Brain conference

VERONA 2024

9 • 10 • 11 OCTOBER

SCIENTIFIC PROGRAM

7th BRAINSTORMING RESEARCH ASSEMBLY FOR YOUNG NEUROSCIENTISTS

Polo Didattico Zanotto, Università di Verona
Viale Università, 4 • 37129 Verona

www.braynconference.com

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MENTORS

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Michele Tinazzi	Dep. Neurosciences, Biomedicine and Movement Sciences, University of Verona (Italy)
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INVITED SPEAKERS

Domenico Arenella	Biblioteca Medica P.G. Corradini - Azienda USL IRCCS di Reggio Emilia (Italy)
Maria Chiara Bassi	Biblioteca Medica P.G. Corradini - Azienda USL IRCCS di Reggio Emilia (Italy)
Séverine Boillée	Paris Brain Institute - ICM, INSERM, Pitié-Salpêtrière Hospital, Paris (France)
Martin Chalfie	Department of Biological Sciences, Columbia University, New York (USA)
Alessandro Gozzi	Functional Neuroimaging Laboratory, Istituto Italiano di Tecnologia, Center for Neuroscience and Cognitive Systems, Rovereto (Italy)
Christiaan Levelt	Netherland Institute for Neuroscience (NIN), Amsterdam (Netherlands)
Kiavash Movahedi	Brain and Systems Immunology Lab, Brussels Center for Immunology, Vrije Universiteit Brussel (Belgium)
Stephanie Schorge	University College London, London (UK)
Giorgio Seano	Institut Curie, CNRS, Paris-Orsay (France)
Bianca A. Silva	Institute of Molecular and Cellular Pharmacology (IPMC), Sophia-Antipolis (France)

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Ingrid Battistella	Department of Cellular, Computational & Integrative Biology, Università degli studi di Trento (Italy)
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Rina Demjaha	Medical University of Graz (Austria)
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Paola Infante	«Sapienza» University of Rome (Italy)
Nunzio Iraci	Dept. BIOMETEC, University of Catania (Italy)

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Elena Zenaro	University of Verona (Italy)

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Marco Cambiaghi	Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona (Italy)
Maria F. Veloz Castillo	King Abdullah University of Science and Technology (Saudi Arabia)
Chiara De Marchi	Freelance, social media content creator
Samuele Negro	University of Padova (Italy)

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BRAYN SCIENTIFIC SESSIONS

NEUROIMAGING & CLINICAL NEUROLOGY is a comprehensive scientific session exploring the intersection of advanced neuroimaging techniques and clinical neuroloy applications. This session delves into the utilization of various neuroimaging methodologies to probe the structure, function, and physiology of the nervous system, alongside the translational aspects of clinical neuroloy. The session covers two primary neuroimaging approaches: structural imaging, which aids in the diagnosis of large-scale intracranial diseases and injuries, and functional imaging, crucial for diagnosing metabolic diseases like Alzheimer's and facilitating neurological and cognitive psychology research. Techniques such as Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Electroencephalography (EEG), and Positron Emission Tomography (PET) will be discussed in the context of their applications alone or in combination to investigate neurological diseases. Moreover, the session emphasizes the integration of neuroscience data and basic research with clinical neurology to enhance understanding and treatment of nervous system disorders. The session invites submissions showcasing translational significance and real-world clinical applications, focusing on patient-related observations derived from experimental research, clinical trials, and clinical cases. Special attention will be given to discussions on the potential role and use of biomarkers in clinical settings, as well as novel therapies for neurological diseases. Join us to explore the latest advancements in neuroimaging techniques and their pivotal role in shaping clinical neuroloy, bridging the gap between bench and bedside for improved patient outcomes.

NEUROINFLAMMATION is the inflammatory response initiated in the central nervous system (CNS) by resident cells or triggered by infiltrating immune cells, which causes the neuronal dysfunctions observed in inflammatory and neurodegenerative disease of the CNS. The NI session mainly focuses on basic and clinical research in multiple sclerosis (MS), Neuromyelitis Optica Spectrum Disorder (NMOSD) and other inflammatory diseases of the CNS that have a significant impact on the lives of young adults. Although the scientific discoveries of recent decades have improved the therapeutic approaches used for the treatment of such pathologies, many questions still remain unanswered. The NI session aims to discuss the basic pathogenic mechanisms governing CNS inflammation, the role of immune system in CNS autoimmunity, and the importance of genetic and environmental factors in the development of neuroinflammatory diseases, with a patient-centered focus.

