



ROME 2022

28•29•30 SEPTEMBER



5th BRAINSTORMING RESEARCH ASSEMBLY
FOR YOUNG NEUROSCIENTISTS

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Giovanni Nardo	«Mario Negri» Institute, Milan (Italy)
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Simona Schiavi	University of Genoa (Italy)

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Giovanni Fabbrini	«Sapienza» University of Rome (Italy)
Cristina Limatola	«Sapienza» University of Rome (Italy)
Luca Ramenghi	IRCCS «Giannina Gaslini» Institute Genoa (Italy)
Thomas C. Südhof	Nobel Laureate • Department of Molecular and Cellular Physiology, Howard Hughes Medical Institute, Stanford University School of Medicine, Stanford (USA)
Antonio Uccelli	IRCCS San Martino Hospital, Genoa (Italy)

INVITED SPEAKERS

Laura Cancedda	Italian Institute of Technology - IIT, Genova (Italy)
Rafael Fernández-Chacón	Instituto de Biomedicina de Sevilla (IBiS) (Spain)
Giacomo Koch	Santa Lucia IRCCS/Università di Ferrara, Ferrara (Italy)
Konstantinos Meletis	Karolinska Institutet / Department of Neuroscience (Sweden)
Rodrigo Quiñan Quiroga	Centre for Systems Neuroscience, University of Leicester (UK)
Maria Rescigno	Humanitas University, Humanitas Research Hospital, Milan (Italy)
Dirk Sieger	Centre for Discovery Brain Sciences, University of Edinburgh, Edinburgh (UK)
Amanda Sierra Saavedra	Achucarro Basque Center for Neuroscience Fundazioa, Leioa (Spain)
Henrique Veiga-Fernandes	Champalimaud Research Foundation, Lisbon (Portugal)

BRAYNIACS

Gianmarco Abbadessa	University of Campania “Luigi Vanvitelli” (Italy)
Stefano Amoretti	University of Padua (Italy)
Vito Antonio Baldassarro	Department of Veterinary Medical Sciences, University of Bologna (Italy)
Marta Bottero	IRCCS San Martino Hospital, Genoa (Italy)
Luca Cuffaro	UO Neurologia Ospedale Universitario San Paolo, Milan (Italy)
Giulia D’Arrigo	Neuroscience Institute - National Research Council of Italy, Milan (Italy)
Mattia Di Paolo	University of l’Aquila (Italy)
Samuele Negro	University of Padova (Italy)
Paola Pacifico	Scuola Normale Superiore, Pisa (Italy)
Simona Paglia	University of Bologna (Italy)
Gianmarco Pallavicini	Department of neuroscience “Rita Levi Montalcini”, University of Turin (Italy)
Laura Porta	SISSA, Trieste (Italy)
Marco Rasile	Humanitas University, Rozzano (Italy)
Gabriele Sansevero	Neuroscience Institute - National Research Council of Italy, Pisa (Italy); Fondazione Umberto Veronesi, Milan (Italy)
Giacomo Sferruzza	San Raffaele Scientific Institute, Milan (Italy)
Elisabetta Stanzani	Italian National Research Council, Milan (Italy); Humanitas Res. Hospital, Rozzano (Italy)
Maria Velasco	Trinity College, Dublin (Ireland)

YOUNG EPILEPSY SECTION-ITALY, YES-ITALY, ILAE

Simona Balestrini	Department of Clinical and Experimental Epilepsy, UCL Queen Square Institute of Neurology, London (UK)
Giulia Battaglia	Neuroscience Section, University of Catania, Catania (Italy)
Luca De Palma	Rare and Complex Epilepsy Unit, Department of Neuroscience, Bambino Gesù Children’s Hospital IRCCS, Rome (Italy)
Lorenzo Ferri	Department of Biomedical and Neuromotor Sciences, University of Bologna, Bologna (Italy)

