



ISTITUTO DI NEUROSCIENZE

Consiglio Nazionale
delle Ricerche

Retreat 2022

Santa Margherita di Pula
Hotel Flamingo, September 22-24

Scientific Program

September, 22nd, afternoon: **Pennellate di Matteo**

14.30 *Welcome, introduction and logistics*
Michela Matteoli
IN-CNR director

14.50 *Opening lecture:*
Peripheral nervous system regeneration
Cesare Montecucco
University of Padova / IN-CNR Padova

15.40 *Rehabilitation and Neuromodulation after Stroke:*
novel therapeutic strategies in murine models
Cristina Spalletti
IN-CNR Pisa

16.00 *Social and neurophysiological aspects of licking*
behavior in mice
Claudia Alia
IN-CNR Pisa

16.20 *In vivo characterization of intracortical connectivity in*
a mouse model for stroke
Manuela Allegra
IN-CNR Padova

16.40 *Coffee break*

17.10 The lateral entorhinal cortex from pathology to
physiology: Neuronal underpinnings of episodic-like
memory
Nicola Origlia
IN-CNR Pisa

17.30 *Arrivederci Matteo*
Alessandro Sale
IN-CNR Pisa

17.50 *Ricerca a quattro mani: venti anni di collaborazione
con Matteo Caleo*
Yuri Bozzi
University of Trento

Posters and wines

20.00 Dinner

21.15 Meeting IN

September, 23rd, morning

Symposium: ***From HBP to EBRAIN***

8.30 *Multiscale Brain Modelling: toward brain digital twins*
Egidio D'Angelo
University of Pavia

9.10 *Cognitive functions and dysfunctions emerging from
large-scale computational modeling*
Michele Migliore
IBF-CNR

9.50 *Slow waves and brain complexity in brain injury*
Marcello Massimini
University of Milan

10.30 *Coffee break*

11.00 *High-resolution mapping of human brain tissue with
advanced microscopy techniques*
Giacomo Mazzamuto
LENS / INO-CNR

11.40 *The cognitive effects of slow wave activity
propagation in wakefulness and sleep*
Giulia De Bonis & Chiara De Luca
LENS

12.20 *The upcoming initiatives: EBRAINS, EIC, EBrain-Italy*
Egidio D'Angelo & Michele Migliore

13.00 Lunch

September, 23rd, afternoon

14.30 *Neuronal circuits activity and dynamics: function and dysfunction*

Claudia Lodovichi

IN-CNR Padova

15.00 *Brain circuits for fear attenuation*

Bianca Silva

IN-CNR Milano

15.20 *Astrocytic calcium signaling in the progression of Alzheimer's disease*

Micaela Zonta

IN-CNR Padova

15.40 *The value of corticospinal excitability and intracortical inhibition in predicting motor skill improvement driven by action observation*

Arturo Nuara

IN-CNR Parma

16.00 *Coffee break*

16.30 *Intracellular chloride as master regulator of cortical excitability*

Gian Michele Ratto

NANO-CNR / IN-CNR Pisa / IN-CNR Padova

17.00 *Human connectomics and disconnectomics: insights from inside the brain.*

Pietro Avanzini

IN-CNR Parma

17.20

Physical activity and cortical plasticity

Gabriele Sansevero

FONDAZIONE UMBERTO VERONESI / IN-CNR Pisa

17.45

Keynote lecture

Spontaneous brain activity in health and disease

Maurizio Corbetta

University of Padova

19.00

Posters and wines

20.30

Dinner

September 24th, morning

8.30 *New models of alpha-synuclein toxicity reveal the role of glial cells in Parkinson's disease neurodegeneration.*

Vania Broccoli

IN-CNR Milano

9.00 *Oral nano-delivery of nasco pomace extract exerts neuroprotective and anti-inflammatory effects in the MPTP mouse model of Parkinson's disease.*

Marcello Serra

University of Cagliari / IN-CNR Cagliari

9.20 *Microglial extracellular vesicles in motion at the neuronal surface: implication in the propagation of amyloid-related synaptic dysfunction in the mouse brain.*

