.96)	0.6	(0.21 to 0.62)
Insula depth (mm)	0.93	(0.91 to 0.95)	0.57	(0.43 to 0.89)	0.84	(0.78 to 0.89)	0.67	(0.38 to 0.92)
Cavum septi pellucidi (mm)	0.73	(0.60 to 0.83)	0.68	(0.32 to 0.92)	0.88	(0.82 to 0.92)	0.81	(0.58 to 0.95)

Table 2 Intra- and inter- rater reliability between three-dimensional transabdominal and transvaginal ultrasonography

Abbreviation: CI; confidence interval, TAS; trans abdominal ultrasonography, TVS; trans vaginal ultrasonography.

Presenter:
Chatuporn Duangkum
Khon Kaen University, Thailand

Spleen-Directed Focused Ultrasound Alleviates Colitis-Associated Neuroinflammation

Feng-Yi Yang and **Zih-Yun Pan**

Department of Biomedical Imaging and Radiological Sciences, National Yang Ming Chiao Tung University, Taiwan

Inflammatory bowel disease (IBD) is often accompanied by cognitive and emotional disturbances resulting from persistent intestinal inflammation and neuroimmune dysregulation. Given the limited efficacy and adverse effects of pharmacological interventions, non-invasive neuromodulation has gained attention as an alternative therapeutic approach. Previous research has demonstrated that the abdominal application of low-intensity pulsed ultrasound (LIPUS) can help reduce systemic inflammatory responses. This study investigated whether splenic LIPUS applied to the spleen could alleviate dextran sulfate sodium (DSS)-induced colitis and its associated neuroinflammatory responses, with a particular emphasis on the Notch signaling pathway. Male C57BL/6J mice were administered 3% DSS in drinking water for 7 days to induce colitis, and splenic LIPUS stimulation was applied daily from day 4 to 7. Disease progression was evaluated through changes in body weight, colon length, spleen weight, and histopathological assessment. Prefrontal cortex (PFC) tissues were further analyzed using transcriptomic profiling and quantitative PCR (qPCR). LIPUS treatment partially preserved epithelial integrity and reduced mucosal damage in the colon, though overall disease severity indices showed no significant improvement. Transcriptomic data revealed the differentially expressed genes in the PFC, with notable downregulation of Notch pathway components confirmed by qPCR validation. Functional enrichment analysis revealed the attenuation of pathways related to neuronal development, gliogenesis, and apoptosis, accompanied by an upregulation of oxidative phosphorylation and mitochondrial respiratory processes. Collectively, these findings suggest that splenic LIPUS mitigates DSS-induced neuroinflammation by inhibiting Notch signaling and enhancing mitochondrial function. This work supports the potential of spleen-targeted ultrasound as a non-invasive therapeutic strategy for IBD.

Presenter:
Feng-Yi Yang
National Yang Ming Chiao Tung University, Taiwan

Integrating EMDR in the Multidimensional Management of PTSD and Cognitive Dysfunctions in Post-COVID-19 Syndrome: A Neuropsychological Perspective

Concetta Mezzatesta

Psychologist, Psychotherapist, Clinical Sexologist, Traumatic Disaster Manager, EMDR Therapist, Neurocovid Specialist and Psychologist for COVID, Italy

Background: Emerging evidence highlights the significant impact of COVID-19 on mental and cognitive health, with post-traumatic stress disorder (PTSD) and cognitive impairments frequently observed in survivors. PTSD, reported in 24% of post-COVID patients in our study, is closely associated with cognitive dysfunctions, including memory deficits, impaired attention, and executive dysfunctions. Eye Movement Desensitization and Reprocessing (EMDR) therapy, a well-established intervention for PTSD, holds promise in mitigating these neuropsychological sequelae by addressing trauma- induced dysregulation and promoting neural integration.

Objective: This study aims to explore the efficacy of EMDR in alleviating PTSD symptoms and its potential impact on cognitive recovery in post-COVID-19 patients.

Methods: A cohort of 245 post-COVID-19 patients was assessed for PTSD symptoms and cognitive impairments. PTSD was identified in 24% of participants, with significant overlap observed among those exhibiting mild (33.6%) and severe (20.4%) cognitive deficits. EMDR intervention was administered in a subset of PTSD-positive patients (n=58) over eight weekly sessions. Outcome measures included changes in PTSD symptom severity (assessed via the PCL-5 scale) and cognitive performance (evaluated with MoCA and neuropsychological batteries) pre- and post-treatment.

Results: Preliminary findings demonstrate a significant reduction in PTSD symptoms following EMDR therapy (mean PCL-5 score reduction: 48%, $p<0.001$). Cognitive assessments revealed notable improvements in memory (verbal recall: +22%), attention (digit span: +18%), and executive function (Stroop test: +19%) compared to baseline. Patients with mild cognitive impairments exhibited greater recovery rates than those with severe deficits.

Conclusions: Our results highlight the potential of EMDR as a dual-action intervention for PTSD and associated cognitive impairments in post-COVID-19 patients. By addressing trauma-induced dysregulation, EMDR not only reduces PTSD symptoms but also facilitates cognitive recovery, particularly in domains critical for daily functioning. This study underscores the importance of integrating trauma- focused therapies into multidisciplinary post-COVID care, paving the way for innovative approaches to managing the long-term neuropsychological sequelae of COVID-19.

Presenter:
Concetta Mezzatesta
Psychologist, Psychotherapist, Clinical Sexologist, Traumatic Disaster Manager, EMDR Therapist, Neurocovid Specialist and Psychologist for COVID, Italy

Cross-Regional Barriers to Achieving Desired Physical Activity in University Students: A Multicentre Study in Europe and the Americas with Policy Implications

Luis Moral-Moreno

Departamento de Didáctica de la Expresión Musical, Plástica y Corporal, Centro de Enseñanza Superior Don Bosco, Spain

Background: Insufficient physical activity (PA) in university students is a modifiable determinant of mental health and wellbeing, yet barriers may differ across sociocultural and structural contexts, limiting the effectiveness and equity of PA promotion policies.

Objective: To identify multicentre patterns of barriers to achieving desired PA among university students from Europe and the Americas, examine associated factors, and derive policy-relevant recommendations for university settings.

Methods: A cross-sectional multicentre survey (N = 686) was conducted in Chile, Mexico, Spain, and Italy. Barriers were assessed using the BBAQ-21 as dichotomous items (yes/no), covering lack of time, low energy/fatigue, low willpower/motivation, fear of injury, lack of skills, lack of resources, and limited social support for physical activity. Barrier prevalence was compared by region (Europe vs. the Americas). Multivariable models examined associations with (i) the total number of perceived barriers (Poisson regression) and (ii) lack of resources (logistic regression), adjusting for sex, age, body mass index (BMI), working status, sedentary time, and estimated socioeconomic status (SES).

Results: The most prevalent barriers overall were low energy (39.6%), lack of time (37.7%), and low willpower (35.6%). Compared with Europe, students in the Americas reported higher prevalence of fear of injury (12.7% vs 4.7%), lack of skills (16.1% vs 9.7%), and lack of resources (33.7% vs 16.9%). In adjusted models, residence in the Americas showed a trend toward higher overall barrier burden (rate ratio≈1.18). For lack of resources, the Americas showed higher odds (OR≈1.87), and lower SES was associated with higher odds (OR≈1.19 per unit toward lower SES); other associations were small in magnitude.

Conclusions and implications: University PA policies should prioritize structural equity measures (low-cost access, inclusive facilities, safe environments), capability-building (skills training and supervised introductory programs), and time-enabling strategies (active-campus design and curricular flexibility). Cross-regional differences indicate that resource-focused and equity-oriented interventions are particularly urgent in the Americas.

Presenter:
Luis Moral-Moreno
Centro de Enseñanza Superior Don Bosco, Spain

Enhancing Mental Health with Artificial Intelligence: Progress, Pitfalls, and Promises

Vimala Veeraraghavan

Apeejay Stya University, India

Psychology is the science of behaviour and Artificial intelligence is the science of building machines that can perform tasks requiring human intelligence such as reasoning, data processing, decision making, etc. AI and psychological research go hand in hand, with AI emerging as a transformative force in psychology.

Since the entry of AI into “mental health”, the evidence from statistical show how AI algorithms have revolutionized mental health care to meet patient needs (3, 4). In 2022, open AI invented the conversational AI software ChatGPT which set the tone for application of Chatbot especially to the mental health area. The ChatGPT therapy and the creation of AI tools for therapists, have helped in rendering more accurate diagnosis and planning personalized treatment.

The AI tools has made it possible to continuously monitor mental health by patients themselves through the “wearable” devices, or smart phones to engage with the chatbots and virtual therapists. This continuous monitoring has enabled therapists to note any small subtle change in the patients’ well-being, and take up immediate and timely intervention.

Inaccessibility to mental health care for those from lower socio economic strata, marginalized group or living in remote areas, globally and in India, is indeed well known. The AI tools, by digitalizing mental health facilities (accurate diagnosis, fast and effective treatment) has made mental health resources accessible and affordable to these groups and many others. Tele psychology platforms and the AI Chatbots help therapists to suggest coping strategies to patients.

In this paper, an attempt has been made to present how AI has transformed the field of mental health and how the designing and availability of mental health apps is able to cater to far larger number of needy persons than ever before. It is known that 10,000 mental health apps are available globally, ranging from general mindfulness (CALM) to comprehensive teletherapy

(Talkspace) and AI-driven CBT tools (Woebot, Wysa). This presentation has also perused and analysed 15 of the more popular mental health apps being used by patients in India and has highlighted their utility and validity.

Presenter:
Vimala Veeraraghavan
Apeejay Stya University, India

Effect Of Trehalose on Autophagy Induction and Genes Expression in Young and Old Mice with Genetic Model of Diabetes

Korolenko T.A[1], Pupyshev A.B.[1], Belichenko V.M[1], Akopyan A.A[1], Dubrovina N.I[1] and **Bgatova N. P[2]**

[1]Institute of Neurochemistry and Medicine, Russia
[2]Institute of Clinical and Experimental Lymphology, Branch of Institute of Cytology and Genetics, Russia

Autophagy attenuation has been found in neurodegenerative diseases, aging, diabetes mellitus, and atherosclerosis. In experimental models of neurodegenerative diseases, the correction of autophagy in the brain reverses neuronal and behavioral deficits and hence seems to be a promising therapy for neuropathology. Our aim was to study the effect of an autophagy inducer, trehalose, on brain autophagy and behavior in a genetic model of diabetes with signs of neuronal damage (db/db mice). 2% trehalose solution was administered as drinking water during 24 days of the experiment.

Expressions of markers of autophagy (LC3-II), neuroinflammation (IBA1), redox state (NOS), and neuronal density (NeuN) in the brain and liver cells were assessed by immunohistochemical analysis. The The following genes were studied : *Atg8*, protein marker of autophagy LC3-II; gene *Becn1*, coding protein Beclin1, connected with autophagy. Brain cells (neurons and glia) have been studied by electron microscopic methods.

Young db/db mice (2 months old) were successfully treated by disaccharide trehalose, decreasing hyperglycemia, activating autophagy in brain cells (neurons) and liver, decreasing neuroinflammation and improving the cognitive insufficiency. In cortical neurons of old db/db mice (5 months) increased lipofuscin level was shown in electron microscopic study as well as in glia cells. So, differential effects of trehalose treatment were obtained in young and old db/db mice (lock of transcription activation in old db/db mice). It was concluded that positive effect of trehalose in db/db mice decreased with ageing. Young db/db mice treated by trehalose –revealed autophagy induction in liver and brain cells via mTOR-independent way. However, autophagy genes activation was weak in old (5 months mice), influencing on expression insulin receptor gene *Insr*.

Presenter:
Tatiana A. Korolenko
Institute of Neurochemistry and Medicine, Russia

miR-146A and miR-146B Promoter Methylation and Common Sequence Variations are Not Likely to be Involved in Autism Spectrum Disorder

Maha M. Kobesiy[1], Sohair M. Salem[1], Nora N. Ismaiel[1], Ammal M. Metwally[2] and **Engy A. Ashaat[3]**

[1]Molecular Genetics & Enzymology Department, Human Genetics and Genome Research Institute, National Research Centre, Egypt
[2]Community Medicine Research Department/Medical Research and Clinical Studies Institute, National Research Centre, Egypt
[3]Clinical Genetics Department, Human Genetics and Genome Research Institute, National Research Centre, Egypt

One of the well-studied epigenetic regulators is miRNA (miRNA) which plays critical roles in gene regulation and has been implicated in autism spectrum disorder (ASD) pathology, particularly through their involvement in neuroinflammation and neuronal regulation. MiR-146A and miR-146B are of special interest due to their dysregulation in ASD. Epigenetic modifications, such as promoter methylation, and genetic variations in miRNAs can influence their expression and function, yet their roles in ASD remain unclear. This study aimed to investigate promoter methylation patterns and sequence variations in miR-146A and miR-146B to evaluate their potential contributions to ASD. The study included Egyptian patients with ASD (ages 5–16 years) diagnosed using DSM-V criteria and assessed for severity using the Childhood Autism Rating Scale (CARS). DNA was extracted from peripheral blood samples of 93 autistic patients and 44 age-matched controls. Methylation specific

PCR (MSP) was used to analyze promoter methylation of miR-146A and miR-146B, while Sanger sequencing was employed to detect sequence variations in these genes and their flanking regions. Statistical analyses included independent *t*-tests, ANOVA, ROC curve, and Pearson correlation. No significant differences in promoter methylation levels of miR-146A and miR-146B were observed between ASD cases and controls or among severity subgroups ($P > 0.05$). Sequence variation analysis identified no significant differences in the distribution of common SNPs (*rs2910164* and *rs2224374*). However, a novel miR-146A upstream variant (C/A at 5:160,485,254) was discovered in one case with autism. Methylation and common genetic variations in miR-146A and miR-146B are unlikely to play significant roles in ASD in this population. The

discovery of a novel upstream variant highlights the potential importance of regulatory regions in miRNA function. Further studies with larger cohorts and functional validation are recommended.

Presenter:
Maha Mahmoud Ahmed Kobesiy
National Research Centre, Egypt

Neuropathic Pain: A Journey Through Mechanistic Discoveries and Therapeutic Horizons

Sonali Manwatkar[1] and **Bimlesh Kumar**[2]

[1]School of Pharmacy, Vishwakarma University, India. School of Pharmaceutical Sciences, Lovely Professional University, India
[2]School of Pharmaceutical Sciences, Lovely Professional University, India

Neuropathic pain is a persistent and often life-altering condition that stems from injury or abnormal functioning of the nerves responsible for sensing touch, temperature, and pain. Our understanding of this disorder has evolved remarkably, shifting from a purely nerve- damage perspective to a broader appreciation of the complex biological events that drive it.

Early research emphasized changes in injured peripheral nerves, such as heightened electrical activity and altered ion channel behaviour. However, recent studies highlight that immune cells, glial activation, and disrupted communication within the spinal cord and brain play equally important roles in amplifying and sustaining pain signals.

These scientific advancements have influenced how clinicians and researchers approach treatment. Traditional medicines—including gabapentinoids, antidepressants, and certain anticonvulsants—remain the backbone of therapy, but their effectiveness varies from person to person. As limitations of current treatments become more apparent, new strategies are emerging. These include targeted ion-channel blockers, therapies aimed at calming neuroinflammatory responses, biological agents such as monoclonal antibodies, gene- directed interventions, and advanced neuromodulation techniques. Non-pharmacological approaches and personalized care models are also gaining attention as ways to improve overall outcomes and quality of life.

This presentation will walk the audience through the evolution of neuropathic pain research—how discoveries at the molecular, cellular, and systems levels have shaped today's therapeutic pathways. By connecting foundational science with the latest innovations, the session aims to provide a clear and engaging overview of where the field stands today and where it is heading. The overarching goal is to highlight opportunities for more effective, mechanism-driven, and patient-centred management of neuropathic pain.

Presenter:
Sonali Manwatkar
Vishwakarma University and Lovely Professional University, India

Presenting a Correlational Model of Neurological Functions with Mental Disorders through Mediation of Alexithymia in Addicts

Alireza Homayouni[1], Gholamali Nikpour[2] and **Sepideh Mahmoudi[3]**

[1]Associate Professor, Department of Psychology, Islamic Azad University, Iran
[2]Assistant Professor, Department of Psychology, Rahedanesh Institute of Higher Education, Iran
[3]MA in Clinical Psychology, Iran

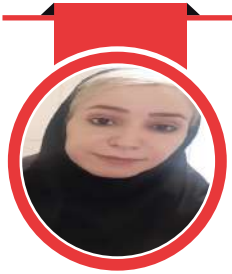
Introduction: Addiction is a neuropsychological problem and neurological studies contributes to our understanding of addiction. Advances in neuroscience and addiction research have helped to describe the neurobiological changes that occur when a person transitions from recreational substance use to a substance use disorder or addiction (Uhl, et al, 2019). The behavioral inhibition system (BIS) and behavioral activation system (BAS) are neuropsychological systems hypothesized to underlie response to cues signaling potential reward and punishment (Serrano-Ibáñez et al, 2019). BIS sensitized to and activated by punishment cues, and BAS sensitized to and activated by reward cues (Turner et al., 2021). So, for better understanding of a neuropsychological factors in tendency to addiction, the research investigated correlational model of neurological functions with mental disorders through mediation of Alexithymia in addicts.

Methods: 205 addicted people were selected with available sampling and responded to Carver & White's Behavioral Inhibition - Activation Systems Scale (BIS/BAS) (1994), Bagby et al's Toronto Alexithymia Scale (1994), and Goldberg & Hillier's General Health Questionnaire (1979). The data were analyzed by Pearson correlation formula and regression.

Results: Findings showed that there is positive and significant effect of behavioral inhibition system and components of Alexithymia (difficulty identifying, describing feelings, externally oriented thinking) on components of mental disorders (somatic symptoms, anxiety, social dysfunction, depression), and also there is negative and significant effect of components of behavioral activation system (drive, reward responsiveness, fun seeking) on components of mental disorders (somatic symptoms, anxiety, social dysfunction, depression).

Conclusion: Based on findings it is concluded that neuropsychological approach and Alexithymia can help to increase our knowledge about addiction and mental disorders that accompany it, and as a result suggest and apply some treatments for addicts.

Presenter:
Alireza Homayouni
Islamic Azad University, Iran



Blooming of a Multidisciplinary Third Wave Positive Psychology in L2WTC

Elnaz Oladrostam

Department of English Language & Literature, Shahid Beheshti University, Iran

A burgeoning number of studies have cast light on the significance of positive psychology (PP) in language learning and teaching. The role of PP and emotional factors in learners' willingness to communicate (WTC) has therefore drawn the attention of investigators in recent years. Moreover, a thorough examination of cultural and contextual variables is warranted with the blossoming of a third wave of PP as researchers have accentuated that L2 WTC is a multi-faceted construct which is prone to a host of variables and factors. To address these concerns, the researcher embarked on the current explanatory sequential mixed-methods study to assess the efficacy of PP interventions in accelerating learners'L2WTC and their sense of well-being. Originally, 306 learners filled in the PERMA-Profiler and WTC measures and 30 participants subsequently took part in the intervention phase of the study which constituted 10 PP activities. The third wave PP approach was utilized to divide the activities in to collectivist, individualistic, and both-way activities. Results of the paired sample t test as well as MANOVA indicated that the interventions could lead to an elevated level of PERMA as well as WTC. The findings of the qualitative wave also implied that PP interventions which can lift learners out of their torpor to get engaged in more communicative activities should be aligned to the cultural standards of each milieu in order to be effectual and to eschew 'imposed positivity'. Moreover, it was found out that PP.30 with its focus on fostering a multidisciplinary perspective and the notion of multimodal well-being must be applied to future SLA studies which are conducted in relation to positive psychology.

Presenter:
Elnaz Oladrostam
Shahid Beheshti University, Iran

Yoga Asanas Posture Detection and Correction with Live Stream Data using a Mobile Application

G Rathi, Dr. R. Anuradha, Kaviarasu M, Pravin and **Sajitha A K**

Sri Ramakrishna Engineering College/Department of Computer Science and Engineering, India

Many women experience physical and psychological symptoms during their menstrual periods starting from puberty. Research shows that yoga can be an effective therapy with minimal side effects, easily practiced at home or work. Specific yoga asanas can alleviate abdominal pain, providing comfort during menstruation. Yoga encompasses physical postures, breathing exercises, meditation, and relaxation techniques that promote a healthier, more harmonious lifestyle. However, the effectiveness of yoga depends on maintaining proper posture, and existing methods can predict asana but can't correct them to ensure the right stance.

