

1° Year of Phd in NANOSCIENCE



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National Enterprise for nanoScience and nanoTechnology

NEST

ATTENDED COURSES (with final exam):

- Introductory Quantum Physics
- Fundamentals of Biophysics at the Nanoscale
- Physics of the living cell

OTHER PHD ORIENTED ACTIVITIES:

- Ciclo di seminari – Biophysical sciences
- Scientific data analysis school

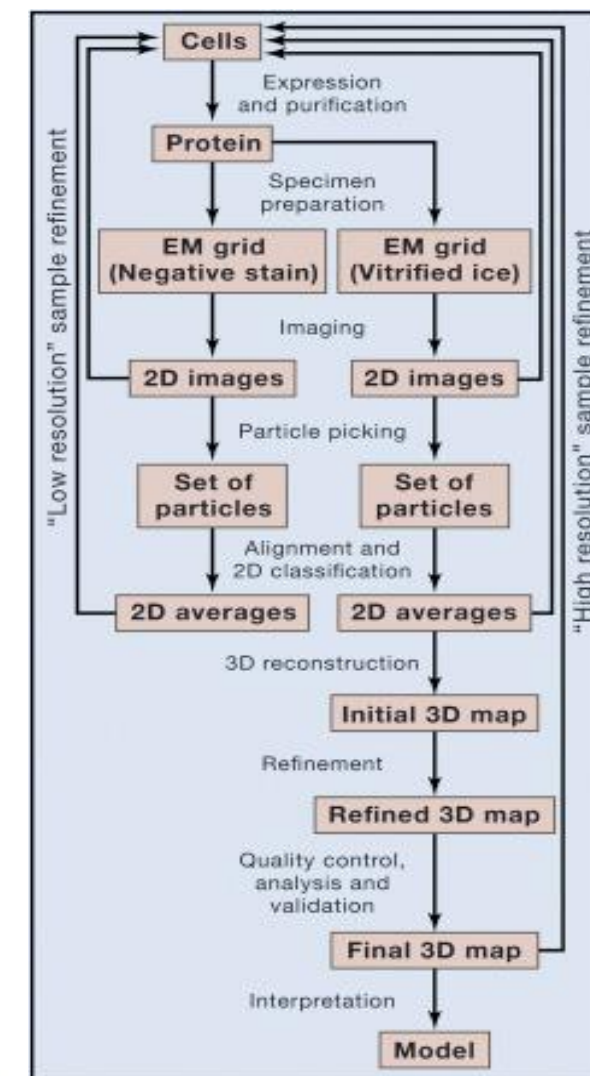
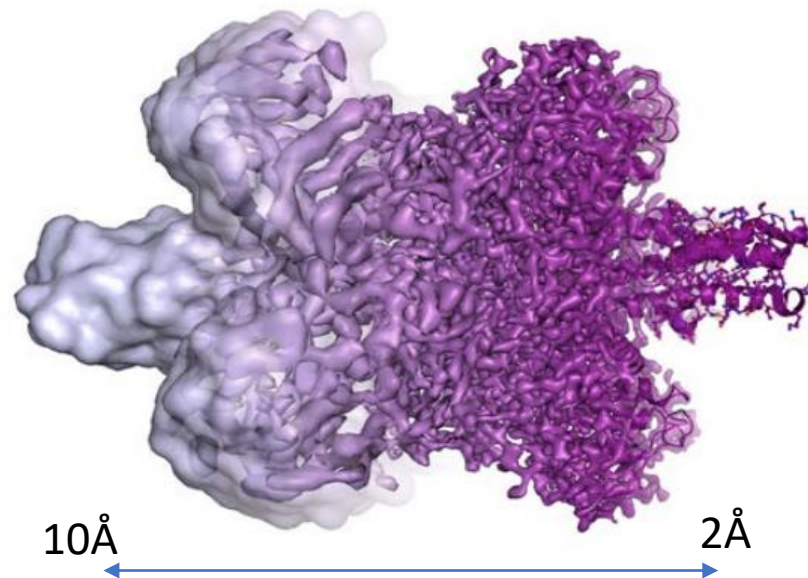


