To commemorate the 90th anniversary of the death of the Spanish neuroscientist Santiago Ramón y Cajal, the Embassy of Spain in Italy and the European Brain Research Institute 'Rita Levi-Montalcini' (EBRI) are co-organizing the 'Encuentros Cajal Italy'. The event is held in the framework of the Spanish 2024-2025 'Encuentros Cajal' initiative, which pays tribute to the Nobel Laureate in different countries. The project has a dual purpose: to foster collaboration and synergies between scientists, towards a knowledge sharing network; to promote "open science", outreach and dissemination activities for the general public. The Rome event will explore the bidirectional interactions between Neurosciences and Artificial Intelligence (AI). Neuroscience has been a critical driver of progress in AI, however the current pace of dramatic developments makes communication and collaboration between the two fields difficult, but also urgent. We shall discuss the role of brain understanding in accelerating AI research, and, reciprocally, the symmetric role of Neuroscience-inspired ideas that will lead to the next generation of AI technologies. What can Neuroscience teach AI? How can AI increase our understanding of brain functions? The cross-talk of ideas between AI and Neuroscience will create a "virtuous cycle" at their intersection, advancing the knowledge in unforeseen directions – but only if there is a large enough community of scholars and researchers fluent in both domains. We must train a new generation of AI researchers who are equally at home in engineering/computational science and Neuroscience. And vice versa.

"Even more appealing than virgin forest was the jungle lying before me at that moment: the nervous system, with its billions of cells gathered in populations each different from the other and all locked into the apparently inextricable nets of the nervous circuits which intersect in all directions along the cerebrospinal axis. The pleasure I was already savoring in anticipation was enhanced by the prospect of carrying out the project under the conditions contingent on the prohibitive racial laws. If Ramón y Cajal, with his giant's step and exceptional intuition, had dared foray into that jungle, why should I not venture along the path he had opened for me?"

Levi-Montalcini, R. 1988.
In Praise of Imperfection.
Basic Books, New York, p. 90

Registration is required to partecipate ***LINK***

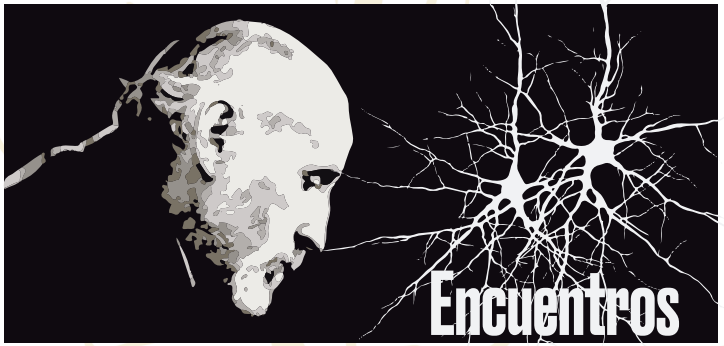
MEETING SECRETARIAT: scientific.assist@ebri.it

EBRAINS Italy

EBRI
European Brain Research Institute
Rita Levi-Montalcini

Embajada de España en Italia · aecid · Cooperación Española

CSIC Consejo Superior de Investigaciones Científicas · Instituto Cajal



Encuentros CAJAL ITALY

NEUROSCIENCE-INSPIRED NEXT GENERATION AI

26 November 2024

ROME

Sala Convegni - Consiglio Nazionale delle Ricerche CNR
Via dei Marrucini

Con il patrocinio della
Regione Lazio

PROGRAMME

9:30

Registration

10:00

WELCOME ADDRESSES

Maria Chiara Carrozza
President, Italian National Research Council

Miguel Fernández-Palacios M.
Ambassador of Spain to the Republic of Italy

Antonino Cattaneo
President, European Brain Research Institute 'Rita Levi-Montalcini'

Roberta Angelilli
Vice President, Lazio Region

10:20

KEYNOTE LECTURES

CHAIRS: **Ivan Arisi** and **Mara D'Onofrio**
European Brain Research Institute 'Rita Levi-Montalcini'

FROM CAJAL'S CEREBRAL CORTEX TO CURRENT CORTICAL DYNAMICS: A LIVING LEGACY

Mavi Sanchez-Vives
Institut d'Investigacions Biomèdiques August Pi i Sunyer, Barcelona

NEURONAL NETWORK MODELING - ESSENTIAL TOOLS AND THEIR LIMITATIONS

Hannah Monyer
European Brain Research Institute 'Rita Levi-Montalcini'; German Cancer Research Center, DKFZ

MULTIPLEXED DECISION STRATEGIES IN THE BRAIN CAN BE INFERRED FROM MOUSE FACIAL EXPRESSIONS

Alfonso Renart
Champalimaud Centre for the Unknown, Lisbon

A NEW PERSPECTIVE ON THE CONSEQUENCES OF BRAIN INJURY

Marcello Massimini
Università degli Studi di Milano

13:00

End of session

14:30

ROUNDTABLE

CHALLENGES IN CONNECTING AI AND NEUROSCIENCE

CHAIR: **Antonino Cattaneo**
European Brain Research Institute 'Rita Levi-Montalcini'

Catalina Curceanu
Istituto Nazionale di Fisica Nucleare, Frascati

Stefano Ferraina
Sapienza Università di Roma

Giovanni Felici
Istituto di Analisi dei Sistemi ed Informatica "A. Ruberti", CNR, Rome

Marcello Massimini
Università degli Studi di Milano

Maurizio Mattia
Istituto Superiore di Sanità, Rome

Hannah Monyer
European Brain Research Institute 'Rita Levi-Montalcini'; German Cancer Research Center, DKFZ

Pier Stanislao Paolucci
Istituto Nazionale di Fisica Nucleare, Rome

Alfonso Renart
Champalimaud Centre for the Unknown, Lisbon

Mavi Sanchez-Vives
Institut d'Investigacions Biomèdiques August Pi i Sunyer, Barcelona

16:30

Presentation of the Italian translation of Ramón y Cajal's book

Reglas y consejos sobre investigación científica (Los tónicos de la voluntad)
Regole e consigli sulla ricerca scientifica (I tonici della volontà)

Angelo Sidoni and **Marco Paone**
Università degli Studi di Perugia

16:45

RAMÓN Y CAJAL AND LEVI MONTALCINI: NEURONAL NETWORKS AND THEIR MAKING

Pietro Calissano
Co-Founder of the European Brain Research Institute 'Rita Levi-Montalcini'