Martina Gabrielli

IN-CNR Milano

9.40 *Mechanisms of synaptic dysfunction in the Angelman syndrome.*

Matteo Fossati

IN-CNR Milano

10.00 *Coffee break*

10.30 *Impact of early life stress and social enrichment on behavior in adolescent and adult rats: focus on sex differences*

Liana Fattore

IN-CNR Cagliari

11.00 *Posters and cheese*

12.00 *Closing lecture:*
How the immune system affects synaptic function.
Michela Matteoli

12.45 *Closing remarks and salutations*

Poster Sessions

Session 1 Thursday 22 September, 18:40-19:40

Theme: Cellular and molecular biology of the neuron

P1. Multiome technology to explore the role of nuclear UBE3A in Angelman Syndrome. *Simone Alberti, Alicia Rubio, Tommaso Pezzica, Edoardo Bellini, Mattia Zaghi, Melania Nannoni, Diana Gambarè, Matteo Marzi, Francesco Nicassio, Laura Baroncelli, Iliaria Tonazzini, Vania Broccoli.*

P2. PHOX2B regulates neuronal excitability by modulating the expression of K⁺, Na⁺ and Ca²⁺ channel genes. *Roberta Benfante, Silvia Cardani, Simona Di Lascio, Clara Cambria, Delia Podesta', Elisa Costa, Silvia Pagliardini, Flavia Antonucci, Diego Fornasari.*

P3. Small molecules to fix the genetic defects of pathogenic reelin mutations in ADLTE. *Emanuela Dazzo, Giorgia Pallafacchina, Carlo Nobile.*

P4. Modeling native and seeded synuclein aggregation and related cellular dysfunctions in dopaminergic neurons derived by a new set of isogenic iPSC lines with SNCA multiplications. *Angelo Iannielli, Mirko Luoni, Serena Gea Giannelli, Rosangela Ferese, Gabriele Ordazzo, Matteo Fossati, Andrea Raimondi, Felipe Opazo, Olga Corti, Jochen H.M. Prehn, Stefano Gambardella, Ronald Melki, Vania Broccoli.*

P5. Disentangling the signaling complexity of nerve growth factor receptors by CRISPR/Cas9. *Giovanna Testa, Eleonora Vannini, Laura Pancrazi, Antonino Cattaneo, Mario Costa, Marco Mainardi.*

P6. Tau hyperphosphorylation affects axonal transport *in vitro* and *in vivo*. *Edoardo Moretto, Chiara Panzi, Emily Huff, Samantha De La-Rocque, Giampietro Schiavo.*

Theme: Mitochondrial and neuromuscular physiology

P7. Mitotrap: a novel tool designed to study mitonuclear communication. Giulietta Di Benedetto, *Alessandra Tavoni, Kostantinos Lefkimmiatis.*

P8. Unraveling the role of mitochondrial metabolism in tumors of the peripheral nervous system. Ionica Masgras, *Francesca Scantamburlo, Francesco Ciscato, Samuele Negro, Marco Pirazzini, Ranieri Verin, Alessandra Castegna, Andrea Rasola.*

Theme: Neurobiology of addiction and Behaviour

P9. The oxytocin system contributes to brain microvascular development. Marta Busnelli, *Antonio Zippo, Camilla Paolini, Francesca Piacentini, Bice Chini.*

P10. Oxytocin ameliorates behaviors and promotes *in vitro* blood-brain barrier formation in a 22q11.2 deletion syndrome mouse model. Camilla Paolini, *Francesca Piacentini, Bice Chini, Giulia Castellani, Mariasole Ciampoli, Arianna Benedetti, Francesco Papaleo.*

P11. Effects of the phenethylamine 2-CI-4,5-MDMA and the synthetic cathinone 3,4-MDPHP in adolescent rats: focus on sex differences. Augusta Pisanu, *Giacomo Lo Russo, Giuseppe Talani, Jessica Bratzu, Carlotta Siddi, Fabrizio Sanna, Marco Diana, Patrizia Porcu, Maria Antonietta De Luca, Liana Fattore.*