Objective: This paper aims to develop a mobile application that streams live video from the user's webcam to analyze and predict posture, providing recommendations for effective asanas. The main asanas targeted are Marjaryasana, Balasana, Ustrasana, Paschimottanasana, Virasana, Parvatasana, Bhujangasana, Savasana, and Uttanasana, which focus on alleviating menstrual pain in women.

Method: The proposed system utilizes a two stage deep –learning pipelining for the yoga posture classification.

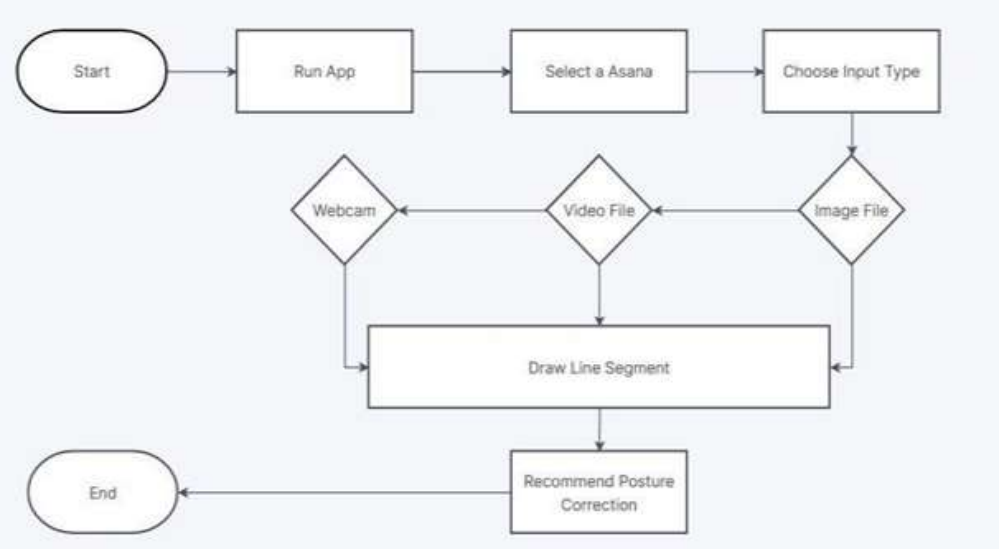
Step 1: Pose estimation is done using pose net algorithm

Extracts 17 key body landmarks from each frame and also determines the confidence score

Step 2: Yoga Asana Classification Using Convolutional Neural Network

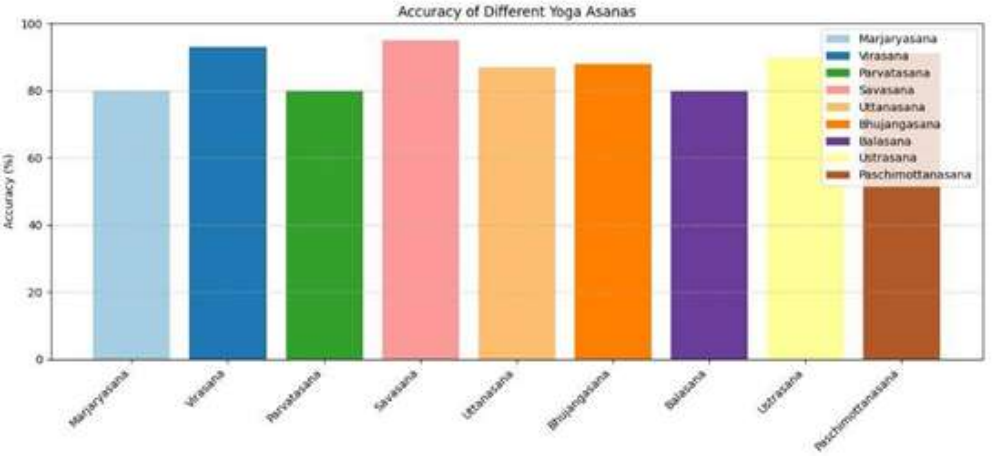
Classifies the pose into one of the nine asana using either key point

heatmaps/Feature vector.



FLOW OF THE MOBILE APPLICATION

Results:



Comparison for Accuracy on asana

Presenter:
G. Rathi
Sri Ramakrishna Engineering College/Department of Computer Science and Engineering, India

Philosophy in the Birth of Physiology: Spinoza and Johannes Peter Müller on Hallucinations

Filip Adolf Buyse

KVCV, Belgium

In the first half of the nineteenth century, views on hallucinations changed fundamentally, shifting from the ancient notion of apparition to the modern concept of "hallucination", understood as "the generic name for a class of utterances reporting subjective experiences (putatively) perceptual in nature which occur in the (arguably) absence of an adequate external stimulus." In this transformation, an early work by Johannes Peter Müller (1801–1858), *Über die phantastischen Gesichtserscheinungen* (On Fantastic Visual Phenomena, 1826), played a catalytic role (Berrios, 2005).

Interestingly, in his explanation of hallucinations, Müller refers several times to the work of Baruch Spinoza, both in this early treatise and in his influential magnum opus, *Handbuch der Physiologie des Menschen* (1837–1840). This raises the question of where, when, and why exactly the German physiologist invokes the Dutch philosopher. Remarkably, this connection has not yet been systematically investigated in the secondary literature. This is surprising given the considerable interest in Spinoza's philosophy among contemporary biologists such as Antonio Damasio, Henri Atlan, and Jean-Pierre Changeux, who argue that Spinoza (1632–1677) anticipated important aspects of modern biological thinking. Likewise, Spinoza's name is entirely absent from several major biographies of Müller.

This paper argues that Spinoza influenced the thinker often regarded as the "father of modern physiology." It shows that this influence can be understood not only in historical terms but also in relation to shared ontological and methodological commitments.

Presenter:
Filip Adolf Buyse
KVCV, Belgium

The 3-Second NeuroShift™ and the Dopamine Reset Method™: Rewiring Automatic Patterns to Reclaim Choice, Restore Resilience, and Redefine what's Possible

Edie Raether

NeuroShifts, LLC, USA

For decades, mental health treatment has largely assumed that insight precedes change. The 3-Second NeuroShift™ proposes a different possibility: that embodied action may create the conditions for insight—and that the process can begin in as little as three seconds.

Mental health professionals are increasingly challenged to provide interventions that are practical, trauma-informed, and immediately accessible during moments of distress. The 3-Second NeuroShift™ introduces a neuroscience-informed framework rooted in principles of neuroplasticity, embodied cognition, interoception, autonomic regulation, and the brain's reward circuitry. This approach demonstrates how brief, intentional interventions can interrupt automatic patterns and rapidly restore choice, agency, and emotional control.

Developed by Neuro-Behavioral Strategist Edie Raether, CSP, the 3-Second NeuroShift™ and its companion Dopamine Reset Method™ integrate micro-interrupts, breath-anchored attention, bilateral activation, and somatosensory engagement to disrupt stress and craving loops while supporting prefrontal functioning associated with self-regulation and cognitive flexibility.

Participants will experience practical techniques that can be integrated into psychotherapy, trauma-informed care, addiction recovery, crisis intervention, and other high-stress settings. Attendees will learn strategies to interrupt emotional reactivity, redirect dopamine-driven behaviors, enhance resilience, and help clients move from automatic reaction to intentional response.

Drawing upon emerging neuroscience and five decades of clinical and educational experience, this presentation offers an innovative addition to the therapeutic toolkit—one that reframes healing through the lens of possibility.

Perhaps meaningful change does not always require more time.

Perhaps it begins with three intentional seconds.

Presenter:
Edie Raether
NeuroShifts, LLC, USA

Diagnostic CNS Tumor Challenges in the Molecular Age

Michael Punsoni

Department of Pathology, Division of Neuropathology, Brown University, USA

The biological understanding of central nervous system (CNS) tumors has evolved rapidly over the past decade. The classification scheme and accessibility of advanced molecular testing have also changed substantially since the previous 2016 edition of the WHO Classification of CNS Tumors. Integrated diagnoses that incorporate histological and molecular findings are now standard and provide detailed, holistic summaries of tumor characteristics to allow for the most accurate diagnostic and prognostic information available to clinicians and patients; this updated reporting strategy matches a trend in personalized medicine that seeks to provide individualized therapies based on tumor profiling. The 2021 WHO Classification of CNS Tumors elaborated on the molecular diversity of CNS tumors and the application of molecular testing to aid in the diagnosis and classification of an expanded list of tumors. While it's estimated that brain and other nervous system cancers will number approximately 25,000 new cases in 2026, which represents 1.2% of all new cancer cases in the U.S., survival rates due to CNS tumors are far lower than most other common types of cancer. With an aging global population early intervention and developing best practices including accurate diagnostic approaches, appropriate testing platforms, and high-quality treatment regimens have never been more important. This is especially critical in aggressive, high-grade CNS tumors, which may be difficult to manage surgically and therapeutically. Still, despite the availability of extensive genome-wide testing, the diagnosis of some tumors remains challenging and at times elusive. Familiarity with these difficult-to-profile tumors along with further development and refinement of testing modalities and classification schemes are necessary to support appropriate personalized treatment selection, prognostication, and enrollment in clinical trials. By analyzing the biology of CNS tumors, we gain critical insights into tumor behavior and can assess the likely course of disease, which ultimately may help tailor surgical planning, inform multidisciplinary management, and potentially lead to improved survival rates and reduced recurrence risks.

Presenter:
Michael Punsoni
Brown University, USA

Bridging The Gulf Between Clinical Work and Neuroscience Findings

Janet Lee Bachant

Psychoanalytic Institutes, USA

Helping clinicians recognize the value of recent neuroscience findings for identifying and working with complex developmental trauma can be a starting point for bridging the gulf between minds and molecules. This paper highlights three key areas of early brain development that enhance therapeutic understanding and treatment options: the clinical implications of right hemisphere dominance in early childhood, the prominence of the fear system during early development, and the lasting effects of trauma during critical periods on mental organization. Clinical case material illustrates the author's perspective.

Presenter:
Janet Lee Bachant
Psychoanalytic Institutes, USA

A Micronutrient Mixture with Probiotics, Collagen Peptides, Omega 3, Cannabidiol, and Diet may Reduce the Risk of Development and Progression of Post-Traumatic Stress Disorder (PTSD), and Improve its Treatment

Kedar N Prasad

University of Lowa, USA

Post-traumatic stress disorder (PTSD) is a complex psychiatric disorder caused by sudden exposure to a single or repeated traumatic events. The major symptoms include flashbacks, nightmares, hyperarousal, depression, substance abuse, suicidal tendencies, impaired learning ability, and cognitive dysfunction. There is no effective prevention strategy and current treatments focus on the symptoms of PTSD rather than the causes of it. For reducing the risk of PTSD and improving treatment, it essential to attenuate both external and internal stressors which causes this disease External stressors include exposure to sudden traumatic events which are not preventable. Poor diet and lifestyle and exposure to environmental toxins aggravate the symptoms after exposure to traumatic events. Internal stressors include increased oxidative stress, chronic inflammation, intestinal dysbiosis, loss of collagen, dysfunctional omega 3, and excessive release of glutamate and decrease release of gamma- aminobutyric acid . Proposed preventive recommendations include consuming healthy diet and lifestyle, reducing excessive consumption of fat, sugar, alcohol, and caffeine, increasing social interaction and physical and mental exercises, reducing exposure to environmental toxins. In addition, supplementation with a micronutrient mixture for reducing oxidative stress and chronic inflammation, probiotics with prebiotics for reversing the harmful effects of intestinal dysbiosis, collagen peptides for restoring the loss of collagen, and omega 3 for replacing dysfunctional oxidized omega 3, and CBD for reducing the levels of serotonin and dopamine, increasing release of glutamate and decreasing release of gamma-aminobutyric acid. Psychotherapies are considered gold standard for PTSD treatment, but they produce serious adverse side-effects. Medications include selective serotonin reuptake inhibitors for reducing anxiety and depression, Prazosin for improving PTSD-related sleep disturbance. These drugs cause adverse side-effects. Combining current therapies with the proposed prevention plan would improve symptoms of PTSD and reduce the progression of this disease.

Presenter:

Kedar N Prasad
University of Lowa, USA

Human Neural Stem Cells for Traumatic Brain Injury: Cross-Species Evidence of Circuit Integration and Functional Recovery from Rodents to Non-Human Primates

Brian J Cummings[1,3], Josh Karam[1], M Arredendo[4], E.W. Daadi[5], E.S. Daadi[5], Hooman Sadighian[2], Farzaneh Atrian[2], Rebecca Nishi[1] and **Marcel Daadi[4,5]**

[1]Sue & Bill Gross Stem Cell Research Center, USA
[2]NeoNeuron LLC, USA
[3]Physical Medicine & Rehabilitation, USA
[4]Univ. of Texas Health, San Antonio, Long School of Medicine, USA
[5]Southwest Natl. Primate Res. Center, Texas Biomed. Res. Inst., USA

Traumatic brain injury (TBI) remains a major cause of chronic neurological disability. We developed an allogeneic human neural stem cell candidate, S6.133.hNSCs, derived from the Shef-6 embryonic stem cell line, through a multi-stage pipeline encompassing derivation, efficacy testing, and Good Manufacturing Practices (GMP) process development. The resulting $CD133^{+}$/$CD34^{-}$ neural stem cell population retains multipotency and is enriched for multipotent neural progenitors.

In controlled cortical impact models of TBI, S6.133.hNSCs consistently survived, differentiated, and integrated into host circuitry while modulating the inflammatory microenvironment. In rats, transplants improve hippocampal-dependent learning and memory (Morris water maze, novel place recognition), reduce anxiety (elevated plus maze), promote dendritic complexity, and support endogenous neurogenesis. Replicate studies using independently manufactured lots (frozen aliquots) demonstrated the reproducibility of the benefit and confirmed safety without tumor formation for up to 12 months.

In non-human primates, administration of S6.133.hNSCs 45 days post-injury led to improvements in executive function/problem solving (Object Retrieval Barrier Detour task), normalization of diurnal/nocturnal activity (Actiwatch), and reduced anxiety (Human Intruder Test). MRI showed increased white matter volume and reduced lesion volume at a dose of 5 million cells. Histopathology confirmed the absence of teratoma or overgrowth.

Multiple non-exclusive mechanisms may contribute to benefit. S6.133.hNSCs integrate into damaged neural circuits and differentiate into neurons, astrocytes, and oligodendrocytes; form synaptics with host neurons; increase host neurogenesis and dendritic arborization; protect vulnerable hippocampal neurons; and attenuate astrocytic and microglial activation. These effects may facilitate circuit restoration, reduce chronic inflammation, and improve networks supporting cognitive recovery.

Expanded viral testing, genomic stability, and validated release criteria support the safety profile of the Shef-6 lineage for clinical translation. A complete GMP manufacturing plan is in place to generate clinical doses. Collectively, these data demonstrate cross-species, cross-laboratory, and cross-lot reproducibility of disease-modifying activity and manufacturing readiness, supporting advancement of S6.133.hNSCs toward first-in-human evaluation for chronic TBI.

Presenter:
Brian J Cummings
University of California, USA

A Link Between Circadian Disruption and Diseases

Xiaoyue Pan

Department of Foundations of Medicine, NYU Grossman Long Island School of Medicine, USA

Circadian clock gene basic helix-loop-helix ARNT like 1 “Bmal1” is one of the most important proteins in sleep regulation and lipid and glucose metabolism, and is highly regulated by light and dark at the transcription levels. Over the years, the functions of Bmal1 have been identified, including roles as a central clock gene and a regulator of lipid and glucose metabolism. Recently, we have shown that a deficiency of Bmal1 in macrophages increases the development of atherosclerosis, as Bmal1 regulates cholesterol efflux and transport. Disorder of the circadian clock can lead to tissue dysfunction. While the circadian clock is the most remarkable the master internal biological timer, the pathological role of glucose reabsorption in kidney is unclear. Herein, we identified a previously unknown fasting-induced, glucagon-mediated inhibitory effect of Bmal1 on the expression of the main proximal tubule glucose transporter, solute carrier family 5 member 2 (Sglt2), which is an important target for treating diabetes and kidney diseases. We showed that during fasting and refeeding, glucagon regulates renal glucose reabsorption by utilizing the local cellular circadian machinery. However, defining a role for brain tissue glucose metabolism has been elusive, especially in light of studies in global and kidney Bmal1 gene-deletion mouse models showing a net effect on brain glucose metabolism. We have used in vivo and in vitro models to define the role of Bmal1 in brain glucose metabolism. We found that Bmal1 dysfunction reduces the expression of brain glucose transporter. This may contribute to the glucose homeostasis in brain neurons. Taken together, these studies suggest a coordinated role for Bmal1 in brain glucose metabolism, which might control brain diseases. We define the circadian clock mechanisms, which have shown that dysfunction of the Brain Bmal1 and glucose metabolism pathways is interconnected through a complex system of molecular, neural, and hormonal signaling.

Presenter:
Xiaoyue Pan
NYU Grossman Long Island School of Medicine, USA

Topological Analysis of Alzheimer's Progression with Persistence Images

Jayanth Kande

Southern University and A&M College, USA

My research employs topological analysis techniques to investigate the progression of Alzheimer's disease (AD) using MRI data. I focus on using local persistence images (PIs) extracted from temporal lobe patches to classify AD and control subjects. My study evaluates model performance, analyzes topological heterogeneity within diagnostic categories and individual patients, examines the overlap between topological outliers and misclassified samples, and explores the distance of each image to the median representations of AD and control subjects. Key findings include competitive classification results using local PIs, significant topological heterogeneity within diagnostic categories, and trends in patient clustering based on distance to the median PIs. My study highlights the potential of topological analysis in understanding AD progression and suggests avenues for future research in disease subtyping and early detection.

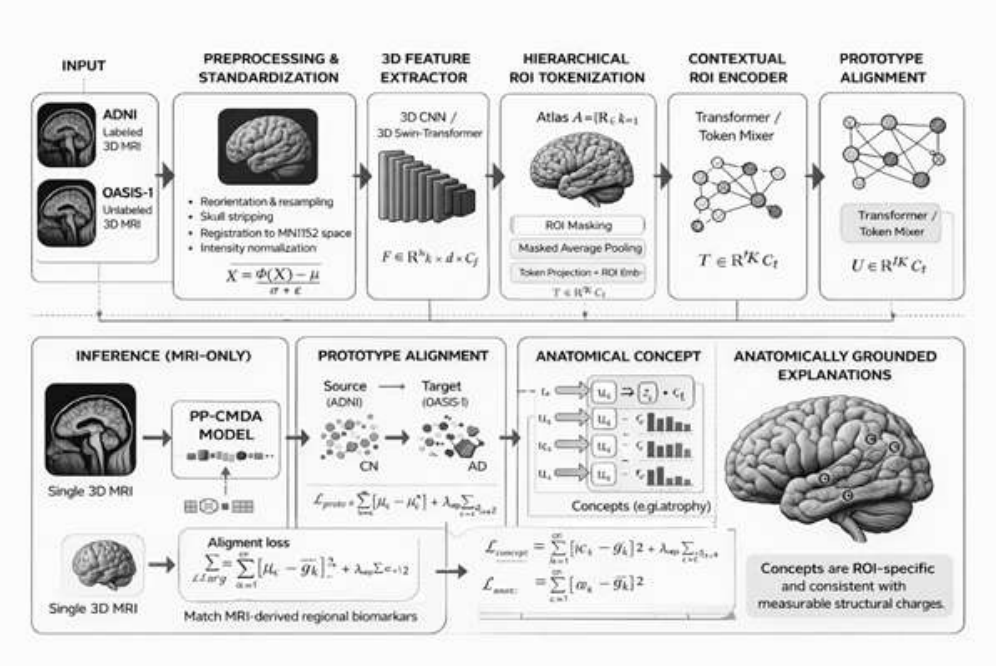
Presenter:
Jayanth Kande
Southern University and A&M College, USA

Anatomically Interpretable Domain Adaptation for Alzheimer's Disease Diagnosis in 3D MRI

A. Patiño-Bedoya[1] and **E. Restrepo-Parra**[2]

[1]Universidad Nacional de Colombia, Colombia
[2]PCM Computational Applications, Colombia

Alzheimer's disease classification from structural magnetic resonance imaging remains difficult under cross-dataset variability, since differences in acquisition protocols, subject populations, and preprocessing pipelines often reduce generalization and limit clinical interpretability. In this work, we proposed a domain-adaptive 3D MRI framework for Alzheimer's disease classification using an ADNI-derived cohort as source domain and an OASIS-derived cohort as target domain. The scope of the study was restricted to MRI-only diagnosis, avoiding unsupported multimodal assumptions, while emphasizing anatomically grounded explanation. The method combined a hierarchical 3D feature extractor, atlas-guided region-of-interest tokenization, class-conditional prototype alignment for source–target adaptation, and an anatomical concept bottleneck in which regional latent representations were mapped to interpretable structural abnormality concepts. In addition, a Jacobian-based anatomical consistency regularization term was incorporated to encourage agreement between learned concepts and measurable deformation patterns. Experimental evaluation showed that the proposed framework achieved a balanced accuracy, a macro-F1 score, and an AUC competitive on the target cohort. The concept bottleneck also produced region-level explanations that were more anatomically consistent than standard attention-based explanations, with an improvement in the selected explanation metric. These results indicate that prototype-based MRI domain adaptation, when combined with anatomically grounded concept learning, can improve both cross-dataset robustness and interpretability in computer-aided Alzheimer's disease diagnosis.



