Ph.D. program in genetics, molecular and cellular biology

Project title: Structural and biochemical characterization of flavoenzymes with potential bio-catalysis application

Supervisor: Claudia Binda
Reviewer: Alberta Pinnola

Lorenzo Basile

SUMMARY

Proactive, passionated and dedicated Molecular Biologist with 2 years of professional lab experience in protein expression, purification and crystallization. Possess skills in orthogonal cell-free assay for biochemical characterization and knowledge in Cryo-EM samples preparation and processing data

EXPERIENCE

- 2022 - PRESENT
  University of Pavia
  ACADEMIC TUTOR
  - Laboratory of Biomolecular Methods
  - Sample preparation
  - Teaching lectures
- 2020 -PRESENT
  University of Pavia
  INTERNSHIP
  - Structure Biology Lab
  - Biochemical and structure characterization of the membrane complex NADPH OXIDASE 2 (NOX2)

EDUCATION

- 2020 -2022
  University of Pavia
  MOLECULAR BIOLOGY AND GENETICS
  - Thesis title: "The chimeric single-chain cytosolic activator Trimera as a new tool for the biochemical and structural investigation of the native NADPH Oxidase 2".
  - Final mark: 110/110 Cum Laude
- 2017 - 2020
  University of Pavia
  BIOLOGICAL SCIENCES
  Final mark: 110/110
- 2016 - 2017
  University of Pavia
  BIOENGINEERING
  - Exams done before changing the course:
  - Analytics 1, Geometry and Algebra
- 2011 - 2016
  Pavia
  SCIENTIFIC HIGH SCHOOL
  - high school N. Copernico

SKILLS AND COMPETENCE

- Recombinant cytosolic and membrane protein expression in prokaryotic and eukaryotic (mammalian) cells. Culture of human cell lines
- DNA amplification (PCR)
- Protein (cytosolics, membrane complexes) purification (affinity, immunoaffinity, ion exchange, size exclusion chromatography) with Äkta system (FPLC) and in batch systems
- Protein characterization (SDS-PAGE, Western blot)

- Enzymatic assays [for ROS measurements: cytochrome c assay, NADPH consumption assay, MCLA [2-Methyl-6-(4-methoxyphenyl)-3,7-dihydroimidazo[1,2-a]pyrazin-3-one, hydrochloride] chemiluminescence assay]
- Characterization of protein 3D structure by X-ray methods (X-ray crystallography with vapour diffusion techniques)
- Cryo-electron microscopy sample and grids preparation (Vitrobot System).

BIOINFORMATIC SKILLS

- Protein structure analysis (Pymol)
- Transmission electron microscopy 2D class averages and refinement of 3D reconstructions (RELION)
- The use of databases as Protein Data Bank, Clustal Omega, BLAST, UniProt.
- GraphPad Prism
- Basic knowledge of RStudio and Virtual Box
- Basic knowledge of Linux

LANGUAGES

- Italian: Native
- English: Intermediate
- Spanish: School level