P12. Behavioral characterization of co-exposure to cannabinoids and hormonal contraceptives in female rats. *Liana Fattore, Augusta Pisanu, Luca Concas, Claudia Casula, Maria Giuseppina Pisu, Mariangela Serra, Alessandra Concas, Patrizia Porcu.*

Theme: Physiology, plasticity and pathological conditions of the visual system

P13. The interphotoreceptor matrix: investigating the role of IMPG2 in zebrafish retinal development and function. *Simona Casarosa, Maria Elena Castellini, Giovanni Spagnolli, Antonella Pirozzi, Lucia Poggi, Bice Avallone, Emiliano Biasini, Andrea Messina.*

P14. Infantile ceroid neuronal lipofuscinosis: new possible approaches to interfere with lysosomal accumulation. *Simone Giubolini, Giacomo Pasquini, Manuel Scorrano, Elena Novelli, Simona Rapposelli, Filippo Maria Santorelli, Gian Michele Ratto, Silvia Landi.*

Theme: Physiopathology of the synapse

P15. Sumoylation of OPHN1 controls spine density and architecture by tuning actin dynamics. *Cristina Guglielmetti, Marco Erreni, Marie Pronot, Marta Prieto, Marta Busnelli, Fabrizia Guarnieri, Francesca D'Autila, Gwenola Poupon, Silvia Bassani, Maria Passafaro, Matteo Fossati, Davide Pozzi, Stéphane Martin, Michela Matteoli, Alessandra Folci*

P16. Neuronal network activity and connectivity is impaired in a conditional knockout mouse model with PCDH19 mosaic expression. *Sara Mazzoleni, Giorgia Giansante, Antonio G. Zippo, Luisa Ponzoni, Anna Gilardi, Greta Maiellano, Maura Francolini, Mariaelvina Sala, Luca Murru, Maria Passafaro Silvia Bassani.*

Theme: Other Topics

P17. Tonic somatosensory responses and deficits of tactile awareness converge in the parietal operculum. *Maria Del Vecchio, Carlotta Fossataro, Flavia Maria Zauli, Ivana Sartori, Andrea Pigorini, Piergiorgio d'Orio, Belen Abarategui, Simone Russo, Ezequiel Pablo Mikulan, Fausto Caruana, Giacomo Rizzolatti, Francesca Garbarini, Pietro Avanzini.*

P18. Continuous tracking as a probe for perceptual motion extrapolation. *Luca Lo Verde, David Charles Burr, Guido Marco Cicchini.*

P19. Anatomical and electrophysiological biomarkers to predict spontaneous recovery after MCAO in mice. *Verediana Massa, Claudia Alia, Daniele Cangì, Irene Busti, Alessio Ricci, Maria Pasquini, Carlo Perego, Maria Grazia De Simoni, Silvestro Micera, Matteo Caleo.*

P20. The dynamic experience of virtual environments influences motor and attentional mechanisms during the observation of emotional body postures. *Giovanni Vecchiato, Paolo Presti, Gaia Maria Galasso, Pietro Avanzini, Fausto Caruana, Davide Ruzzon.*

Session 2 Friday 23 September, 19:00-20:00

Theme: Cellular and molecular biology of the neuron

P21. The epilepsy-associated protein PCDH19 undergoes NMDA receptor-dependent proteolytic cleavage and regulates the expression of immediate early genes. *Silvia Bassani*, *Laura Gerosa, Sara Mazzoleni, Francesco Rusconi, Alessandra Longaretti, Elly Lewerissa, Silvia Pelucchi, Luca Murru, Elena Marcello, Nael Nadif Kasri, Elena Battaglioli, Maria Passafaro.*

P22. Rare missense mutations of the h β 4 subunit alter α 3 β 4 nAChRs trafficking. *Sara Francesca Colombo*, *Cecilia Galli, Arianna Crespi, Sergio Fucile, Cecilia Gotti.*

P23. The lncRNA PHOX2B-AS1 in the pathogenesis and as potential drug target in congenital central hypoventilation syndrome (CCHS). *Simona di Lascio*, *Ana Lucia Cuadros Gamboa, Silvia Cardani, Diego Fornasari, Roberta Benfante.*