Presenter:
Alejandro Patiño Bedoya
Universidad Nacional de Colombia, Colombia

Promotion of Alzheimer's Disease-Like Tauopathy by eCIRP

Max Brenner

Center for Immunology and Inflammation, The Feinstein Institutes for Medical Research, USA
Departments of Surgery and Molecular Medicine, Zucker School of Medicine at Hofstra/Northwell, USA
Elmezzi Graduate School of Molecular Medicine, USA

In Alzheimer's disease (AD), pathologically phosphorylated microtubule-associated tau protein (p-tau) precipitates and forms neurofibrillary tangles (NFT), a defining feature of AD that strongly correlates with neurodegeneration and cognitive decline. We have discovered that extracellular cold-inducible RNA-binding protein (eCIRP) is a new mediator of neuroinflammation and injury during ischemic brain stroke and alcohol-induced cognitive impairment. eCIRP is released by microglia and other cells exposed to stressors such as inflammation, hypoxia, alcohol exposure, and irradiation. Upon its release, eCIRP activates the IL6Rα/PLC/IP_3 pathway in neurons, resulting in mobilization of intracellular calcium stores and activation of calpain. Calpain then cleaves the Cdk5 regulatory subunit p35 to generate the truncated form p25, a Cdk5 hyperactivator. As a result, the hyperactive Cdk5 hyperphosphorylates tau, leading to the formation of neurofibrillary tangles. We have also discovered that radiation causes AD-like tau phosphorylation via the eCIRP/IL-6Rα/Cdk5 pathway. These novel findings are directly relevant to the pathogenesis and mitigation of radiation-induced cognitive dysfunction, as well as to the etiopathogenesis of AD. Moreover, in addition to causing neuronal overproduction of pathological tau species, we have also discovered that eCIRP may inhibit the microglial clearance of oligomeric and fibrillar tau, as well as the efferocytic removal non-viable neurons and neurons containing aggregated tau. Thus, eCIRP is a novel neuroinflammatory mediator with consequential effects for tau pathology and cognitive dysfunction. To therapeutically target eCIRP's deleterious effects leading to the accumulation of pathological tau species, we have generated and initiated the development of eCIRP-inhibiting peptides. We have shown that eCIRP-targeting peptides are able to decrease the generation of hyperphosphorylated tau in vitro and the accumulation of AD-like tau *in vivo*. These peptides hold exciting translational potential in AD and related neurodegenerative pathologies controlled by eCIRP.

Presenter:
Max Brenner
The Feinstein Institutes for Medical Research, USA

From Phantom to Practice: Stimulus Transfer in Theory and Virtuality

Armin Grasnick

IU International University of Applied Sciences, Extended Artificial Intelligence, Germany

We present a focused XR workflow that translates stimulus transfer from theory into practice. The PHANTOMATRIX framework provides a theoretical backbone by modeling how real stimuli are modified along a technical system's sensing-rendering-perception chain, which we describe with transfer functions. In immersive XR, perceived experience arises from a mixture of primary (unfiltered) and secondary (system-filtered) stimuli that provoke specific psychophysiological responses. Within PHANTOMATRIX, these responses are measured and used to train a model that estimates emotional state via early fusion of multimodal features. The resulting transfer functions can control adaptive feedback and stimulation in real time.

In the practical project VR CHARLIE, PHANTOMATRIX is used exclusively to guide the interaction via state variables; the core Glasgow Coma Scale (GCS) assessment logic remains unchanged to preserve test validity. VR CHARLIE delivers an examiner-free, voice-controlled GCS assessment in immersive VR. Built in Unity and using speech-to-text (STT) and text-to-speech (TTS), the application automates the clinical dialogue, observes eye opening, verbal response, and motor responses of a virtual patient avatar, and computes the final GCS score against the scripted ground truth. Standardized prompts and comprehensive interaction logs support a user-friendly, auditable workflow with both offline and online deployment paths. Given the central role of GCS in trauma and intensive care medicine, our standardized approach supports consistent training and examination conditions for future on-site decision-making. In a preliminary evaluation with clinicians and Physician Assistant students, participants reported high engagement and an intuitive workflow; cloud-based speech transcription achieved a high accuracy level suitable for real-time use.

Presenter:
Armin Grasnick
IU International University of Applied Sciences, Germany

Through the Borders of "Normality": The Construction of Mental Illness and the Work of the Psychologist

Bianca M. Athayde

Federal University of Bahia (UFBA), Brazil

Through the Borders of "Normality" is a theoretical essay that engages with the growing debate on mental health, drawing from a multitude of assumptions, theories, and practices that shape this field. Here, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5-TR) stands as the hegemonic tool for addressing mental health issues. In this scenario, the proposal for this presentation is to 'take a step back' and examine the fact that there is no clear or shared definition of what mental health, or mental illness, actually means. To do so, an analysis will be conducted on the DSM's foundations, assumptions, and practical implications, focusing on the spectrum between understanding mental disorders as social constructs or medical conditions.

The investigation leads to the conclusion that the concept of mental health, as well as the DSM's categories, were arbitrarily created by humanity to organize experiences and make sense of reality, but also have the power to directly impact the lives of people going through psychological distress. Thus, it is imperative that a practitioner be aware of the foundations of the theoretical systems guiding their interventions, and choose what best works for the patient and the goals they both have in mind, considering the reality beyond the clinic.

The contents of this presentation derive from a book chapter of the same name authored by the presenter. The chapter can be found in 'Epistemological Renewal of the Human Sciences: Peeling the Pineapple with Cultural Psychology' (Chaudhary, Carolina and Valsiner, Eds,. 2026).

Presenter:
Bianca de Magalhães Athayde
Federal University of Bahia (UFBA), Brazil

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ADVANCES IN MENTAL HEALTH AND PSYCHIATRY

JUNE 22-24, 2026

SPEAKER TALKS

Playing to Grow: How a Serious Game Strengthens Teachers' Professional Well-Being

Valeria Cavioni[1], Elisabetta Conte[2] and **Veronica Ornaghi[3]**

[1]Department of Humanities and Social Sciences, Faculty of Society and Communication Sciences, Universitas Mercatorum, Italy
[2]Department of Human and Social Sciences, University of Bergamo, Italy
[3]Department of Human Sciences for Education "Riccardo Massa", University of Milano-Bicocca, Italy

Teachers' mental health is essential for sustaining motivation, job satisfaction, and a positive school climate. As professional demands continue to rise, supporting teacher well-being has become increasingly crucial. This study examined the effectiveness of the Online Well-being Course (OWC), a serious game designed to enhance teachers' social and emotional competences and professional well-being.

A total of 227 in-service Italian teachers (205 female; M age = 45.8 yrs) participated in a mixed-methods evaluation with two objectives: (1) to quantitatively assess the impact of the OWC on social-emotional competence, self-efficacy, and perceived stress using a pre–post design with three groups: Group A (n = 76), Group B (n = 72), and a waitlist control group (n = 79); and (2) to qualitatively explore participants' subjective experiences through focus groups and open-ended feedback. Group A collaborated with researchers to co-design revisions to the course before participation, Group B accessed the original version, and Group C accessed the OWC after the post-test phase. The five-month intervention aimed to promote engagement and strengthen skills in emotional regulation, empathy, and self-care. Quantitative analyses using a repeated-measures General Linear Model revealed a significant Time × Group interaction ($p = .002$), showing improvements in social-emotional competence, self-efficacy, and perceived stress ($p = .001$) among intervention participants. Qualitative results complemented these findings, indicating perceived gains in emotional awareness, self-care, social relationships, decision-making, and overall school climate.

Overall, the study highlights the promise of serious games as innovative, evidence-based tools for promoting teachers' mental health and professional growth.

Presenter:
Valeria Cavioni
Universitas Mercatorum, Italy

Transdiagnostic Eye-Tracking Biomarkers of Inattention across Psychiatric Disorders: A Systematic Review

Anahita Khorrami Banaraki[1,2], Armin Toghi[5,3], Azar Mohammadzadeh[4] and **Zahra Alemi[1]**

[1]Institute for Cognitive Science Studies, Iran
[2]Brain & Cognition Clinic, Iran
[3]Interdisciplinary Schools, Iran
[4]Research Center for Cognitive and Behavioral Studies, Tehran University of Medical Sciences, Iran
[5]Institute for Cognitive and Brain Sciences, Shahid Beheshti University, Iran

Background: Attention impairment is a dimensional and heterogeneous trait, distributed continuously across the population. Understanding the pathophysiology of eye movement control offers valuable insight into attention dysfunctions and their underlying neural circuits. This systematic review aims to map different oculomotor paradigms and metrics to key attention systems across a range of psychiatric conditions, highlighting their potential for identifying biological markers of attention.

Methods: We conducted a systematic search on PubMed, Scopus, and Web of Science databases using keywords related to 'eye-tracking,' '(in)attention,' and 'mental disorders.' Seventy-five studies were included, categorized into three core domains of attention: Selective Attention (spatial/feature), Sustained Attention, and Executive Control, based on the associated oculomotor paradigms. These studies covered various psychiatric conditions, including Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), Tourette Syndrome (TS), Obsessive-Compulsive Disorder (OCD), Borderline personality disorder (BPD), Developmental Coordination Disorder (DCD), and Schizophrenia Spectrum and Other Psychotic Disorders (SSD).

Results: The findings highlighted impairments in several key oculomotor metrics shared across psychiatric conditions, and moderately correlated with self-reported and behavioral measures of inattention symptoms. These include antisaccade direction errors, fixation durations on task-relevant/irrelevant areas, the latency to first fixation, and anticipatory and intrusive saccades. These metrics are particularly important in paradigms requiring endogenous shifts of attention.

Conclusions: Eye-tracking metrics could serve as transdiagnostic biomarkers for identifying inattention symptoms across normative and psychiatric conditions. Further research is needed to transition eye-tracking from a research tool to a clinically actionable biomarker for personalized assessment and intervention.

Presenter:
Anahita Khorrami Banraki
Institute for Cognitive Science Studies, Iran

Beyond the Surface: Deciphering CNS Pathologies through Epigenetic Liquid Biopsies of Brain Cell Death

Asael Lubotzky

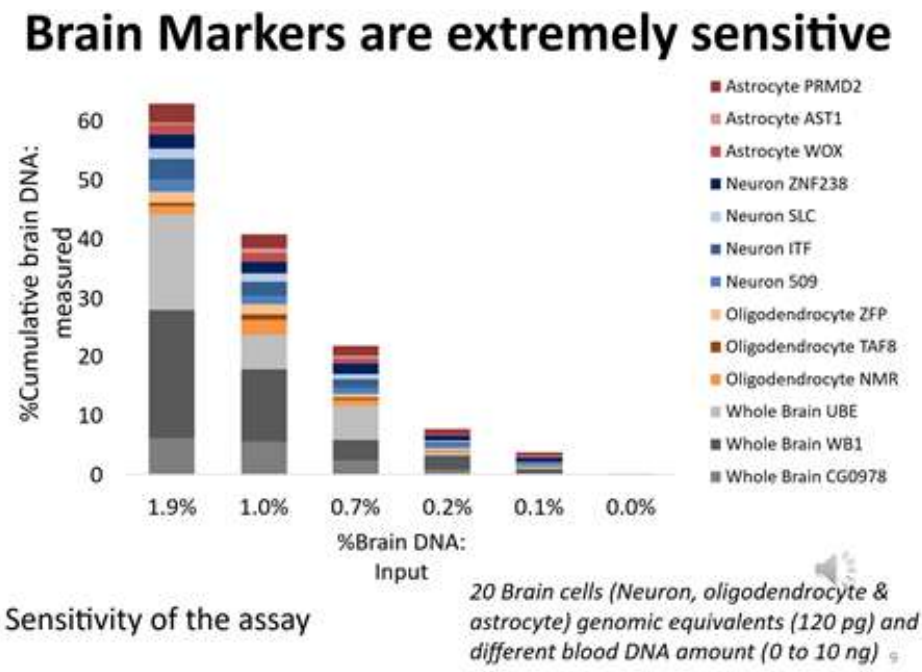
Shaare Zedek Medical Center, Affiliated with the School of Medicine of the Hebrew University of Jerusalem, Israel

Cell death in the central nervous system (CNS) underlies a wide range of neurological conditions, yet non-invasive tools to measure this process remain scarce. Circulating cell-free DNA (cfDNA), released by dying cells into the bloodstream, offers an opportunity to monitor brain pathology in real time. Importantly, each cell type carries a unique DNA methylation "signature," stable across individuals, that can be exploited to identify its tissue of origin.

During my doctoral research in Prof. Yuval Dor's laboratory at the Hebrew University, we contributed to the development of an approach using epigenetic liquid biopsy to detect brain-derived cfDNA. Leveraging the Human Methylation Atlas, we applied targeted sequencing of cell type–specific methylation markers for neurons, astrocytes, and oligodendrocytes. After bisulfite conversion and high-depth sequencing, the method showed high sensitivity, detecting very small numbers of brain cell genome equivalents even in the presence of abundant blood DNA.

Using this assay, we demonstrated elevated levels of brain-derived cfDNA in patients with brain metastases as well as in individuals at the time of a first psychotic episode. These findings highlight the potential of this approach to provide cell-specific insights into diverse brain pathologies.

Epigenetic liquid biopsy is an emerging tool that may ultimately complement clinical and imaging studies to monitor CNS health and disease. While still at the proof-of-concept stage, this work suggests new opportunities for applying molecular diagnostics to neurology and precision medicine.



Presenter:
Asael Lubotzky
Medicine of the Hebrew University of Jerusalem, Israel

Long-Term Pharmaco-Surgical Management and Review of Recurrent Atypical Spreading Long Buccal and Lingual Nerve Trigeminal Neuralgia

Pushpa Kumari[1] and **Ashish Chakranarayan**[2]

[1]Classified Specialist Oral & Maxillofacial Surgery, Indian Navy, India
[2]Specialty Doctor in Oral & Maxillofacial Surgery, Cumberland Infirmary Carlisle, UK

Background: Trigeminal neuralgia is a common condition presenting as sharp shooting pain affecting the various divisions of the trigeminal nerve. As with the other branches of trigeminal nerve, first-line medical management for lingual nerve neuralgia includes anticonvulsants like carbamazepine, but some cases may be refractory and require alternative medications such as gabapentin or pregabalin. In cases unresponsive to medication or standard neurectomy procedures, peripheral neurectomy of the lingual nerve may provide significant pain relief. Surgical intervention is considered when pharmacotherapy fails; minimally invasive procedures like lingual neurectomy are options for patients unsuitable for more extensive neurosurgical treatments.

Method and result: The reported case presented in 2008 as sharp pain in the right-side maxillary (V2) and mandibular (V3) divisions of the trigeminal nerve. The patient was initially managed with drug therapy using carbamazepine and amitriptyline was added to the prescription in due course of time and was subsequently taken up for infraorbital and inferior alveolar nerve neurectomy in 2010. The patient reported resurgence of symptoms in 2018 and was managed with drug therapy using carbamazepine, amitriptyline and lamotrigine and was subsequently taken up for a long buccal and lingual nerve neurectomy in 2024.

Conclusion: Our study highlights a rare presentation of the long buccal and lingual nerve involvement as a spreading recurrence in trigeminal neuralgia and its management.

Presenter:
Pushpa Kumari
Classified Specialist Oral & Maxillofacial Surgery, Indian Navy, India

Features of Care Facilities for People with Cognitive Impairments in Russia

Posvyatenko Yu.V[1] and **Bruno V.V**[1,2]

[1]Moscow State University of Civil Engineering (National Research University), Russia
[2]Institute of Sociology of the Federal Center of Theoretical and Applied Sociology of the Russian Academy of Sciences, Russia

The study examines the architectural and spatial conditions of residential care facilities for people with cognitive impairments (primarily dementia and other memory disorders) and their perception by potential and actual users in contemporary Russia. The relevance of the research stems from the fact that a significant proportion of such institutions are located not in purpose-built buildings but in adapted structures, primarily cottages constructed in the 1990s–2000s. Originally designed for individual residences, these buildings were only later adapted for private long-term care facilities. Many of the features of these homes contradict the principles of a cognitively disabled-friendly environment. Unlike most studies focusing on the medical and organizational aspects of care, this research considers residential care facilities through the prism of the architectural environment and the everyday experience of users, situating the problem at the intersection of the sociology of care and the sociology of architecture.

The study is based on a combination of methods, including an analysis of scholarly literature on environmental design for people with dementia, a review of materials from official websites and aggregators of residential care facilities, an analysis of discussions on thematic online forums, and a descriptive analysis of operating facilities in Moscow and the Moscow region. The empirical basis of the study is an online survey of respondents aged 35 and older (N = 165). The sample is purposive and was formed through open online channels, the snowball method, and the distribution of the questionnaire on a specialized forum for relatives of people with dementia. For analytical purposes, two groups were distinguished: respondents with experience interacting with residential care facilities (45%, n = 73) and those without such experience (55%, n = 92).

The results show that experience of interaction with residential care facilities significantly changes attitudes toward institutional care: the proportion of respondents considering a care facility a reasonable solution at severe stages of the disease increases from 74% to 92%. At the same time, the evaluation

of the physical environment reveals a deficit of specialized architectural adaptation. While basic infrastructure – such as common recreation areas (91%) and surrounding grounds (83%) - is usually present, specialized environmental elements are much less common: elevators are available in only 24% of facilities, and specially organized walking routes without dead ends in only 11%. Difficulties are also associated with internal orientation and navigation systems, with only 17% of respondents evaluating them as “very good.” Overall, the findings suggest that the main problems are related not so much to the everyday organization of care as to the insufficient architectural adaptation of existing buildings.

Presenter:
Yulia Posvyatenko
Moscow State University of Civil
Engineering (National Research University), Russia

Bruno V.V
Institute of Sociology of the Federal Center of Theoretical and Applied Sociology of the Russian Academy of Sciences;
Moscow State University of Civil Engineering (National Research University), Russia

A Review of the Current use of Humanities and the Arts to Address Mental Illness in the Caribbean with Recommendations for the Future

Rachael E Williams

Data for Development and Management, Trinidad

In the Caribbean about 60% of people experience mental health stigma and more than 70% of those who suffer from mental illness do not receive the essential care they need. Prior to 2020, only 2% of all government health funding in the Americas (including the Caribbean) went toward mental health services. The median ratio of mental illness burden to mental health spending is 6.1, meaning that the burden associated with mental diseases is six times more than the amount of health dollars currently allocated to mental health.

Within the mental health care sector, art and music therapy are specialties that use art and music respectively to enhance one's perspective and reduce the symptoms of despair and anxiety. Also, dance movement therapy is a potential treatment option for mood disorders that has not been fully explored in the Caribbean. Furthermore it is known that in patients with chronic illnesses, spiritual health and mental health are significantly positively correlated; that is, the more robust and high the level of spiritual health, the lower the degree of psychological disorders. This paper explores the use of humanities/the arts to tackle mental illness in the Caribbean and presents recommendations for significant improvements in mental health.

