Mariapina D'Onofrio

Personal details

Date of birth: 3/11/1975
Address: University of Verona, Department of Biotechnology, Strada Le Grazie 15, CV1 Verona
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Present activity

30 Mar 2022 Permanent position as associate professor of organic chemistry, SSD CHIM06, at the Department of Biotechnology of University of Verona

Career breaks

- 24 October 2011-23 March 2012 maternity leave
- 3 July-31 July 2012 maternity leave
- 15 September 2013-15 February 2014 maternity leave
- 30 June-15 July 2014 illness leave
- 21 July-1 August 2014 maternity leave

Education

2000-2003 PhD in Chemistry, University of Modena and Reggio Emilia.
1993-1999 Master's Degree in Chemistry, University of Modena and Reggio Emilia.

Professional and research experiences

Jun-Jul 2022, 2023 Visiting scientist in the laboratory of Prof. Nicola D'Amelio, Université de Picardie Jules Verne, Amiens, France; project selected in the framework of the call "Soutien au rayonnement de la recherche-S2R, Action 4.1: aide aux mobilites entrants."

Jun- Jul 2013 Visiting scientist in the laboratory of Prof. David Fushman, Department of Chemistry and Biochemistry, University of Maryland, USA, with a grant obtained from the University of Verona in the framework of the call Cooperint 2012.

2011- 2022 Permanent position as assistant professor of organic chemistry, SSD CHIM06, at the Department of Biotechnology of University of Verona

2007- 2011 Permanent position as expert technician at the University of Verona, Department of Biotechnology

Mar - Dec 2006 Coordination of the research activity of the biotechnology department of ProtEra s.r.l., a spin-off company of the University of Florence.

Sep 2004- Feb 2006 Marie Curie fellow for the transfer of knowledge in the laboratory of Prof. Harald Schwalbe, Johann Wolfgang Goethe Universität, Institut für Organische Chemie und Chemische Biologie, Germany.

Jul - Aug 2004 Coordination of the research activity of the biotechnology department of ProtEra s.r.l., a spin-off company of the University of Florence.

Jun 2003-Jul 2004 Postdoctoral fellow in the laboratory of Prof. David Fushman, Department of Chemistry and Biochemistry, University of Maryland, USA.

Feb 2000-Feb 2003 Fellowship during the PhD period at the Centro di Risonanze Magnetiche of the University of Florence.

Scientific and Professional Recognitions

2023 The article “Tira R, Viola G, Barracchia CG, Parolini F, Munari F, Capaldi S, Assfalg M, D'Onofrio M. *Espresso Coffee Mitigates the Aggregation and Condensation of Alzheimer's Associated Tau Protein*. J Agric Food Chem. 2023 Aug 2;71(30):11429–11441” was included in the ACS special collection *Influential Articles in Food Science from 2023*.

Jun 2023 Awarded the Italian National Scientific Qualification (*Abilitazione Scientifica Nazionale*) for the scientific sector 03/C1, Organic Chemistry-Prima Fascia (*Chim/06*).

May 2019 Awarded a grant to participate in the Women in Science Workshop as part of the Instruct Biennial Structural Biology Conference, Alcalá de Henares, Madrid, Spain

Dec 2017 Recipient of the Finanziamento delle Attività Base di Ricerca

Institutional Assignments

2023 – Corse Referent percorso di formazione insegnanti 30 e 60 CFU, DPCM 4 agosto 2023, A050, Scienze naturali, chimiche e biologiche

2026 – Member of the Commissione Orientamento, Dipartimento Biotercnologie

2025 – Member of the Commissione AQ Terza Missione, Dipartimento Biotercnologie

2015 - Member of the Commissione AQ CdS Bioinformatica

2013 - Member of the Commissione Pratiche studenti- Collegio didattico Informatica

2015- 2018 Elected as member representative of the assistant professors in Giunta di Dipartimento

