

## GIANLUCA MOLLA

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**MACROSETTORE** 05/E - BIOCHIMICA E BIOLOGIA MOLECOLARE SPERIMENTALI E CLINICHE

**SETTORE SCIENTIFICO-DISCIPLINARE (SSD)** BIOS-07/A – Biochimica - BIOCHEMISTRY

**Gruppo Scientifico Disciplinare (GSD)** 05/BIOS-07 BIOCHIMICA

## Current Position

**2023 - Present** Full Professor (from 01/05/2023), Dip. di Biotecnologia e Scienze della Vita, Università dell'Insubria (Varese, Italia) (BIO/10 - BIOCHEMISTRY)

**2020 - Present** Member of the “Commissione orientamento” of DBSV

**2020 - Present** Placement delegate of the DBSV – Delegato dipartimentale in Commissione Orientamento e Placement di Ateneo

**2010 - Present** Membro del Collegio dei Docenti del Dottorato di Ricerca in Scienza della Vita e Biotecnologie (Università degli Studi dell'Insubria)

**2025 - Present** Member of the “Presidio della qualità di Ateneo (PQA)” of the University of Insubria

## Previous Positions

**2019 - 2025** Coordinator of the Master Degree Course in Molecular and Industrial Biotechnology - Università dell'Insubria (Varese, Italia)

**2016 - 2023** Associate Professor, Dip. di Biotecnologia e Scienze della Vita, Università dell'Insubria (Varese, Italia) (BIO/10 - BIOCHEMISTRY)

**2018-2025** Coordinatore della commissione AiQua del Corso di Laurea in Biotecnologie Molecolari e Industriali (dal 2018)

**2019-2025** Coordinatore della commissione di Coordinamento didattico del Dipartimento di Biotecnologie e Scienze della Vita dell'Università degli Studi dell'Insubria (dal 2019).

**2004 - 2015** Researcher, Dept. of Biotechnology and Life Sciences, University of Insubria, Varese (Italy)

**2002-2004** Associate Researcher, Dept. of Structural and Functional Biology, University of Insubria, Varese (Italy)

**2000-2002** 2000-2002 Research grant holder at the University of Insubria, Varese (Italy) Post-Doc in Enzymology

**1999-2018** Consultant for various pharmaceutical companies (ACS DOBFAR SpA, Antibioticos SpA Farmaopera SpA Ingenza Ltd, UK, ABR)

**1998** 1998 "Visiting Researcher" in Structural Biochemistry, Konstanz University (Germany)

## Memberships

**2005 - Present** Member of the Italian Society of Biochemistry and Molecular Biology (SIB)

**2019 - Present** Italian association of Biocatalysis and Bioseparations

**2019 - Present** Member of the Italian Association of Biotechnologists

**2015 - 2019** New York Academy of Sciences

**2006** Member of the Society of Chemical Industry (SCI).

## Education

**1994** Università degli Studi di Milano (Italia) Degree 5 years in Biological sciences (110 with honors) “Clonaggio del cDNA codificante per la D-Aminoacido ossidasi da *R. gracilis*”

**1999** Università degli Studi di Milano (Italia) PhD in Evolutionary and Developmental Biology Struttura 3D e mutagenesi sito-specifica della D-aminoacido ossidasi dal lievito *Rhodotorula gracilis*: comparazione evolutiva con altre D-aminoacido ossidasi”.

**2006** 6<sup>a</sup> Scuola Estiva di “Visualizzazione Scientifica e Grafica Interattiva 3D” - Centro di Calcolo del CINECA - Casalecchio di Reno, Bologna

**2007** 5<sup>th</sup> Course in “From structural Genomics to Drug Discovery - Modeling the Flexibility” University of Parma, Parma

## Teaching positions

Official teaching activity (Course Lecturer)

**2002 - present** Enzymology (6 CFU) - Master programme in Biotechnology for the Bio-based and Health Industry - University of Insubria  
Biochemistry - Laurea Magistrale in Chimica Industriale - - University of Insubria  
Biochemistry and Bioinformatics - Laurea Triennale in Biotecnologie - University of Insubria  
Biochemical methodologies - Laurea Triennale in Chimica - University of Insubria