It is evident that most persons are unaware of the benefits of neuroplasticity via the creative art therapies/spiritual healing as valid alternatives to "mainstream medicine" to address mental illness in the Caribbean. Raising awareness of the creative art treatments/spiritual healing is a necessary aim to allow for all, increased, easy access to affordable mental health services and support networks. We also have to advocate for improved mental health regulations, many of which are outdated, and more robust government assistance.

Presenter:
Rachael Elizabeth Williams
Data for Development and Management, Trinidad

Reducing Anxiety and Improving MRI Experience in Pediatric Patients: Clinical Perspectives and Audiovisual Support Strategies

Seçil Oktay

Department of Pediatric Neurology, Aydın City Hospital, Türkiye

Magnetic resonance imaging (MRI) remains one of the most challenging diagnostic procedures in pediatric patients because of anxiety, fear, noise exposure, prolonged immobility, and the unfamiliar hospital environment. Even in adult patients, MRI-related anxiety may negatively affect cooperation and image quality; however, these difficulties become more pronounced in children. Consequently, motion artifacts, prolonged imaging times, repeated examinations, and increased sedation requirements are frequently encountered in pediatric neuroimaging practice.

Sedative agents used during MRI procedures may also lead to adverse effects, prolonged recovery periods, increased healthcare costs, and additional monitoring requirements. Therefore, supportive non-pharmacological approaches aimed at improving patient comfort and cooperation have gained increasing importance in recent years.

This invited presentation focuses on the clinical challenges encountered during pediatric MRI procedures and discusses the role of audiovisual support strategies in reducing anxiety and improving imaging quality. Practical experiences obtained from previously published clinical research and scientific projects in this field will also be presented. In addition, the presentation aims to highlight child-centered imaging approaches that may improve both patient experience and diagnostic effectiveness in pediatric neuroimaging settings.

Audiovisual interventions may represent practical, low-cost, and easily applicable supportive strategies for improving pediatric MRI tolerance while potentially reducing motion-related image degradation and sedation requirements.

Presenter:
Seçil OKTAY
Aydın City Hospital, Türkiye

A Rare Presentation of Wernicke's Encephalopathy with Internuclear Opthalmoplegia in Primi Gravida

Manimozhi.T, Gobinathan and **Anand**

Sree Balaji Medical College and Hospital, India

Wernicke's encephalopathy (WE) is an acute, reversible neurological emergency caused by thiamine deficiency. Hyperemesis gravidarum is a recognized but often overlooked precipitating factor in early pregnancy. Early diagnosis is critical to prevent irreversible complications.

Wernicke's encephalopathy (WE) is an acute neuropsychiatric emergency resulting from thiamine deficiency, most commonly associated with hyperemesis gravidarum during early pregnancy. We report a case of a 24-year-old primigravida at 6 weeks of gestation who presented with a 2-day history of persistent vomiting, followed by giddiness and diplopia of the same duration, and unsteadiness of gait for 1 day. Clinical evaluation revealed features suggestive of the classic triad of WE: ophthalmoplegia, ataxia, and confusion, though cognitive disturbances were subtle. The temporal association with intractable vomiting and inadequate nutritional intake during early gestation raised strong suspicion for thiamine deficiency–induced neurological dysfunction. Prompt recognition of WE in pregnancy is crucial, as delayed diagnosis may result in irreversible neurological sequelae for the mother and potential fetal compromise. The patient was managed with immediate high-dose parenteral thiamine supplementation, supportive therapy, and correction of nutritional deficits. Early intervention led to significant clinical improvement, underscoring the importance of maintaining a high index of suspicion for WE in pregnant women presenting with hyperemesis and neurological symptoms. This case highlights the need for timely diagnosis and management to prevent morbidity in both mother and fetus.

Discussion: Pregnant women with persistent vomiting are at risk of thiamine depletion. WE must be considered early in patients with neurological symptoms associated with hyperemesis gravidarum. Delay in treatment may lead to persistent neurological deficits (Korsakoff syndrome) and fetal compromise.

Conclusion: Early recognition of neurological symptoms in vomiting during early pregnancy, Prompt thiamine supplementation, Preventing long-term maternal and fetal morbidity.

Presenter:
Manimozhi.T
Sree Balaji Medical College and Hospital, India

Neuroprotective Effect of Low-Intensity Ultrasound Against Diabetic Neuropathy

Serap Oktay

Department of Biophysics, Institute of Health Sciences, Adnan Menderes University, Türkiye

Aim: To investigate the possible neuroprotective effect of low-intensity ultrasound (US) in diabetic neuropathy.

Methods: Adult male wistar rats were randomly divided into three groups as control, untreated diabetic and ultrasound-treated diabetic. Diabetes was induced by a single intraperitoneal injection of STZ (50 mg/kg) and controlled by the presence of hyperglycemia (>250 mg/dl). US was delivered at a power density of 1.5 W/cm2 and a frequency of 1 MHz for 3 min/day for 5 weeks over a 5 cm2 skin surface. Blood glucose, insulin and HbA1c levels were measured. Nociceptive hot plate test and sciatic nerve electrophysiological measurements were performed. Oxidative stress and inflammation values were also examined.

Results: It was observed that STZ-induced diabetes led to an increase in blood glucose and HgA1C levels, a decrease in insulin levels, prolonged nociceptive response times, a decrease in nerve conduction velocity, and an increase in oxidative stress parameters and neuroinflammation biomarkers. With the applied US treatment, these values approached those of the healthy control group.

Conclusion: Low-intensity ultrasound has been shown to have a neuroprotective effect by reducing the changes associated with diabetes-induced neuropathy to near normal values. Low-intensity ultrasound is neuroprotective against the adverse effects of diabetic neuropathy.

Presenter:
Serap OKTAY
Adnan Menderes University, Türkiye

Disaccharide Trehalose Effects in C57Bl/6 Mice with Obesity Induced by a High Carbohydrate-Fat Diet and Behavior

Tatiana Korolenko[1], Alexander Pupyshev[1] and **Erik Korolenko[2]**

[1]Research Institute of Neurosciences and Medicine, Russia
[2]University Canada West, MSE Department, Canada

Disaccharide Trehalose is known autophagy inducer. Early we have shown positive effect of trehalose in db/db mice with experimental diabetes with obesity by drinking of 2% solution during for one month. There were reduced body weight, blood glucose and total cholesterol levels, followed by small movement activation of mice (Korolenko et al., 2024). The aim of this study was to evaluate trehalose drinking on metabolic parameters of C57Bl/6 mice with high carbohydrate-fat diet, so called the cafeteria diet. The cafeteria diet included free access for 18 weeks to water, standard feed, fatty food (unsalted lard) and carbohydrates (biscuits). Experiments were made in vivarium of the Institute of Cytology and Genetics Siberian Branch RAN, Novosibirsk, Russia.C57Bl/6 male mice, 3-months old, were used. In control mice drinking water and standard feed there was no changes of the biochemical parameters studied – body weight, blood glucose, triglycerides, total cholesterol, ALT activity). In C57Bl/6 mice with high carbohydrate-fat intake there was increasing of body weight (up to 25%), blood glucose (by 35%) and cholesterol level (by 66%) according to our data (Pupyshev et al., 2025). However, in C57Bl/6 mice with high carbohydrate-fat diet drinking trehalose we observed reduced blood insulin levels with compensatory upregulation of insulin signaling gene expression and there was no trehalose effect on body weight of these mice. So, Cafeteria diet, known model of obesity in humans, had some specific features in experimental animals - mice C57Bl/6 compared to humans, as well as trehalose drinking effects. Trehalose drinking was followed only by mild decrease of the levels of glucose, cholesterol, HDL-lipoproteins and induced week effect on genes expression participating in carbohydrate metastasis.

Presenter:
Tatiana Korolenko
Novosibirsk Medical University, Russia

On Quantum-Holographic Framework of Psychosomatics & Spirituality

Dejan Raković

University of Belgrade, Faculty of Electrical Engineering, Serbia

The subject of this talk is quantum-holographic foundations of psychosomatics & spirituality. This is of special importance due to the increasingly widespread application of integrative medicine in developed countries – since contemporary research into psychosomatic diseases indicates the necessity of applying holistic methods (with a focus on the body's acupuncture system & consciousness), oriented towards treating man as a whole and not diseases as symptoms of disorders of that whole, implying their macroscopic quantum origin – with significant global psychosomatic implications about the necessity of including the three front lines of integrative psychosomatic medicine. The aforementioned research is also in line with the reawakened scientific interest in researching the phenomenon of consciousness in recent decades (with hints of the emergence of a great synthesis of two modes of cognition, rational-scientific & creative-religious, within the framework of the quantum-holographic paradigm) – where the role of the individual becomes irreplaceable due to the influence & concern for the collective mental environment, which is certainly a fundamental issue of mental hygiene & civil decency, i.e. spiritual & civil morality.

Presenter:
Dejan Raković
University of Belgrade, Faculty of Electrical Engineering, Serbia

RAB3GAP1 Deficiency in Warburg Micro Syndrome: Autophagy Defects, Emerging Trafficking Involvement, and Enigmatic Mechanisms of Cortical Maldevelopment

Adeline Orts-Del Immagine[1], Emma Noël[1] and **Fabien Guimiot[2]**

[1]Université Paris Cité, NeuroDiderot, France
[2]Functional Unit of Fetal Pathology, France

Warburg Micro syndrome is a rare autosomal recessive neurodevelopmental disorder characterized by severe ocular, neurological, and endocrine abnormalities, most frequently caused by pathogenic variants in *RAB3GAP1*. *RAB3GAP1* encodes the catalytic subunit of the RAB3 GTPase-activating protein, a regulator of Rab-dependent vesicular and membrane dynamics. While experimental models have suggested a role for *RAB3GAP1* in autophagy, how its loss affects human brain development remains largely unknown.

In this seminar, I will present the first detailed neuropathological and molecular analysis of human Warburg Micro syndrome, based on two related cases: a 23-week gestation fetus and a 3-month-old infant carrying biallelic null *RAB3GAP1* variants. Using fetal brain tissue, we show selective vulnerability of the developing cerebral cortex, characterized by thinning of the cortical plate. At the cellular level, loss of *RAB3GAP1* expression in the fetal frontal cortex is associated with disruption of neurogenic niches, including depletion of SOX2-positive progenitor cells, disorganization of radial glia, increased apoptotic signaling, and reduced numbers of immature and deep-layer cortical neurons. Notably, although no major cortical malformations are evident at mid-gestation, pronounced cortical abnormalities are present in the postnatal brain, suggesting a progressive neurodevelopmental defect that originates during fetal corticogenesis. These developmental alterations are accompanied by marked dysregulation of autophagy markers in the fetal brain, supporting impaired autophagy as a central pathogenic feature of Warburg Micro syndrome. Complementary studies in proband fibroblasts confirm autophagy defects and further underscore the context-dependent impact of RAB3GAP1 dysfunction.

Together, these findings establish a direct link between RAB3GAP1 loss, impaired autophagy, and abnormal human cortical development. However, how defects in autophagy intersect with Rab-dependent intracellular trafficking to drive neurodevelopmental failure remains unresolved. To address

this question we are now developing a human cellular model to dissect the dynamic contribution of these pathways during corticogenesis and to improve our understanding of disease pathogenesis.

Presenter:
Adeline Orts-Del'Immagine
Université Paris Cité, France

Yoga-Based Modulation of Autonomic Nervous System in Post-COVID Anxiety: An Integrative Therapeutic Approach

Olena Bakai

International Yoga Therapy Center SENSE, Ukraine

Post-COVID syndrome frequently includes persistent anxiety symptoms associated with dysregulation of the autonomic nervous system. Prolonged sympathetic activation, driven by neuroinflammation and hypothalamic–pituitary–adrenal (HPA) axis imbalance, has been identified as a key mechanism underlying these conditions. This highlights the need for effective non-pharmacological rehabilitation strategies targeting autonomic balance.

The objective of this study was to evaluate the effectiveness of a structured yoga therapy protocol in reducing anxiety and improving autonomic regulation in individuals recovering from COVID-19. The study involved 42 female participants aged 30–40 years who had experienced COVID-19 infection at least three months prior. Participants were divided into an experimental group and a control group.

The intervention program was based on an integrative yoga therapy model combining controlled physical нагрузку (interval isometric exercises), breathing regulation techniques (pranayama), and guided relaxation. The structured alternation between activation and recovery phases was designed to stimulate adaptive responses in the autonomic nervous system.

Psychological assessment tools included the State-Trait Anxiety Inventory (STAI) and the Generalized Anxiety Disorder scale (GAD-7). Following an 8-week intervention period, participants in the experimental group demonstrated a statistically significant reduction in anxiety indicators compared to the control group. Improvements were associated with enhanced parasympathetic activity and stabilization of autonomic responses.

The findings support the potential of yoga therapy as an effective integrative approach in post-COVID rehabilitation. The study emphasizes the importance of structured protocols that combine physical, respiratory, and relaxation components to achieve therapeutic outcomes.

Presenter:
Olena Bakai
International Yoga Therapy Center SENSE, Ukraine

A Retrospective Five-Year Autopsy-Based Study of Suicide in Punjab Province of Pakistan

Arif Rasheed Malik[1], Fatima Ayub[2], Maryam Ayub[2,4], Michael Eddleston[3] and **Nazish Imran[4]**

[1]Ex-Surgeon Medicolegal Punjab, Pakistan, now prof. & HOD Forensic Medicine & Toxicology, RMDC, Pakistan
[2]Connections Psychiatric Services, Pakistan
[3]Centre for Pesticide Suicide Prevention (CPSP), University of Edinburgh, UK
[4]Child & Family Psychiatry Department, King Edward Medical University, Mayo Hospital, Pakistan

Background: Suicide deaths are significantly under-reported in Pakistan due, in part, to the absence of a national registry of suicide and stigma resulting from its illegal status until recently. Past studies of suicide by forensic autopsy have focused on larger cities. We aimed to identify the pattern of suicidal deaths in five rural districts in Punjab Province of Pakistan.

Methods: The data included all autopsies performed for suspected suicide in five districts of Punjab province (Bhakkar, Okara, Nankana Sahib, Khanewal and Khushab) over five years between January 2018 and December 2022, identified through collaboration with the Surgeon Medicolegal Punjab Office and district medico-legal officers. Demographic information and post-mortem toxicological findings were collected through a pre-designed proforma based on previous research.

Results: A total of 205 autopsies due to suspected suicides were identified. Most were aged under 30 years (133/205, 64.9%) and the male-to-female ratio was observed as 1.1:1. The most common methods overall were ingestion of poisonous substances (80/205, 39%; 18.5% of men and 61.9% of women) and hanging (75/205, 36.6%; 46.3% of men and 25.8% of women). Kala-pathar (paraphenylenediamine hair dye) was the most common ingested poison (41/80, 51.3%) followed by aluminium phosphide (formulated as 56% of 3 g fumigant wheat pills). Domestic conflict was the most common motive identified.

Conclusions: This retrospective review of suicide autopsy cases in five districts of the Pakistan Punjab showed that poisoning was the most common means of suicide, particularly with paraphenylenediamine hair dye. There is need for systematic collection of such data from all districts across Pakistan,

which can lead to the development of a national suicide registry. This will allow official reporting of suicide deaths on a national level to help guide development and monitoring of an effective suicide prevention strategy.

Presenter:
Arif Rasheed Malik
HOD Forensic Medicine & Toxicology, RMDC, Pakistan

Bad Governance and Corruption as Preludes to Insecurity, Economic Crises, National Instability and Educational Failure: Implication for Psychology of Human Development and Mental Health

Eric Chima NDUKWU and **Edith N. Ndukwu**

Department of Education Foundations, Faculty of Education
University of Nigeria, Nigeria

The Nigerian political class seems to show no interest in mending Nigeria or directing it to the path to progress. They only care about their own pockets and families. The activities of corrupt politicians have infected every sector in Nigeria negatively. The purpose of this study was to investigate the impact of poor governance and corruption on insecurity, education, and economic development with the aim of improving human psychology. The main idea behind this study is to uncover the root cause of Nigeria's problems and proffer lasting solutions that will better Nigeria. The study adopted a descriptive survey design. Two research questions and two hypotheses guided the study. Questionnaires were used to collect data from a sample of 104 adults (51 Males and 53 Females), aged 20–66 years. Arithmetic mean and t-test were used for data analysis. The study revealed that poor governance and corruption are the brain behind insecurity, national disunity, economic crises and educational failure experienced in Nigeria currently. The study equally uncovered that the immediate causes of insecurity in Nigeria are corruption, unemployment, poverty and illicit drug use. Before now, people did not know that bad governance, corruption and insecurity could impact negatively on human psychology by triggering emotional tension, death-anxiety, depression and suicidal ideation in people. To be candid, suicide related death has skyrocketed in Nigeria since the current administration took over power in 2023. The study also revealed how much bad governance and corruption could destroy a nation's unity and her educational quality. It is concluded that bad governance and corruption are major and remote causes of insecurity and educational failures in Nigeria. Insecurity has created death anxiety in the lives of the masses.

Presenter:
Eric Chima NDUKWU
University of Nigeria, Nigeria

The Quest of Remyelination in Multiple Sclerosis: Current State of the Field

Christina Argyropoulou

Department of Neurology, General Hospital of Nicosia, Cyprus

Multiple sclerosis (MS) is a chronic inflammatory and neurodegenerative disease of the central nervous system characterized by immune-mediated demyelination and progressive axonal loss. While current disease-modifying therapies primarily target inflammatory processes, they have limited capacity to promote myelin repair or restore neurological function. Remyelination, a regenerative process driven by oligodendrocyte precursor cells (OPCs), represents a critical therapeutic goal to prevent irreversible disability.

This review provides a comprehensive overview of the current state of remyelination research in MS. We first examine the cellular and molecular mechanisms underlying myelin repair, with particular emphasis on OPC recruitment, differentiation, and the influence of the lesion microenvironment. We then discuss key experimental models that have advanced our understanding of remyelination biology. Emerging therapeutic strategies are critically evaluated, including pharmacological agents such as clemastine fumarate and metformin, monoclonal antibodies targeting inhibitory pathways, and cell-based approaches aimed at restoring oligodendrocyte populations. In addition, we highlight advances in imaging techniques and biomarkers that enable *in vivo* assessment of remyelination.

Despite significant progress, numerous challenges remain, including age-related decline in regenerative capacity, lesion heterogeneity, and difficulties in translating preclinical findings into effective clinical therapies. Future approaches will likely require combinatorial strategies that integrate immunomodulation with targeted promotion of myelin repair.

In conclusion, remyelination represents a promising yet incompletely realized avenue for therapeutic intervention in MS. Continued advances in understanding the mechanisms of myelin regeneration and improving clinical trial design will be essential to translate this potential into meaningful clinical outcomes.

Presenter:
Christina Argyropoulou
General Hospital of Nicosia, Cyprus

Changing the Neuro Future

Luiz Moutinho

University of Suffolk, England

The talk starts by discussing the fusion between NS and AI, Machine Learning, followed by an overview of Behavioural Neurology, Neurophysiology, and Precision Neuromedicine. Biomarkers, Neuroimaging, Neuroinformatics, and Neuroethics are covered next. Other concepts to be dissected include, Computational NS, Neuroscience-Inspired AI, Neurotechnology, Cognitive Architectures, Interbrain, and BCIs. Finally, Neuroengineering and Human-Robot Interaction will also be presented.

Presenter:
Luiz Abel Magro Moutinho
University of Suffolk, England

Association Between Albumin-Bilirubin Index and Severity of Hepatic Encephalopathy: Evidence from a Cross-Sectional Analysis

Annysa Martina[1], Indarwati Setyaningsih[2] and **Kusumo Danandjoyo[2]**

[1]Resident of Neurology Specialist Education Program, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Indonesia
[2]Neurologist and Lecturer Neurology Study Program, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Indonesia

Objectives: Hepatic encephalopathy (HE) is a multifactorial neuropsychiatric complication of liver disease, influenced by metabolic, inflammatory and precipitating factors such as infection and gastrointestinal bleeding. Although the Albumin-Bilirubin (ALBI) index is validated and objective measure of hepatic function, its clinical utility in predicting HE severity has not been fully established, particularly in real-world clinical settings. This study aimed to investigate the relationship between the ALBI index and the severity of HE, and to determine whether ALBI can serve as an independent predictor of severe HE.