NEURODEGENERATION is a key aspect of a large number of diseases characterized by progressive damage of the nervous system that leads to irreversible neuronal death, such as Parkinson's disease (PD) and Alzheimer's disease (AD). PD is a slowly progressive syndrome that begins insidiously, gradually worsens in severity, and usually affects one side of the body before spreading to involve the other side. Rest tremor is often the first symptom recognized by the patient, but the illness sometimes begins with bradykinesia, and in some patients, tremor may never develop. AD is the most common type of dementia and it is an irreversible, neurodegenerative and progressive central nervous system disorder that slowly destroys memory and thinking skills, and, eventually, other mental abilities. Other examples of neurodegenerative diseases are tauopathies, narcolepsy, depression and psychiatric disorders. During the BraYn conference, we will be updated on the more recent advances in the field.

NEURO-ONCOLOGY is an emerging field of investigation that studies nervous system tumors. As many of them can cause severe nervous system damage, neuro-oncology represents a trending research area in neuroscience, which may identify the molecular mechanisms involved in tumor pathogenesis. This would ultimately lead to the development of novel therapeutic approaches for the treatment of life-threatening diseases such as glioma, and medulloblastoma. These topics will be discussed in depth during the NO session.

NEUROPHYSIOLOGY & NEURAL PLASTICITY. We will focus on studies addressing the function of the nervous system and of its components, and the capacity of the nervous system to modify itself, functionally and structurally, in response to experience and injury. All levels of function and plastic changes are included, from the membrane and cell to systems and behaviour. Experimental approaches include molecular, cellular and developmental neurobiology, functional neuroanatomy, neurochemistry, neuropharmacology, electrophysiology, and behavioural analysis, in *in vivo*, *ex-vivo* and *in vitro* models in invertebrate or vertebrate species, including humans.

EPILEPSY, NEURODEVELOPMENT & NEUROGENETICS are deeply interconnected fields. Human neurodevelopment is a dynamic and extensive process, beginning at the pre-natal stages, driven by genetic information, and influenced by many environmental factors. The alteration of this process at different levels can lead to neurodevelopmental and psychiatric disorders such as autism spectrum disorder, intellectual disability, and epilepsy. Epilepsy is one of the most common neurological diseases globally. Its etiologies cover a wide range, from genetics to trauma, auto-immunity, and tumors. Unfortunately, available therapeutics only treat the symptoms but not the root cause of the disease. This complexity has pushed epilepsy research to embrace many different fields of neuroscience, to discover the pathophysiological processes that cause and sustain seizures, and potential therapeutic targets. In this session we discuss how new insights from the fields of epilepsy research, developmental disorder and neurogenetics can improve our understanding of the human brain and contribute to novel therapeutic perspectives.

9 OCTOBER • Day 1

10:00 Registration

11:00 Opening Ceremony • **Giovanni Ferrara**

BRAYN STARTING GRANT SESSION

Chairpersons: N. Iraci, C. Calì, V. Chiurchiù, P. Infante

11:15 **Ludovica Lospinoso Severini** (Starting Grant 2023 Winner)
Defining the role of the oncofetal protein SALL4 in Hedgehog-dependent medulloblastoma.

11:30 Lectio Magistralis | **Martin Chalfie** (Chairman: M. Cambiaghi)
GFP: Lighting up Life.