- Industrial biochemistry - Laurea Triennale in Biotecnologie - University of Insubria  
 Design of Biopharmaceuticals - Master programme in Biotechnology for the Bio-based and Health Industry - University of Insubria  
 Altre informazioni utili per il mondo del lavoro - Laurea Triennale in Biotecnologie - University of Insubria
- 2024/2025** Biochemistry - Laurea Triennale in Scienze Biologiche (9 CFU) - University of Insubria  
 Information Literacy (2 CFU) - Master programme in Biotechnology for the Bio-based and Health Industry - University of Insubria
- 2017 -present** Course of Structural Bioinformatics - Ph.D. schools in Life Sciences and Biotechnology
- 2011** Exercitation of Molecular Biology and Biotechnology - Ingegneria dei Sistemi, Politecnico di Milano
- 2017** Course "Enzymes: from drug metabolism to biocatalysis" – PH.D. schools in Biomolecular medicine, Università degli Studi di Verona
- 2002 - present** Supervisor of 13 Bachelor student's thesis and 17 Master student's thesis
- 2010 - present** Supervisor of 7 PhD students
- 2009 - Dott.ssa Elena Tallarita - Politecnico di Milano  
 2010 - Dott. Davide Bifulco - Università dell'Insubria  
 2011 - Dott.ssa Silvia Ciappellano - Università dell'Insubria  
 2012 - Dott. Paolo Motta - Università dell'Insubria  
 2013 - Dott. Fabio Tonin - Università dell'Insubria  
 2015 - Dott.ssa. Roberta Melis - Università dell'Insubria  
 2018 - Dott.ssa Valentina Pirillo - Università dell'Insubria  
 2021 - Dott.ssa Caren Battaglia - Università degli Studi dell'Insubria

## SCIENTIFIC ACTIVITY

- 1994-2002** Participation in the scientific research activities of Professor M. Pilone's and Professor L. Pollegioni's laboratory, initially at the Department of General Physiology and Biochemistry, Biological Chemistry section, University of Milan, and later at the Department of Functional and Structural Biology and the Department of Biotechnology and Molecular Sciences, University of Insubria (Varese), mainly focusing on the biochemical study of flavoprotein oxidases, also from a biotechnological perspective.
- 1996-99** Research activity in Professor M. Pilone's laboratory (Department of Structural and Functional Biology, University of Insubria, Varese) as part of the PhD program in Evolutionary and Developmental Biology, University of Milan, 12th cycle. During the same period, also supervised and planned the experimental activities of internal students (see Teaching Curriculum).
- 1998-99** Occasional attendance at the laboratories of Professors S. Ghisla and W. Welte at the University of Konstanz (Germany) as part of a project on the crystallization and determination of the 3D structure of a yeast flavoprotein oxidase (D-amino acid oxidase).
- 2000-02** Contracted researcher in the Protein Engineering RgDAAO project. The research activity was carried out in Professor M. Pilone's laboratory (Department of Functional and Structural Biology, Faculty of Science, University of Insubria, Varese).
- 2005** Participation in the development of the patent: Cephalosporin C Acylase. US 2005/0158818 A1 (Jul. 21, 2005), SCB 1465 EUR (2005). Enzymes with cephalosporin C acylase activity obtained by site-directed, random, or "site-saturation" mutagenesis of a native sequence optimized for expression in *E. coli*.
- 2006-Present** Management of the Protein Engineering and Functional Post-Genomics laboratory at the Department of Biotechnology and Life Sciences, University of Insubria.