Methods: A cross-sectional study was conducted involving 118 patients with liver disease. The ALBI index was analysed as a continuous variable, while HE severity was assessed using the West Haven criteria. Spearman correlation analysis was performed to evaluate the association between ALBI and HE grade. Due to violation of proportional odds assumptions, HE severity was dichotomized into mild (grade 0-1) and severe (grade 2-4) for multivariable analysis. Binary logistic regression was applied to identify independent predictors, including age, infection status, gastrointestinal bleeding, serum creatinine, and sodium levels.

Results: A significant but weak positive correlation was observed between ALBI index and HE severity ($\rho = 0.249$; $p = 0.007$). In multivariable analysis, ALBI was identified as an independent predictor of severe HE (OR = 8.368; $p = 0.010$). Other variables, including age, infection, gastrointestinal bleeding, creatinine, and sodium levels, were not significantly associated with HE severity. The overall regression model demonstrated borderline statistical significance ($p = 0.060$).

Conclusion: The ALBI index is independently associated with the severity of hepatic encephalopathy and may serve as a practical and objective predictor in clinical settings. These findings highlight the central role of hepatic dysfunction in HE pathogenesis, despite the contribution of multiple precipitating factors.

Presenter:
Annysa Ayu Martina
Universitas Gadjah Mada, Indonesia

Factors Contributing to Uncertainty in Self-Administered Medication Intake

Reenu Singh

Indian Institute of Management Mumbai, India

Medication adherence is a complex behavior shaped by personal, cognitive, and environmental factors, and individuals often struggle to recall whether they have taken their medication—a difficulty that can be intensified by health conditions and packaging design. This study explores the key factors influencing timely medication adherence, with particular emphasis on cognitive challenges and health-related conditions that contribute to uncertainty in medication intake. Using a mixed-methods approach, data were collected from 30 participants aged 20–60 through a structured survey instrument with good internal consistency (Cronbach's alpha = 0.816), and analyzed to identify behavioral patterns and associations with health and demographic variables. The results show that insomnia and hypertension were statistically significant contributors to uncertainty about medication intake, with participants commonly questioning adherence 30 minutes to over two hours after the scheduled dose. Gender, age, and difficulties with child-safe packaging further affected adherence, while correlation analysis highlighted the potential of design-based solutions such as ergonomic packaging, smart reminders, and accessible pill organizers. Overall, the study underscores the multifaceted nature of medication adherence and the need to address cognitive and ergonomic barriers through user-centered interventions.

Presenter:
Reenu Singh
Indian Institute of Management Mumbai, India

Systems, Methods, and Media for Predicting a Conversion Time of Mild Cognitive Impairment to Alzheimer's Disease in Patients

Mohamed Ali M. Abu Sheha[1] and **Chris P. Tsokos**[2]

[1]Department of Mathematics, Southeast Missouri State University, USA
[2]Department of Mathematics and Statistics, University of South Florida, USA

The research is protected by a pending US patent, provisional application no.18/098,057.

Alzheimer's is a devastating disease that gradually destroys a person's memory, which happens very slowly and can not be reversed. Eventually, it takes away a person's ability to carry out even simple daily life activities. Based on 2000-2019 data, heart disease deaths decreased by 7.8%, while **Alzheimer's disease, AD**, deaths increased by 146.2%. In the present innovation we begin with a group of persons that are medically classified with M**ild Cognitive Impairment, MCI**. This group of **MCI** patients are treated and some remain in MCI, while others develop **Alzheimer's Disease, AD**, and some may revert to **Normal Cognitive, NC**, which is very rare. We have developed a real data driven analytical **Artificial Intelligence, AI**, supervised learning model that very accurately predicts the time of conversion of a patient in the **MCI** stage into being a patient in the **AD** stage. In developing the **AI** model, we have identified the individual and their interacting risk factors that are significantly contributing to the **MCI** patient to proceed on to the critical **AD** stage. We have ranked the significant risk factors based on the percentage of the most contributing to the least contributing risk factor. The developed **AI**- supervised learning model has been tested using several statistical methods to attest to its high quality. The subject model predicts the time of conversion from **MCI** to **AD** stage with 93.5% accuracy.

Presenter:
Mohamed Abu Sheha
Southeast Missouri State University, USA

Collaborating with Content Area and Non-Content Area Teachers: Implictaions for Students with Disabilities

Jeffrey P. Bakken and **Tegan W. Nusser**

Bradley University, USA

This presentation focuses on how special education teachers collaborate with teachers of content area and non-content area subjects and work with students with disabilities. Students with disabilities are often placed into inclusive environments that address both content and non-content areas. In these environments the teachers are often at a loss at how to meet these students' needs. Content areas addressed include English, mathematics, science, and social studies. Non-content areas or "specials" include art, physical education, and music.

Participants will learn about how collaboration is essential for general education teachers, specifically content-area teachers and non-content area teachers, with special educators to meet the needs of students with disabilities in these classrooms. Given general education teachers generally have limited knowledge and experiences with students with disabilities. First, it is critical that these teachers understand the characteristics and abilities of student with disabilities. Second, it is essential they collaborate with special education teachers to learn about effective strategies, adaptations, and modifications that can be made to their content areas to give access to students with disabilities. They also may find these strategies impact students without disabilities in their classes.

An extensive literature review was conducted and suggestions based on research will be highlighted. Specific areas that will be covered will include English, mathematics, science, social studies, art, physical education, and music. Specific strategies and best practices will be highlighted for each of these areas. Implications for teachers of students with disabilities and how they can work with special education teachers will be emphasized. Participants will leave the presentation knowing how to impact students with disabilities in content and non-content area classes.

Presenter:
Jeffrey P. Bakken
Bradley University, USA

Anticonvulsant Medication Discrepancies in Paediatric Discharge Summaries for Patients Presenting with Seizures: A Two-Cycle Quality Improvement Project

Nuwanji Amarasekera

University Hospital Coventry and Warwickshire, UK

Medication discrepancies in paediatric discharge summaries are common1, particularly among children with epilepsy2 who require accurate anticonvulsant and rescue medication prescribing. Incomplete medication histories and inconsistent documentation can lead to confusion in primary care, delays in discharge, and potential adverse events. This quality improvement project aimed to quantify anticonvulsant medication discrepancies and implement measures to improve discharge summary accuracy.

A retrospective audit was conducted on paediatric seizure admissions to the paediatric assessment unit or ward between September and November 2024. Discharge summaries were reviewed for unintentional discrepancies in regular anticonvulsant and rescue medication prescriptions, using clinic letters and national summary care records as reference standards. Accuracy of regular medication prescribing, provision of rescue medication when indicated, and documentation of current weight were assessed. Departmental teaching was delivered to address identified issues, followed by a second audit cycle three months later. A prescribing checklist was also added to the departmental handover system to support incoming rotating staff.

In the first cycle, 9 of 14 discharge summaries omitted at least one regular anticonvulsant, with 15 of 31 (48%) regular medications not prescribed. Rescue medication was omitted in 3 of 14 cases, and 6 of 14 summaries lacked a current weight. The second cycle showed improvement in regular medication accuracy, with omissions reduced to 5 of 21 (24%). However, rescue medication omissions increased to 7 of 14, and weight documentation remained unchanged (6 of 14).

Medication errors remain multifactorial3 and persist despite digital prescribing systems. Frequent staff rotation likely reduced the impact of teaching alone. Sustainable interventions included clear guidance on rescue medication prescribing and visual aids for brand-specific anticonvulsants. Improved long-term accuracy will require a fully integrated digital care system link-

ing primary and secondary care to ensure complete, synchronised, and auto-populated medication records at discharge.

Presenter:
Nuwanji Amarasekera
University Hospital Coventry and Warwickshire, UK

Practical Emotional Intelligence: Bridging Affect and Action Through the R.E.A.L. Framework

Stevie Amos Burke

Clean Community Inc. (CCI), USA

Many people can identify emotions, understand trauma, and recognize unhealthy behavioral patterns, yet still struggle to create meaningful and lasting change in their lives. This gap between emotional awareness and functional action represents one of the most significant challenges facing mental health, recovery, education, leadership, and community well-being.

This presentation introduces Practical Emotional Intelligence (PEI), an emerging approach focused on helping individuals move beyond emotional insight and toward intentional action. At the center of this work is the R.E.A.L. Framework, an integrative system that combines emotional literacy, behavioral science, trauma-informed practices, nervous-system regulation, reflective inquiry, guided journaling, grief work, and self-leadership.

The presentation will introduce the R.E.A.L. Method (Stop, Breathe, Recognize, Explore, Align, and Lead), a structured process designed to help individuals pause automatic reactions, regulate emotional responses, examine underlying patterns, align with personal values, and choose intentional behaviors. Additional components of the framework, including the R.E.A.L. Healing Library, Behavioral Labs, pilot studies, and the development of the R.E.A.L.-SS Scale (From Emotional Awareness to Functional Action), will also be discussed.

Particular attention will be given to the role of nervous-system regulation, childhood trauma, emotional triggers, addiction cravings, grief, and behavioral conditioning in shaping human responses. The presentation explores how practical emotional tools and structured reflection can help create greater self-awareness, accountability, communication, and behavioral alignment.

Rather than focusing solely on emotional understanding, Practical Emotional Intelligence seeks to answer a simple but important question: How do we help people translate what they feel and know into how they actually live?

Presenter:
Stevie Amos Burke
Clean Community Inc. (CCI), USA

Disparities in Neurological Management for Parkinson's Disease in Latvia: Pilot Study Evidence

Paula Abola

University of Jamestown, USA

Background: Parkinson's Disease management requires coordinated specialist, pharmacological, and non-pharmacological care. In Latvia, regional variation has not been empirically examined.

Objective: To evaluate regional variation in Parkinson's Disease management in Latvia from neurologist and patient perspectives and identify system-level barriers to equitable care.

Methods: A cross-sectional online survey targeted licensed neurologists who treat Parkinson's Disease (n = 55) and adults living in Latvia with a diagnosis of Parkinson's Disease (n = 50). Regional variation was tested using chi-square tests for categorical outcomes and Kruskal-Wallis tests for ordinal outcomes.

Results: Neurologists most frequently reported limited access to advanced treatments (78.2%), physiotherapy and related services (65.5%), long waiting times (60.0%), and insufficient funding (60.0%) as systemic barriers. Significant regional variation was observed in waiting times ($p<0.01$), access to advanced therapies ($p<0.01$), and awareness of national guidelines ($p=0.02$). Patients outside Riga reported longer travel distances ($p=0.03$), greater difficulty attending appointments ($p=0.03$), and fewer multidisciplinary care opportunities ($p<0.01$). The majority used levodopa-based regimens (86%), but reimbursement levels differed regionally ($p=0.03$). Both groups reported the need for improved reimbursement, telemedicine, and expanded regional services. Neurologists prioritized systemic reforms and training, while patients prioritized accessibility and rehabilitation frequency.

Conclusions: Regional and systemic disparities persist in Latvian Parkinson's Disease care, affecting access, funding, and non-pharmacological support. Updating national guidelines, strengthening multidisciplinary networks, expanding reimbursement, and supporting telemedicine and primary care education could promote more equitable, patient-centered management nationwide.

Presenter:

Paula Abola
University of Jamestown, USA

Understanding Pediatric Traumatic Brain Injury Across the Childhood Lifespan

Juliet Haarbauer-Krupa

Department of Pediatrics, Emory University School of Medicine, USA

Background: As a result of Traumatic Brain Injury (TBI) during childhood, changes in health, thinking, family environment, and behavior affect learning, self-regulation, and social participation, which are critical skills to optimize functioning in adulthood. TBI affects children differently than adults because of impact on brain development during key periods that may alter development trajectories over time. A TBI during childhood is associated with several health conditions, including epilepsy, headache/migraine, autonomic disturbances, intellectual disability, vision problems, speech and language problems and behavior and mental health problems.

Objectives: 1) Participants will learn about research describing the effects of TBI during childhood. 2) Participants will understand the effects of childhood TBI during the transition to adulthood.

Methods: The presentation will present research about childhood TBI across the age span including young children, school aged children and young adults. Imp0locations for taking care of children and future research will be described.

Results: Evidence suggests that TBI sustained during childhood is associated with long-term issues, including potential development of aging-related and neurodegenerative disease, that have a profound effect on children's ability to become productive adults and strain our healthcare system and society. What is currently known about TBI in children aligns with the WHO definition of a chronic health disease. Documentation of unmet needs for services both in the healthcare setting and school further supports the significant and ongoing burden of TBI well beyond the initial injury

Conclusion: In conclusion, TBIs are a leading cause of morbidity and mortality in children. Behavioral, cognitive, medical, and pain-related sequelae across the lifespan after TBI can persist. Although long-term studies of children are limited, emerging research demonstrates that TBI effects can persist throughout childhood and span into adulthood.

Presenter:

Juliet Haarbauer-Krupa
Emory University School of Medicine, USA

Structural and Functional Mechanisms of Kainate-Type Glutamate Receptors

Nami Tajima[1], Changping Zhou[1], Guadalupe Segura-Covarrubias[1], Nebojša Bogdanović[2] and **Lisa Zhang[3]**

[1]Case Western Reserve University School of Medicine, USA
[2]Florida State University, USA
[3]The University of Toledo College of Medicine and Life Sciences, USA

Kainate receptors (KARs) are a subfamily of ionotropic glutamate receptors (iGluRs) that are highly expressed in the brain. They play critical roles in regulating neurotransmitter release at presynaptic sites and mediating excitatory neurotransmission postsynaptically. Receptor activation and desensitization are key processes that modulate synaptic strength and plasticity. Although KARs share overall structural similarities with non-KARs, including AMPA receptors, their function-dependent conformations, particularly in the desensitized state, differ markedly from other iGluRs. Despite their importance in synaptic signaling and neurological disorders, the detailed gating mechanisms of KARs remain incompletely understood.

In this study, we used cryo-electron microscopy (cryo-EM) to determine the structures of KARs in multiple functional states, including the apo resting state, full/partial agonist-bound intermediate states, and the desensitized state. Furthermore, we elucidated the molecular mechanism of glycan-mediated modulation of KARs. These findings provide new insights into the gating mechanisms of KARs and advance our understanding of their role in synaptic physiology.

Presenter:
Nami Tajima
Case Western Reserve University School of Medicine, USA

Controlled Local Hyperthermia and Magnetic Hiperthermia for Therapy of Cancer Diseases

Zviad Kovziridze[1], Nunu Mitskevich[2], Sophio badzgaradze[3], Anano Saldadze[3], Guram Mentheshashvili[4] and **Paata Khorava[4]**

[1]Institute of Bionanoceramic and Nanocomposite Technology Technical University of Georgia
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[4]Institute of Clinical Oncology, Georgia

Creation of innovative high technology for treating cancer patients by the use of locally controlled hyperthermia in clinics.

Method: MRT, chemical, thermal, X-ray structural, electronic and biological microscopy, hematite particle distribution and particle density-normal Gauss distribution was determined with “Nanophox” device at the Powder Hause of Clausthal-Zellerfeld, Germany.

Results: Average size of hematite and magnetite micro and nanopowders and polydispersity index, zeta potential and distribution of particles were studied. Analysis showed that average size for hematite particles – 30-100 nm. Alternate current feed source was created for hyperthermia. Proceeding from the requirements of the objectives the U type MnZn material magneto conductors were selected, in which 10.0 and 8.0 mm width gaps were cut and glass test tubes with magnetite or hematite suspensions were placed in them. Series of experiments at various field intensity and frequencies showed that for efficient magnetic hyperthermia therapy more powerful device was needed with frequency of up to 10 Mega Hertz to achieve the temperature -42-45°C necessary for full activation of Neel and Brown mechanisms in particles.

Conclusion: High anti-blastoma effect innovative technology was developed. Apparatus was tested on patients in oncological clinic “Integra” Kutaisi for treating by “Cancerthermia” method. Advantages of our work and the uniqueness lies in the fact that the controlled local "cancerthermia" treatment is harmless to human health and is not characterized by any side effects - Conclusion of Research Center of Pharmacologic and Therapeutic Means of Tbilisi State Medical University for harmlessness.

Presenter:
Zviad Kovziridze
Georgian Technical University, Georgia

Pharmacokinetics and Pharmacodynamics of Perfluorooctane Sulfonate (PFOS) and its Role in the Development and Progression of Prostate, Ovarian and Breast Cancers

Victor C. N and **Uche O. A**

Department of Pharmaceutical Sciences, Irma Lerma Ramgel School of Pharmacy, Texas A&M University, USA

Environmental pollution, driven by industrialization, urbanization, and agricultural practices, has intensified global ecological degradation. Among the most concerning pollutants is PFOS, a synthetic compound known for its chemical stability, environmental persistence, and bioaccumulative potential. Widely utilised in industrial and consumer products, PFOS infiltrates ecosystems and food chains, posing substantial risks to human and animal health. Upon exposure, PFOS disrupts lipid metabolism, damages cellular membranes, and alters signaling pathways through partial metabolism by cytochrome P450 enzymes. Accumulating evidence links PFOS to oxidative stress, mitochondrial dysfunction, endocrine disruption, neurotoxicity, and immunotoxicity. Critically, PFOS contributes to the development and progression of prostate, breast, and ovarian cancers via mechanisms such as hormonal interference, chronic inflammation, and epigenetic modifications. Epidemiological studies further associate elevated PFOS serum levels with increased cancer risk, particularly in occupationally and environmentally exposed populations. This study/presentation brings together the latest knowledge on PFOS emissions, mechanistic toxicity, and cancer-causing potential, highlighting the urgent need for focused research and improved regulatory measures to safeguard public health.

Presenter:
Victor Chukwubuike Nwankwo
Texas A&M University, USA

Targeted Treatment of Gliomas Using Boron-Containing Dyes Specific to Beta-Amyloid

Vassiliy Tsytsarev[1], Lilia Kucheryavykh[2], Kevin Rosa Gonzalez[2], Felix Narvaez Irizarry[2] and **Mikhail Inyushin[2]**

[1]Johns Hopkins University, USA
[2]Department of Biochemistry, Universidad Central del Caribe, USA

Gliomas, among the most aggressive primary brain tumors, present significant diagnostic and therapeutic challenges due to their infiltrative growth and pronounced heterogeneity. Our previous research revealed that glioma tumors in both animals and humans accumulate beta-amyloid protein (Aβ), detectable by immunohistochemical methods or staining with amyloid-specific dyes. We hypothesize that beta-amyloid–specific dyes could serve as glioma markers, enabling tumor delineation and targeted therapeutic delivery. In this study, the specificity and blood-brain barrier (BBB) permeability of two fluorescent beta-amyloid-specific dyes, Brilliant Blue G (BBG) and the BODIPY-based Amyloid Probe-1 (BAP-1), were evaluated in C57BL/6 mouse glioma implantation models using GL261 and KR158 glioma cells. Notably, BAP-1 contains a boron isotope with a high neutron capture capacity, providing a biological rationale for its application in boron neutron capture therapy (BNCT). Upon neutron irradiation, boron-mediated localized energy release induces molecular damage, resulting in protein denaturation and selective tumor cell death. The preferential accumulation of BAP-1 within glioma tissue suggests a dual role as both an imaging agent and a boron delivery compound. Our findings demonstrate that both BBG and BAP-1 selectively stain gliomas, providing clear contrast from normal brain tissue, and highlight the translational potential of amyloid-targeted strategies for intraoperative glioma visualization and BNCT-based therapeutic applications.

In summary, because gliomas accumulate amyloid and BAP-1 selectively binds amyloid while delivering boron, this approach enables preferential boron enrichment within tumor tissue with minimal accumulation in normal brain, thereby enhancing the therapeutic selectivity of BNCT, in which neutron irradiation induces disproportionately greater tumor cell death compared to surrounding healthy cells.

Presenter:
Vassiliy Tsytsarev
Johns Hopkins University, USA

Redesigning a Dialogue between Phenomenology, Neurology and Cognitive Sciences, Starting from the View of the Historian of Philosophy

Bettina Bergo

Université de Montréal, Canada

Neurosciences today are increasingly hybrid pursuits, as are many cognitive sciences, which are their 'cousins.' When we understand the rich history of neurology, then we see how computationalist neuroscience emerged from its dynamic, materialist antecedents. When we understand, in addition, the ever more important role played by first-person description in phenomenology and clinical psychology, then we can integrate both of these as crucial contributions toward an enactivist cognitive neuroscience. My book studies this double history, which culminates in a synthesizing dialogue between phenomenology, neuro-psychology, and recent cognitive science.

