

Sara Chiarugi

EDUCATION & QUALIFICATIONS

- Nov 2017 - present** **PhD in Nanosciences**
Scuola Normale Superiore of Pisa (PI, Italy)
Project: "Structural insights into human NAPE-PLD interaction".
Supervisors: Dr. Gianpiero Garau, Prof. Gian Michele Ratto
- Jul 2016** **State examination for professional qualification**
University of Pisa (PI, Italy)
- Mar 2016** **Master's Degree in Pharmaceutical Chemistry and Technology**
University of Pisa (PI, Italy)
Final score: 110/110 cum laude
Thesis: "Med chem optimization of synthetic thyronamine analogues with diphenylmethane structure".
Supervisors: Prof. Simona Rapposelli, Prof. Grazia Chiellini

RESEARCH EXPERIENCE

- Nov 2017 - Apr 2022** **PhD in Nanosciences at the National Enterprise for nanoScience and nanoTechnology (NEST), Scuola Normale Superiore of Pisa**
- Research activity: structural and functional investigation of the human protein target NAPE-PLD (N-acylphosphatidylethanolamine phospholipase D) by small molecule modulators for target validation.
- Other research activities:
- nanodiscs assembly for protein structure determination;
 - structural investigation of novel dual PDK1/AurA inhibitors interactions;
 - expression, purification, crystallization and interaction of the 14-3-3 protein (isoform ζ) with modulators.
- May 2015 - Mar 2016** **Master's thesis internship at Department of Pharmacy, University of Pisa**
- Research activity: design, synthesis and characterization of new thyronamine analogues with diphenylmethane scaffold for *in vitro* and *in vivo* evaluation.

TECHNICAL & SCIENTIFIC SKILLS

Cell biology	Cell culture (HEK293, HEK293T), cell transfection (calcium phosphate), cell counting, cell fractionation, protein quantification (BCA assay), western blot, confocal microscopy on live specimens.
Molecular biology	Insert and cloning vector design, primers design, PCR, electrophoretic analysis of nucleic acids, DNA extraction and purification, DNA cloning, sequencing of nucleic acids, spectrophotometric quantification of nucleic acids.
Protein expression and purification	Recombinant protein expression in bacterial systems (<i>E.coli</i>), protein expression optimization, protein purification (dialysis, ion-exchange chromatography, affinity chromatography, gel-filtration chromatography) with gravity-flow system or fast protein liquid chromatography (FPLC) technology (ÄKTA™ system), membrane filtration, protein quantification, SDS-PAGE, western blot.
Structural biology	Protein crystallization techniques and single-crystal X-ray diffraction experiments using synchrotron radiation for protein structure determination (data collected at ELETTRA Synchrotron of Trieste, XRD2 beamline and at the European Synchrotron Radiation Facility- ESRF of Grenoble). Data analysis (data reduction, phasing, refinement and validation process). Nanodiscs assembly for protein structure determination. EM imaging for nanostructures characterization.
Other biochemistry techniques	Development of enzymatic assays (HPLC-MS and fluorescence based methods), development of SPR assays for the study of ligand binding interactions with targets.
Organic Chemistry	Drug design and synthetic strategies planning, small molecule synthesis, purification (crystallizations, chromatography, HPLC) and characterization (NMR, IR, MS).
Instruments	<ul style="list-style-type: none">• SPR system (SensiQ Pioneer)• FPLC (ÄKTExpress)• Image Quant LAS 4000• HPLC (Dionex Ulti Mate 3000 with Chromeleon software and Shimadzu with LabSolutions software)• Mass spectroscopy (AB SCIEX 3200 Q TRAP With Analyst software)• NMR (Bruker 300/400)• UV/Vis spectroscopy (Spectrophotometer Jasco V-550 with Spectra Manager software)• Infrared spectroscopy (Agilent Technologies Cary 600 Series FTIR Spectrometer)• Fluorescent confocal microscope (Zeiss LSM 800)• Transmission electron microscope (Zeiss Libra 120 +)• Plate Reader (Promega GloMax Discover)
Bioinformatics and IT skills	OS: Macintosh, Windows, Linux. Applications: Microsoft Office (Full ECDL certification), image analysis and editing (ImageJ), chemical structure editors (ChemDraw, ChemSketch), statistical analysis (GraphPad Prism, Origin, Excel), SPR data analysis (Pioneer analysis software QDAT), structure determination software for macromolecular X-Ray Crystallography (CCP4, Phenix, Coot), software for mass spectra analysis (MultiQuant 2.1.1), software for NMR spectra analysis (Bruker TopSpin 3.2, MestReNova).