## Grants

- 2024** Potenzialità del microbioma artico e antartico come modello per lo studio della resistenza antimicrobica e di applicazioni biotecnologiche (Consorzio Italiano per le Biotecnologie). Role: participant.
- 2023** 2022375PJF - From POLYETHYLENE TEREPHTHALATE WASTE to BIOACTIVE POLYMERS: an innovative bioeconomy approach (**PET2POLY**) - PRIN2022 - 24 mesi - Role: PI.
- 2023** Un approccio di bioeconomia circolare applicato alla produzione di chitina per le biotecnologie verdi - L'INNOVAZIONE DELLE BIOTECNOLOGIE NELL'ERA DELLA MEDICINA DI PRECISIONE, DEI CAMBIAMENTI CLIMATICI E DELL'ECONOMIA CIRCOLARE CODICE CMPT219220 (finanziato dal MUR ex D.M.n.1059 del 09/08/2021) (Consorzio Italiano per le Biotecnologie). 12 months. Role: PI
- 2022** Identification of Novel molecules Supporting the Impact of  $\beta$ -lactams against clinically-relevant GramNegative multidrug resistant Organisms (**IN SIGNO**)- (Fondazione Regionale per la Ricerca Biomedica). 36 months. Role: **Coordinator of the research activities of the Biochemistry unit**
- 2022** aN InseCt bioEactor for the full valorization of PolyEthylene Terephthalate (NICE-PET) – (PRIN2020). 36-months. Role: Coordinator of the research activities of the Biochemistry unit (protein evolution).
- 2020** Turning Rubbish Into biobased materials: a sustainable CHain for the full valorization of organic waste (RICH) – (Fondazione CARIPLO). 36-months. Qualifica: Coordinator of the research activities and responsible of the protein processing.
- 2020** Novel enzymes for PET biodegradation by computational and protein engineering combined approaches. (University of Insubria Research Grant 2019) - 12 months. Qualifica: Proponente.
- 2017** Studio e messa a punto di nuovi processi biocatalizzati per la modifica e produzione di antibiotici (CLARISSIMO) - Fondo Europeo di Sviluppo Regionale 2014-2020/Regione Lombardia - 24 mesi - Qualifica: Responsabile degli studi bioinformatica
- 2017** Development of an improved biocatalyst by a computational based in vitro evolution approach. (University of Insubria Research Grant 2016) - 16 months. Qualifica: Proponente.
- 2015** Characterization and in vitro evolution of L-amino acid oxidases of biotechnological interest (University of Insubria Research Grant) - 12 months. Qualifica: Proponente.

- 2014** Evolution of enantioselective enzymes for chiral biocatalysis (University of Insubria Research Grant) - 12 months. Qualifica: Proponente.
- 2013** Bio-refinery integrated lombardy labs (BIOREFILL) - progetti integrati per la sperimentazione di iniziative di promozione, sviluppo, valorizzazione del capitale umano della ricerca con ricaduta diretta sul territorio lombardo (Regione Lombardia - Fondazione Cariplo). Qualifica: Proponente - Coordinator of the research activities and responsible of the identification of the requested enzymes.
- 2011** Network Lombardo di eccellenza per lo sviluppo di farmaci di origine naturale diretti alla modulazione di microambiente tissutale per la prevenzione e terapia dei tumori e delle malattie neurodegenerative (Acronimo: NEPENTE) (Fondo per la Promozione di Accordi Istituzionali). 24 mesi. Qualifica: Ricercatore Senior
- 2010** Approccio biotecnologico alla progettazione razionale di vaccini: nuovo vaccino anti TB (Acronimo: VATUB) (Accordo quadro di collaborazione con le Università della Lombardia). 24 mesi. Qualifica: Senior Researcher
- 2010** Sviluppo di un biosensore per l'istamina (Acronimo: ISTANSENSOR) (Bando di Invito a Presentare Progetti di Cooperazione Scientifica e Tecnologica, regione Lombardia). 24 mesi. Qualifica: Senior Researcher
- 2007** Studi di proteomica funzionale per la diagnosi e la cura della schizofrenia - Fondazione CARIPLLO - 24 mesi- Qualifica: Responsabile Fase 2.
- 2004** Ruolo delle interazioni molecolari nell'acquisizione della struttura funzionale di proteine Modello - PRIN - 24 mesi - Qualifica: Researcher.
- 2002** Studio della modulazione delle proprietà di legame e di riconoscimento molecolare tramite ingegneria proteica (rational e irrational design) in proteine modello: flavoossidasi da organismi mesofili (D-amino acido ossidasi, colesterolo ossidasi) e sieralbumina umana - PRIN - 24 mesi - Qualifica: Researcher.

