

20th OCTOBER 21st 2021 2021 21 PISA·ITALY



FOR YOUNG NEUROSCIENTISTS

OFFICINE GARIBALDI Via Vincenzo Gioberti 39, Pisa, Italy

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BRAYN SCIENTIFIC SESSIONS

NEUROIMAGING (NIM) consists in using various techniques to image the structure, function, or physiology of the nervous system. It is subdivided into two main approaches: Structural imaging, which deals with the structure of the nervous system and the diagnosis of a large-scale intracranial disease (like tumors, multiple sclerosis lesions, stroke) and injuries (like traumatic brain injury); Functional imaging, which is used to diagnose metabolic diseases (like Alzheimer) and for neurological and cognitive psychology research as well as 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 the mentioned techniques, both alone and in combination, to help in understanding and/or detecting various aspects of neurological diseases.

NEUROINFLAMMATION (NI) describes the inflammatory response initiated in the central nervous system (CNS) by resident cells or triggered by infiltrating immune cells. Furthermore, in neurodegenerative disease it is evident that neuroinflammation is a key player in central nervous system dysfunction. The neuroinflammation session is mainly devoted to basic and clinical research in multiple sclerosis (MS), Neuromyelitis Optica Spectrum Disorder (NMOSD) and other inflammatory disorders of the CNS which have a significant impact on the lives of young adults. Even though the scientific discoveries of recent decades have improved the therapeutic approach of those disease, there are still open questions. The aim of the present session will be to explore the pathogenic mechanisms, the role of immune system in the autoimmune response, the roles of genetics and environment in the development of neuroinflammatory disease and examine options within the patient-centered approach. This and other aspects will be debated in the present session.

NEURODEGENERATION (ND) is a key aspect of a large number of diseases characterized by progressive damage of the nervous system, which leads to irreversible neuronal death such as, but not limited to, Parkinson's disease (PD) and Alzheimer's disease (AD), tauopathies, narcolepsy, depression and psychiatric disorders. 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. During the BraYn conference we will be updated on the more recent advances in the field.

NEURO-ONCOLOGY (NO) 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.

PAEDIATRIC NEUROSCIENCE & EPILEPSY (PNE). Paediatric neuroscience is a branch studying neurodevelopment and its disorders. The session will focus on biological mechanisms underlying developmental and epileptic encephalopathies, including genetic disorders and their management and treatment implications.

NEUROPHYSIOLOGY & NEURAL PLASTICITY (NP). 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.

BRAYN MEETS SÜDHOF (parallel session) is a session where to meet and discuss scientific topics with Prof. **Thomas Südhof**, winner of the **Nobel Prize in Physiology or Medicine** in 2013. On the morning of October 22nd (9:30-11:30), scheduled groups of people for a limited time (max 30 minutes) will have the chance to engage in a scientific discussion with Prof. Südhof.

OCTOBER 20th

10:45	Registration	
11:45	Opening Ceremony (G. Ferrara)	
12:00	Lucia Lisa Petrilli – Starting Grant 2020 Winner (Chairman: C. Calì) Dissecting pædiatric high grade-glioma through single-cell mass cytometry: from tissue to cell and back	
12:15	Lecture Laura Ferraiuolo (Chairman: G. Nardo) Pathways of astrocyte toxicity in ALS and precision medicine approaches	
12:45	Lunch box	
	SESSION 1 • NEUROIMAGING • ORAL COMMUNICATIONS Chairpersons: F. Di Lorenzo, S. Schiavi, G. Baron	
13:30	Guillem París • Assessing reliability of white matter metrics in diffusion MRI based on ROI variability	
13:45	BraYn Educational Symposium • Femtonics Ivan Zsolt, Tune in to the BraYn in 3D, SMART solutions, SMART microscopes (Chairpersons: S. Negro, S. Schiavi)	
14:05	Manuela Moretto • Whole-brain functional dynamics in normal aging during resting conditions	
14:20	BraYn Educational Symposium • PerkinElmer Fernanda Ricci (Axxam spa), Image-based phenotypic analysis as a tool for drug discovery at the cellular and sub-cellular level in neurolog- ical disease models (Chairpersons: G. D'Arrigo, S. Negro)	
14:40	Caterina Lapucci • Using the Central Vein Sign and Diffusion MRI to differentiate demyelinating from chronic vascular lesions in Multiple Sclerosis	
SESSION 2 • NEUROINFLAMMATION • ORAL COMMUNICATIONS		
	Chairpersons: S. Angiari, I. Prada, L. Pangrazzi	
15:00	Lecture Adrian Liston Synthetic expansion of brain regulatory T cells to prevent neuro-inflammation	
15:30	Cindy Bokobza • Microglial spatio-temporal heterogeneity in a perinatal inflammation mouse model – Link to Autism-like phenotypes	