LOCAL ORGANIZING COMMITTEE

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Giuseppina D’Alessandro	«Sapienza» University of Rome (Italy)
Francesco Di Lorenzo	Santa Lucia Foundation Scientific Institute, Rome (Italy)
Andrea Guerra	«Sapienza» University of Rome (Italy)
Paola Infante	«Sapienza» University of Rome (Italy)
Francesco Marrocco	«Sapienza» University of Rome (Italy)
Alessandra Musella	IRCCS San Raffaele Pisana, Rome (Italy)
Domenico Pimpinella	European Brain Research Institute, Neurophysiology, Roma, Italy
Matteo Tartaglia	«Sapienza» University of Rome (Italy)

ORGANIZING SECRETARIAT

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BRAYN SCIENTIFIC SESSIONS

NEUROIMAGING

Neuroimaging exploits various techniques to image the structure, function, or physiology of the nervous system. Two main NI approaches exist: i) structural imaging, which evaluates the structure of the nervous system and allows the diagnosis of large-scale intracranial diseases (such as tumors, multiple sclerosis lesions, and stroke) and injuries (like traumatic brain injury); ii) functional imaging, which is used to diagnose metabolic diseases such as Alzheimer's disease, and for neurological and cognitive psychology research, as well as for building brain-computer interfaces. The most commonly used techniques for neuroimaging are Computed Tomography (CT), Diffuse Optical Imaging (DOI), Event-Related Optical Signal (EROS), Magnetic Resonance Imaging (MRI), Arterial Spin Labeling (ASL), Magnetoencephalography (MEG), Electroencephalography (EEG), Positron Emission Tomography (PET), Single-Photon Emission Computed Tomography (SPECT), and cranial or functional ultrasound imaging. In this session, we will discuss the use of these techniques, both alone and in combination, to investigate, detect, and understand various aspects of neurological diseases.

NEUROINFLAMMATION

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 aim of the NI session is 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.

NEUROPHYSIOLOGY & NEURAL PLASTICITY

The physiology dealing with the functions of the central nervous system and the naturally occurring adapting to anatomical and environmental changes in central nervous system will be addressed in the new scientific session of BraYn 2021. Follow the session to be updated on new research activities in the field.

NEURO-ONCOLOGY

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, medulloblastoma. These topics will be discussed in depth during the session.

EPILEPSY, BRAIN DEVELOPMENT & NEUROGENETICS

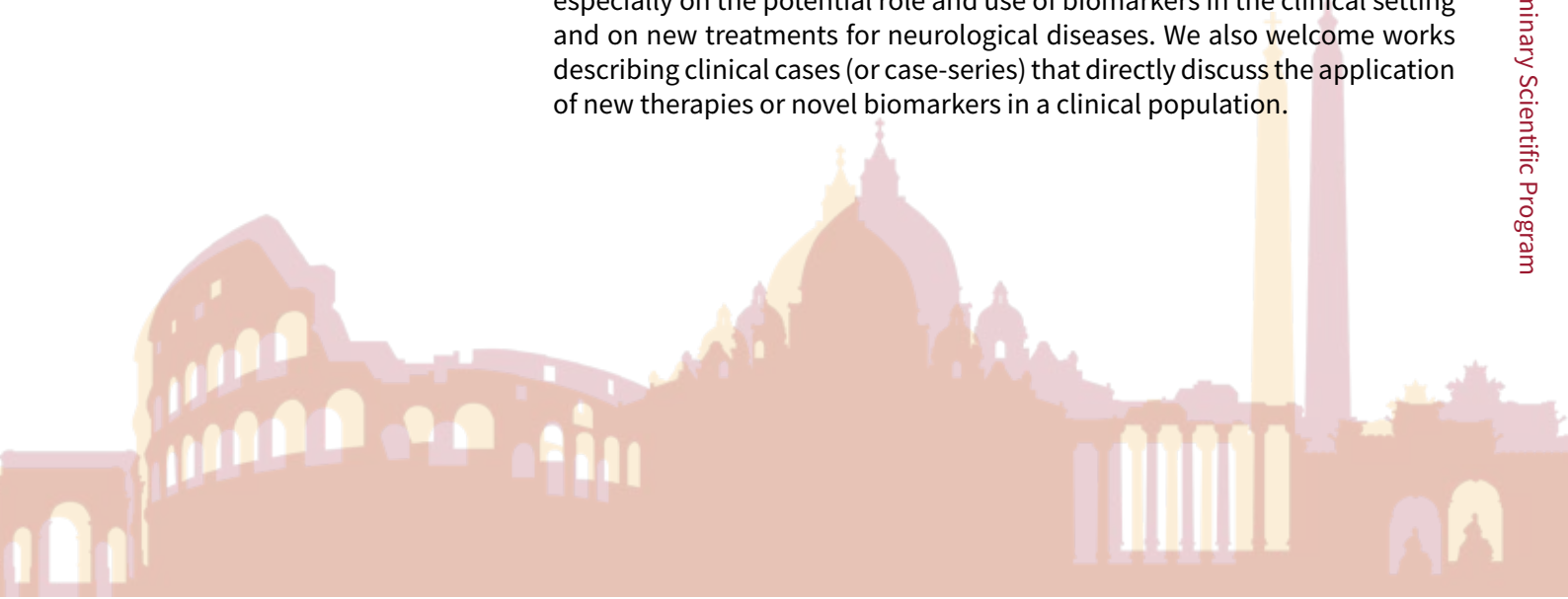
Epilepsy, neurodevelopment and neurogenetics are deeply interconnected fields. Human neurodevelopment is a dynamic and extensive process, beginning at the pre-natal stages, driven by genetic information, and influenced by many environmental factors. The alteration of this process at different levels 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 traumas, auto-immunity, and tumors, and available therapeutics only treat symptoms but not the root cause of the disease. This complexity has pushed epilepsy research to embrace many different fields of neuroscience, in order 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.

