

International Symposium on the Connection Between Physics and Metabolism in Brain Functions

3rd Edition

Meeting

09.10.26

On-site

8 teaching hours

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Exploring how metabolic pathways shape brain development, cognition, and neurodevelopmental disorders.

Following the success of the first two international symposia on physics, metabolism and brain function (Barcelona, 2024, and Paris, 2025), we are pleased to welcome you to the third edition in Barcelona. This meeting will bring together leading experts in physics, chemistry, neurobiology and philosophy to foster interdisciplinary collaboration and inspire new ideas in the emerging "science of the night".

The programme will delve into frontier topics in physics, metabolism and mechanobiology, bridging basic research and clinical practice, complemented by musical performances that will enrich the dialogue between science and the arts. Organised by Professors Angeles García-Cazorla (SJD & University of Barcelona) and Fanny Mochel (Paris Brain Institute & Sorbonne University), the symposium will be held in English and is aimed at a scientific audience.

Course directors

Dr. Angeles García Cazorla. Professor of Pediatric Neurology and Neurometabolism Universitat de Barcelona.SJD Barcelona Children's Hospital Barcelona.
Dr. Fanny Mochel. Professor of Medical Genetics and Neurometabolism, Sorbonne University, Paris.

Scientific Organising Committee

Dr. Juliana Ribeiro-Constante (Spain).
Dr. Adrian Hallou (UK).
Dr. Alfonso de Oyarzábal (Spain).
Dr. Neus Sanfeliu-Cerdan (Spain).
Dr. Maya Tchikviladze (France).

Registration: <https://bit.ly/connection-physics-metabolism-2026>
Price: 30 €



Contact
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This course is especially aimed at:

- Professionals and academics from various disciplines interested in the intersection of physics and neurometabolism.
- Physicians.
- Biologists.
- Physicists.
- Neurologists.
- Geneticists.
- Biochemists.
- People interested in the metabolic field.

After this training, you will be able to:

To foster interdisciplinary knowledge on the relationship between physics, chemistry, neurobiology and philosophy, exploring their combined application to the study of the brain and biological processes related to sleep and the night.

To update and expand scientific knowledge on emerging topics such as quantum biology, mitochondrial mechanosensing, physical approaches to brain metabolism, mechanodiseases, and their clinical translation, fostering knowledge exchange among experts from diverse disciplines.

To promote scientific collaboration and the generation of new ideas through dialogue among researchers from diverse fields, while incorporating the interaction between science and the arts to stimulate new perspectives and innovative approaches.

Location

Auditorium SJD Pediatric Cancer Center
Sant Joan de Déu Education Calle de Santa Rosa, 39-57 08950 Esplugues de Llobregat (Barcelona)

Endorsed by:

European EAACME (SEAFORMEC) accreditation has been requested.

Friday, 09 october 2026

09:00 - 09:05 h	Piano introduction
09:05 - 09:20 h	Welcome and Introduction. Angeles Garcia-Cazorla, Spain & Fanny Mochel, France.
Inaugural Talk	
09:20 - 09:25 h	Piano interlude
09:25 - 09:55 h	The New Physics of the Brain. Sonia Contera (Spain).
09:55 - 10:05 h	Discussion
Block I — Quantum Biology	
10:05 - 10:10 h	Piano interlude
10:10- 10:30 h	Quantum sensing in photoreceptor proteins. Margaret Ahmad (France) .
10:30 - 10:40 h	Discussion
10:40 - 11:00 h	Quantum Sensing for new insights in biological systems. Alexander Huck (Denmark).
11:00 - 11:10 h	Discussion
11:10 - 11:40 h	Coffee Break

Block II — Physical Approaches to Brain Metabolism	
11:40 - 11:45 h	Piano interlude
11:45 - 12:05 h	The brain cost of cognition in health, disease and across species. Gustavo Deco (Spain).
12:05 - 12:15 h	Discussion
12:15 - 12:35 h	From Photons to Function: Real-Time Control and Observation of Neural Dynamics in Living Organisms. Michael Krieg (Spain) .
12:35 - 12:45 h	Discussion
12:45 - 13:05 h	Feeling the Force: Mitochondrial Mechanosensing and Cellular Adaptation. Neus Sanfeliu-Cerdán (Spain).
13:05 - 13:15 h	Discussion
13:15 - 14:45 h	Lunch Break 
Block III — Mechanodiseases	
14:45 - 14:50 h	Piano interlude
14:50 - 15:10 h	Acoustic Levitation: A New Window into Tumor Plasticity. Elias El-Habr (France).
15:10 - 15:20 h	Discussion

15:20 - 15:40 h	Mechanosensitive channels in myelination. Amit Agarwal (Germany) .
15:40 - 15:50 h	Discussion
15:50 - 16:10 h	Pulling Axons: Mechanisms and Translational Perspectives. Vittoria Raffa (Italy).
16:10 - 16:20 h	Discussion
Block IV — Clinical Translation and Patient Perspectives	
16:20 - 16:25 h	Piano interlude
16:25- 16:45 h	“Living with rare genetic diseases: patient-identified priorities for research” Patient perspective (Spain).
16:45 - 16:55 h	Discussion
Closing Lecture & Closing Remarks	
16:55 - 17:00 h	Piano interlude
17:00 - 17:20 h	Metabolic considerations for cognitive modeling. David J. Colaço (Germany).
17:20 - 17:30 h	Discussion
17:30 - 17:40 h	Closing Remarks. Angeles Garcia-Cazorla, Spain & Fanny Mochel, France.
17:40 - 18:10 h	Farewell Coffee: Networking, coffee, and informal conversations to close the day 