

Curriculum Vitae

Barbara La Ferla

Born in Milan 22/09/1972, Italian.

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PRESENT POSITION:

Since 1/10/2014 she is Associate Professor of Organic Chemistry at the department of Biotechnology and Bioscience, University of Milano-Bicocca.

She obtained the National Scientific Qualification as Full Professor in organic chemistry (18/11/2020).

EDUCATION AND TRAINING

1997 she obtained her MsC degree in Chemistry at the Università Statale degli Studi di Milano 110/110. During this period she spent six month (4-10 1996) at the Ecole Normale Supérieure in Paris, supervised by Prof. Pierre Sinay.

In December 2000 she obtained her PhD in Chemistry at the University of Milan working on the "Chemo-Enzymatic Synthesis of Complex Human Milk Oligosaccharides" The PhD thesis was supported by the European Community FP5 project NOFA Contract Fair CT 97-3142. Supervisor prof. G. Russo.

From 2001 she joined the research group of prof. F. Nicotra at the University of Milano-Bicocca as Post Doc fellow and scientific supervisor of industrial projects (Pharmacia-Nerviano Medical science, Novuspharma) which led to publications and a patent.

2002-04 post-doc fellow at the same university, working on the design and synthesis of glycomimetics, in particular iminosugars as enzymatic inhibitors.

From 1998 to 2002 she takes part to many advance courses and schools in the field of synthetic organic and carbohydrate chemistry, among which:

1998 "5th European Training Course on Carbohydrates", Rolduc (Kerkrade), the Netherlands;

1999 "XXIV Corso estivo di Sintesi Organica A. Corbella", Gargnano (BS), Italy, as fellowship winner;

1999 "ECCDR1" (1st EuroConference on Carbohydrate in Drug Research), Stintino (Sardegna) Italy;

2000 "ECCDR2" (2nd EuroConference on Carbohydrate in Drug Research), Sintra, Portugal;

2001 Gordon Research Conference: Carbohydrate, Tilton, New Hampshire, U.S.A.;

2002 "IASOC Conference, Ischia Advanced School on Organic Chemistry", Ischia, Italy.

PROFESSIONAL BACKGROUND

Since 1.10.2014 she is Associate Professor of Organic Chemistry (SSD CHIM06) at the department of Biotechnology and Bioscience at the University of Milano-Bicocca. From 1.4.2004 to 30.9.2014 she was Assistant professor at the same University.

TITLES, PROFESSIONAL APPOINTMENTS AND POSITIONS

2022 Member of the final examination PhD commission in PhD Industrial Chemistry and Chemical Engineering at Politecnico di Milano

2021 Member of the examination committee for the selection of RtdB CHIM06, at the department of Scienze per gli Alimenti, la Nutrizione e l'Ambiente, Università degli Studi di Milano.

2021 Member of the examination committee for the PhD Thesis at the university of Queensland (Australia)

2021 Member of the final examination PhD commission in Chemistry at the Università degli Studi di Milano.

Since 2020 she is the Erasmus Coordinator for the Chemistry course.

Since 2020 she is member of the Editorial Board of the journal *Applied Nano* (ISSN 2673-3501).

2020 Member of the final examination PhD commission in Chemistry at the Università di Firenze.

2019 Member of the examination committee for the selection of RtdA CHIM06, at the department of Biotechnologie, Università di Verona.

2019 Member of the organizing committee of the 2° Workshop “I chimici per le Biotechnologie” held the 22th February 2019 at the Università degli Studi di Milano, Via Golgi 19 Milano.

2018 Member of the organizing committee of the XXXVIII National Congress of the Organic Chemistry division of the Italian Chemical Society, held in Milan, 9-13 September 2018.

2017 Member of the organizing committee of the HorizonChem 2017 Workshop, held at the University of Milano-Bicocca, 6-March-2017, Milan, Italy.

2015 Member of the Commission for admission exam to the PhD program in Chemical-Geological and Environmental Sciences (UNIMIB) XXXI Cycle.