## Teaching activities

- 2025** Lesson at CECAM workshop (Centre Européen de Calcul Atomique et Moléculaire) "Computations meet Experiments to Advance the Enzymatic Depolymerization of Plastics One Atom at a Time". Trieste, Italy
- 2023** Lesson at BTSE Lake Como School – The Bioeconomy Transformation: Science, Economics, Business and Society" - Lake Como School of Advanced Studies, Villa del Grumello (Como) 5-9 June  
Exploiting microbial enzymes for sustainable plastic recycling and upcycling
- 2016** Teaching activity in 4 schools in Protein engineering and Enzymology for post-graduated students
- 2004** Seminario per gli studenti di dottorato in Scienze Biochimiche (Università di Verona) dal titolo: "L'interazione proteina ligando analizzata in silico: metodologie e problemi".
- 2003 - 2010** Seminarial activity for biotech companies in biochemistry, bioinformatics and protein engineering
- 2015** Lecturer durante il Corso "Enzyme Discovery" (Lake Como School of Advanced Studies, Varese, Italy).
- 2016** Lecturer durante il Corso di "Watching at the "D" side: D-amino acids and their significance in neurobiology" (Lake Como School of Advanced Studies, Varese, Italy).
- 2010** Several lessons at BiCT company (Bagnolo Cremasco, CR) dal titolo: "Modeling and Molecular Docking".
- 2005** Lecturer alla Scuola di Ingegneria Enzimatica (scuola estiva del gruppo di Enzimologia e Regolazione Metabolica della Società Italiana di Biochimica e Biologia Molecolare, Varese).
- 2006** Lecturer di formazione presso l'azienda Antibioticos s.p.a. (Rodano, MI) dal titolo: "Analisi strutturali di proteine e complessi proteina/ligando al computer".
- 2004** Lecturer durante il Corso di Cinetica Rapida (scuola invernale del gruppo di Enzimologia e Regolazione Metabolica della Società Italiana di Biochimica e Biologia Molecolare, Varese).
- 2003** Lesson at Antibioticos s.p.a. (Rodano, MI) dal titolo: "computer modelling: proteine e interazione con piccole molecole".

## Scientific interests

- Biotechnology applied to bioeconomy and circular economy: the study of enzymatic plastic degradation by producing evolved enzymes, exploitation of insects as bioreactors for upcycling of waste biomasses
- the study of the relationship between structure and function of enzymes, in particular of flavoproteins oxidase. These enzymes have been studied by means of multidisciplinary approaches: kinetic studies (at steady-state and performance status), structural studies (eg X-ray crystallography), computational and protein engineering approaches. In particular the prof. Molla was involved in the characterization of numerous wild-type and i-type enzymes of industrial interest (eg DAAO from different organisms, L-amino acid deaminase and cholesterol oxidase bacterial, glycine oxidase from Bacillus (GO), cephalosporin acylase from Pseudomonas (VAC), etc.) or ii) of human origin (eg proteins D-aspartate oxidase, proline oxidase, DAAO and pLG72). Some of these proteins, involved in the regulation of the concentration of neuromodulators at the level of the central nervous system, are implicated in important pathologies including schizophrenia, ALS, etc.
- the in vitro evolution (through rational mutagenesis and "random mutagenesis") of new enzymatic activities not present in nature (VAC, DAAO from yeast, GO and proteolytic enzymes) in order to obtain enzymes for the realization of biosensors or for the use as biocatalysts in synthesis or deracemization reactions. More recently, Dr. Molla has been involved in the identification and characterization of L-amino acid oxidase and microbial deaminases to obtain new biocatalysts of biotechnological interest. Several flavoenzymes produced through these approaches have been used to produce biosensors for the analytical determination of D-amino acids and for biocatalysis reactions. These studies have been supported by computational approaches such as the study of the interaction between proteins and ligands through automatic docking and innovative molecular dynamics approaches. Eg., Molecular docking studies conducted in silico have allowed the development of new inhibitors of human D-amino acid oxidase.
- development of heterologous expression systems (prokaryotes and eukaryotes) in order to obtain recombinant proteins in an appreciable quantity for applications on an industrial scale.
- Computational approaches applied to the study of proteins (in silico studies) such as the study of the interaction between macromolecules and ligands through molecular docking; the study of oxygen diffusion modality within flavoproteins oxidase (in particular of D-amino acid oxidase); the study of protein dynamics by classical molecular dynamics, Steered MD and Scaled MD.
- the study of the biotechnological use of enzymes (as biocatalysts) to produce antibiotic intermediates and other biomedical compounds or as biological elements of biosensors.