Presenter:
Bettina Bergo
Université de Montréal, Canada

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SPEAKER TALKS

Atypical Manifestation of Pituitary Crooke's Cell Tumour: A Case Report and Literature Review

Abdullah Alsayedomar, Athary Saleem, Mariam Alsheikh, Mohamad Alkaak, Maryam Almurshed, Mohammad Ghorbani and **Tarek Alsheikh**

Department of Neurosurgery, Jaber Al-Ahmad Al-Sabah Hospital, Kuwait

Background: Crooke's cell adenoma represents an infrequent and biologically aggressive variant of corticotroph pituitary tumors. Despite its association with hypercortisolism, its clinical behavior is often unpredictable, with a tendency toward invasiveness and recurrence.

Case Presentation: A 29-year-old woman with known hypertension and hypothyroidism presented with a brief history of generalized fatigue accompanied by atypical abdominal discomfort. Neurological and systemic examinations were unremarkable. Initial cranial CT imaging did not reveal abnormalities; however, endocrine evaluation demonstrated markedly elevated ACTH levels, raising suspicion for an underlying functional pituitary lesion. Subsequent pituitary MRI identified a macroadenoma. The patient underwent endoscopic endonasal transsphenoidal excision. Histopathological assessment confirmed Crooke's cell adenoma, characterized by corticotroph lineage markers, distinctive cytoplasmic changes, and increased proliferative activity. The postoperative course was smooth, with satisfactory recovery.

Discussion: This case illustrates the diagnostic complexity of Crooke's cell adenomas, particularly when initial imaging is non-contributory and symptoms are non-specific. Although radiological features may overlap with other pituitary lesions, definitive diagnosis relies on histopathological and immunohistochemical evaluation. The aggressive biological profile of these tumors necessitates early recognition and careful long-term monitoring.

Conclusion: Clinicians should consider functional pituitary pathology in patients with subtle or atypical symptoms, even when initial imaging appears normal. Early reliance on biochemical markers and targeted pituitary imaging can facilitate timely diagnosis. Given the known risk of recurrence and progression, structured follow-up is essential in managing Crooke's cell adenoma.

Presenter:
Abdullah A A Alsayedomar
Department of Neurosurgery, Jaber Al-Ahmad Al-Sabah Hospital, Kuwait

Shadow Perception, Embodiment and Nature-Based Psychotherapy: An Integrative Ecopsychological Model

Maayan Green

Independent Researcher, Israel

This presentation is based on the published article “In Our Image and Likeness”: The Shadow as an Organizing Principle in Nature-Based Psychotherapy – An Integrative Theoretical Model within Ecopsychology (Human Arenas, Springer Nature, 2026).

This article proposes an integrative theoretical model in which the optical shadow is conceptualized not as equivalent to the Jungian shadow, but as an embodied perceptual phenomenon. Under specific therapeutic conditions, it is proposed to function as a structured perceptual interface through which aspects of experience not fully accessible to conscious awareness may become observable. Drawing on interdisciplinary literature from ecopsychology, embodied cognition, environmental psychology, somatic psychotherapy, and mindfulness research, the article reframes the shadow as a dynamic perceptual extension emerging through the interaction of body, movement, light, and natural environment.

Within this framework, shadow perception is proposed to operate through a two-stage mechanism: first, as a perceptual anchor that may stabilize attention and embodied awareness; and second, under certain conditions, as a medium through which discrepancies between intended and observed movement, non-volitional bodily expressions, or experiences of self-alterity may become available for therapeutic observation and processing.

Situated within an ecopsychological perspective, the model conceptualizes the natural environment not merely as a therapeutic setting but as an active relational field shaping perceptual and regulatory processes. The article differentiates between claims grounded in existing empirical literature and novel theoretical propositions, and outlines testable relationships, clinical implications, and directions for future empirical investigation.

Presenter:
Maayan Green
Independent Researcher, Israel

Drug Repurposing through Altered Cell–Cell Communication Networks in Alzheimer's Disease

Seyedeh Sedigheh Abedini[1,2], Orazio Vittorio[3], Hamid Alinejad-Rokny[2] and **Fatemeh Vafaee[1]**

[1]School of Biotechnology and Biomolecular Sciences, UNSW Sydney, Australia
[2]UNSW Biomedical Machine Learning Lab (BML), the Graduate School of Biomedical Engineering, UNSW Sydney, Australia
[3]School of Clinical Medicine, UNSW Medicine & Health, UNSW Sydney, Australia

Cell–cell communication (CCC) coordinates synaptic function, glial homeostasis, and neuroimmune interactions in the brain, and its disruption is increasingly recognised as a contributor to Alzheimer's disease (AD) pathology. This study uses single-nucleus RNA sequencing (snRNA-seq) to characterise altered intercellular signalling in AD and applies drug perturbation analysis to nominate compounds with the potential to reverse disease-associated ligand–receptor (L–R) patterns.

LIANA+ integrated with Tensor-cell2cell was applied to 1,396,877 nuclei from the Mount Sinai cohort (142 AD, 142 controls), with validation in an independent ROSMAP subset (941,460 nuclei; 80 AD, 73 controls). Sample-resolved tensor factorisation, combined with Spearman correlation and Gini-based specificity assessment, identified condition-associated communication programmes. Dysregulated L–R interactions converged on insulin-like growth factor (IGF), EGFR, and collagen–integrin signalling, with prominent remodelling of neuron–glia communication involving astrocytes and microglia, and shared interaction patterns between OPCs and $CD8^+$ T cells. Pathway enrichment implicated cell adhesion molecules, axon guidance, PI3K–Akt signalling, focal adhesion, and neuroinflammatory responses.

For drug repurposing, LR-targeting compounds curated from DrugBank, DGIdb, and OpenTargets were matched against LINCS and Tahoe-100M perturbation profiles. After dose–time selection, z-score normalisation, and filtering of disease-reinforcing effects, hypergeometric testing identified compounds with transcriptional signatures opposing AD-associated LR dysregulation. Candidates acted through integrin–ECM, NOTCH-related glial, APP-associated, and neuroinflammatory pathways. Cross-validation against FDA trial status confirmed framework reliability (31 drugs, 2.51-fold enrichment, $p = 3.01 \times 10^{-6}$), with discontinued candidates (e.g. simvastatin, atorvas-

tatin, celecoxib, nilotinib) correctly flagged.

By integrating sample-resolved CCC mapping with perturbation-response analysis, this work prioritises mechanistically grounded LR targets and nominates candidate compounds for follow-up, supporting a precision strategy for dissecting altered intercellular signalling in neurodegeneration.

Presenter:
Seyedeh Sedigheh Abedini
UNSW Sydney, Australia

Resilience as a Protective Mediator of Quality of Life in Cancer Patients in Healthcare Settings

Cristina Liviana Caldiroli[1], Olivia Realdon[2], Silvia Sarandacchi[4], Deborah Diso[4], Marco Castiglioni[4] and **Rossella Procaccia[3]**

[1]Department of Theoretical and Applied Sciences (DiSTA), eCampus University, Italy
[2]Department of Economics, Management and Statistics, University of Milano Bicocca, Italy
[3]Faculty of Psychology, eCampus University, Italy
[4]Department of Human Sciences for Education "Riccardo Massa", University of Milano-Bicocca, Italy

Quality of life (QoL) represents a pivotal dimension in oncology, influencing patients' psychological adjustment, treatment adherence, and overall clinical trajectory. Hematological cancers, in particular, are associated with complex treatment regimens, prolonged hospitalization, and unpredictable prognoses, all of which contribute to heightened emotional distress. The present study explores how psychological symptoms and personal resources interact in shaping QoL among hematological patients receiving care in three Italian hospital centers. A total of 110 patients, aged between 22 and 98 years, completed a battery of validated self-report instruments assessing PTSD symptoms, depressive symptoms, resilience, perceived social support, and overall quality of life. Correlational analyses showed that QoL was significantly and negatively associated with female gender, older age, depressive symptoms, and PTSD symptomatology. Conversely, resilience emerged as a strong and consistent positive correlate of QoL, suggesting that patients with greater psychological resources perceive higher levels of well-being despite clinical challenges.

Hierarchical regression analyses further confirmed the predictive relevance of resilience, together with depressive symptoms, age, and gender. Importantly, mediation analyses revealed that resilience acted as a partial mediator of the influence of demographic factors and depression on QoL, emphasizing its protective function in mitigating psychological vulnerability. Unexpectedly, perceived social support did not significantly correlate with QoL, challenging the assumption that external support systems always play a decisive role in patient adjustment. This result suggests that internal psychological strengths may outweigh external relational resources in determining well-being among patients dealing with chronic and uncertain he-

matological conditions.

Overall, the findings underscore the necessity of integrating resilience-focused interventions into psycho-oncological care pathways. Promoting adaptive coping strategies and identifying individuals at greater psychological risk may contribute to enhancing subjective well-being and improving patients' engagement with treatment. The study highlights the value of adopting a holistic and personalized approach to cancer care, where psychological resources are recognized as central components of clinical management.

Presenter:
Cristina Liviana Caldiroli
eCampus University, Italy

Progress in Suture-Free Nerve Repair: Integrating Novel Bioadhesives with Electrical Stimulation for Enhanced Regeneration

Peyman Esmaeili Fard Barzegar[1], Arbues Santa Cruz Minano[1], Abbas Raisi[2], James M. Hook[3], Keng-Yin Lai[1], and **Antonio Lauto[1]**

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[2]Department of Clinical Sciences, Faculty of Veterinary Medicine, Lorestan University, Iran
[3]School of Chemistry, University of New South Wales, Australia

Neural tissue regeneration following traumatic nerve injury remains a major challenge in neuroscience and biomedical engineering. In this study, we designed and applied a novel wireless stimulator system to enhance functional recovery in a rat model of crushed peripheral nerve injury. The core of this approach involved a biocompatible graft antenna fabricated from chitosan and rose bengal reinforced with gold, which was applied directly to the injury site and secured using laser-assisted attachment. To augment neural repair, animals were subjected to weekly non-invasive neuromodulation using transcranial magnetic stimulation (TMS) over an eleven-week period, with assessments conducted at weeks 1, 6, 9, and 11. The combination of localized stimulation via the graft antenna and systemic neuromodulation via TMS aimed to synergistically promote axonal regrowth, remyelination, and functional recovery.

A multi-modal evaluation strategy was employed to comprehensively assess outcomes. Behavioral performance was monitored using the Basso, Beattie, and Bresnahan (BBB) locomotor rating scale, von Frey filament testing for mechanical sensitivity, and the Hargreaves test for thermal nociception. Electrophysiological recovery was measured by recording compound muscle action potentials (CMAP), compound nerve action potentials (CNAP), and nerve conduction velocity (NCV), providing insights into restored electrical signaling across the injured nerve. Histological analyses including hematoxylin and eosin (H&E) staining and Luxol Fast Blue were performed to characterize tissue morphology and myelin integrity. Additionally, retrograde labeling of spinal cord motor neurons was conducted using fast blue and DiI dyes to trace axonal connectivity and regeneration.

The integration of bioengineered graft antenna technology with repetitive TMS therapy demonstrated a promising strategy for enhancing structural

and functional neural repair. Results suggest that this wireless stimulator approach may represent a clinically translatable platform for peripheral nerve regeneration and rehabilitation.

Presenter:
Peyman Esmaeili Fard Barzegar
School of Science, Western Sydney University, Australia

Material Support Alone is Not Enough: Personal Vision and Intrinsic Motivation as Mediators of Adolescent Mental Health Outcomes in Zimbabwean Orphanages

Munashe Mhaka, Roosevelt D Kabudura and **Forgiveness A Muchaka**

Mighty Me Motivations, Zimbabwe

Approximately 95,000 children live in institutional care in Zimbabwe. Orphanages provide essential material support including food, shelter, and education. However, 62% of adolescents remain unemployed three years after leaving care, and 41% report clinical depression. The psychological mechanisms explaining why some adolescents thrive despite identical material conditions remain unknown. To test whether personal vision (clear future goals) and intrinsic motivation (inner drive) mediate the relationship between material support and adolescent mental health outcomes, after controlling for pre-orphanage trauma, age at entry, and orphanage quality. Cross-sectional mixed-methods study of 420 adolescents aged 12-19 years (52% female) from 14 orphanages across Harare Province. Quantitative measures: Material Support Adequacy Scale (α=0.89), Future Orientation Scale (α=0.87), Intrinsic Motivation Inventory (α=0.92), Patient Health Questionnaire (PHQ)-9 depression screen (α=0.89). Mediation analysis using PROCESS macro (Model 4) with 5,000 bootstraps. Qualitative: 30 semi-structured interviews and 8 focus groups. Depression prevalence (PHQ-9 ≥10) was 35% - nearly three times the global adolescent average. Material support alone showed no significant direct effect on depression (β=-0.09, p=0.12). However, personal vision and intrinsic motivation significantly mediated the material support–depression relationship (indirect effect=-0.24, 95% Confidence Interval (CI) [-0.31, -0.18]). Adolescents with high personal vision had 64% lower depression scores (Cohen's d=2.9, p<0.001). Qualitative themes confirmed that hope and encouragement matter more than material provision alone. Material support is necessary but insufficient. Personal vision and intrinsic motivation act as critical psychological bridges transforming resources into wellbeing. Orphanage interventions must add low-cost goal-setting and mentorship to existing material support programs.

Presenter:
Munashe Mhaka
Mighty Me Motivations, Zimbabwe

Evaluating Stress in Healthy Participants with Single-Channel EEG Features and HRV Based on Two Studies and Meta-Analysis

Neta Maimon

Tel Aviv University, Israel

Acute and chronic stress affect both autonomic and cortical regulatory systems, yet there is still no practical protocol that links EEG-derived stress markers with established physiological and subjective measures at the individual level. Across two studies (N = 84), we examined how single-channel frontal EEG features relate to heart rate variability (HRV) and anxiety during different tasks. Participants completed auditory cognitive, resting-state, emotional, and Trier Social Stress Test (TSST) tasks, while HRV and EEG were recorded concurrently; in Study 2, State–Trait Anxiety Inventory (STAI) scores were also collected. Two pre-validated EEG features (ST4 and T2) emerged as robust correlates of autonomic and subjective stress. ST4 consistently showed negative associations with RMSSD and SDNN across studies and in the meta-analysis, indicating higher ST4 activity during higher physiological stress. T2 showed task-dependent relationships: positive HRV correlations during low-stress conditions (Study 1) but negative correlations during stress and emotional tasks (Study 2). Higher anxiety levels were associated with reduced HRV during the TSST, increased Beta and Gamma power during stressful performance, reduced Alpha power at rest, and increased Delta activity during sadness-inducing excerpt. Linear mixed models' analysis revealed that participants with lower baseline HRV exhibited significantly higher T2 activity during cognitive load, with similar trends in emotional and stress conditions. Together, these findings demonstrate that single-channel EEG features track physiological and subjective stress responses across diverse task contexts and may support scalable, real-time stress monitoring in naturalistic settings.

Presenter:
Neta Maimon
Tel Aviv University, Israel

The Cycle of Trauma: Unreconciled Prior Victimization and the Victim Offender Overlap Among Prisoners in South India

Beulah Shekhar

Adjunct Professor, Department of Liberal Arts, Parul University, India

The criminal justice system often treats victimhood and offending as separate life positions. This paper examines the victim offender overlap among prisoners in South India by focusing on the role of unreconciled prior victimization in shaping pathways into crime. The study aims to understand how early exposure to family disruption, physical and emotional abuse, peer violence, community level insecurity, institutional neglect, and repeated social exclusion may contribute to later offending behaviour. The scope of the work is limited to persons deprived of liberty in correctional settings in South India, with special attention to how they narrate their childhood experiences, unresolved trauma, coping strategies, and transition into criminal conduct.

The study adopts a qualitative exploratory design based on narrative accounts collected from prisoners. The narratives are examined through thematic analysis to identify recurring patterns of trauma, emotional suppression, defensive aggression, substance use, distrust, and the absence of timely psychological support. The analysis highlights that many prisoners do not enter offending pathways as isolated rational actors, but as individuals whose prior victimization remained unaddressed by family, school, community, welfare, and justice institutions. Unreconciled trauma appears to operate as a silent background condition that weakens emotional regulation, normalizes violence, and increases vulnerability to deviant peer networks.

The paper concludes that correctional policy must move beyond punishment centred approaches and recognize trauma as a criminogenic and rehabilitative concern. It argues for trauma informed screening, structured mental health interventions, restorative dialogue, and long term psychosocial support inside prisons. Addressing prior victimization is therefore not a dilution of accountability, but a necessary step toward reducing reoffending and breaking the intergenerational cycle of trauma and crime.

Presenter:
Beulah Shekhar
Parul University, India

Characterization of Fission and Fusion Mitochondrial Dynamics in HD Fibroblasts According to Patient's Severity Status

U Sprecher, S Gharaba, A Baransi, N Muchtar and **M Weil**

Laboratory for Personalized Medicine and Neurodegenerative Diseases, The Shmunis School of Biomedicine and Cancer Research, The George S. Wise Faculty for Life Sciences, Sagol School of Neurosciences, Tel Aviv University, Israel

Huntington's Disease (HD) is an inheritable neurodegenerative condition caused by an expanded CAG trinucleotide repeat in the HTT gene with a direct correlation between CAG repeats expansion and disease severity with earlier onset-of- disease. Previously we have shown that primary skin fibroblasts from HD patients exhibit unique phenotype disease features, including distinct nuclear morphology and perturbed actin cap linked with cell motility, that are correlated with the HD patient disease severity. Here we provide further evidence that mitochondrial fission-fusion morphology balance dynamics, classified using a custom image-based high-content analysis (HCA) machine learning tool, that improved correlation with HD severity status. This mitochondrial phenotype is supported by appropriate changes in fission-fusion biomarkers (Drp1, MFN1, MFN2, VAT1) levels in HD patients' fibroblasts. These findings collectively point towards a dysregulation in mitochondrial dynamics, where both fission and fusion processes are disrupted in HD cells compared to healthy controls. This study shows for the first time a methodology that enables identification of HD phenotype before patient's disease onset (Premanifest). Therefore, we believe that this tool holds a potential for improving precision in HD patient's diagnostics bearing the potential to evaluate alterations in mitochondrial dynamics throughout the progression of HD, offering valuable insights into the molecular mechanisms and drug therapy evaluation underlying biological differences in any disease stage.

Presenter:
Uri Sprecher
Tel Aviv University, Israel

Investigating the Effectiveness of Virtual Reality as an Educational Tool for Children with Autism: A Technical Analysis Review

Aisha Al-Zaabi and **Jabar Yousif**

Sohar University, Oman

The new development in information technology and communication help present the importance of virtual education, making it an important learning tool. It offers many benefits, including improving education by providing students with unforgettable visual and interactive experiences, which inspires students to read and memorize educational materials easily. Virtual reality also provides a safe learning environment that can be easily monitored, accessed, and available at all times. This manuscript investigates the potential of using virtual reality as a learning tool based on a comprehensive technical analysis review of the research studies from 2016 to 2022. The results show that VR technology can improve education for children with autism. Also, found significant factors in the uniqueness and personalization of VR interventions, while technical and cost considerations were cited as challenges to implementing VR in educational environments. Results indicate that the distribution of skills, such as social skills and visual interactions, are the most frequently targeted behaviors, accounting for around 32% and 30%, respectively. Besides, communication skills follow closely behind with 24%, and emotional regulation has the lowest frequency of 14%. Also, the studies indicate that most use the virtual reality “VR” group with a rate of 53%, which is slightly higher frequency than the wearable technology “WT” group with a rate of 47%. Recommendations for future research include conducting rigorous research, collaborating with teachers, exploring other study areas, and addressing technical challenges. This technical review will serve as a benchmark for future research on using virtual reality technology in education for students with autism and guide researchers to ensure that research in this field is of high quality.