2013 Member of the Commission for admission exam to the PhD program in Life Science (UNIMIB) XXIX Cycle.

2013 Member of the international final examination PhD commission in chemistry at the University of Aveiro, Portugal.

2012 Member of the final examination PhD commission in Chemistry and Pharmaceutical Technologies, University of Pavia.

2012 Member of the COST action CM1102.

2007-2009 Member of the Commission for admission exam to the PhD program in Industrial Biotechnology (UNIMIB) XXIII / XXV Cycle.

1999 She has been Scientific Secretary of the 1st EuroConference on Carbohydrate in Drug Research “ECCDR1”, held in September at Stintino, Italy.

She has been reviewer for the national projects PRIN for MIUR (2012), of international projects for ANR (Agence Nationale de la Recherche) and for Cariplo Foundation (2017).

From December 2012 to October 2014 she has been member of the junta of the dep. of Biotechnology and Bioscience at the University of Milano-Bicocca

Since 2017 she is member of the PhD school “TECNOLOGIE CONVERGENTI PER I SISTEMI BIOMOLECOLARI (TECSBI)” at the University of Milano-Bicocca.

From 2015/16 an 2016/17 she was member of the PhD school in Chemical-Geological and Environmental Science at the University of Milano-Bicocca.

In 2014/15 she was member of the PhD school in Biology and Biotechnology at the University of Milano-Bicocca

In 2013/14 she was member of the PhD school in Life Science at the University of Milano-Bicocca

From 2006/07 to 2012/13 she was member of the former PhD school in Industrial Biotechnology at the University of Milano-Bicocca.

Since 2001 she has been supervisor/co-supervisor of many thesis of Bachelor (34) and MsC (33) degrees in Industrial Biotechnology and Chemistry, Supervisor of 2 and co-supervisor of 5 PhD degrees, and scientific supervisor of many Post-Doc.

She is also reviewer for the following journals: *Eur J. Org. Chem.*, *Beilstein J. Org. Chem.*, *Org. Letters*, *ChemMedChem*, *Curr. Pharm. Des.*, *Bioorg. Med. Chem.*, *Synlett.*, *Synthesis*, *J. Med. Chem.*, *Curr. Med. Chem*, *RCS Advances*, *Cancer Res.*, *Molecules*, *Synthesis*.

TEACHING ACTIVITIES

Since 2003, she has been in charge of chemistry teaching courses for bachelor and master students in Biotechnology, Biology and Chemistry.

The bachelor courses comprise: Organic Chemistry, Organic chemistry laboratory, Organic Compounds of Cosmetic and Alimentary interest, Biomolecule Analysis and Purification Techniques Lab., Synthesis of Biomolecule, Organic Biotechnology, Organic Compounds of Commodity Interest, Organic Chemistry III.

The MsC courses comprise: Advanced Organic Chemistry Lab Course, Organic Chemistry for Life Science

Masters

1997-2000 Lecturer for the S.A.B. (Specialization school in biotechnological applications) at the Università Statale degli Studi di Milano.

2000-2003 Lecturer for the S.A.B at the Università Statale degli Studi di Milano.

2009-2017 Lecturer for the Master course in "Design and development of Drugs" at the Università degli Studi di Pavia.

2011-2012 Lecturer for the Master course in "Qualified Cosmetic Informer – ICQ", organized by UNIPRO and University of Milano-Bicocca.

2014-2015 Lecturer for the IInd Level Master course in "Chemistry of Cosmetic Compounds", organized by the University of Milano-Bicocca.