PERSONAL SKILLS

- Well-organized person, able to work independently as well as in team, always oriented toward the goal. Ability to manage multiple projects from the beginning to the end respecting deadlines improved thanks to the tutoring activity during the PhD for 1 PhD student and 1 Master's Degree student (Lorenzo Mosti, thesis link: <https://etd.adm.unipi.it/t/etd-01102022-120355/>).
- Capable to manage the purchasing of consumables and new equipment relative the laboratory (responsible for the ordering of the molecular biology products and all materials needed for research during the PhD).
- Ability to analyze and synthesize, to expose scientific results, fast and autonomous learning, willingness to learn and grow improving knowledge.

LANGUAGES

Italian: mother tongue

English: B2 level certification

French: basic communicational skills

OTHER WORK EXPERIENCES

May 2017 - Sep 2017 **Pharmacist**, Farmavaldera S.R.L., Ponsacco (PI)

Sep 2016 - Apr 2017 **Pharmacist**, Farmacia Viotti, Selvatelle (PI)

Jun 2016 - Sep 2016 **Sales assistant**, Farmacia Viotti, Selvatelle (PI)

SCHOOLS & CONFERENCES

Giovani Cristallografi Italiani "GCI@HOME", BioCrystallography section (online edition)

29 Sep 2020 (*virtual oral communication*)

School of crystallography "GeCrySchool From Gene to Protein Crystal Structure" (on line edition)

ELETTRA Synchrotron, Trieste (Italy), 22-25 Sep 2020

"Accelerating the Drug Discovery Process, bringing together academic research & industrial experience"

Pisa (Italy), 12 Dec 2019

EMBO workshop "Tools for Structural Biology of Membrane Proteins"

EMBL Hamburg (Germany), Centre for Structural System Biology (CSSB), 7-9 Oct 2019 (*poster presentation*)

IIT Workshop "Advanced theranostic nanomedicine in oncology"

Pontedera (PI, Italy), 31 Jan 2019

Workshop "Hands-on single particle cryo-EM data processing and analysis"

Laboratorio NEST, Pisa (Italy), 7-8 May 2018

PUBLICATIONS

Mapping, Structure and Modulation of PPIs. Martino E, **Chiarugi S**, Margheriti F, Garau G. 2021. Front. Chem. Doi: 10.3389/fchem.2021.718405.

Development of potent dual PDK1/AurA kinase inhibitors for cancer therapy: Lead-optimization, structural insights, and ADME-Tox profile. Sestito S, Bacci A, **Chiarugi S**, Runfolà M, Gado F, Margheriti E, Gul S, Riveiro ME, Vasquez R, Huguet S, Manera C, Rezai K, Garau G, Rapposelli S. Eur J Med Chem. 2021. Doi: 10.1016/j.ejmech.2021.113895.

Hit-to-Lead Optimization of Mouse Trace Amine Associated Receptor 1 (mTAAR1) Agonists with a Dyphenylmethane-scaffold: Design, Synthesis, and Biological Study. Chiellini G, Nesi G, Sestito S, **Chiarugi S**, Runfolà M, Espinoza S, Sabatini M, Bellusci L, Laurino A, Cichero E, Gainetdinov RR, Fossa P, Raimondi L, Zucchi R, Rapposelli S. 2016. J Med Chem. Doi: 10.1021/acs.jmedchem.6b01092.

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The Undersigned, according to the Articles 46 and 47 DPR No. 445/2000, aware of the penalties provided by art. 76 DPR No. 445/2000 in case of false statements, false documents, use or exhibition of documents containing false information or no longer correspond to the truth, declares that the above reported is true. I hereby authorize the treatment of my personal data according to the current Italian directives on Privacy policies (Law No. 196, 30 June 2003).