Presenter:
Aisha Mohammed Ahmed Al-Zaabi
Sohar University, Oman

Magnetic Field–Enhanced Docosahexaenoic Acid Delivery for Acetylcholine Restoration in Alzheimer's Disease: An *in Silico* Study

Madhuleena Dasgupta[1], Amit Konar[2] and **Atulya K. Nagar[1]**

[1]School of Mathematics, Computer Science and Engineering, Liverpool Hope University, UK
[2]Artificial Intelligence Lab, ETCE Department, Jadavpur University, India

Alzheimer's Disease (AD) is characterised by progressive Acetylcholine (ACh) depletion, impairing cognitive processing and synaptic communication. Docosahexaenoic acid (DHA), the predominant omega-3 polyunsaturated fatty acid in neuronal membranes, is known to enhance cerebral ACh levels. However, conventional DHA supplementation is constrained by restricted blood–brain barrier permeability and slow passive diffusion kinetics, limiting its therapeutic efficacy in AD. The present work develops a closed-form mathematical framework modelling the coupled spatiotemporal dynamics of DHA diffusion and ACh synthesis under an externally applied static magnetic field. Under the field, DHA molecules undergo paramagnetic alignment while body cells form directional linear arrays, together enhancing the effective DHA diffusion coefficient. Analytical expressions are derived for DHA concentration, ACh concentration, and the time required to reach a therapeutic ACh threshold under both baseline and magnetically enhanced conditions. Simulations demonstrate that magnetic field–assisted DHA transport reduces threshold attainment time by 83.3%, from 10.55 s to 1.76 s. This improvement is spatially uniform across brain distances of 0–3.0 cm, with the absolute time saving growing from 6.71 s to 19.21 s. Co-evolution analysis further reveals that at 2.0 s, magnetic field assistance elevates DHA concentration 7.39-fold, driving ACh to 133.7% of the therapeutic threshold, while baseline conditions attain only 18.1%. A Brain–Computer Interface (BCI)–based closed-loop DHA dose regulation framework is additionally proposed as a pathway for future clinical validation. The findings establish a theoretical basis for magnetically enhanced DHA therapy as an approach to cholinergic restoration in Alzheimer's Disease.

Table 1. Time Required for ACh to Reach Therapeutic Threshold

Distance (cm)	Without Field (s)	With Field (s)	Δt (s)
0.00	8.047	1.341	6.706
0.50	10.547	1.758	8.789
0.10	13.047	2.175	10.873
1.50	15.547	2.591	12.956
2.00	18.047	3.008	15.039
3.00	23.047	3.841	19.206

Δt = time without field − time with field. $[ACh]_{threshold} = 5\times[ACh]_{baseline}$. Percentage reduction is constant at 83.3% across all distances.

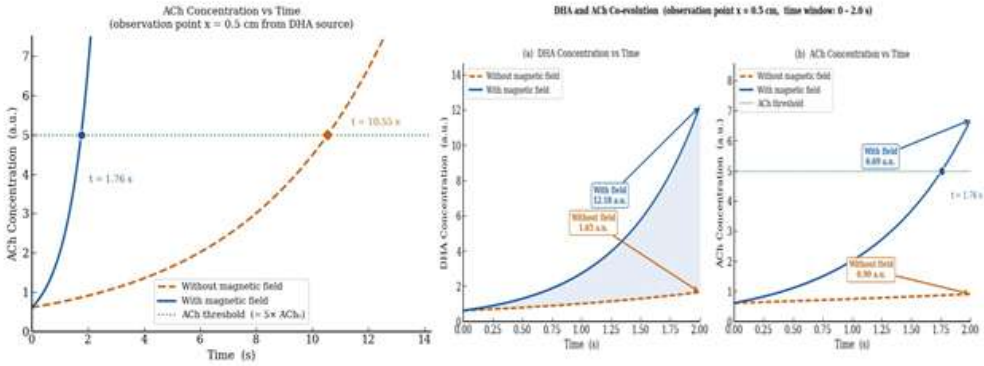

Figure 1. ACh Concentration vs Time and DHA–ACh Co-evolution

Left: ACh concentration vs time at x = 0.5 cm. Magnetic field–assisted condition (blue) reaches therapeutic threshold at t = 1.76 s versus 10.55 s under baseline (orange dashed).

Right: DHA and ACh co-evolution over 2.0 s window, showing 7.39-fold DHA elevation driving ACh to 133.7% of threshold under magnetic assistance.

Presenter:
Madhuleena Dasgupta
Liverpool Hope University, UK

Does Sucrose have a Beneficial Effect in the Treatment of PTSD?

Imola Plangár[1,2], Prabhat Kumar[1,2] and **Dóra Tímea Zelena[1,2]**

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[2]Szentágothai Research Centre, University of Pécs, Hungary

Posttraumatic stress disorder (PTSD) is a mental health condition that can develop after experiencing or witnessing a traumatic event. It is highly co-morbid with other adverse health outcomes, including obesity, suggesting metabolic disturbance. In support, previous studies on rats concluded that consuming sucrose immediately after a traumatic event may have positive impact on the stressed brain. For generalization we investigated the impact of various concentrations of sucrose solution on the trauma induced freezing behaviour of mice.

Adult male C57Bl/6 mice from both sexes were exposed to a single electric foot-shock and their freezing behaviour was detected 24h later in the trauma context and after presenting light and sound cues previously paired with shock. Half of the mice were got 2-16-32% sucrose solution to drink for 24h between trauma and test. As 16% was the most preferred this concentration was tried out also for 3h.

Our protocol induced trauma even after habituation to sucrose, which was necessary due to aversive effect of the highly osmotic solution. Post-trauma 2% sucrose drinking for 24h had no effect, but 16% and 32% reduced freezing, however, the effect was not dose dependent. The 3h window was not enough to induce any effect.

We confirmed that high energy intake (but not the sweet taste) right after trauma may modify the recent fear memories in both sexes. Our findings suggest a cheap, widely available treatment option for relief of acute stress symptoms as a prodromal phase of PTSD development.

Presenter:
Imola Plangár
University of Pécs Medical School, Hungary

Reeling in Miller Fisher Syndrome: A Rare Catch in Trinidad and Tobago

I. Ogeer, J. Mahabir, N. Hosein, N. Aziz, N. Abdulla and **Z. Mohammed**

San Fernando General Hospital, South West Regional Health Authority, Trinidad and Tobago

Background: Guillain-Barre Syndrome (GBS) is a neurological emergency caused by an insult to the peripheral nervous system. Miller Fisher Syndrome (MFS) a variant of GBS has an incidence of 0.1 per 100000 population [1]. Its pathognomonic triad has debilitating complications if not diagnosed early and treatment initiated. The following case highlights this rare diagnosis.

Case: A 25 year old male presented with ataxia and visual disturbances on a background of coryzal symptoms and diarrhea 2 weeks prior. Past history was insignificant and he admitted to regular alcohol and cannabis use. He denied dysphagia and respiratory symptoms. Examination noted bilateral ptosis, an ataxia gait and loss of deep tendon reflexes. Sensation, muscle tone and power were spared. Cardiac and respiratory examinations were normal. Complete blood count, renal and hepatic function tests were normal. A brain computed tomography scan was also unremarkable.

A differential diagnosis of MFS was made, frequent monitoring and serial neurological examinations were required to ensure no progression, with a low threshold for admission to intensive care. Magnetic resonance imaging with angiography of the brain and spinal cord were normal. Cerebrospinal fluid analysis revealed an elevated protein level with normal glucose, cell count and culture. Serum Anti-GQ1b antibody was positive supporting the diagnosis. Treatment onsisted of intravenous immunoglobulin at 400mg per kilogram for a duration of 5 days integrated with regular physiotherapy. While hospitalized there was gradual improvement in ptosis and coordination. Follow up included regular outpatient visits with continued physical and occupational therapy.

Conclusion: MFS although less encountered in clinical practice may have significant sequelae. As a less studied phenomenon [2] with long term functional and psychological implications more literature is required to sensitize healthcare providers.

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Presenter:

Ijaz Ogeer
San Fernando General Hospital, Trinidad and Tobago

Cognitive Assessment in Parkinson's Disease: A Cross-Sectional Comparison of Standard Clinical Scales and Visuospatial Cognitive Tests

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Introduction: Cognitive impairment observed in Parkinson's disease is six times more frequent than in the healthy population with two to six times higher risk of developing dementia with prevalence among patients about 25-30 %.

Objective: The aim of this study was to compare methods of cognitive assessment in Parkinson's disease, using noninvasive verbal cognitive tests and standard clinical evaluation tools.

Methods: A prospective cross-sectional study was performed. Exclusion criteria for this study were age less than 18 years and older than 65 years, history of cerebral events, neuroinfections or head trauma, diagnosed tumor or metastases in a central nervous system, thyroid pathologies, other diagnosed neurodegenerative diseases, type I or II diabetes mellitus, decompensated arterial hypertension.

The patients and participants in the control group were evaluated using MoCA, PHQ-9 and MDS-UPDRS scales during first meeting and using the mental rotation test, the perspective taking test, and the category fluency test in categories color (blue) and shape (round) during a second visit.

Results: A total of 61 participants were included, 27 in the patient group and 34 in the control group, matched by age and gender. Statistically significant differences between groups were observed in the results of the MoCA test (*Mann Whitney test U*= 296.5; *Z*= -2.396; *p*= 0.017). The participants in the control group had better results (*Mean rank* =35.78) than the participants in the patient group (*Mean rank* =24.98).

Positive moderate correlation between mental rotation test and perspective taking test were observed in patient (Spearman's rho =0.563; p=0.002) and control (*Spearman's rho* =0.617; *p*<0.001) groups.

In a patient group positive moderate correlation between MDS-UPDRS total score value and Category fluency test results were observed (*Spearman's rho* =0.587; *p*=0.001). Also, in patient group better mental rotation test results were associated with faster test completion (*Spearman's rho* = -0.402; *p*=0.038).

Presenter:
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From Elixir to Enemy: The Dark Side of Mercury

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Two children aged below 5 years were brought to the pediatric department with acute onset irritability, behavioural disturbances, pain in the limbs, paraesthesias, refusal to walk or play, weight loss and poor sleep for 2.5 months. One child had generalized seizures and was mechanically ventilated for status epilepticus with an MRI of the brain showing features of posterior reversible encephalopathy while the other child was noted to have brisk deep tendon reflexes on neurological examination. On further clinical examination, both children lacked sustained eye contact, were irritable, had excessive sweating of palms and soles with grade 2 hypertension. They did not have facial dysmorphism, ambiguous genitalia or neurocutaneous markers. Both children achieved age appropriate developmental milestones with no significant prior medical history.

Extensive evaluation for the etiology of hypertension and associated neurological symptoms including neural crest and catecholamine secreting tumors, renal, endocrine and cardiac causes was inconclusive.

History subsequently revealed consumption of Indian traditional medicine in both children. Given the temporal association of the use of alternative medicine with the symptoms, heavy metal toxicity was suspected. Serum and urine for heavy metal toxicity screen revealed elevated mercury levels. Both patients were also positive for contactin-associated protein like 2, an antibody against voltage-gated potassium channel associated proteins. They responded well to chelation therapy with dimercaprol and steroids. Both the children had no residual symptoms on follow up.

With these two cases, we aim to highlight that heavy metal toxicity is an evolving global health concern. The knowledge of the presence of heavy metals in some alternative medicines and their varied clinical manifestations should prompt seeking history of their usage in children with unexplained neurological symptoms.

Table 1: Differential diagnoses and relevant investigations for both children

Differential diagnosis	Investigations	Reference range (for both cases)	Case 1	Case 2
Renovascular causes	Serum creatinine	0.2–0.5 mg/dL	0.26 mg/dL	0.21 mg/dL
	Urine protein/creatinine ratio	0.2–0.5 mg/mg	1.26 mg/mg	0.21 mg/mg
	Ultrasound abdomen and pelvis	–	No nephrocalcinosis or obstruction	–
Neuroendocrine tumors	MRI and MRA abdomen with spine screening	–	No abdominal masses	–
	Renal artery Doppler / CT angiogram	–	Normal	Normal
	Plasma renin	170–1120 µIU/mL	>500 µIU/mL	96 µIU/mL
	Plasma aldosterone	70–540 pg/mL	60 pg/mL	423 pg/mL
	Urine spot sodium (U Na)	<10 mmol/L	73 mmol/L	–
	Urine spot potassium (U K)	<10 mmol/L	18 mmol/L	–
	Arterial blood gas	pH 7.35–7.45, HCO_3 22–26 mmol/L	pH 7.39, HCO_3 24.2 mmol/L, AG-3	–
Neuroendocrine tumours	24-hour urinary metanephrines	25–117 µg/24 h	101 µg/24 h	76 µg/24 h
	24-hour urinary normetanephrines	54–249 µg/24 h	824 µg/24 h	239 µg/24 h
	PET scan	–	No abnormal tracer uptake	No abnormal tracer uptake

	MIBG scan	–	No abnormal tracer uptake	–
	5-HIAA levels (urine)	–	Not detected	–
Hypertensive encephalopathy and end-organ damage	Fundus examination	–	Normal	Normal
(Sequelae of hypertension)				
	CT/MRI brain	–	Residual PRES changes	Normal
Endocrine causes	ACTH levels	7.2–63.3 pg/mL	33.4 pg/mL	–
	Thyroid function (TSH)	0.7–5.97 mIU/mL	3.319 mIU/mL	1.320 mIU/mL
	Free T4 (FT4)	5.9–13.9 µg/dL	13.9 µg/dL	11.7 µg/dL
	Free T3 (FT3)	0.85–1.75 ng/mL	1.76 ng/mL	1.57 ng/mL
	Cortisol (8AM)	3–21 µg/dL	19.5 µg/dL	–
Cardiac anomalies and cardiac effects of hypertension	Echocardiogram	–	Normal	LVH
	Electrocardiogram	–	Sinus tachycardia	Normal
Guillain–Barré syndrome	Anti-neuronal and anti-ganglioside antibodies	–	Negative	–
	Electromyography	–	Normal	–
Porphyria	Urine porphobilinogen	–	Not detected	–
	Urinary delta-amino-levulinic acid (ALA)	<5 mg/24 h	0.72 mg/24 h	–
Autoimmune vasculitis	ANA	–	Negative	–

	ANCA	<20 RU/mL	<2 RU/mL	–
Monogenic hypertension	Whole exome sequencing	–	Negative	–
Heavy metal toxicity screen*	24-hour urine mercury level	<10 µg/L	23.7 µg/L	16.5 µg/L
	24-hour urine arsenic level			
		<15 µg/L	7.3 µg/L	16.5 µg/L
	Serum mercury levels	<10 µg/L	14.4 µg/L	–
	Serum lead levels	<10 µg/L	9.6 µg/L	6.5 µg/L

*The heavy metal toxicity screen (whole blood) included the following metals: nickel, arsenic, cobalt, chromium and lead. However, the levels of other heavy metals were below limits.

ANA, antinuclear antibody; ANCA, antineutrophil cytoplasmic antibody; FT3, free triiodothyronine; FT4, free thyroxine; HCO, bicarbonate; K, potassium; LVH, left ventricular hypertrophy;

MIBG, metaiodobenzylguanidine; MRA, magnetic resonance angiography; Na, sodium; PET, positron emission tomography; PRES, posterior reversible encephalopathy syndrome; TSH, thyroid stimulating hormone.

FORM	ELEMENTAL ←→	INORGANIC ←→	ORGANIC
State	Metal and vapor	Mercuric salts (low lipid solubility)	Organomercuric compounds (lipophilic)
Route	Inhalation	Ingestion, injection	Ingestion, inhalation
Exposure	BP, thermometers, bulbs, gold mining, dentistry fillings	chloralkali industries, lab agents, ingestion of oral or topical medications, vaccines and antiseptics, cosmetics	mercury-contaminated fish, Thimerosal - preservative used in some vaccines, wood preservation and outdoor painting
Deposition	CNS	Kidneys (PCT)	Kidney, liver, hair, CNS
Excretion	Kidneys and GI tract	Kidneys and GI tract	Faeces, enterohepatic circulation
Systems affected	RS, CNS, Renal	GI, Renal	GI, RS, CNS,
Treatment	Supportive, chelation	Supportive, chelation	Supportive

Figure 1 Sources of mercury exposure and forms of mercury toxicity. BP, blood pressure sphygmomanometer; CNS, central nervous system; PCT, proximal convoluted tubule; GI, gastrointestinal tract; RS, respiratory system.

Presenter:
Sharon Pradeeptha
Christian Medical College, India

tDCS may Enhance Post-Stroke Neuroplasticity *via* Real-Time Motor Imagery BCI

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Purpose: This study aims to investigate whether the combination of transcranial Direct Current Stimulation (tDCS), Motor Imagery-based Brain-Computer Interface (MI-BCI), Neurofeedback (NF), and Functional Electrical Stimulation (FES) may induce post-stroke neuroplasticity and functional improvements.

Methods: A chronic post-stroke patient with left hemiparesis completed a 15-day MI-BCI-NF-FES protocol (Protocol 1) comprising 18-minute sessions with visual and tactile feedback to promote upper-limb recovery. Subsequently, the patient received 20 minutes of tDCS followed by an additional 15 days of Protocol 1 (Protocol 2: tDCS+MI-BCI-NF-FES). Analyses included clinical recovery assessments and EEG-based cortical motor mapping of the Mu (8–12 Hz) and Beta (13–30 Hz) bands. EEG was recorded at baseline (day 1), post-Protocol 1 (day 15), and post-Protocol 2 (day 30). The clinical scales Medical Research Council (MRC), the Fugl–Meyer Assessment for Upper Extremity (FMA-UE), the Functional Independence Measure (FIM), the modified Rankin Scale (mRS), Barthel Index (BI) and the National Institutes of Health Stroke Scale (NIHSS) were applied. Statistical analyses included Kruskal-Wallis, Cohen's d, and percentage change.

Results: Protocol 1 was associated with contralesional motor map reorganization and increased Mu/Beta Event-Related Desynchronization (ERD), indicating possible compensatory vicariation and related clinical improvement. The combination of tDCS enhanced sensorimotor cortical modulation by increasing ERD, promoting reorganization of the motor map toward the ipsilesional hemisphere and potentially mitigating maladaptive neuroplasticity.

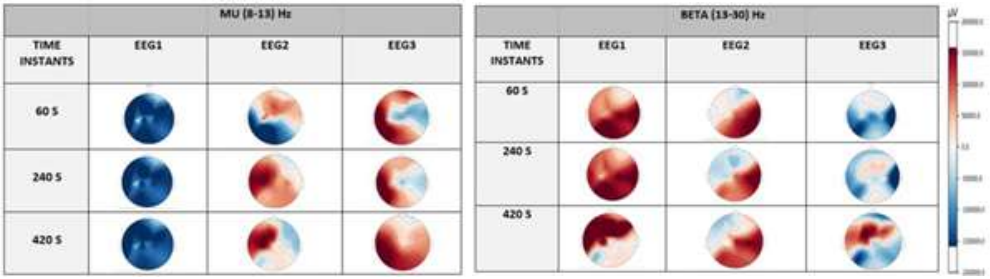

Fig: EEG Topography Across Three Time Points in the Mu and Beta Bands

Table: Intervention effect size between each pair EEG datasets for each time instants – Mu and Beta band

Cohen's d	MU (8–13) Hz					
TIME INSTANTS	Cohen's d EEG2 vs.EEG1	Effect size	Cohen's d EEG3 vs. EEG1	Effect size	Cohen's d EEG3 vs.EEG2	Effect size
60 S	4.26	↑↑↑↑	4.30	↑↑↑↑	0.37	↑↑
240 S	5.04	↑↑↑↑	4.90	↑↑↑↑	−0.82	↓↓↓↓
420 S	5.81	↑↑↑↑	5.99	↑↑↑↑	1.10	↑↑↑↑
Cohen's d	BETA (13–30) Hz					
TIME INSTANTS	Cohen's d EEG2 vs.EEG1	Effect size	Cohen's d EEG3 vs. EEG1	Effect size	Cohen's d EEG3 vs.EEG2	Effect size
60 S	−3.25	↓↓↓↓	−3.54	↓↓↓↓	−2.37	↓↓↓↓
240 S	−3.81	↓↓↓↓	−3.95	↓↓↓↓	−1.21	↓↓↓↓
420 S	−1.47	↓↓↓↓	−1.52	↓↓↓↓	−1.08	↓↓↓↓

N: No effect 0≤d. ↑ or ↓: Trivial increased or decreased 0.01≤d<0.2; ↑↑ or ↓↓: Small increased or decreased 0.2≤d<0.5; ↑↑↑ or ↓↓↓: Moderate increased or decreased 0.5≤d<0.8; ↑↑↑↑ or ↓↓↓↓: Large increased or decreased d≥0.8

All outcomes improved after Protocol 1: MRC (2 to 3), FMA-UE (61 to 82), FIM (109 to 112), mRS (3 to 2), NIHSS (3 to 2), BI (44 to 45). Protocol 2 yielded additional gains in FMA-UE (82 to 86), FIM (112 to 120), and the BI (45 to 46).