## Congress participation

- 1997 - XII Convegno Proteine '97 del Gruppo Funzione e Struttura della Società Italiana di Biochimica, Ferrara.
- 1998 - XIII Convegno Proteine '98 del Gruppo Funzione e Struttura della Società Italiana di Biochimica, Genova.
- 1999 - 13<sup>th</sup> International Symposium on Flavins and Flavoproteins, Konstanz, Germany.
- 2000 - XV Convegno Proteine 2000 del Gruppo Funzione e Struttura della Società Italiana di Biochimica, Varese.
- 2001 - IV European Symposium of the Protein Society, Paris, France.
- 2002 - 14<sup>th</sup> International Symposium on Flavins and Flavoproteins, Cambridge, UK.
- 2004 - 49<sup>o</sup> Congresso Nazionale della Società Italiana di Biochimica e Biologia Molecolare, Riccione
- 2005 - 15<sup>th</sup> International Symposium on Flavins and Flavoproteins, Shonan Village Center, Japan.
- 2006 - Convegno Proteine 2006 (Società Italiana di Biochimica e Biologia Molecolare), Novara.
- 2007 - 52<sup>o</sup> Congresso Nazionale della Società Italiana di Biochimica e Biologia Molecolare, Riccione
- 2008 - 16<sup>th</sup> International Symposium on Flavins and Flavoproteins, Jaca, Spain.
- 2009 - 14<sup>th</sup> European Congress on Biotechnology, Barcelona, Spain.
- 2010 - Convegno Proteine 2010 (Società Italiana di Biochimica e Biologia Molecolare), Parma, Italy
- 2011 - Biotrans 2011 - Conference of Industrial process research, Catania, Italy
- 2012 - XI National Congress of Biotechnology, Varese, Italy
- 2014 - 10th International Conference on Protein Stabilisation, Stresa, Italy
- 2014 - Cofactors, Parma, Italy
- 2016 - Convegno Proteine 2016 del Gruppo Funzione e Struttura della Società Italiana di Biochimica, Bologna.
- 2016 - 8th OxiZymes Meeting, Wageningen, The Netherlands
- 2016 - Novel enzymes 2016, 11-13/10/2017, Groningen, The Netherlands
- 2017 - Workshop "third generation biorefineries", Fondazione Golinelli, Bologna
- 2017 - 19th International Symposium on Flavins and Flavoproteins, Groningen, The Netherlands
- 2017 - IDAR2017, The 3<sup>rd</sup> International Conference of D-Amino Acid Research, Varese, Italy
- 2017 - 59<sup>o</sup> Congresso Nazionale della Società Italiana di Biochimica e Biologia Molecolare, Caserta
- 2017 - Italy-Japan Joint Symposium - New Trends in Enzyme and Microbial Science in the Translational Biology Era, Napoli
- 2018 - Convegno Proteine 2018 del Gruppo Funzione e Struttura della Società Italiana di Biochimica, Verona.
- 2019 - 4th International Conference of D-Amino Acid Research (IDAR2019), Tokyo (Japan)
- 2022 - First PET recycling summit - Paris, December 2022
- 2022 - Let's meet again. Trends in Biotechnology. Società Italiana di Biochimica - SIB, Napoli
- 2022 - XVI FISV Congress - Portici (Naples), September 14-16, 2022
- 2023 - SIB 2023 62nd Congress, Florence, Italy
- 2023 - SPRING Networking Annual Event, 14 settembre 2023, Milano - Via Verziere, 11
- 2024 - 1st International Conference on Circularity, Sustainability and Resilience in Water, Wastewater and Sludge Management Varese - Italy
- 2024 - Connettiamo il Futuro: Successi, Innovazione e Opportunità: Evento di Networking di Consorzio Italbiotec in collaborazione con Centro Lyceum e i progetti ProPla, REPLAY e NICE-PET", Milano (Italy)
- 2024 - The 48th FEBS Congress "Mining biochemistry for human health and well-being", Milano, Italy
- 2024 - 5<sup>o</sup> Forum Regionale per lo Sviluppo Sostenibile - "Nuovi orizzonti per un'economia circolare", Varese, Italy