NEURODEGENERATION

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.

CLINICAL NEUROSCIENCE

Clinical neuroscience is a translational field in which neuroscience data and basic research are coupled with clinical neurology to better understand the neural underpinnings of nervous system disorders, and to improve their diagnosis and treatment. In this session we encourage the submission of data with a clear translational significance and real-world clinical applications. We will discuss patient-related observations derived from experimental research, clinical research, and clinical trials, focusing especially on the potential role and use of biomarkers in the clinical setting and on new treatments for neurological diseases. We also welcome works describing clinical cases (or case-series) that directly discuss the application of new therapies or novel biomarkers in a clinical population.



28 SEPTEMBER • Day 1

10:00 Registration

11:00 Opening Ceremony | **G. Ferrara**

11:15 **Loredana Leggio** (Starting Grant 2021 Winner)

Identification of bioactive molecules responsible for the neuroprotection of astrocyte-derived EVs

11:30 **Eveljn Scarian** (Starting Grant 2021 Winner)

Brain organoids RNA-seq analysis for the study of sALS pathogenesis

11:45 Lecture | **Invited Speaker**

12:15 Lunch box with Poster session 1

SESSION 1 • PAEDIATRIC NEUROSCIENCE & EPILEPSY (curated by Young Epilepsy Section-Italy, YES-Italy, ILAE) ORAL COMMUNICATIONS

14:00 Lecture | **Rafael Fernández-Chacón**

14:30 Oral communication

14:45 Oral communication

15:00 BraYn Educational Symposium

15:15 Oral communication

SESSION 2 • NEUROINFLAMMATION • ORAL COMMUNICATIONS

15:30 Lecture | **Henrique Veiga-Fernandes**: *Neuroimmune interactions in health and disease.*

16:00 Oral communication

16:15 Oral communication

16:30 BraYn Educational Symposium

16:45 BraYn Educational Symposium

17:00 Coffee Break

17:30 Oral communication

17:45 Oral communication

18:00 Oral communication

18:15 Closing remarks

29 SEPTEMBER • Day 2

SESSION 3 • NEUROPHYSIOLOGY & NEURAL PLASTICITY • ORAL COMMUNICATIONS

9:00 Lecture | **Laura Cancedda**: *Treating neurodevelopmental disorders: the road is long and winding, but we need to try.*