RESEARCH EXPERIENCE

Since the PhD, the research has focused on the design and synthesis of compounds of biological interest, with particular attention to compounds bearing a saccharide structure, among which glycomimetics, iminosugars, C-glycosides, glycophosphonates as potential enzyme inhibitors, antibacterial agents and anti-inflammatory drugs and as scaffolds, or platforms relevant to the spatial orientation of the pharmacophores. This activity has led also to develop new synthetic procedures, with particular attention paid to the processes with low environmental impact, making it possible to limit as much as possible the use of protecting groups and employing environmental friendly solvents. In this context the use of enzymes as regioselective acylating agents was also explored. In recent years, the research topics have also been extended to the functionalization of nanoparticles for Alzheimer's disease (FP7 NAD project), developing new amyloid-beta peptide ligands based on tricyclic-glycofused scaffolds. For the surface functionalization of nanoparticles (NPs), in particular liposomes and solid- lipid nanoparticle (SLN), we exploited and developed chemoselective conjugation approaches including azido-alkyne Cu(I) catalyzed and copper free click chemistry reactions. We also recently focused on the preparation of NPs as drug targeting systems, working on the functionalization of cellulose based nanoparticles, and on the synthesis of polymeric NPs (PLGA poly(D,L-lactide-co-glycolide)) surface decorated with sugar epitopes. Finally, the research has also recently moved to the preparation of multivalent glycoconjugates to study and trigger protein-carbohydrate interactions.

The scientific activity has led to the overall production as author/co-author of 90 among original and review articles on international peer reviewed journals, 11 book chapters, 7 patents, 4 invited lectures (2 plenary and 2 keynote) at international congress, 17 oral communications and more than 100 poster communications to national and international congress.

H-index scopus 30.

17 publications as First author.

27 as Corresponding author, among which 5 co-corresponding.

FINANCED PROJECT PARTICIPATION:

CARIPLO FOUNDATION: project 2020-NAZ-0080 "On demand BIOdegradable STARrch-derived composites for PACKaging (BIOSTAR-PACK)" Participant.

AIRC FUNDATION 2015-NAZ-0015 "Targeting of Gastrin-Releasing Peptide receptor expressing tumors: NMR characterization of Bombesin/GRP-R interaction" Participant.

AIRC FUNDATION 2014-NAZ-0022 "Molecular targeting of the hexosamine biosynthetic pathway in pancreatic cancer as a novel therapeutic strategy" Participant.

FP5 Marie Curie HPRN-CT-2002-00173, "New carbohydrate Derived Scaffolds for the Generation of Bioactive Libraries" Participant.

FIRB RBNE01MTYS_003 "Progettazione, preparazione e valutazione biologica e farmacologica di nuove molecole organiche quali potenziali farmaci innovativi" Participant.

Prin 2005 n. 2005037725_003 "Sistemi di separazione ad elevate prestazioni basati sul riconoscimento molecolare chemo- e stereoselettivo, Participant.

Lombardy Region, project Metadistretti n° 7022, "Piattaforma integrata per la progettazione e la produzione high throughput di enzimi e peptidi ingegnerizzati. Valutazione della loro attività biologica rispetto a specifici substrati molecolari di interesse farmaceutico, con riferimento allo screening di prodotti oncologici ed alla produzione di antibiotici e nutraceutici (PANDA)" Participant.

CARIPLO FUNDATION: project 2008-3175 "Development of NMR techniques for tissue Engineering studies" Participant.

CARIPLO FUNDATION: project 2010-0378: "Nanostructured biomaterial functionalization for treatment of articular cartilage defects" Participant.

CARIPLO FUNDATION: project 2011-0270 (1/3/2012-28/2/2015): Sintesi di una macromolecola brush-like con architettura e proprietà meccaniche biomimetiche ottimizzate. Participant.

HFP VII PROGRAM: CP-IP 212043-2 NAD "NANOPARTICLES FOR THERAPY AND DIAGNOSIS OF ALZHEIMER DISEASE" Winner of IndTech2014 Best Project Award. Participant, scientific supervisor.

LOMBARDY REGION "Fondo Per La Promozione di Accordi Istituzionali" project NEDD 14546/2010 "Network Enabled Drug Design" Participant.

Lombardy Region-MIUR - Project "PROBIOPLUS4FOOD" ID 30221122. Role: PI of the chemistry unit, and scientific supervisor.

PRIN 2011 n. 2010L9SH3K "Metodologie chimiche innovative per biomateriali intelligenti" Role: participant.

HORIZON H2020-MSCA-ITN-2014: grant agreement no. 642028 NABBA. Participant.