Theme: Neurobiology of addiction and Behaviour

P24. Molecular basis and behavioural significance of a sex specific circuit switch in drosophila. *Erika Donà*, *Marina Gkantia, Dana S. Galili, István Taisz, Gregory S.X.E. Jefferis.*

P25. Binge-like alcohol drinking in sardinian alcohol-preferring rats living in an enriched environment. *Laura Regonini-Somenzi*, *Paola Maccioni, Carla Lobina, Giancarlo Colombo.*

Theme: Neurodegenerative diseases and bioenergetics

P26. Towards a cure for creatine transporter deficiency: promises and challenges of gene therapy.

Laura Baroncelli, Elsa Ghirardini, Francesco Calugi, Federica Di Vetta, Giulia Sagona, Lorenzo Dadà, Sara Cornuti, Elena Putignano, Mario Costa, Maria Grazia Alessandri, Giovanni Cioni, Tommaso Pizzorusso.

P27. Interleukin-10 protects from dopaminergic cell loss by guiding the fate of innate and adaptive immune cells. *Simone Bido, Diana Gambarè, Edoardo Bellini, Melania Nannoni, Sharon Muggeo, Elena Melacini, Vania Broccoli.*

P28. 50-khz Ultrasonic vocalizations in hemiparkinsonian rats repeatedly treated with dopaminomimetic drugs as a possible behavioral marker of the affective properties of dopaminomimetic drugs used in the therapy of Parkinson's disease. *Jacopo Marongiu, Marcello Serra, Giulia Costa, Micaela Morelli, Nicola Simola.*

P29. Microangioarchitecture efficiency in a swine ALS model: toward a possible diagnostic marker? *Marco Righi, Stefano Morara, Giulia Petrillo, Andrea Perota, Giulia Cagnotti, Cristiano Corona.*

Theme: Physiopathology of the synapse

P30. Multi-level characterization of the knock-out mouse for PCDH9, a cell-adhesion molecule implicated in neurodevelopmental disorders. *Federico Miozzo, Luca Murru, Verjina Metodieva, Greta Maiellano, Maura Francolini, Maria Passafaro.*

P31. Investigation of the role of parvalbumin-positive interneurons in a conditional model of PCDH19-related disorder. *Francesca Rossi, Sara Riccardi, Daunia Laurenti, Mariaelvina Sala, Silvia Bassani, Luca Murru, Maria Passafaro.*

Theme: The mirror neuron system

P32. Paralleling the short-term effect of action observation with the long-term efficacy of action observation training. *Maria Chiara Bazzini, Arturo Nuara, Simone Paolini, Laura Ferrari, Maria Chiara Lanini, Giulio Branchini, Pietro Avanzini, Maddalena Fabbri Destro.*

P33. Kinematic characterization of motor phenotypes in whole-body actions: claiming the role of motor similarity in observation-based movement learning. *Doriana De Marco, Laura Ferrari, Emilia Scalona, Maddalena Fabbri Destro, Pietro Avanzini.*

P34. Kicking in or kicking out? The role of individual motor experience in predicting the outcome of rugby placed kicks. *Simone Paolini, Maria Chiara Bazzini, Marco Rossini, Pietro Avanzini, Maddalena Fabbri-Destro.*

Theme: Other Topics.

P35. Exploring the accurate definition of acute stroke imaging outcomes with circulating biomarkers. *Marzia Baldereschi, Antonio Di Carlo, Silvia Biagini, Alessandro Soderò, Laura Tudisco, Ivano Lombardo, Benedetta Piccardi, Cristina Sarti, Vanessa Palumbo, Domenico Inzitari, James Kennedy.*

P36. Temporal manipulation of Scn1a gene expression in dravet syndrome. *Gaia Colasante, Simone Brusco, Alessia Salamone, Linda Serra, Martina Mainardi, Simona Bagnasco, Vania Broccoli.*

P37. A novel photothrombotic model of occlusion-recanalization of MCA in mice. *Emilia Conti, Noemi Carlini, Benedetta Piccardi, Anna Letizia Allegra Mascaro, Francesco Saverio Pavone.*

P38. Astrocytes modulate somatostatin interneuron signaling in the visual cortex. *Vanessa Jorge Henriques, Angela Chiavegato, Giorgio Carmignoto, Marta Gómez-Gonzalo.*

P39. Brain sex-dependent alterations after prolonged high fat diet exposure. Maria Luisa Malosio, Valentina Murtaj, Silvia Penati, Sara Belloli, Maria Foti, Angela Coliva, Angela Papagna, Cecilia Gotti, Elisa Toninelli, Remy Chiaffarelli, Stefano Mantero, Susanna Pucci, Michela Matteoli, Rosa Maria Moresco.