2011- 2019 Member of the Commissione Strumentazione Comune di Dipartimento

Funded Research Projects as Principal Investigator

- Project funded by Regione del Veneto, European Social Fund (13/01/2023-12/01/2024) Project title: “Identification of bioactive molecules in nutraceuticals and hive products and study of their potential neuroprotective effect”.
- PRIN 2022 funded by MUR (16/10/2023-15/10/2025) Project title: “PROTAC-based approach to develop broad-spectrum antiviral drugs triggering the proteolysis of the main viral protease”. Role: Principal Investigator of the unit in Verona
- Grant of Fondo di beneficenza ed opere di carattere sociale e culturale of bank Intesa San Paolo (01/02/2022-31/01/2023) Project title: “Innovative strategy to block coronavirus infections by specific degradation of viral proteins”.
- Alzheimer's Association Research Grant funded by the American Alzheimer's Association (from 01/11/17 to 31/10/20) Project title: “Role of polyubiquitination in Alzheimer’s disease”.

- Progetto Ricerca di Base 2015 funded by University of Verona (from 1/10/16 to 30/09/18) Project title: “Semi-synthesis and structural studies of ubiquitinated Tau”.
- Joint Project 2010 funded by University of Verona, in collaboration with Novartis Vaccines and Diagnostics srl (Siena) (from 1/09/11 to 31/12/14). Project title: “NMR structural studies on the mechanisms of pilus assembly in Gram-positive Streptococcus agalactiae (Group B streptococcus)” Role: PI starting from 1/12/12.
- Principal Investigator of the Hosting Laboratory of the Umberto Veronesi post-doctoral fellow 2017 Dr. Francesca Munari

Participation in Research Projects

- Prin 2017, national project. Title: “Integrative tools for defining the molecular basis of the diseases: computational and experimental methods for protein variant interpretation”, coordinator Prof. Fariselli.
- Firb giovani 2008, national project. Title: “Dalla comprensione dell'attivazione allosterica di fatty acid binding proteins modulata dall'interazione con membrane cellulari e leganti, al disegno di nuovi inibitori della cattura di lipidi”, coordinator Dr. Assfalg.
- Prin 2008, national project. Title: “Produttività e meccanismi molecolari di fotoprotezione in organismi fotosintetici ossigenici”, coordinator Prof. Bassi.
- Cariverona 2007 e Joint Project 2007, biennial local projects. Title: “Progetto pilota di metabolomica tramite Risonanza Magnetica Nucleare per lo studio del cancro del pancreas”, coordinator Dr. Assfalg.
- Cariverona 2007, biennial local project. Title: “Nuove applicazioni della Risonanza Magnetica Nucleare dotata di cryoprobe ad alta sensibilità per lo sviluppo di nano biotecnologie”, coordinator Prof. Molinari.

Oral communications in conferences and seminars

- 46° Webinar Instruct-ERIC Structure Meets Function, 21 April 2026. Title: “Interplay of Ubiquitination and Phosphorylation of Tau protein”
- Seminar in the framework of IDP2 Biomed Bringing Intrinsically Disordered Proteins to Biomedical Applications-Expert Seminars, Cambridge, 10-12 June 2025. Title: “Modulation of Toxic Tau Species by Ubiquitination.
- 50th National Congress on Magnetic Resonance, Roma, 6-8 September 2023. Title: “Ubiquitin pathway of tau protein: insights into functional interactions”
- Université de Picardie Jules Verne, Amiens, 28 June 2023. Title: “Molecular assemblies, interactions and coacervation of modified tau protein”
- Université de Lille, Prof. David Devos, E-meeting, 7 July 2022. Title: “Structural properties of ubiquinated tau protein and implications in Alzheimer’s disease”
- Université de Picardie Jules Verne, Amiens, 7 July 2022. Title: “Ubiquitination of tau protein: impact on molecular properties and recognition”
- 27th National Congress of Italian Chemical Society, virtual, 14-23 September 2021 Title: “Chemoselective disulfide-coupling for the semisynthesis of ubiquitinated forms of the Alzheimer’s associated protein tau”
- TubInTrain e-meeting, 25 February 2021, invited seminar. Title: “Toward understanding the influence of ubiquitination on tau molecular properties and interactions”

