DAVIDE MARIA FERRARIS - CURRICULUM VITAE

PERSONAL INFORMATIONS

Davide Maria Ferraris

davide.ferraris@uniupo.it

PROFESSIONAL EXPERIENCE

December 2021 – Present

Associate Professor
Biochemistry and Structural Biology Unit of the Department of Pharmaceutical Sciences - University of Eastern Piedmont.
Disciplinary scientific sector: BIO/10 (Biochemistry)

December 2018 – December 2021

Researcher
Biochemistry and Structural Biology Unit of the Department of Pharmaceutical Sciences - University of Eastern Piedmont.
Disciplinary scientific sector: BIO/10 (Biochemistry)

October 2018 – December 2021

Teaching activities

Degree / Master's Degree in Biotechnology - Department of Health Sciences - University of Eastern Piedmont

Disciplinary scientific sector BIO/10 (Biochemistry)

Teaching of the module of Structural Biochemistry with elements of enzymology within the Degree Course / Master's Degree in Biotechnology at the Department of Health Sciences (48 hours) for the academic year 2018-2019 and 2020-2021 for the discussion and analysis of the general principles and basic techniques of biochemistry and structural biology.

Degree / Master's Degree in Food, Health and Environment (FHE), Department of Sciences and Technological Innovation - University of Eastern Piedmont, Vercelli (Italy) (36 hrs)

Disciplinary scientific sector BIO/10 (Biochemistry)

Teaching of “Biochemistry of Nutrition with Elements of Enzymology” within the Degree Course / Master's Degree in Biotechnology at the Department of Food, Health and Environment (FHE), academic year 2018 / 2019 (24 hours).

Teaching of Biochemistry within the Degree in Pharmaceutical Sciences, 2020/2021/2022 (64 hours)

Member of the teaching board of the doctoral course “Drug Innovation”, Department of Pharmaceutical Sciences, 2021

Lecturer for the “European Master in Translational Cosmetic and Dermatological Sciences – EMOTION” (https://www.emotion-master.eu)

November 2014 - Present

Co-founder – Member of the Board

IXTAL srl (www.ixtal.it) - Spin-off of the Department of Pharmaceutical Sciences of the University of Eastern Piedmont operating as a Contract Research Organization in the field of Protein Science. IXTAL operates in the field of protein science, structural biology and drug design, offering research and development services for pharmaceutical and biotechnology companies.

October 2008 - December 2018

Research Fellow

Biochemistry and Structural Biology Unit of the Department of Pharmaceutical Sciences - University of Eastern Piedmont.

Disciplinary scientific sector BIO/10 (Biochemistry)

Research and scientific activity - Production and biochemical and structural characterization of Mycobacterium tuberculosis enzymes involved in infection processes. In particular, I worked on the biochemical and structural analysis of protein-inhibitor complexes of *M. tuberculosis* enzymes for the development of new potential antitubercular drugs. Furthermore, I worked on the study of proteins involved in the host-pathogen interaction, in the Krebs cycle and in the metabolism of the pyrimidine bases necessary for the synthesis of nucleotides and of the DNA of *M. tuberculosis*. More recently I have been involved in the study of enzymes involved in oncogenic processes in humans and in the study of proteins involved in the degradation of hydroxyproline.

EDUCATION AND TRAINING

September 2004 - October 2008

International Marie-Curie (MIDITRAIN) PhD Program in Infection Biology

PhD title in “Infection Biology” at the Hannover Medical School (MHH) and held at the Helmholtz Centre for Infection Research (HZI, Braunschweig, Germany), at the Division of Structural Biology, under the supervision of Prof. Dirk Heinz.