## Oral presentations/chairs in congresses/meetings

### Chairman

- 2024 "Bio-based polymers for engineered "green" materials"  
Parallel Session V - "Synthetic biology for a sustainable recycling and upcycling of PET"  
The 48th FEBS Congress "Mining biochemistry for human health and well-being". Milano, Italy

### Selected speaker

- 19 2023 "Engineered polyethylene terephthalate hydrolyzing enzymes as key enabling tools for a sustainable conversion of waste plastics to high added-value compounds". SIB 2023 62nd Congress, Florence, Italy
- 18 2010 "A new mechanism of glyphosate tolerance by means of protein engineering". Congresso Nazionale Proteine 2010, Parma, Italy
- 17 2006 "The challenge of depicting the biochemical pathogenesis of schizophrenia" Riunione Lombardia-Piemonte-Liguria della Società Italiana di Biochimica, Pavia, Italy.
- 16 2006 "Role of DAAO in neurotransmission and schizophrenia" 51<sup>o</sup> Congresso Nazionale della Società di Biochimica e Biologia Molecolare - Riunione del Gruppo di Neurochimica. Riccione, Italy.
- 15 2004 "Relazione struttura-funzione nella glicina ossidasi da Bacillus subtilis" Riunione Lombardia-Piemonte-Liguria della Società Italiana di Biochimica. Novara, Italy.
- 14 2000 "Evoluzione strutturale della D-aminoacido ossidasi da R. gracilis" (2000) Riunione Lombardia-Piemonte-Liguria della Società Italiana di Biochimica. Pavia, Italy.
- 13 1998 "Caratterizzazione del mutante R285K della D-aminoacido ossidasi da R. gracilis" Riunione Lombardia-Piemonte-Liguria della Società Italiana di Biochimica. Pavia, Italy.

### Invited speaker:

- 16 2025 Computations meet Experiments to Advance the Enzymatic Depolymerization of Plastics One Atom at a Time CECAM Workshop. Trieste, Italy
- 15 2024 "Synthetic biology for a sustainable recycling and upcycling of PET"  
The 48th FEBS Congress "Mining biochemistry for human health and well-being". Milano, Italy
- 14 2024 "aN InseCt bioreactor for the full valorisation of PolyEthylene Terephthalate"