- 2nd Global Virtual Conference on Neurodegenerative Diseases, 28 January 2021 Title: “Impact of ubiquitination of tau on pathological fibrils formation”
- 6th ECBS/LS-EuChemS Meeting, Madrid, 3-5 April 2019 Title: “Introduction of post-translational modifications in vitro modulates Tau protein fibrillation”
- 6th EuChemS Chemistry Congress, Seville, 11-15 September 2016 Title: “Biomolecular recognition by nanoparticles probed by NMR”
- XLIV National Congress on Magnetic Resonance, Roma, 28-30 September 2015 Title: “Ubiquitin-nanoparticle interactions probed by NMR”
- XXXVI Convegno della Divisione di Chimica Organica, Bologna, 13-17 September 2015 Title: “Biomolecular recognition by fullerenol”
- XLI National Congress on Magnetic Resonance, Pisa, 17-19 September 2012 Title: “Exploring the ligand binding capability of human liver fatty acid binding protein”
- National Congress of the Division of Chemistry of Biological Systems of the Italian Chemical Society, San Vito di Cadore (BL), 9-11 September 2010 Title: “An NMR study on human Liver FABP as carrier for MRI contrast agents”
- XXXVIII National Congress on Magnetic Resonance, Bressanone (BZ), 10-13 September 2008 Title: “Lipid Trafficking: Unfolding and Binding features of Liver Intracellular Bile Acid Binding Proteins”

Conference Organization

- Member of the Organizing Committee of the 52nd National Congress on Magnetic Resonance, Verona, 10–12 September 2025
- Member of the Scientific Committee of the Italian-French International Conference on Magnetic Resonance, Milan, 27–30 September 2022
- Member of the Organizing and Scientific Committee of the GIDRM Workshop “Protein Structure-Function Relationship: New Challenges and Advancements”, Verona, 19 October 2018
- Member of the Organizing Committee of the 2016 National Conference of the Division of Chemistry of Biological Systems – Italian Chemical Society, Verona, 21–23 September 2016
- Member of the Scientific Committee of the following national congresses:
  - 48th National Congress on Magnetic Resonance, L’Aquila, 11–13 September 2019
  - 47th National Congress on Magnetic Resonance, Turin, 19–21 September 2018
  - 46th National Congress on Magnetic Resonance, Fisciano, 27–29 September 2017

Teaching Activities and Student Supervision

Undergraduate and Teacher Training Courses

2014- Lecturer for the course *Fundamentals of Organic Chemistry* in the Bachelor’s Degree Programme in Bioinformatics

2022-2026 Lecturer for the course *Organic Chemistry* in the Bachelor’s Degree Programme in Viticulture and Oenology

2012 - Lecturer for the *Organic Chemistry Laboratory* module in the Bachelor’s Degree Programme in Biotechnology

2018-2021 Lecturer for the Chemistry module of the course Fundamentals and Teaching of Mathematics 3 and Chemistry in the Single-Cycle Master's Degree Programme in Primary Education

2023 - Lecturer for the course Fundamentals and Teaching of Organic Chemistry within the 30 and 60 CFU Teacher Training Programme, for teaching qualification classes A50 and A28

PhD Courses

2026 Lecturer for the course Principles of NMR within the PhD Programme in Nanoscience and Advanced Technologies, University of Verona

2019-2025 Lecturer for the course An Introduction to NMR Spectroscopy for the Study of Biomacromolecules within the PhD Programme in Nanoscience and Advanced Technologies, University of Verona

2015 Lecturer for the course Biomolecular Nuclear Magnetic Resonance within the PhD Programme in Biotechnology, University of Verona

2014 Lecturer for the course Protein Chemistry under Physiological Conditions: In-Cell NMR Spectroscopy within the PhD Programme in Molecular, Industrial and Environmental Biotechnology, University of Verona

2012 Lecturer for the course Structure Determination of Protein Complexes by NMR Spectroscopy within the PhD Programme in Molecular, Industrial and Environmental Biotechnology, University of Verona