15:45	Antonella Casamassa • Astrocyte-microglia crosstalk promotes Ascl1-Dependent post-ischemic astrocyte plasticity through Na+/Ca2+ exchanger 1
16:00	Ginevra Toma • Electroencephalographic alterations in persons SARS-COV2 positive
16:15	BraYn Educational Symposium • Beckman Coulter Valerio Chiurchiù, Immunophenotyping of infiltrated immune cells in the CNS in health and disease (Chairpersons: S. Amoretti, M. Rasile)
16:35	BraYn Educational Symposium • Campoverde-Cytek Biosciences Enrico Ghersi , Full spectrum cytometry: pushing the limits of fluorescence in a fluorochrome limited world (Chairpersons: G. D'Arrigo, M. Rasile)
16:55	Coffee Break
17:50	Maria Cristina Mariani • β3-adrenergic receptor expressing stromal cells in thymus control Treg generation and release of newly generated lymphocytes
18:05	Francesca Corsi • Anti-inflammatory and anti-apoptotic activities of TSPO ligands in an in-vitro model of retinal neuro-inflammation
18:20	Livia Guadalupi • Exercise protects from hippocampal inflammation and neurodegeneration in experimental autoimmune encephalomyelitis
18:35	Poster session 1 + "Lost in the protocol" session

Closing Remarks

20:00

OCTOBER 21st

SESSION 3 • NEURODEGENERATION • ORAL COMMUNICATIONS Chairpersons: G. Nardo, B. Bettegazzi, D. Sproviero, M. Medelin **Lecture | Konstantinos Ampatzis** 9:00 Locomotion dependent neuron-glia interactions control neurogenesis and regeneration in the adult spinal cord **Edoardo Sozzi** • Developing silk scaffold-based platform to generate 9:30 functional and reproducible human bioengineered forebrain organoids Monica Favagrossa • The intranasal administration of cholesterol as a 9:45 possible therapeutic strategy in Huntington's disease **Anna Caretto** • Investigating a new therapeutic role of the GHRH ago-10:00 nist MR409 in an experimental model of Spinal Muscular Atrophy 10.15 Coffee Break 11:00 Chiara Diquigiovanni • Biallelic variants in spart cause a severe mitochondrial dysfunction rescued by COQ10 complementation 11:15 Martina Gabrielli • Microglial large extracellular vesicles propagate early synaptic dysfunction in Alzheimer's disease 11:30 **Lorenzo Agostino Citterio •** Expression of serum miR-223-3p and miR-7-1-5p in Parkinson's disease patients

- 11:45 Lecture | **Viola Galligioni** (Chairman: S. Angiari)
 In vivo research, what to factor in when planning experiments
- 12:15 Lunch box

SESSION 4 • NEURO-ONCOLOGY • ORAL COMMUNICATIONS

Chairpersons: G. D'Alessandro, E. Vannini, L. Lospinoso Severini

BraYn Educational Symposium • Euroclone

- 13:10 **Luca Mazzitelli**, *Deciphering the Complex Biology of Brain Tumors with Single Cell and Spatial Technologies* (Chairpersons: M. Di Paolo, E. Stanzani)
 - **Elisabetta Mori** Weekly systemic administration of CTX-CNF1 amelio-
- 13:30 rates motor deficits and strongly enhances survival in a mouse model of glioma

