



Giovedì **18 Dicembre 2025** alle ore **15:00** presso l'aula D

il **Dr. Pau Gorostiza**

ICREA Research Professor, Bioengineering of Catalonia (IBEC,  
Barcelona Institute of Science and Technology)

terrà il seminario dal titolo:

## **Inter-protein electron transport between redox partner proteins**

Electron transfer (ET) between redox proteins is an essential process in the respiratory and photosynthetic transport chains. While intra-protein ET is well characterized, the experimental methods to investigate inter-protein ET are limited by the presence of the solvent and by the transient nature of the protein-protein interaction and ET event, which are averaged in protein ensembles. Wiring precisely oriented redox protein partners to the nanoscale electrodes of an electrochemical scanning tunneling microscope (EC-STM) allows to record the time- and distance-dependence of the current flowing between them through the aqueous solution. These methods have revealed that the current between individual protein pairs extends beyond tunneling distances ( $>10$  nm) and it is electrochemically gated in a nanometre scale cation-exclusion volume described as Gouy-Chapman conduit. This current is also strongly regulated by phosphorylation, demonstrating its biological relevance. However, the corresponding mechanism and the identity of the charge carriers in the aqueous solution remained to be elucidated and we have recently aimed to study them. To determine the species involved in long distance charge transport between the redox partner proteins cytochrome c (Cc) and a fraction of complex III (Cc1) of the mitochondrial respiratory chain, we have performed single protein recordings as a function of pH, in heavy water solutions, and in oxygen-degassed solutions.

*La presenza della S. V. sarà molto gradita*

*Organizzatore  
Christian Durante*

**Il Direttore del Dipartimento**  
*Stefano Mammi*