2011 Lecturer for the course An Introduction to NMR-Based Approaches for Determining Protein Structures within the PhD Programme in Molecular, Industrial and Environmental Biotechnology, University of Verona

National School of Nuclear Magnetic Resonance

Feb 2025 Lecturer for the course Isotopic Labelling Strategies for Studies of Proteins and Nucleic Acids, School of Nuclear Magnetic Resonance for the Study of Biomolecules, Caserta

Jun 2010 Lecturer for the course Methods for Expression and Purification of Enriched Protein Samples, National School of Nuclear Magnetic Resonance, Specialist Course: Structure, Dynamics and Interactions of Proteins, Villa Gualino, Turin

Student and Researcher Supervision

Prof. D'Onofrio has served as scientific supervisor for 12 postdoctoral research fellows, supervisor of 3 PhD students, and thesis advisor for 9 Bachelor's degree students and 4 Master's degree students.

Third Mission and Public Engagement Activities

Feb 2026 Speaker in the Sciencepalooza 2026 webinar series. Title: "Does Italian Espresso Mitigate Alzheimer's?", organized by Lorain County Community College, Ashland University (USA), and the American Chemical Society – Wooster Section

Sep 2025 Public outreach seminar as part of Biotech Week. Title: "A PROTAC-Based Approach to the Development of Broad-Spectrum Antiviral Drugs", 2025

May 2025 Seminar for high school students as part of the workshop "Chemistry as a Bridge Between Biotechnology and Magnetic Resonance", organized by the Interdivisional Groups of Biotechnology and Magnetic Resonance of the

Italian Chemical Society (SCI). Seminar entitled “Structural Alterations of Proteins and Their Implications in Disease”, Catania, 30 May 2025

Aug 2023 Guest participant in the Start Magazine podcast “An Anti-Alzheimer’s and Anti-Parkinson’s Coffee?”

Sept 2018 Scientific consulting and supervision in the fields of Organic Chemistry and Biotechnology, including theoretical lectures and laboratory activities for students, as part of the projects “Prove di volo sulle ali della scienza” and “In estate si imparano le STEM – Campi estivi di scienze, matematica, informatica e coding”, held at Margherita Hack Secondary School, San Giovanni Lupatoto (Verona)

Mar 2017 Participant in the National Scientific Degree Plan (PLS 2016/17) promoted by the Department of Biotechnology, University of Verona; delivered an educational seminar and laboratory sessions for high school teachers on the topic “From Gene to Protein”

Summary of the research activity

- Optimization of semi-synthetic and enzymatic methods to introduce post translational modification on proteins involved in neurodegenerative diseases and the influence of the modifications on structure and aggregation properties.
- Synthesis of polyubiquitin chains and their interaction with organic nanoparticles. Optimization of enzymatic and semi-synthetic methods to ubiquitinate different substrates.
- NMR studies on liver Fatty Acid Binding Proteins and liver and ileal Bile Acid Binding Proteins. Characterization of the binding properties with physiological ligands (fatty acids and bile acids) and synthetic molecules (potential contrast agents) both in diluted solution and in crowded environment.
- Characterization of protein-nanoparticle interactions using an integrated approach (NMR, fluorescence spectroscopy, dynamic light scattering, and calorimetry)
- In collaboration with a research group in Novartis Vaccine in Siena, I have characterized by NMR the structure of the wild type and mutant enzymes and substrates involved in the molecular assembly of bacterial pili.

Keywords

- Chemistry, structural and functional properties of biomolecules
- NMR spectroscopy
- Biomacromolecules-ligand interactions
- Nanoparticles: characterization and interactions
- Chemical and biochemical modification of biomacromolecules
- Protein aggregation

Bibliometric Index

- N. total publications: 71
- H index: 25
- N. total citations: 1657 (source Scopus)
- Orcid iD: 0000-0002-8699-0847

For the complete list of publications, please refer to: https://orcid.org/0000-0002-8699-0847