

Luca Banfi

Full Professor of Organica Chemistry

EDUCATION AND TRAINING

1975: High School Diploma, Liceo Classico "B. Zucchi", Monza.

1981 (january): Master degree (5 years) in Chemistry at the University of Milan with an experimental thesis on the total synthesis of a natural substance (advisor: C. Scolastico; co-advisor: C. Gennari). Note that no Ph.D. program was available in Italy until 1983.

Post-degree research not at the University of Genova

1981-1983: University of Milan. Research in the field of the synthesis and biosynthesis of natural substances, in stereoselective syntheses and in the synthesis of potential drugs or API

1986-1987: Massachusetts Institute of Technology, Cambridge (MA, USA) and University of Indiana (Bloomington, IN, USA): secondment period in the group of Prof. W. R. Roush (13 months) performing research on the stereoselective synthesis using chiral boronates. Fellowship funded by the University of Genova and C.N.R.. L. Banfi was also awarded a prize from C.N.R. for the work carried out during this period.

Post-degree research at the University of Genova

During all his scientific activity, Luca Banfi has conducted researches in the field of organic synthesis stressing especially four aspects: a) the synthesis of biologically active substances; b) asymmetric synthesis, either with the aid of more traditional systems, or of biological means (enzymes, microorganisms); c) 'diversity oriented synthesis' taking advantage of multicomponent reactions; d) green chemistry, synthesis from building blocks derived from biomass, exploitation of agricultural waste. These last two aspect has been increasingly pursued from 1998 to date. Moreover, Luca Banfi has always carried out researches in collaboration with private companies, especially in the pharmaceutical realm.

Author of 201 publications, including 176 journal articles (of book chapters) indicized on Scopus or WOS, 14 books or book chapters (not indicized) (non indicizzati), 8 patents and 3 editorials

- Hirsch index (H-index): 40 (Scopus)
- Total citations: 4921

Recent publications

1. A. Messina, F. Monticelli, T. Miroglio, A. Gagliardi, I. Viviani, L. Banfi, R. Riva, L. Moni, A. Basso and C. Lambruschini, Photoexcited Palladium Complex-Catalyzed Isocyanide Insertion into Inactivated Alkyl Iodides, *Molecules*, 2025, **30**.
2. C. Lambruschini, A. Barbero, A. Cherubin, L. Moni, L. Palio, R. Riva and L. Banfi, Multicomponent Hosomi-Sakurai reaction on chiral, bio-based, alcohols, *RSC Advances*, 2025, **15**, 17897-17905.
3. G. Vitali Forconesi, A. Basso, L. Banfi, D. Gugliotta, C. Lambruschini, M. Nola, R. Riva, V. Rocca and L. Moni, Total Synthesis of 4-epi-Bengamide E, *Molecules*, 2024, **29**.
4. F. Raboni, A. Galatini, L. Banfi, R. Riva and A. Pellis, Chemo-Enzymatic Derivatization of Glycerol-Based Oligomers: Structural Elucidation and Potential Applications, *ChemBioChem*, 2024, **25**.