9:30 Oral communication

9:45 Oral communication

10:00 BraYn Educational Symposium

10:15 BraYn Educational Symposium

10:30 Coffee Break

11:00 Oral communication

11:15 Oral communication

11:30 Lecture | **Maria Rescigno**: *The microbiota in gut-brain vascular axis.*

12:00 Lunch box with Poster session 2

SESSION 4 • NEURO-ONCOLOGY • ORAL COMMUNICATIONS

14:00 Lecture | **Dirk Sieger**

14:30 Oral communication

14:45 Oral communication

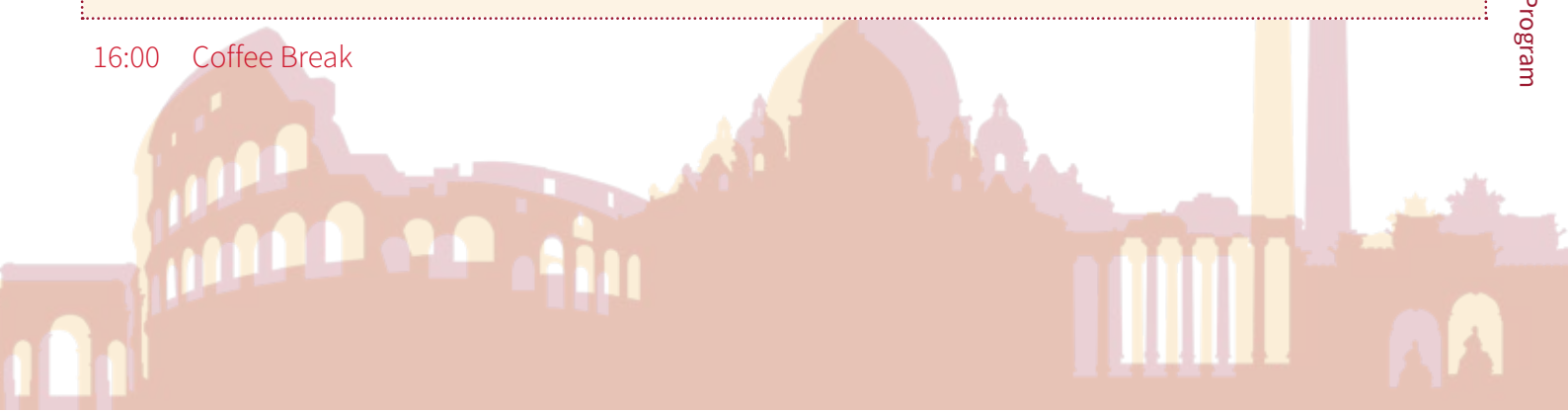
15:00 BraYn Educational Symposium

15:15 BraYn Educational Symposium

15:30 Oral communication

15:45 Oral communication

16:00 Coffee Break



SESSION 5 • NEUROIMAGING • ORAL COMMUNICATIONS

16:30 Lecture | **Rodrigo Quian Quiroga**: *What makes us human?*

17:00 *Oral communication*

17:15 **BraYn Educational Symposium**

17:30 **BraYn Educational Symposium**

17:45 *Oral communication*

18:00 *Oral communication*

18:15 Closing remarks

30 SEPTEMBER • Day 3

SESSION 6 • NEURODEGENERATION • ORAL COMMUNICATIONS

9:00 Lecture | **Amanda Sierra**: *Not just corpse removal: how microglial phagocytosis maintains brain tissue homeostasis*

9:30 *Oral communication*

9:45 *Oral communication*

10:00 *Oral communication*

10:15 **BraYn Educational Symposium**

10:30 Coffee Break

11:00 *Oral communication*

11:15 *Oral communication*

11:30 *Oral communication*

12:00 Lunch box with Poster Session 3



**SESSION 7 • CLINICAL NEUROSCIENCE
ORAL COMMUNICATIONS**

14:00 Lecture | **Giacomo Koch**

NEURODEGENERATION (DEMENTIA, MOVEMENT DISORDERS, MND)