12:30 Lunch Box with Poster Session 1

SESSION 1 • NEUROIMAGING & CLINICAL NEUROLOGY ORAL COMMUNICATIONS

Chairpersons: A. Bombaci, G. Borgonovo, S. Cocozza, S. Bosticardo

14:00 **Teresa Giannattasio** • *Assessing wireless implantable microbots using high-resolution 3D imaging techniques.*

14:15 **Marco Micali** • *PULSAR: an in silico model to predict ultrasound treatments in preclinical settings.*

14:30 **Martina Greselin** • *Instance-level explanations in multiple sclerosis lesion segmentation: a novel localized saliency map.*

14:45 BraYn Educational Symposium ▶ **Evident**
Luca Cevenini: *Transforming Precision Imaging: empower your microscopy imaging experiment with quantitative image data.*

15:00 SpeedTalk | **Sara Cabras** • *Role of 2-[18F]FDG-PET as a biomarker of upper motor neuron involvement in Amyotrophic Lateral Sclerosis.*

15:05 SpeedTalk | **Martina Greselin** • *Exploring the relationship between volume and microstructural changes in multiple sclerosis lesions using advanced quantitative MRI.*

15:10 SpeedTalk | **Ilaria Gabusi** • *MRI analysis of white matter in spastic ataxia: insights from the PROSPAX cohort.*

SESSION 2 • NEUROINFLAMMATION
ORAL COMMUNICATIONS

Chairpersons: M. Bottero, S. Angiari, F. Caratis

15:15 Lecture | **Kiavash Movahedi** (Chairman: S. Angiari)
Macrophage-Brain Symbiosis in Health and Disease: From Basic Understanding to New Therapeutic Paradigms.

15:45 **Elena Ellmeier** • *Coenzyme A fueling with pantethine limits autoreactive T cell pathogenicity in experimental neuroinflammation.*

16:00 **Sara Balletta** • *Effects of anti-CD20 therapy on T lymphocyte-dependent synaptic excitotoxity in Multiple Sclerosis.*

16:15 BraYn Educational Symposium ▶ **Novartis**
Roberta Magliozzi: *The compartmentalized inflammatory response in multiple sclerosis: looking for biological biomarkers.*

16:45 BraYn Educational Symposium ▶ **Alexion**
Valentina Camera: *The innate immune system: the protective power of the complement system and its role in NMOSD and gMG.*

17:00 **Alessandra Colamatteo** • *Calorie restriction as a novel therapeutic tool to modulate immune system during multiple sclerosis.*

17:15 **Giulia Borgonovo** • *Modulation of the Nerve Growth Factor signaling impacts on microglial phenotype.*

17:30 SpeedTalk | **Anastasia Lechiara** • *Role of immune system and axonal damage: serological biomarkers in neurological sequelae post-SARS-CoV-2 infection.*

17:35 SpeedTalk | **Enrica Marzani** • *Pharmacological inhibition of CDK9 in sepsis-associated encephalopathy: impact on microvascular endothelial function.*

17:40 SpeedTalk | **Leen Ali** • *Emerging roles of brain border macrophages in brain homeostasis and disease.*

17:45 SpeedTalk | **Francesca Ciarpella** • *Neural stem cells in meninges interact with immune cells and are modulated during the progression of experimental autoimmune encephalomyelitis (EAE).*

17:50 SpeedTalk | **Eleonora Terrabuio** • *Tissue resident memory leukocytes alter neuronal functionality during neurodegenerative diseases.*

17:55 Closing remarks

10 OCTOBER • Day 2

SESSION 3 • NEURODEGENERATION
ORAL COMMUNICATIONS

Chairpersons: S. Amoretti, F. Anastasi, S. Tessitore

9:15 **Paola Pacifico** • *Epidermal Langerhans Cells promote Painful Diabetic Neuropathy through neuroimmune-mediated mechanisms.*

9:30 **Ayla Lievens** • *Microglia replacement as a therapeutic tool for neurological disorders.*

9:45 **Antonia Wenger** • *Myelin content in major white matter tracts is associated with clinical disability and serum neurofilaments in patients with Multiple Sclerosis.*

10:00 **Elena Fontana** • *Detection of TDP-43 seeding activity in the olfactory mucosa from patients with frontotemporal dementia.*

10:15 BraYn Educational Symposium ▶ **Revvity**
Reynald Herteaux: *How accurate cell counting can ease your long and complex experiments.*

10:30 **Sebastiano Antonio Rizzo** • *Injectable glucose-releasing materials to rescue cells from oxygen-glucose deprivation and its implication for neurotransplantation: a novel approach to an old problem?*