October 1997 - March 2004

Degree in Chemistry - Organic Chemistry

Faculty of MFN - University of Turin - Degree in Chemistry

Degree thesis: Analysis of isoenzymes of the catechol 1,2-dioxygenase of *Acinetobacter radioresistens*. Speaker: Prof. Carlo Giunta

October 1992 - July 1997

Secondary School Certificate

"Galileo Ferraris" Scientific High School – Turin

Scientific Publications (Last 5 years)

Marta Alberti; Giulio Poli; Luca Broggini; Stefano Sainas; Menico Rizzi; Donatella Boschi; Davide M. Ferraris; Elena Martino; Stefano Ricagno; Tiziano Tuccinardi, Marco L. Lolli , Riccardo Miggiano. *An alternative conformation of the N-terminal loop of human dihydroorotate dehydrogenase drives binding to a potent antiproliferative agent*. Acta Crystallographica Section D Structural Biology, 2024-06-01; DOI: http://doi.10.1107/S2059798324004066

The Atomwise AIMS Program; Izhar Wallach; Denzil Bernard; Kong Nguyen; Gregory Ho; Adrian Morrison; Adrian Stecula; Andreana Rosnik; Ann Marie O'Sullivan; Aram Davtyan et al. *AI is a viable alternative to high throughput screening: a 318-target study.* Scientific Reports, 2024-04-02 ; DOI: 10.1038/s41598-024-54655-z

Yunqing Li; Serena Arghittu; Marina S. Dietz; Gabriel J. Hella; Daniel Haße; **Davide M. Ferraris**; Petra Freund; Hans-Dieter Barth; Hartmut H. Niemann; Roberto Covino, Mike Heilemann. *Single-molecule imaging and molecular dynamics simulations reveal early activation of the MET receptorin situ.* bioRxiv 2023.12.22.572978; doi: https://doi.org/10.1101/2023.12.22.572978

Alberti M, Sainas S, Ronchi E, Lolli ML, Boschi D, Rizzi M, **Ferraris DM**, Miggiano R. *Biochemical characterization of Mycobacterium tuberculosis dihydroorotate dehydrogenase and identification of a selective inhibitor.* FEBS Lett. 2023 Aug;597(16):2119-2132. doi: 10.1002/1873-3468.14680. Epub 2023 Jun 15. PMID: 37278160; https://doi.org/10.1002/1873-3468.14680

Sainas S, Giorgis M, Circosta P, Poli G, Alberti M, Passoni A, Gaidano V, Pippione AC, Vitale N, Bonanni D, Rolando B, Cignetti A, Ramondetti C, Lanno A, **Ferraris DM**, Canepa B, Buccinnà B, Piccinini M, Rizzi M, Saglio G, Al-Karadaghi S, Boschi D, Miggiano R, Tuccinardi T, Lolli ML. *Targeting Acute Myelogenous Leukemia Using Potent Human Dihydroorotate Dehydrogenase Inhibitors Based on the 2-Hydroxypyrazolo[1,5-a]pyridine Scaffold: SAR of the Aryloxyaryl Moiety.* J Med Chem. 2022 Oct 13;65(19):12701-12724. doi: 10.1021/acs.jmedchem.2c00496. Epub 2022 Sep 26.PMID: 36162075; https://doi.org/10.1021/acs.jmedchem.2c00496

Eugenio Ferrario, Riccardo Miggiano, Menico Rizzi, **Davide M. Ferraris**
The integration of AlphaFold-predicted and crystal structures of human trans-3-Hydroxy-L-proline dehydratase reveals a regulatory catalytic mechanism; Comput Struct Biotechnol J. 2022 Jul 18;20:3874-3883; https://doi.org/10.1016/j.csbj.2022.07.027

Edoardo Gelardi, Diego Caprioglio, Giorgia Colombo, Daniele Mazzoletti, Daiana Mattoteia, Stefano Salamone, **Davide M. Ferraris**, Eleonora Aronica, Giulia Nato, Annalisa Buffo, Menico Rizzi, Lorenzo Magrassi, Alberto Minassi, Silvia Garavaglia
Curcumin-based-fluorescent probes targeting ALDH1A3 as a promising tool for glioblastoma precision surgery and early diagnosis, Communications Biology volume 5, Article number: 895 (2022); https://doi.org/10.1038/s42003-022-03834-7

Desole C, Gallo S, Vitacolonna A, Vigna E, Basilico C, Montarolo F, Zuppini F, Casanova E, Miggiano R, **Ferraris DM**, Bertolotto A, Comoglio PM and Crepaldi T (2021)
Engineering, Characterization, and Biological Evaluation of an Antibody Targeting the HGF Receptor
Front. Immunol. 12:775151. https://doi.org//10.3389/fimmu.2021.775151