14:30 Oral communication (8 min) Q&A (2 min)

14:40 Oral communication (8 min) Q&A (2 min)

14:50 Case report MND (5 min)

NEUROIMMUNOLOGY (MULTIPLE SCLEROSIS, ONCOLOGY, NMOSD, PERIPHERAL DISEASES, PAIN)

15:00 Oral communication (8 min) Q&A (2 min)

15:10 Oral communication (8 min) Q&A (2 min)

15:20 Case report Multiple Sclerosis (5 min)

NEUROVASCULAR (VASCULAR, HEADACHE, EPILEPSY)

15:30 Oral communication (8 min) Q&A (2 min)

15:40 Oral communication (8 min) Q&A (2 min)

15:50 Case report (5 min)

**SESSION 8
(curated by Karolinska Institutet)
ORAL COMMUNICATIONS**

16:00 Lecture | **Konstantinos Meletis**: *Organization and function of circuits that control motivated behaviors.*

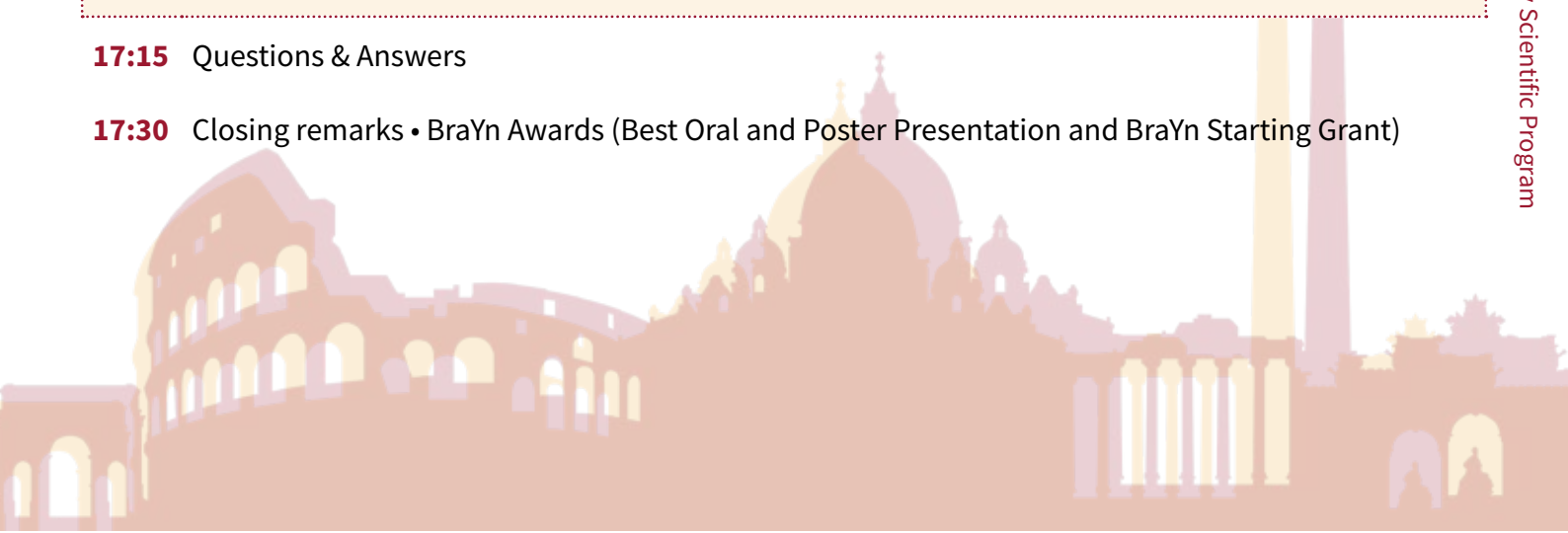
16:30 Oral communication

16:45 Oral communication

17:00 Oral communication

17:15 Questions & Answers

17:30 Closing remarks • BraYn Awards (Best Oral and Poster Presentation and BraYn Starting Grant)



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