Flavio Di Pisa, PhD

Institute of Biophysics, National Research Council,
Via Corti, 12 – 20133 Milan

Professional Profile

Structural biologist with a decade of comprehensive experience in the field. Proficient in
structure-function studies of macromolecular complexes. Adept in employing cutting-edge techniques and methodologies to unravel structural puzzles.

Personal Information

Professional career

2022-Ongoing
Principal Investigator
Institute of Biophysics, National Research Council (CNR), Milan
Lab Head: Dr. Eloise Mastrangelo

2020-2022
Post-Doctoral Fellow
Biocrystallography unit, San Raffaele Research Hospital, Milan
Group Leader: Prof. Massimo Degano

2017-2020
Post-Doctoral Fellow
Structural Vaccinology Lab, University of Milan
Group Leader: Prof. Martino Bolognesi
Lab Head: Prof. Louise Gourlay

2015-2017
Post-Doctoral Fellow
Protein Crystallography and Structural Biology Lab, University of Siena
Group Leader: Prof. Stefano Mangani

Experience as visiting Researcher

University of Halle (october 2024 – december 2024) : Cryo-EM data acquisition and processing, Prof, Kastritis Lavoratory (link , section Visiting Professors/Researchers)

ESRF synchrotron, Grenoble (7/02/2025 – 9/02/2025,15/12/2017 – 16/12/2017, 11/02/2018 – 13/02/2018, 25/07/2018 – 27/07/2018, 16/11/2016 – 18/11/2016, 13/04/2016 – 16/04/2016, 27/09/2012 – 29/09/2012, 31/05/2012 – 02/06/2012) : data acquisition using SAXS and single crystal diffraction techniques

Institut Laue-Langevin, Grenoble (22/05/2024 – 24/05/2024): data acquisition using SANS technique.

DLS, Diamond Light Source, Oxfordshire (22/01/2017 – 24/02/2017, 08/07/2016 – 10/07/2016, 28/07/2015 – 30/07/2015, 03/05/2015 – 05/05/2015, 17/02/2015 – 19/02/2015, 02/05/2014 – 04/05/2014, 02/02/2014 – 04/02/2014, 15/05/2013 – 17/05/2013, 04/07/2013 – 06/07/2013) : data acquisition using single crystal diffraction techniques

Teaching work experience

2021- 2022
Teacher of Medical Chemistry, Dental School - Master's Degree in Dentistry and Dental Implantology, San Raffaele Research Hospital, Milan

2017-2018
Teaching assistant, University of Milan
Wet lab tutoring for internship in Experimental Biology, Referent: Prof. Louise Gourlay

2018-2019
Teaching assistant, University of Milan
Wet lab tutoring for internship in Experimental Biology, Referent: Prof. Louise Gourlay/ Prof. Monica Beltrame

Education and training

2015: PhD in Chemical and Pharmaceutical Sciences, University of Siena (Italy)
Department of Biotechnology, Chemistry and Pharmacy
Supervisor: Prof. Stefano Mangani

Thesis entitled: "Crystallographic studies to unravel reaction mechanisms and enzyme-substrate interactions in target proteins"

2011: Master Degree in Chemistry, awarded with 110/110 marks cum laude, University of Siena (Italy)
Supervisor: Prof. Stefano Mangani

Thesis entitled: "Structure-function studies through Crystallographic Methods of class-D β -Lactamases"

2009: Bachelor Degree in Chemistry, awarded with 106/110 marks, University of Siena (Italy)
Supervisor: Prof. Stefano Mangani

Thesis entitled: "High resolution refinement of the three- dimensional structure of the TRU-1 enzyme from Aeromonas Enteropelogenes".

Funding for research

IRONYc: IRON homeostasis in NeuroferritinopathY: unravelling the molecular details of abnormal ferritin functionality

Project funded by **Fondazione Cariplo**, 250 kEU (2022-2026)

Coordinator: Dr. Flavio Di Pisa (CNR, Milano, Italy)

Parters: Prof. Sonia Levi (UniSR, Milano, Italy) and Prof. Maria Luisa Gelmi (Unimi, Milano, Italy)

Languages

- Italian: mother tongue.
- English: spoken (fluent) and written (advanced).

Expertise and competences

Molecular Biology and Microbiology: vector design and high- throughput cloning techniques (Overlap Extension PCR, SLIC), isolation and transformation, DNA purification (mini- and maxi- prep), DNA gel analysis, SDS-PAGE, western blotting,

Protein Expression and Purification: bacterial protein expression (*Escherichia Coli*), eukaryotic protein expression (baculovirus- infected insect cells). AKTA HPLC Systems (Pure, Explorer, Start), chromatographic methods (IMAC/SEC/IEX), affinity tag purification (MBP, SUMO, Chitin Binding Domain).

Protein characterization & Biophysics: MALDI-TOF MS, UV-Vis spectroscopy, Circular Dichroism (CD), Fluorescence Spectroscopy, dynamic light scattering DLS, Differential Scanning Fluorimetry (DSF)

Crystallization techniques: Vapor diffusion (hanging drop, sitting drop), microbatch under oil and optimisation of crystallisation conditions.
Use of automatic pipetting robots Oryx 4 and Oryx 8 (Douglas Instruments).

Protein X-ray Crystallography:
-X-ray data collection at synchrotrons (ESRF, DLS, Elettra)
-Data processing (XDS, iMosflm)
-Structure determination by Molecular Replacement
-Model Building (Autobuild, Buccaneer) and structure refinement (Refmac, Buster, Phenix refine)
-Structure validation (Molprobity, PDB Redo)
-Extensive knowledge of technical softwares for X-ray structure determination (CCP4 suite, Phenix, SHELX) and visualization (Pymol, CCp4mg, Chimera).

Cryo Electron Microscopy:
-Single particle cryo-electron microscopy data processing (CryoSPARC software)
-Model building using real space refinement (Phenix package)

Computer proficiency:
-Office Suite (word processor, spread sheet, presentation software) and Internet search engines (Chrome, Explorer, Firefox).
-Basic knowledge of Bash programming language (Linux).