



Classical and Quantum Processes in Biological Systems

15 October 2026 · 09:00–16:00

Accademia Peloritana dei Pericolanti, Università degli Studi di Messina

From biomolecular dynamics and hydration to open-system effects, bioelectricity and neural function: the workshop brings together physicists, chemists, biologists and neuroscientists to connect molecular mechanisms with collective biological behaviour across scales, distinguishing experimentally supported mechanisms from model-dependent hypotheses and asking *when quantum effects truly matter*.

TIME	SPEAKER	TALK
09:00 – 09:20	Opening	Institutional greetings
09:20 – 09:40	Alessandro Sergi Univ. of Messina	Quantum-Classical Dynamics and the Arrow of Time in Biology
09:40 – 10:00	Andrea Ciccolo Univ. of Messina	Conformational Ensembles of Intrinsically Disordered Proteins revealed by Well-Tempered Metadynamics
10:00 – 10:20	Elisa Bonaccorso Univ. of Messina	Dancing with Water: Uncovering the Hydration Landscape of Cellular Condensates and Membrane Domains
10:20 – 10:50	Coffee break	
10:50 – 12:10	Round table	Connecting Physical Descriptions across Biological Scales
12:10 – 12:30	Michael Nitsche IfADO, Dortmund, Germany	Non-Invasive Brain Stimulation and Human Neuroplasticity
12:30 – 12:50	Michele Allegra Univ. of Padua	The geometry and dimensionality of neural activity
12:50 – 13:50	Lunch	
13:50 – 14:40	Poster session	
14:40 – 15:00	Isabella Munafò Univ. of Messina	Self-Assembly of Pluronic Copolymers in the Presence of Drug Molecules
15:00 – 15:20	Jack Tuszynski Univ. of Alberta, Canada	Are there quantum processes in which neuronal microtubules are involved?
15:20 – 15:40	Gabriel Hanna Univ. of Alberta, Canada	Mixed Quantum-Classical Approaches to Charge and Energy Transfer
15:40 – 16:00	Closing session	Awards, certificates and closing remarks

Organizers: Alessandro Sergi, Maria Teresa Caccamo, Salvatore Magazù (Univ. of Messina) · Antonino Messina (Univ. of Palermo)



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