13:45	Gianmarco Pallavicini • Inhibiting microcephaly genes as alternative to microtubule targeting agents to treat brain tumors	
14:00	Lecture Michelle Monje-Deisseroth (live streaming) Neuron-glial interactions in health and disease: from cognition to cancer	
14:30	Carmela Serpe • Microglia-Derived Small Extracellular Vesicles Reduce Glioma Growth by Modifying Tumor Cell Metabolism and Enhancing Glutamate Clearance through miR-124	
14:45	Davide Ceresa • Myc signalling mediates clonal-wise competition dynamics during glioma progression	
15:00	BraYn Educational Symposium • Fujifilm Visualsonics Valeria Grasso, Photoacoustic imaging of Cerebral Hemodynamics: A multi-spectral approach (Chairpersons: M. Di Paolo, S. Paglia)	
15:20	Coffee Break with Poster Session 2	
SESSION 5 • PAEDIATRIC NEUROSCIENCE & EPILEPSY (curated by Young Epilepsy Section-Italy, YES-Italy, ILAE) ORAL COMMUNICATIONS		
	Chairpersons: G. Balagura, S. Balestrini, G. Lignani, M. Breccia	
16:40	Lecture Gabriele Lignani , From Discovery Neuroscience to Gene Therapy for Intractable Epilepsy	
17:00	Elsa Ghirardini • Tackling Creatine Transporter Deficiency: new insight into cell-specific vulnerability and development of a gene therapy approach	
17:15	Jenna Carpenter • Progressive myoclonus epilepsy KCNC1 (KV3.1) variant causes a developmental dendritopathy	
17:30	Sara Carli • In vivo magnetic resonance spectroscopy in the brain of Cdkl5 null mice reveals a metabolic profile indicative of mitochondrial dysfunctions	
17:45	Martina Biagioni • Impact of UBE3A loss on synapse development: the case of the Angelman Syndrome	

Lecture | **Thomas C. Südhof** (Nobel Laureate) 18:00 The molecular logic of synapse formation (Chairpersons: G. Ferrara, S. Angiari, G. Balagura) 19:00 Questions & Answers

20:30 BraYn Social Dinner

OCTOBER 22nd

SESSION 6 • NEUROPHYSIOLOGY & NEURAL PLASTICITY ORAL COMMUNICATIONS

	Chairwomen: E. Boda, R.C. Paolicelli, G. Calabrese, G. Nardi
9:00	Lecture Michela Matteoli How the immune system affects synaptic function
9:30	Paola Pacifico • Human TrkAR649W and human NGFR100W impair nociception, but differentially regulate anhidrosis and cognitive abilities
9:45	Marco Fogli • Transient neurogenic niches are generated by the sparse and asynchronous activation of striatal astrocytes after excitotoxic lesion
10:00	Francesco Marrocco • Environmental enrichment modifies gut microbiome and metabolome enhancing memory and neurogenesis through short-chain fatty acids
10:15	BraYn Educational Symposium • Siemens Healthineers Fabrizio Fasano, Exploring the human brain's microstructure with a "super-scanner", an Academia-Industry synergy (Chairpersons: P. Lippiello, S. Schiavi)
10:35	Coffee Break with Poster Session 3
	BRAYN MEETS SÜDHOF • Parallel Session (9:30-11:30) For scheduled groups only
11 20	Marco Rinaudo • Hippocampal estrogenic signaling mediates sex dif-

ferences in retroactive interference

11:45

Katia Monsorno • Loss of MCT4 in microglia results in altered brain development and anxiety-like behavior