10:45 **Fabiana Miraglia** • *Targeting the Enteric Nervous System to halt the progression of Parkinson's Disease*

11:00 **Enrico Frigerio** • *Stromal Vascular Fraction-laden hydrogel for the treatment of spinal cord injury.*

11:15 SpeedTalk | **Matteo Bordoni** • *Spinal cord organoids generation for the study of amyotrophic lateral sclerosis.*

11:20 SpeedTalk | **Nikolaos Vareltzakis** • *Alteration of circadian clock genes in brain-infiltrating leukocytes in Alzheimer's disease.*

11:25 SpeedTalk | **Federica Carrillo** • *Multi-omics approach in Parkinson's disease: a comprehensive study of TMEM175 mutations effect on lipid and metabolic pathway in PD patients at cellular and circulating level*

11:30 SpeedTalk | **Federica Anastasi** • *Plasma p-tau and Amyloid biomarkers discrimination accuracy of biologically-defined Alzheimer's disease in a memory clinic setting: a head-to-head study.*

11:35 SpeedTalk | **Barbara Parisi** • *APache: a novel neuronal autophagic marker regulating autophagosome retrograde trafficking.*

11:40 Lecture | **Bianca A. Silva** (Chairman: M. Cambiaghi)
Brain circuits for memory update.

12:10 **Domenico Arenella, Maria Chiara Bassi** (Chairman: G. Ferrara) ▶ *How to effectively communicate the results of our scientific research. Journals, citations, bibliometrics, open access and other strange things.*

13:00 Lunch Box with Poster Session 2

PARALLEL SESSION (10:45-12:15)

• For scheduled groups only •

BraYn Open Lab ▶ Novartis
(Giovanni Ferrara, Roberta Magliozzi)
From lab to clinic: the role of neurofilaments as biomarkers in neurological diseases.

PARALLEL SESSION (14:30-16:30)

• For scheduled groups only •

BraYn meets Martin Chalfie

SESSION 4 • NEURO-ONCOLOGY
ORAL COMMUNICATIONS

Chairpersons: E. Vannini, E. Stanzani, J. Maqbool

14:15	Lecture | **Giorgio Seano** (Chairwoman: E. Stanzani) *Adaptive cell and microenvironment plasticity in residual post-surgery glioblastoma.*
14:45	**Marta Ibañez** • *Development of novel immunotherapeutic approaches for pediatric CNS tumors.*
15:00	**Eugenia Guida** • *BRAFV600E mutation and PTEN deletion in neural stem precursor cells give rise to glioma and neurofibromatosis.*
15:15	BraYn Educational Symposium ▶ **Euroclone** **Stephen Hague**: *Spatial Biology Advancement in Neuroscience*
15:30	**Chiara Riviera** • *Modeling glioma progression in mouse and human neural organoids.*
15:45	**Elisabetta Mori** • *Preclinical testing of a novel therapeutic approach to counteract Glioblastoma Multiforme.*
16:00	BraYn Educational Symposium ▶ **AIRC** **Laura Galbiati:** *AIRC funding opportunities for a career in cancer research.*
16:30	SpeedTalk | **Pablo Blanco Carlón** • *The Force Awakens: PIEZO1 as a novel oncogene in glioma.*
16:35	SpeedTalk | **Mariassunta De Luca** • *Plasma derived EVs of glioma-bearing mice contain promising biomarker for an early Glioblastoma diagnosis.*
16:40	SpeedTalk | **Noemi Marino** • *A pan-sigma receptors modulator as a novel therapeutic strategy to fight glioblastoma.*
16:45	SpeedTalk | **Elena Cerutti** • *Involvement of DNA repair in high-grade glioma recurrence: mechanistic insights into the nucleotide excision repair pathway in glioma stem cells.*
16:50	SpeedTalk | **Alice Reccagni** • *The role of hydrogen sulfide on glioblastoma growth: a gut-brain approach.*
16:55	Closing remarks