		"Connettiamo il Futuro: Successi, Innovazione e Opportunità: Evento di Networking di Consorzio Italbiotec in collaborazione con Centro Lyceum e i progetti ProPla, REPLAY e NICE-PET", Milano (Italy)
13	<b>2023</b>	"Bioeconomy projects of 'The protein factory 2.0', SPRING Networking Annual Event, 14 settembre 2023, Milano – Via Verziere, 11
12	<b>2023</b>	Larve d'insetto come biofactory sostenibile: produzione di proteine e altre componenti ad alto valore aggiunto - Bioeconomy day Polimi - 25 May 2023
11	<b>2022</b>	First PET recycling summit – Paris, December 2022
10	<b>2019</b>	"STRUCTURAL BASES OF HUMAN D-ASPARTATE OXIDASE PROPERTIES", 4th International Conference of D-Amino Acid Research (IDAR2019), Tokyo, September 10-13, 2019
9	<b>2017</b>	"Amino acid oxidases: metabolic complexity from structural simplicity", SIB 2017 59th Congress, Caserta, September 20- 22, 2017
8	<b>2007</b>	"Role of DAAO in neurotransmission and schizophrenia" 52° Congresso Nazionale della Società di Biochimica e Biologia Molecolare. Riccione, Italy.
7	<b>2008</b>	"On the role of D-amino acid oxidase in neurotransmission and schizophrenia" 16th International Symposium on Flavins and Flavoproteins. Jaca, Spain.
6	<b>2012</b>	"A new mechanism of glyphosate resistance", XI National Congress of Biotechnology. Varese, Italy.
5	<b>2016</b>	"L-Amino acid deaminase: a novel flavoprotein for biocatalysis", PROTEINE2016 - Dissecting Biological Complexity at the Molecular Level. Proteine. Bologna. Italy
4	<b>2016</b>	"Structure/function relationships in L-amino acid deaminase, a novel enantioselective biocatalyst", 8th OxiZymes Meeting. Wageningen, The Netherlands
3	<b>2016</b>	"A dream come true: structure-function relationships in L-amino acid deaminase", Novel enzymes 2016, Groningen, The Netherlands
2	<b>2017</b> (Plenary Lecture)	"Playing on both sides of the mirror: amino acid oxidases as versatile tools for chiral biocatalysis", 19th International Symposium on Flavins and Flavoproteins, Groningen, The Netherlands
1	<b>2017</b>	"L-Amino acid deaminase unlocks new opportunities for efficient D-amino acid synthesis", IDAR2017, The 3rd International Conference of D-Amino Acid Research, Varese, Italy

## Publications

<b>Publications (SCOPUS)</b>	110 publications in major international journals
<b>Book chapters</b>	25
<b>Total citations (SCOPUS)</b>	4527 (SCOPUS, MAY25)
<b>Total impact factor (SCOPUS):</b>	467 (Mean 4.3)
<b>H-index (SCOPUS)</b>	39
	Chapter in a biochemistry textbook: "Fondamenti di Biochimica" Edises Universita' (2021) ISBN 978-88-3623-035-8
	<i>Bibliometric data from SCOPUS (FEB 2026)</i>

## Patents

- 2005** Pollegioni L., Pilone M., Molla G., Cucchetti E., Verga R., Cabri W. And Antibioticos SpA. US2005158818: Enzymes with cephalosporin C acylase activity obtained by site-directed, random or "site-saturation" mutagenesis of a native sequence optimized for expression in E. coli. July, 2005
- 2022** Galimberti MS, Barbera V, Testa Edoardo, Fasoli E, Tettamanti G, Bruno D, Molla G, Orlando M, Pollegioni L, Casartelli M. "Materiale Bio-Nanocomposito" Domanda numero: 102022000019020 Data di presentazione: 16/09/2022

## Database submissions

GenBank:	4 Nucleotide or Protein Sequences
Protein Data Bank:	17 Structure coordinates