Edoardo L M Gelardi, Giorgia Colombo, Francesca Picarazzi, **Davide M Ferraris**, Andrea Mangione, Giovanni Petrarolo, Eleonora Aronica, Menico Rizzi, Mattia Mori, Concettina La Motta, Silvia Garavaglia
A selective competitive inhibitor of aldehyde dehydrogenase 1A3 hinders cancer cell growth, invasiveness and stemness in vitro
Cancers, 2021, 13(2), pp. 1–20, 356; https://doi.org/10.3390/cancers13020356

M He, J Guo, J Yang, Y Yang, S Zhao, Q Xu, T Wei, **DM Ferraris**, T Gao, Zhigang Guo
A highly selective electrochemical assay based on the Sakaguchi reaction for the detection of protein arginine methylation state
Electrochemistry Communications 118, 106808; https://doi.org/10.1016/j.elecom.2020.106808

Miggiano R; Rizzi M; **Ferraris DM**
Mycobacterium tuberculosis *Pathogenesis, Infection Prevention and Treatment*
PATHOGENS 2020, 9(5), 385; https://doi.org/10.3390/pathogens9050385

Ferrario E, Miggiano R, Rizzi M, **Ferraris DM** (2020).
Structure of Thermococcus litoralis *Δ1-pyrroline-2-carboxylate reductase in complex with NADH and L-proline.*
ACTA CRYSTALLOGRAPHICA. SECTION D, STRUCTURAL BIOLOGY, vol. 76, p. 496-505, ISSN: 2059-7983, https://doi.org/10.1107/S2059798320004866

Patent applications

Publication number: EP2138508 A1
International Classification: C07K 14/195
Title: Met agonists
Inventors: **Davide M. Ferraris**, Ermanno Gherardi, Dirk Heinz, Hartmut Niemann

Awards and research funding

October 2024-October 2027
Italian Space Agency (ASI) PhD Grant
Total allocated budget: **€ 105,000.**

October 2023 – November 2025
PRIN 2023 Grant – Progetto di Rilevante Interesse Nazionale – Ministero Università e Ricerca (MUR).
Total allocated budget: **€ 40.000.**

March 2023 – March 2027 – Marie Skłodowska-Curie Doctoral Network "PROSTAMET"
I am leading partner of the European doctoral network "PROSTAMET" that aims to train the next generation of researchers tackling complex multifactorial diseases, including cancer.
Total allocated budget: **260,000 €.**

July 2019 – "Local Research Grant"
My project was selected as the recipient of a competitive research grant of **€ 45,000** form the Department of Pharmaceutical Science

June 2019 - Artificial Intelligence Molecular Screen (AIMS) award
My project was selected for the "Artificial Intelligence Molecular Screening (AIMS) award", a public-private collaborative project for the development of molecules, active on molecular targets, using Artificial Intelligence (AI).

May 2019 - "100 Italian Excellences" Award
IXTAL srl, the company of which I am the co-founder and the General Manager, was selected by the "Italian Excellences Observatory" among the companies "representative of Italian excellence".

November 2017 - "Roche for Research" Award
Winner of the **"Roche for research"** award for the project "Analysis and optimization of molecules able to selectively bind the enzyme ALDH1A3, tumor marker of glioma cells, useful for the development of glioma-specific fluorescent drugs and probes". Prize value: **€ 100,000**

Organization, direction and/or participation in national and international research groups

November 20 08 - 201 1 September - Participation as a Research Assistant in the research project "System of Biology *Mycobacterium tuberculosis"* funded by the European Community (SysteMTb HEALTH-F4-2010-241587)

Other activities

Member of the Faculty Board of the DOCTORATE IN PHARMACEUTICAL INNOVATION - Universita' del PIEMONTE ORIENTALE.
Co-editor of the MDPI special issue "*Mycobacterium tuberculosis* Pathogenesis, Infection Prevention and Treatment"

https://www.mdpi.com/journal/pathogens/special_issues/Mycobacterium_tuberculosis

Member of the Editorial Board of Structural Biology (specialty section of Frontiers in Molecular Biosciences and Frontiers in Cell and Developmental Biology) as a Review Editor