11 OCTOBER • Day 3

SESSION 5 • NEUROPHYSIOLOGY & NEURAL PLASTICITY
ORAL COMMUNICATIONS

Chairpersons: M. Cambiaghi, G. Sansevero, P. Lippiello, I. Di Marco

9:00 **Janina Leonie Röckner** • *Quantifying muscle activation in Octopus vulgaris stereotypical motion.*

9:15 BraYn Educational Symposium ▶ **Beckman Coulter**
Nunzio Iraci: *From cell-to-cell communication to nanomedicine the secret(ed) spread of extracellular vesicles*

9:30 **Alessandra La Terra** • *Spinogenesis of cerebellar Purkinje cells is locally repressed in an activity-dependent way.*

9:45 **Federica Marchiotto** • *Transcranial direct current stimulation (tDCS) promotes myelin repair and plasticity in the mouse motor cortex.*

10:00 Lecture | **Christiaan Levelt** (Chairman: G. Sansevero)
The effect of visual experience on visual and auditory processing throughout the mouse visual cortex.

10:30 Lecture | **Alessandro Gozzi** (Chairwoman: F. Alvino)
Brain map decoding via cross-species fMRI

11:00 SpeedTalk | **Marta Carè** • *Advancing Stroke Rehabilitation: Personalized Neurostimulation Using Spiking Neural Networks.*

11:05 SpeedTalk | **Carola Dolci** • *Deciphering the interactions across different attentional control mechanisms during target selection: Insights from Behavioural and EEG Experiments.*

11:10 SpeedTalk | **Ilaria Barone** • *Tumor-associated macrophages-educated promote neuronal regeneration in vivo and in vitro.*

11:15 BraYn Educational Symposium ▶ **Miltenyi**
Luca Lorenzini: *Experimental colitis in young Tg2576 mice accelerates the onset of an AD-like clinical phenotype.*

11:30 Lecture | **Séverine Boillée** (Chairman: G. Nardo)
Microglia and macrophages for the progression of ALS.

12:00 Poster Session 3 and Lunch Box.

SESSION 6 • EPILEPSY, BRAIN DEVELOPMENT & NEUROGENETICS
ORAL COMMUNICATIONS

Chairpersons: M. Rasile, E. Tagliatti, L. Fusar Bassini

14:00 Lecture | **Stephanie Schorge** (Chairwoman: E. Tagliatti)
Brain hacking with viruses: Bringing gene therapy for epilepsy out of science fiction and into clinical trials.

14:30 **Stephana Carelli** • *Ketogenic diet treatment in GLUT1-DS patients: identification of ion channel signaling deregulation related to both epigenetic changes and splicing events.*

14:45 **Letizia Esposito** • *Novel frontiers in Aicardi-Goutières syndrome: association between a RNU7-1 variant and histone dysfunctions.*

15:00 **Alessio Balzerano** • *A novel regulatory role of NBS1 at the primary cilium highlights impinges on cerebellar development and medulloblastoma insurgence.*

15:15 SpeedTalk | **Mariam Marie Chellali** • *Upregulation of Negr1 converges into core impaired processes in autism spectrum disorders.*

15:20 SpeedTalk | **Francesca Ciarpella** • *Brain organoid platform for discovering new therapeutic strategies to promote neural maturation in Allan-Herndon-Dudley Syndrome (AHDS).*

15:25 SpeedTalk | **Martino Bonato** • *Unraveling the roles of oligodendrocyte progenitor cells in the development of the cortical inhibitory system.*

15:30 SpeedTalk | **Wenjie Liao** • *Unveiling the molecular mechanism of intestinal metabolite para-cresol in modulating neuroinflammation and synaptic dysfunction: implications for autism spectrum disorder.*

15:35 SpeedTalk | **Chiara Tesoriero** • *SLC6A1 KO Zebrafish model: an innovative tool to identify new therapeutical approaches for myoclonic-astatic epilepsy.*

15:40 Closing remarks (Chairpersons: G. Ferrara, M. Romeo, N. Iraci, P. Infante, C. Calì, V. Chiurchiù)
BraYn Awards (Best Oral & Poster Presentation, BraYn Starting Grant, Creative BraYns)

UNDER THE PATRONAGE

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