Conclusion: MI-BCI-NF-FES may have promoted upper-limb functional recovery and cortical neuroplasticity in chronic stroke, while adjunctive tDCS neuromodulation may have corrected maladaptive plasticity, modified the cortical motor map, and yielded additional functional gains.

Presenter:
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Federal University of Espírito Santo (UFES), Brazil

Outcomes of Oberlin Transfer in Elderly Patients: A Case Series

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OBJECTIVE: A case series analysis was performed of upper brachial plexus injuries (BPIs) from low-impact trauma in patients ≥ 60 years old to assess the effectiveness of nerve transfers, particularly the Oberlin technique, in restoring elbow flexion and to refine clinical decision making for managing traumatic BPIs in this age group.

METHODS: Between 2013 and 2024, 11 patients aged 60-72 with traumatic upper BPIs underwent Oberlin technique for elbow flexion; all were evaluated with consistent postsurgical criteria.

RESULTS: Trauma mechanisms included falls (55%), direct trauma (27%), knife wounds (9%), and stretching (9%), with no high-impact trauma cases. Injuries predominantly affected the right side (55%). Elbow flexion strength was assessed using the British Medical Research Council scale. Positive Tinel sign was present in 73% of patients, all reporting pain ranging from mild to severe. At 1 year post surgery, 64% achieved M4 elbow flexion, 27% achieved M3, and 9% achieved M1 after 4 months. Patients > 65 who received surgery within 6 months of injury showed better outcomes except for 1 case. No ulnar nerve deficits were observed. Following surgery, 36% experienced no pain, whereas 64% reported mild pain. Additionally, 64% underwent further nerve transfers to restore shoulder function (spinal accessory nerve to suprascapular nerve), and 18% underwent the Somsak procedure for deltoid function.

CONCLUSIONS: Positive outcomes were achieved with the Oberlin technique in patients >60 with upper BPIs from low-energy trauma. However, delayed surgery, significant atrophy, and low testosterone levels may affect results. Evaluation of each patient's medical history is crucial before performing this procedure.

Presenter:
Evelina Llorian
Federal University of Rio de Janeiro State (UNIRIO), Brazil

Microbiome and Neuropsychiatric Disorders

Tyler Halverson[1] and **Kannayiram Alagiakrishnan**[2]

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There is a growing body of evidence that the interaction between the gut microbiome and the human host plays a critical role in both physical and mental health across the lifespan. The Brain–Gut–Microbiome Axis (BGMA) enables bidirectional communication between microbial communities and the central nervous system, through the use of immune, metabolic, and neuroendocrine pathways. Through the gaining process, there are shifts in the gut microbial composition. This can be influenced by early-life exposures in the form of dietary changes, medications such as antibiotics and psychotropics, environmental factors, and even host genetics. These age-related changes, along with alterations in BGMA signalling, are increasingly implicated in the rising prevalence of chronic diseases, including neurocognitive and mental health disorders. Various studies have explored the role of microbial dysbiosis and how it may contribute to conditions such as depression, anxiety, OCD, PTSD, schizophrenia, bipolar disorder, dementia, and the behavioural and psychological symptoms of dementia (BPSD).

As there is a growing understanding in how disruptions in the gut microbiome may contribute to various mental health and neurocognitive conditions, research is now exploring how targeting the microbiome and gut health may serve as an adjunct therapy to current treatment modalities. In particular, microbial therapeutics, such as Gut Biotics (prebiotics, probiotics, synbiotics, postbiotics, paraprobiotics, proteobiotics), and fecal microbiota transplantation may now start to be considered as treatment options for patients. Some early human studies suggest that certain gut biotics can reduce gut permeability, inflammation, and metabolic dysregulation, while some animal models indicate synergistic benefit when combined with conventional psychotropic treatments. Although current evidence is promising, further randomized controlled trials, longitudinal studies, and replication research are required before widespread clinical implementation.

Overall, we hope to highlight the importance of targeting the gut microbiome and BGMA as a novel, holistic strategy for managing neurocognitive and mental health conditions. Nutritional and microbial modulation may complement existing therapies and open new avenues for precision-based,

gut-related psychotherapeutics across the course of a patient's life.

Presenter:
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Analysis of EEG Rhythms During Motor Imagery for Standing and Sitting Tasks

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Background: Despite the extensive research on motor imagery (MI) of the upper and lower limbs, comparatively little research remains on MI for standing and sitting.

Objectives: The objectives of this study were twofold: first, to analyze electroencephalogram (EEG) rhythms using features of power spectral modulation and event-related synchronization/desynchronization; and second, to identify neural patterns associated with offline and online motor imagery experiments for the sit-to-stand and stand-to-sit tasks.

Scope: The scope of this study was to examine the alpha and beta bands during motor imagery associated with Sit-to-Stand and Stand-to-Sit tasks, and to identify discriminative features in subjects with no prior experience with electroencephalography (EEG).

Methods: Thirty-two healthy subjects participated in the study, which utilized 17 active EEG electrodes. The filter bank common spatial pattern (FBCSP) method, in conjunction with the regularized linear discriminant analysis (RLDA) technique, was employed to decode participants' electroencephalograms (EEGs) during the offline and online motor imagery experiments for the sit-to-stand and stand-to-sit tasks.

Results: Offline analysis yielded mean accuracies of 88.51% ± 1.43% and 85.29% ± 1.83% for classifying motor imagery versus the idle state during sit-to-stand and stand-to-sit tasks, respectively. The mean accuracies of the sit-to-stand and stand-to-sit online experiments were 94.69 ± 1.29% and 96.56 ± 0.83%, respectively.

Conclusion: The analysis of electroencephalogram (EEG) data during motor imagery for standing and sitting tasks performed by inexperienced subjects has the potential to inform the development of more effective interventions. These results suggest that motor imagery for these tasks could benefit fu-

ture brain-controlled standing systems.

Presenter:
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Universidad Nacional Abierta y a Distancia (UNAD), Colombia

Multi-Modal AI-Powered Prediction of Ischemic Stroke Etiologies for Recurrent Stroke Prevention

William H. Lee

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Determining an etiology of acute ischemic stroke (AIS) is crucial for recurrent stroke prevention. Stroke etiologies are heterogeneous and often diagnostically challenging to identify. About 30% of AIS cases have no known or cryptogenic etiology. Moreover, only 1 out of 6 stroke patients in the US is examined by a board-certified vascular neurologist. To address this issue, we recently developed a computational framework of natural language processing (NLP) and machine learning (ML) tools, *StrokeClassifier*, to predict TOAST-based stroke etiologies using discharge summary notes in electronic health records (EHR) from 3 academic hospitals in the US. We developed an ML ensemble classification model by employing a classical NLP tool, MetaMap, to extract clinical information from the EHR notes as model features. We achieved state-of-the-art performances and cross-hospital validations with 70-90% accuracies and F1 scores. In addition, *StrokeClassifier* reduced the cryptogenic cases from 25% to 8% with high confidence. To further improve our approach, we are developing multi-modal artificial intelligence (AI)-powered tools for stroke etiology prediction using proteomics and MRI data. Our preliminary study shows that the clinical notes offer higher prediction power than proteomics or MRI for stroke etiology prediction, which may be due to differences in data availability or limitations. Assuming the continued improvement of the data and AI tools, we anticipate that AI-powered multi-modal approaches will have a major impact on development of a powerful clinical decision support tool in recurrent stroke prevention.

Presenter:
William H. Lee
Yale University School of Medicine, USA

Unraveling Mechanisms of Muscle Atrophy in Limb-Girdle Muscular Dystrophy R1 (LGMDR1)

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Background: Muscle atrophy is a common feature of many neuromuscular disorders, including muscular dystrophies, where muscle protein breakdown far exceeds protein synthesis, resulting in muscle weakness and reduced function. Among these, Limb girdle muscular dystrophy (LGMD) comprises a group of rare, highly heterogeneous, autosomal neuromuscular disorders. Limb-Girdle Muscular Dystrophy Type R1 (LGMDR1), caused by mutations in the *CAPN3* gene encoding calpain-3, is associated with progressive muscle weakness and atrophy, which is usually accompanied by bilateral scapular winging and Achilles tendon contractures.

This study focuses on LGMDR1 to explore both genetic alterations and mechanisms of muscle atrophy associated with inflammatory signaling.

In our work, we aimed to identify novel variants of the *CAPN3* gene in LGMDR1 patients. Additionally, we investigated the mechanism of muscle atrophy in LGMDR1 patients with a background of inflammatory cytokines, as inflammation is commonly observed in these patients. This inflammation can further activate the ubiquitin–proteasome system (UPS).

Methods: Using muscle biopsies from patients with suspected LGMD, we performed histopathology, immunohistochemistry, Western blotting, and genetic analysis. Additionally, ELISA was used to assess inflammatory cytokines, while qRT-PCR and Western blotting were used to evaluate atrophy-related markers and ubiquitin–proteasome system (UPS) pathway mediators.

Results: We observed reduced or absent calpain-3 protein expression in patients and identified both known and novel variants in the *CAPN3* gene. To

further explore the mechanism of inflammation-linked muscle atrophy, we tested the expression of pro-inflammatory cytokines. Our data showed that increased TNF-α expression was associated with muscle wasting in LGMDR1 patients by increased phosphorylation of NFκB and decreased phosphorylation of the AKT-FOXO pathway. These UPS pathway mediators further activate ubiquitin ligases—MuRF1 and Atrogin-1, leading to increased muscle protein breakdown.

Conclusion: Overall, our work suggests that genetic variants in LGMDR1 patients may help to understand the etiology of the disease and future prognostication. Additionally, targeting TNF-α signaling and its downstream factors may help develop therapeutic interventions to prevent muscle atrophy in LGMDR1 patients.

Presenter:
Sukanya Banerjee
Post Graduate Institute of Medical Education and Research, India
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Using Video Modeling as an Evidence-Based Practice to Teach Leisure Skills to Minor Children with Autism Spectrum Disorder in the United States

Lubna Alzayyat

Duquesne University, USA

Video modeling has emerged as a widely supported evidence-based practice for teaching functional and social skills to children with Autism Spectrum Disorder (ASD). In the United States, where access to inclusive leisure opportunities varies significantly across educational and therapeutic settings, the application of video modeling to teach leisure skills represents a promising and practical instructional approach. This study examines the effectiveness of a video modeling intervention in helping minor children with ASD acquire, generalize, and maintain leisure-related behaviors such as independent play.

The objective of this work was to evaluate the degree to which video modeling improves performance accuracy and independence during leisure tasks. A sample of children aged 6–12 years with clinically diagnosed ASD participated in a multi-phase intervention that included baseline observation, video modeling exposure, and maintenance probes. Data were collected using task-analysis scoring and observational coding systems. Results demonstrated notable improvements in independent engagement and task completion after exposure to the video models. Participants also showed evidence of maintaining their skills after the intervention was withdrawn, suggesting strong transferability of learned skills.

A figure (Figure 1) illustrates the progression of performance scores across the intervention phases, while Table 1 summarizes mean accuracy levels for each participant. The findings reinforce that video modeling is an efficient, accessible, and scalable strategy for promoting meaningful leisure participation among children with ASD. Implications for educators, therapists, and caregivers include the importance of consistent model presentation, individualized video content, and integration of leisure skills into daily routines.

Presenter:
Lubna Alzayyat
Duquesne University, USA

Brain-Specific MicroRNA-Mediated Regulation of Metabolic Homeostasis in *Drosophila Melanogaster*

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To maintain an optimal metabolic balance, an organism must coordinate its food intake, energy storage as fat, and appropriate energy mobilization to meet physiological demands and support overall well-being. These metabolic processes require precise regulation to ensure timely responses to environmental and internal cues. Small non-coding microRNAs (miRNAs) are well suited for this role, as they can regulate physiological and adaptive processes that require rapid or localized control of gene expression.

We have identified a novel neural circuit in *Drosophila* that plays an important role in metabolic homeostasis, mediated by the conserved Central Nervous System (CNS)-specific miRNA *miR-1000*. We find that *miR-1000* regulates key aspects of metabolism, including body weight, fat storage, survival during nutrient deprivation, and longevity. *miR-1000* achieves this by repressing the Neuropeptide Like Peptide 1 (*Nplp1*) gene in the CNS. Loss of *miR-1000* and consequent increase in *Nplp1* expression result in flies with higher fat storage and extended survival under nutrient-deprived conditions. While the biological function of Nplp1 neuropeptides has been largely unknown, this study highlights their critical role in maintaining metabolic homeostasis in *Drosophila*. Additionally, we observed that *miR-1000* and *Nplp1* levels change dynamically during refeeding after starvation, suggesting their involvement in adaptive metabolic responses. *miR-1000* regulates triacylglycerol (TAG) synthesis and storage in lipid droplets, supports fat mobilization during starvation, and facilitates its storage upon refeeding. These findings underscore the importance of *miR-1000* and *Nplp1* in metabolic regulation and provide new insights into the mechanisms of energy balance.

Presenter:
Pushpa Verma
Harvard Medical School, USA

Concurrent Validity of a Head Mounted Display Augmented Reality Device with Accelerometer for Executive Function Testing in Healthy Young Versus Older Adults

James K. Buskirk

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Neurologic pathologic conditions, including Traumatic Brain Injury (TBI), and aging present with physical and cognitive challenges. Functional physical capacities can be reliably assessed however cognition measures traditionally employ static testing methods not involving functional movements. In contrast, a recently validated executive function (EF) test, the Walking Response and Inhibition Test (WRIT), involves generating postural responses to displayed visual commands while walking (as measures of functional mobility and intact executive functions). Two observational studies were conducted in healthy older and younger adult cohorts utilizing a portable version of the WRIT test (HMD-WRIT) with a head-mounted device and body position sensors. Two 3D motion analysis systems, three standardized cognition tests, and a mobility test were used to validate the portable device. Both studies supported use of the HMD-WRIT as a viable option for measuring EF during functional movements.

Comparison of the two age groups.

Variable	Younger Males	Younger Females	Older adults
Latency (LAT) sec	0.76 ± 0.11	0.92 ± 0.19	1.29 ± 0.24
Accuracy (ACC) %	85.89 ± 12.57	71.00 ± 21.28	81.50 ± 19.10
EF	64.67 ± 9.19	61.77 ± 12.62	103.66 ± 26.52
Younger Adults		Older Adults	
EF Variance 122.99		703.31	
TUG 5.09 ± 1.00		6.23 ± 1.46	
MoCA 28.47 ± 1.25		28.07 ± 1.84	

All values are mean ± SD.

Healthy young adults had shorter LAT values than the older group (0.84s ± .18s compared to 1.29s ± .21s),

Young males had higher mean ACC, (85.89% ± SD12.57% to 81.5% ± SD19.1%), but young females did not (71% ± SD21.28%),

Due to shorter LAT values, the young adults' calculated mean EF scores were lower (63.15 ± SD11.09 to 103.66 ± SD24.8), where EF = LAT (sec) * ACC (%)

The young adults had less variable EF scores (122.87 ± 11.08 to 615.04 ± 24.8), where EF = LAT (sec) * ACC (%).

Presenter:
James Buskirk
Rosalind Franklin University, USA

A Multi-Modal Deep Learning Model for Glioma Recurrence Prediction

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Glioma recurrence remains a major clinical challenge, with recurrence rates ranging from 52–62% in patients with low-grade gliomas (LGGs) and reaching approximately 90% in patients with high-grade gliomas (HGGs). Although its clinical importance, there are no models integrating clinical, molecular, and transcriptomic data from patients to predict early glioma recurrence. Such models can help identify patients at high risk of early recurrence, enabling more timely and targeted intervention.

We developed an attention-based deep learning (DL) model, gLioma recUrreNce Attention- based classifieR (LUNAR) to predict early versus late glioma recurrence by integrating multimodal patient data. LUNAR combines clinical features with somatic mutation and mRNA expression profiles, enabling the model to learn complex cross-modal relationships that are difficult to capture with traditional approaches. The model was trained and evaluated using primary grade II–IV glioma cohorts from The Cancer Genome Atlas (TCGA) and independently validated on data from the Glioma Longitudinal Analysis Consortium (GLASS). The model outperformed standard machine learning (ML) models and non-attention DL baselines, achieving strong and reproducible performance across both datasets, with area under the receiver operating characteristic curve (AUROC) exceeding 82%. Beyond predic-

tive accuracy, the model provided insights into which data modalities and features contribute most strongly to recurrence risk, offering a step toward improved interpretability. This study demonstrates the capability of multimodal deep learning models for predicting glioma recurrence and enhancing personalized risk stratification.

Presenter:
Ece Uzun
Brown University, USA

Neurophysiological Signatures of Intentional Brain State and Hormonal Modulation: A QEEG Case Report

Yana Edelshtein

MetaMind Consulting, UK

Background: Intentional brain state modulation, including brain programming practices, is proposed to induce measurable neurophysiological and neuroendocrine changes. This case report investigated quantitative EEG (QEEG) and hormonal responses associated with a single brain programming session in a healthy 30-year-old female.

Methods: Eyes-closed and eyes-open QEEG recordings were analyzed using artifact-corrected 19-channel EEG. Spectral power, topographic distributions, alpha peak frequency, and EEG ratios (theta/beta, theta/alpha, delta/alpha) were evaluated. Hormonal biomarkers related to the hypothalamic–pituitary–adrenal (HPA) axis, sympathetic nervous system was measured before and after the intervention.

Results: The EEG profile demonstrated pronounced slow-wave dominance, with delta (~38%) and theta (~24%) activity accounting for more than 60% of total spectral power. Theta activity was concentrated frontocentrally, while beta activity was globally reduced. Alpha oscillations remained preserved at a peak frequency of 9.0 Hz, indicating intact thalamocortical regulation despite the altered state. The theta/beta ratio was markedly elevated, reflecting a highly internalized and receptive brain state associated with reduced external attentional demand. Hormonal analysis revealed substantial reductions in stress-related markers. Adrenaline decreased from 18 ng/L to below detection levels (<3.7 ng/L), noradrenaline decreased by 52.5% (528.6 to 251.3 ng/L), cortisol decreased by 30.8% (428 to 296 nmol/L), and ACTH decreased by 21.8% (23.01 to 18.00 pg/mL).

Conclusion: The combined QEEG and hormonal findings indicate that the brain programming session induced a distinct neurophysiological state characterized by slow-wave cortical dominance, preserved alpha integrity, reduced beta activity, and significant suppression of sympathetic and HPA-axis activation. The concordance between EEG and endocrine measures supports the hypothesis that intentional brain state modulation can influence stress-regulatory systems and create conditions associated with

enhanced neuroplasticity and physiological recovery. Further controlled studies are warranted to determine the reproducibility and clinical significance of these effects.

Presenter:
Yana Edelshtein
MetaMind Consulting, UK

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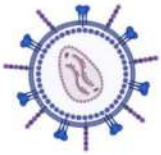

Vector Cloning Service

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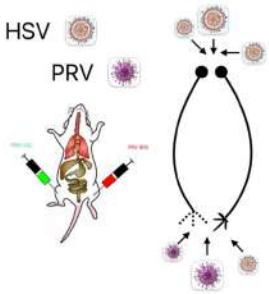

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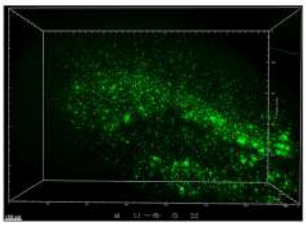

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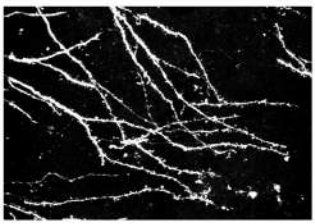

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