## Selected publications (chronological order)

- Valuable Compounds from Pollutants: Converting PET into Enantiopure Alanine - Elena Rosini, Caren Battaglia, Davide Miani, Filippo Molinari, Federico Arrigoni, Umberto Piarulli, Gianluca Molla, and Loredano Pollegioni ACS Catalysis 2025 15 (21), 17829-17843 - DOI: 10.1021/acscatal.5c06530
- Bruno D, Orlando M, Testa E, Carnevale Miino M, Pesaro G, Miceli M, Pollegioni L, Barbera V, Fasoli E, Draghi L, Baltrocchi APD, Ferronato N, Seri R, Maggi E, Caccia S, Casartelli M, Molla G, Galimberti MS, Torretta V, Vezzulli A, Tettamanti G. Valorization of organic waste through black soldier fly: On the way of a real circular bioeconomy process. Waste Manag. 2025 Jan 1;191:123-134. doi: 10.1016/j.wasman.2024.10.030. Epub 2024 Nov 11. PMID: 39531740.
- Pirillo V.; Orlando M.; Battaglia C.; Pollegioni L.; Molla G. Pirillo Molla G. Efficient polyethylene terephthalate degradation at moderate temperature: a protein engineering study of LC-cutinase highlights the key role of residue 243, FEBS Journal, 2023
- Giangeri G, Mortino MS, De Bernardini N, Ji M, Bosaro M, Pirillo V, Antoniali P, Molla G, Raga R, Treu L, Campanaro S. Preliminary investigation of microorganisms potentially involved in microplastics degradation using an integrated metagenomic and biochemical approach. Sci Total Environ. 2022 Oct 15;843:157017. (Elsevier B.V.) doi: 10.1016/j.scitotenv.2022.157017  
IF 2021: 10.75      IF 2021: 10.75      CITATIONS: 1

5. Pirillo V, Orlando M, Tessaro D, Pollegioni L, Molla G. An efficient protein evolution workflow for the improvement of bacterial PET hydrolyzing enzymes. *Int J Mol Sci.* 2021 Dec 27;23(1):264. (MDPI) doi: 10.3390/ijms23010264.  
IF 2021: 6.21      IF 2021:6.21      CITATIONS: 1
6. Pirillo V, Pollegioni L, Molla G. Analytical methods for the investigation of enzyme-catalyzed degradation of polyethylene terephthalate. *FEBS J.* 2021 Aug;288(16):4730-4745. (John Wiley and Sons Inc) doi: 10.1111/febs.15850.  
IF 2021: 5.62      IF 2021: 5.62      CITATIONS: 12
7. Tomasello G, Armenia I, Molla G. The Protein Imager: a full-featured online molecular viewer interface with server-side HQ-rendering capabilities. *Bioinformatics.* 2020 May 1;36(9):2909-2911. (Oxford University Press) doi: 10.1093/bioinformatics/btaa009.  
IF 2021: 6.93      IF 2020: 6.94      CITATIONS: 63
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## CONGRESS COMMUNICATIONS

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### Editorial and public engagement activity:

- 2020-present** Associate editor of "Frontiers in Molecular Biosciences: structural biology"  
2019-present Coordinator of the Commissione di Coordinamento didattico del DBSV
- 2021-present** Editorial Board Members of *Symmetry*
- 2017** Guest Editor of the international scientific journal *BBA - Proteins and Proteomics*
- 2016** Review editor of the international scientific magazine "Frontiers in Cell and Developmental Biology and Molecular Biosciences".
- 2012** Member of the editorial board of the *IRSN Biotechnology Journal*
- 2010** Winner of the "Mario Ripa" Prize awarded by the Italian Society of Biochemistry and Molecular Biology to the best national research project in the field of biochemistry. Project: A new mechanism of glyphosate tolerance by means of protein engineering
- 2005** Collaboration to the translation from English to Italian of the textbook "Principles and Techniques of Biochemistry and Molecular Biology", Wilson & Walker (Cambridge University Press).
- 2004 - present** He has collaborated as a "referee" with scientific journals: *Analytical Biochemistry*, *Biotechnology Progress*, *Computational Biology and Chemistry*, *FEMS Microbiology Letters*, *Journal of Chemical Technology and Biotechnology*, *PLOS ONE*.
- 2002 - 2016** Member of the organizing committee of 5 schools/courses for post-graduated students
- 2000 - 2017** Member of the Organizing Committee of several national and international symposiums (The National Symposium "Protein 2000", The 52nd National Symposium of the Italian Society of Biochemistry and Molecular Biology -2007-, XI Biotechnology National Congress -2012-, 10th International Conference on Protein Stabilization -2014), IDAR2017
- 2025** Organization of the event "Bioeconomia: Innovazione che crea Valore - Dalla scienza al mercato, scenari sostenibili per il futuro" (Sesta edizione della Giornata Nazionale della Bioeconomia). Varese, Italy