



DIPARTIMENTO DI FARMACIA E BIOTECNOLOGIE

AVVISO DI SEMINARIO

Il giorno **venerdì 4 Marzo 2022**
alle ore **14:30**
presso Aula B, via Irnerio 42, Bologna

la **Dott.ssa Francesca Gubellini, PhD**
Structural Biology Department, Institut Pasteur, Paris
(referente Prof. Francia)

terrà un seminario dal titolo:

Cryo-Electron Microscopy for Protein Structure & Function determination

Colleghi e studenti sono cordialmente invitati

Commissione Ricerca e Attività Correlate - FaBiT

Il seminario sarà in presenza ma per chi fosse interessato si potrà collegare anche da remoto al seguente link:

<https://teams.microsoft.com/j/meetupjoin/19%3aeg76Q6VPt8rCvX8S50e6w1bA5Vjaasp4AenBvb93c141%40thread.tacv2/1645697689883?context=%7b%22Tid%22%3a%22e99647dc-1b08-454a-bf8c-699181b389ab%22%2c%22Oid%22%3a%22d559b74c-45c4-4d25-b582-79d00fadb1dc%22%7d>

ABSTRACT

Knowing proteins three-dimensional organization and dynamics is fundamental to fully understand physiological and pathological processes, and for developing new drugs. In recent years, cryo-electron microscopy (cryo-EM) has become the method of choice for the determination of protein structures, celebrated in 2017 by the Nobel Prize awarded to three founders of this technique. High-resolution structures of soluble and membrane proteins can be obtained avoiding the bottleneck of crystallization, by analyzing isolated proteins frozen in solution. Multiple conformations of these proteins can also be identified, revealing the dynamics involved in their function. Moreover, protein complexes can be visualized *in cellulo* by combining cryo-electron tomography and sub-tomogram averaging.

In my seminar I will discuss technical aspects of cryo-EM and present different applications and results recently obtained on bacterial protein complexes using cryo-EM.

BREVE CURRICULUM VITAE

I obtained my PhD in 2004 at the University of Bologna in the group of Prof. A. Melandri. I then moved to the Institut Curie in Paris as a postdoctoral fellow working on membrane complexes using electron microscopy. I then joined the group of Prof. J. Hunt at Columbia University, NYC to deepen my knowledge in membrane protein crystallography. In 2011 I joined the Institut Pasteur (Paris) where in 2014 I obtained the position of Permanent Researcher to investigate membrane protein complexes using an integrative structural biology approach including cryo-EM.

Selected publications:

Tassinari, ..., Gubellini. Central role and structure of the membrane pseudokinase YukC in the antibacterial *Bacillus subtilis* Type VIIb Secretion System. *bioRxiv*. doi: 0.1101/2020.05.09.085852.

Perry, ..., Gubellini. BAmSA: Visualising transmembrane regions in protein complexes using biotinylated amphipols and electron microscopy. *Biochim Biophys Acta Biomembr*. 2019 Feb 1;1861(2):466-477.

Rapisarda, Tassinari, Gubellini, Fronzes. Using Cryo-EM to Investigate Bacterial Secretion Systems. *Annu Rev Microbiol*. 2018 Sep 8;72:231-254. doi: 10.1146/annurev-micro-090817-062702.

Gubellini and Fronzes. Labeling of Membrane Complexes for Electron Microscopy. *Methods Mol Biol*. 2017;1635:125-138.

Low HH*, Gubellini F*, et al. Structure of a type IV secretion system. *Nature*. 2014 Apr 24;508(7497):550-553. doi: 10.1038/nature13081.