P40. Dexamethasone ocular implants for retinitis pigmentosa. Debora Napoli, Beatrice Di Marco, Noemi Orsini, Enrica Stretto.

P41. Brain-state dependent functional (dys)connectivity of excitatory circuits in Shank3B mice. Elena Montagni, Alessandra Martello, Francesco Pavone, Anna Letizia Allegra Mascaro.

Session 3 Saturday 24 September, 11:00-12:00**Theme: Cellular and molecular biology of the neuron**

P42. Exploring the role of RLF protein in neurodevelopmental diseases through iPSC-based and organoid models. *Federica Banfi, Mirko Luoni, Mattia Zaghi, Adam Jackson, Edoardo Bellini, Linda Bossini, Vania Broccoli, Siddharth Banka, Alessandro Sessa.*

P43. Generation of a patient specific hiPSC-derived neuronal model for congenital central hypoventilation syndrome (CCHS). *Ana Lucia Cuadros Gamboa, Roberta Benfante, Monica Nizzardo, Tiziana Bachetti, Cinzia Arzilli, Marta Peruzzi, Silvia Cardani, Isabella Ceccherini, Raffaele Piumelli, Niccolò Nassi, Simona Di Lascio, Diego Fornasari.*

P44. Zika virus induces FOXP1 nuclear displacement and downregulation in human neural progenitors. *Beatrice D'Orsi, Giulia Lottini, Matteo Baggiani, Giulia Chesi, Paola Quaranta, Michele Lai, Laura Pancrazi, Marco Onorati, Mauro Pistello, Giulia Freer, Mario Costa.*

P45. Advancing stem cell-based modeling of the proprioceptive neuronal circuit with dorsal root ganglia organoids and its impairment in Friedreich's ataxia. *Sharon Muggeo, Elena Melacini, Pietro Giuseppe Mazzara, Edoardo Bellini, Mirko Luoni, Mattia Zaghi, Serena Gea Giannelli, Simone Brusco, Matteo Jacopo Marzi, Francesco Nicassio, Marco Rasponi, Vania Broccoli.*

Theme: Neurobiology of addiction and Behaviour

P46. Communal nesting attenuates the effects induced by early life social stress on sensorimotor gating, rewarding and compulsive-like behaviors in male and female rats. *Jessica Bratzu, Maria Ciscato, Fabrizio Sanna, Augusta Pisanu, Giuseppe Talani, Patrizia Porcu, Liana Fattore.*

P47. Long-term effect after intravenous self-administration (IVSA) of the synthetic cannabinoid receptor agonist 5F-MDMB-PICA in adolescent mice. *Francesca Caria, Nicholas Pintori, Giulia Margiani, Enrica Spano, Raimondo Boi, Gaetano Di Chiara, Maria Antonietta De Luca.*

P48. Effects of environmental enrichment on alcohol self-administration and mesolimbic dopaminergic neuronal activity in Sardinian alcohol-preferring rats. *Michele Santoni, Paola Maccioni, Marco Pistis, Giancarlo Colombo, Anna Lisa Muntoni.*

P49. Adolescent JWH-018 synthetic cannabinoid vaping in male rats increases the aversive state and withdrawal symptoms after cessation and dysregulates dopamine responsiveness to hedonic taste stimulus at adulthood. *Enrica Spano, Nicholas Pintori, Gaetano Di Chiara, Maria Antonietta De Luca.*