SINGLE PARTICLE CRYO-ELECTRON MICROSCOPY

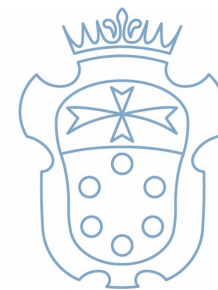
The Nobel Prize in Chemistry 2017



Dubochet – Frank - Henderson

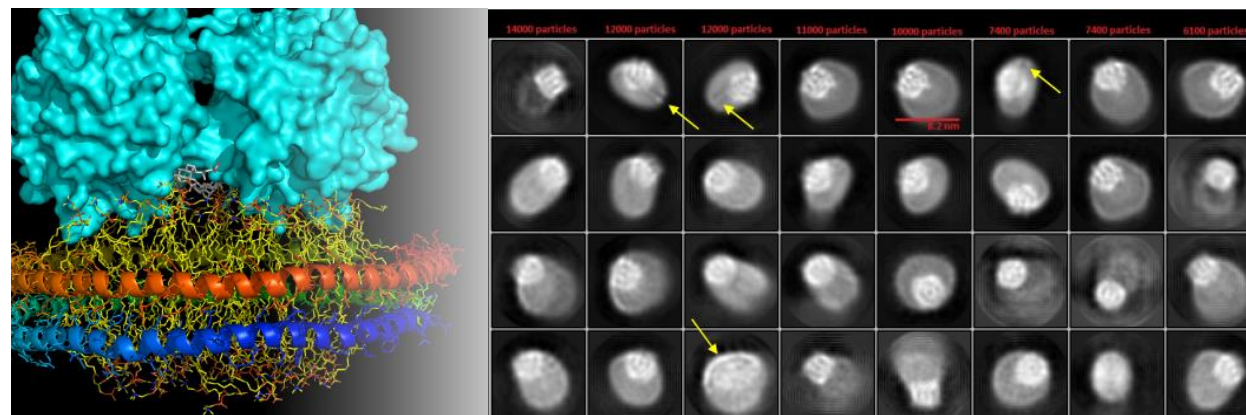


PHD OBJECTIVES

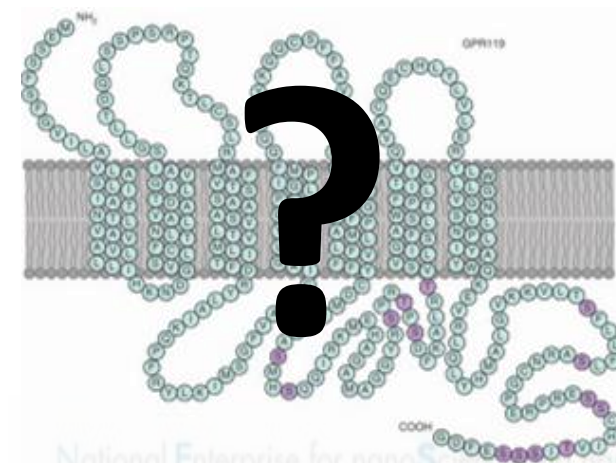


1. Acquire knowledge for images acquisition, data processing and 3D reconstruction of membrane proteins by cryo-EM
2. Determine the structure of the membrane receptor GPR119 by cryo-EM

NAPE-PLD



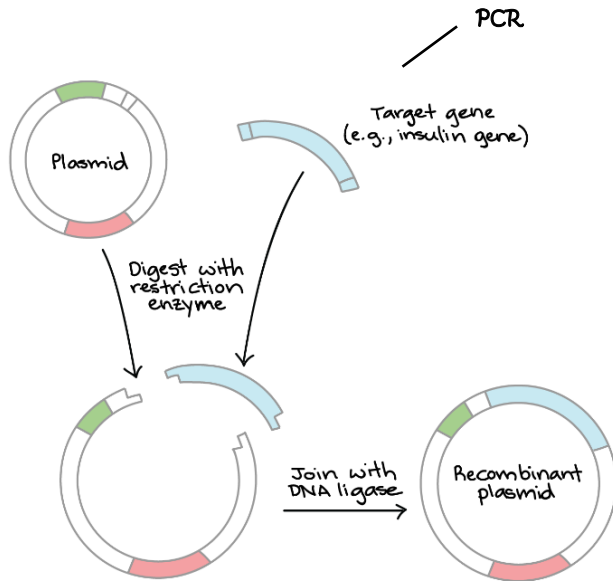
GPR119



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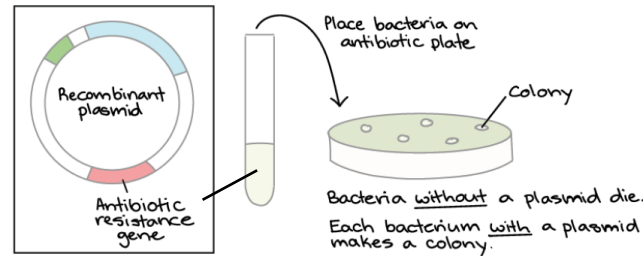
Recombinant protein expression

PLASMID CLONING



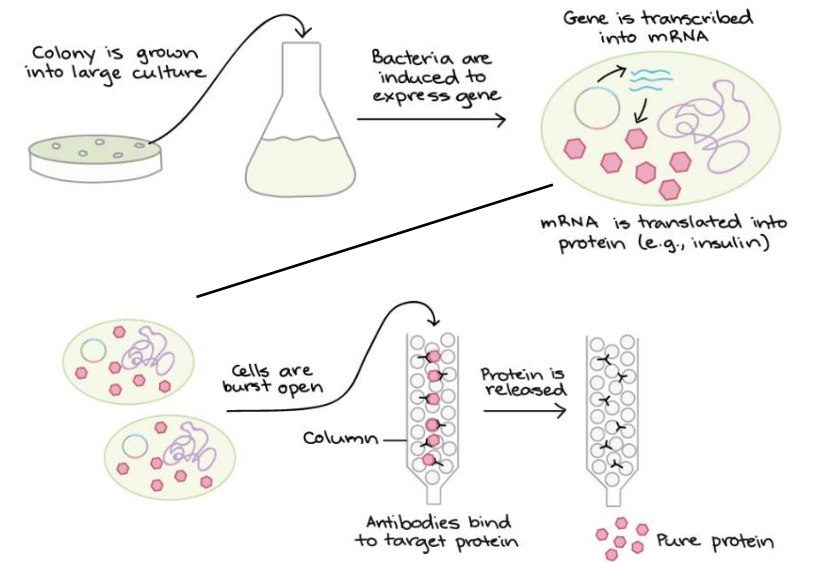
1. Modification of the genetic sequence (PCR)
2. Production of a plasmid containing the gene of the desired protein

BACTERIAL TRANSFORMATION



Transformation of the plasmid into a bacterial strain capable of protein over expression

PROTEIN EXPRESSION AND PURIFICATION



1. Big scale production of the protein by bacteria
2. Cell lysis to recover protein from bacteria
3. Purification of the protein