12:00

Ilham El Atiallah • Striatal dysfunction in the novel DYT25-GNAL dysto-

11:30

nia knockout rat model

Closing Remarks • BraYn Awards (Best Oral and Poster Presentation and BraYn Starting Grant) (Chairpersons: E. Vannini, G. Ferrara, G. D'Alessandro, A. Musella, V. Chiurchiù, N. Iraci, C. Calì)

STAYING SAFE BraYn 2021 COVID-19 Safety Protocols

The health and safety of BraYn 2021 Conference Speakers, Attendees, Sponsor, Guests, Staff and Organizing Secretariat remains the top priority for the BraYn. The most up-to-date guidelines and recommendations will be observed and maintained at all times. Delegates are responsible to ensure that they are aware of all travel precautions and restrictions.

Please consult the website https://www.esteri.it/mae/en/ to find the up-to-date dispositions of the Italian Government.

Effective from 23 September, the Ministry of Health has recognised the equivalence of several vaccines administered by foreign health authorities to those carried out under the National Vaccine Plan for the Prevention of SARS-CoV-2. Namely:

- Vaccines recognised by EMA European Medicines Agency;
- Covishield (Serum Institute of India), manufactured under license from AstraZeneca;
- R-CoVI (R-Pharm), manufactured under licence from AstraZeneca;
- Covid-19 vaccine-recombinant (Fiocruz), manufactured under licence from AstraZeneca.

As a result of this recognition:

- The above-mentioned vaccines are considered valid for the purposes of issuing the COVID-19 green certificate to Italian citizens (including those residing abroad) and their cohabiting family members, as well as to foreign citizens living in Italy for work or study and to all individuals registered in any capacity with the Italian National Health Service who have been vaccinated abroad;
- COVID-19 green certificates issued by foreign health authorities following vaccination with the above vaccines (in addition to the vaccines authorized by EMA) are considered as equivalent for all legal purposes, provided that they contain the following information: identification data of the holder, vaccine data, date(s) of administration of the vaccine, identification data of the issuer of the certificate; and are written in Italian, English, French, Spanish or German (if they are issued in another language, they must be accompanied by a sworn translation).

CONGRESS VENUE

Please note that, based on the provisions of the law following the Covid-19 pandemic, all participants (Speakers, Attendees, Sponsor, Guests, Staff and Organizing Secretariat) will be able to access by presenting at the organizing secretariat desk:

• EU Digital Covid Certificate (vaccination certificate)/Green Pass

or

negative rapid antigen or molecular test certification (carried out within the previous 48h)

or

certification of healing

At the entrance, the temperature will be checked with the thermo scanner. The use of the mask will always be mandatory.

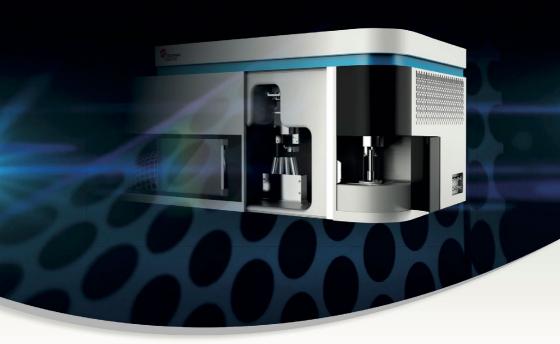
It is important to always be aware of and maintain social distancing (1m between people), wear a mask and follow proper hygiene protocols, including frequent hand washing, sanitization and cough/sneeze etiquette.

We ask for your help in ensuring your own safety and the safety of your colleagues by following directional signage put in place in the venue and complying to the regulations and restrictions required by the venue, BraYn, and any local public health authorities.

Finally, please be sure to isolate and advise event staff immediately should you develop any symptoms related to COVID-19.

While all measures are in place to keep you safe, your participation at the BraYn Conference 2021 is at your own discretion. BraYn Association assumes no responsibility for any personal illness, injury, damages, losses, or other associated risks related to attendance at BraYn 2021 in Pisa.

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