Theme: Neurodegenerative diseases and bioenergetics

P50. Iron-fed microglia: an in vitro system to model microglial phenotype in vitro and test new therapy in neurodegenerative diseases? *Marta Tiffany Lombardo, Giulia Cutugno, Valentina Scali, Maria Teresa Golia, Marta Lombardi, Andrea Benzi, Cecilia Astigiano, Vanna Denti, Giuseppe Paglia, Santina Bruzzone, Claudia Verderio.*

P51. Fenofibrate mitigates inflammation-induced functional alterations in the medial prefrontal cortex in a mouse model of Alzheimer's disease. *Andrea Mastio, Claudia Sagheddu, Michele Santoni, Rafaela Mostallino, Maria Paola Castelli, Marco Pistis.*

P52. Characterization of Nasco grape pomace-loaded nutriosomes and their anti-inflammatory effects in the MPTP mouse model of Parkinson's disease. *Pathik Parekh, Marcello Serra, Mohamad Allaw, Matteo Perra, Jacopo Marongiu, Giulia Tolle, Maria Antonietta Casu, Maria Manconi, Pierluigi Caboni, Olivier J. J. Manzoni, Annalisa Pinna, Micaela Morelli.*

Theme: Physiopathology of the synapse

P53. Investigating the molecular diversity of COPII-dependent transport in cortical neurons. *Federica Baronchelli, Martina Biagioni, Giuseppe Martano, Sara Francesca Colombo, Matteo Fossati.*

P54. Microglia-derived extracellular vesicles are involved in synaptic pruning in vitro. *Giulia D'Arrigo, Giulia Cutugno, Marta Lombardi, Martina Gabrielli, Marta Tiffany Lombardo, Maria Teresa Golia, Francesca Sironi, Roberta Ghidoni, Caterina Bendotti, Claudia Verderio.*

P55. Role of pentraxin3 in neurodevelopmental disorders. *Giuliana Fossati, Cecilia Zen, Mariassunta De Luca, Anna Chiara Pacentra, Sonia Valentino, Angelo Iannielli, Barbara Bottazzi, Cecilia Garlanda, Vania Broccoli, Michela Matteoli, Elisabetta Menna.*

Theme: Other Topics

P56. Implementing novel gene therapy strategies for Rett syndrome. *Mirko Luoni, Serena Giannelli, Benedetta Bellinazzi, Vania Broccoli.*

P57. An engineered epigenetic silencer factor represses the glioblastoma genetic program and restrains tumor development. *Raquel Moll-Diaz, Valerio Benedetti, Federica Banfi, Mattia Zaghi, Luca Massimino, Laura Argelich, Edoardo Bellini, Simone Bido, Sharon Muggeo, Gabriele Ordazzo, Giuseppina Mastrototaro, Matteo Moneta, Alessandro Sessa, Vania Broccoli.*

P58. Concomitant inhibition of $\alpha 2$ and D2 receptor potentiates the dopamine system: implications for pharmacotherapy in schizophrenia. *Claudia Sagheddu, Paola Devoto, Marco Pistis, Gianluigi Gessa.*

P59. Hyperphosphorylation Cdk1 dependent modulates RIP3 during mitosis in human cells. *Nicoletta C. Surdo, Giulietta Di Benedetto, Liliana F. Iannucci and Konstantinos Lefkimiatis.*

P60. In vivo characterization of intracortical connectivity in a mouse model for stroke. *Livia Vignozzi, Stefano Varani, Gabriele Deidda, Manuela Allegra, Matteo Caleo.*

P61. The perception of emotional body postures is influenced by the dynamic experience of the surrounding environment: evidence from an eye-tracking study in virtual reality. *Paolo Presti, Gaia Maria Galasso, Pietro Avanzini, Fausto Caruana, Davide Ruzzon, Giovanni Vecchiato.*

P62. Mapping perceptual awareness with multiple sensory stimulations, no-report paradigm and intracerebral recording in humans. *Andrea Pigorini, Maria del vecchio, Ezequiel Mikulan, Flavia Zauli, Renzo Comolatti, Simone Russo, Fausto Caruana, Ivana Sartori, Giacomo Rizzolatti, Marcello Massimini, Pietro Avanzini.*