5. S. Caputo, S. Donoso, L. Banfi, A. Basso, C. Lambruschini, R. Riva, A. Kovtun and L. Moni, Synthesis of α -Imino Amidines and 2,3-Diamino Indolenines Using a One-Pot Graphene Oxide-Catalyzed Process, *European Journal of Organic Chemistry*, 2024, **27**.
6. L. Banfi and C. Lambruschini, 100 years of isocyanide-based multicomponent reactions, *Molecular Diversity*, 2024, **28**, 1-2.
7. L. Moni, L. Banfi, A. Basso, A. Mori, F. Risso, R. Riva and C. Lambruschini, A Thorough Study on the Photoisomerization of Ferulic Acid Derivatives, *European Journal of Organic Chemistry*, 2021, **2021**, 1737-1749.
8. L. Banfi, A. Basso, C. Lambruschini, L. Moni and R. Riva, The 100 facets of the Passerini reaction, *Chemical Science*, 2021, **12**, 15445-15472.
9. A. Pinna, A. Basso, C. Lambruschini, L. Moni, R. Riva, V. Rocca and L. Banfi, Stereodivergent access to all four stereoisomers of chiral tetrahydrobenzo[f][1,4]oxazepines, through highly diastereoselective multicomponent Ugi-Joullié reaction, *RSC Advances*, 2020, **10**, 965-972.
10. L. Moni, L. Banfi, D. Cartagena, A. Cavalli, C. Lambruschini, E. Martino, R. V. A. Orru, E. Ruijter, J. M. Saya, J. Sgrignani and R. Riva, Zinc(ii)-mediated diastereoselective Passerini reactions of biocatalytically desymmetrised renewable inputs, *Organic Chemistry Frontiers*, 2020, **7**, 380-398.
11. C. Lambruschini, L. Moni and L. Banfi, Diastereoselectivity in Passerini Reactions of Chiral Aldehydes and in Ugi Reactions of Chiral Cyclic Imines, *European Journal of Organic Chemistry*, 2020, **2020**, 3766-3778.
12. G. V. Forconesi, L. Banfi, A. Basso, C. Lambruschini, L. Moni and R. Riva, Synthesis of polyoxygenated heterocycles by diastereoselective functionalization of a bio-based chiral aldehyde exploiting the passerini reaction, *Molecules*, 2020, **25**.
13. S. Tomaselli, P. La Vitola, K. Pagano, E. Brandi, G. Santamaria, D. Galante, C. D'Arrigo, L. Moni, C. Lambruschini, L. Banfi, J. Lucchetti, C. Fracasso, H. Molinari, G. Forloni, C. Balducci and L. Ragona, Biophysical and in Vivo Studies Identify a New Natural-Based Polyphenol, Counteracting A β Oligomerization in Vitro and A β Oligomer-Mediated Memory Impairment and Neuroinflammation in an Acute Mouse Model of Alzheimer's Disease, *ACS Chemical Neuroscience*, 2019, **10**, 4462-4475.
14. D. Galante, L. Banfi, G. Baruzzo, A. Basso, C. D'Arrigo, D. Lunaccio, L. Moni, R. Riva and C. Lambruschini, Multicomponent synthesis of polyphenols and their in vitro evaluation as potential β -amyloid aggregation inhibitors, *Molecules*, 2019, **24**.
15. L. Banfi, C. Lambruschini, L. Moni and R. Riva, in *RSC Green Chemistry*, 2019, vol. 2019-January, pp. 115-140.
16. E. Speich, L. Banfi, L. Moni, R. Riva, V. Rocca and A. Basso, Zr-mediated synthesis of chiral cyclic imines and their application in Betti reactions, *Chemistry of Heterocyclic Compounds*, 2018, **54**, 329-333.
17. C. Lambruschini, S. Villa, L. Banfi, F. Canepa, F. Morana, A. Relini, P. Riani, R. Riva and F. Silveti, Enzymatically promoted release of organic molecules linked to magnetic nanoparticles, *Beilstein Journal of Nanotechnology*, 2018, **9**, 986-999.
18. C. Lambruschini, A. Basso, L. Moni, A. Pinna, R. Riva and L. Banfi, Bicyclic Heterocycles from Levulinic Acid through a Fast and Operationally Simple Diversity-Oriented Multicomponent Approach, *European Journal of Organic Chemistry*, 2018, **2018**, 5445-5455.
19. C. Lambruschini, A. Basso and L. Banfi, Integrating biocatalysis and multicomponent reactions, *Drug Discovery Today: Technologies*, 2018, **29**, 3-9.
20. C. Lambruschini, D. Galante, L. Moni, F. Ferraro, G. Gancia, R. Riva, A. Traverso, L. Banfi and C. D'Arrigo, Multicomponent, fragment-based synthesis of polyphenol-containing peptidomimetics and their inhibiting activity on beta-amyloid oligomerization, *Organic and Biomolecular Chemistry*, 2017, **15**, 9331-9351.
21. S. Caputo, L. Banfi, A. Basso, A. Galatini, L. Moni, R. Riva and C. Lambruschini, Diversity-Oriented Synthesis of Various Enantiopure Heterocycles by Coupling

- Organocatalysis with Multicomponent Reactions, *European Journal of Organic Chemistry*, 2017, **2017**, 6619-6628.
22. L. Banfi, A. Basso, C. Lambruschini, L. Moni and R. Riva, Synthesis of seven-membered nitrogen heterocycles through the Ugi multicomponent reaction, *Chemistry of Heterocyclic Compounds*, 2017, **53**, 382-408.
 23. M. Spallarossa, L. Banfi, A. Basso, L. Moni and R. Riva, Access to Polycyclic Alkaloid-Like Structures by Coupling the Passerini and Ugi Reactions with Two Sequential Metal-Catalyzed Cyclizations, *Advanced Synthesis and Catalysis*, 2016, **358**, 2940-2948.
 24. L. Moni, L. Banfi, R. Riva and A. Basso, External-Oxidant-Based Multicomponent Reactions, *Synthesis (Germany)*, 2016, **48**, 4050-4059.
 25. L. Moni, L. Banfi, A. Basso, E. Martino and R. Riva, Diastereoselective Passerini Reaction of Biobased Chiral Aldehydes: Divergent Synthesis of Various Polyfunctionalized Heterocycles, *Organic Letters*, 2016, **18**, 1638-1641.
 26. L. Moni, L. Banfi, A. Basso, A. Bozzano, M. Spallarossa, L. Wessjohann and R. Riva, Passerini Reactions on Biocatalytically Derived Chiral Azetidines, *Molecules*, 2016, **21**.
 27. C. Lambruschini, L. Banfi and G. Guanti, Switching the Photochromic Activity of Acenaphthylene Derivatives through a Tandem Nucleophile-Promoted Addition Reaction, *Chemistry - A European Journal*, 2016, **22**, 13831-13834.
 28. E. Cini, L. Banfi, G. Barreca, L. Carcone, L. Malpezzi, F. Manetti, G. Marras, M. Rasparini, R. Riva, S. Roseblade, A. Russo, M. Taddei, R. Vitale and A. Zanotti-Gerosa, Convergent Synthesis of the Renin Inhibitor Aliskiren Based on C5-C6 Disconnection and CO₂H-NH₂ Equivalence, *Organic Process Research and Development*, 2016, **20**, 270-283.
 29. S. Caputo, A. Basso, L. Moni, R. Riva, V. Rocca and L. Banfi, Diastereoselective Ugi reaction of chiral 1, 3-aminoalcohols derived from an organocatalytic Mannich reaction, *Beilstein Journal of Organic Chemistry*, 2016, **12**, 139-143.

PROFESSIONAL HISTORY

1983-1998

Assistant Professor

Ricercatore Universitario (Assistant Professor) (in Organic Chemistry) at the University of Genova, Faculty of Sciences, and at the Institute of Organic Chemistry, then (1995) merged into the Department of Chemistry and Industrial Chemistry. Group leader: Prof. Giuseppe Guanti.

1998-2000

Associate Professor

Associate Professor of Organic Chemistry at the University of Genova, Faculty of Sciences and Department of Chemistry and Industrial Chemistry.

2000-today

Full Professor

Full Professor of Organic Chemistry at the University of Genova, Faculty of Sciences and Department of Chemistry and Industrial Chemistry.

ACADEMIC APPOINTMENTS

1988-1998

Member of the educational commission of the Degree Course in Chemistry

1995-2001

Reference person for entering orientation for the Degree Course in Chemistry

1998-2009

Secretary or vice-coordinator of the Chemistry Degree Course Council

2009-2015

Coordinator of the Chemistry Degree Course Council

2009-2015

Educational coordinator of the Faculty of Sciences (from 2012 School of Sciences)

2011-2012

Vice-headmaster of the Faculty of Sciences

2004-2012

Coordinator of the Ph.D. course in Chemical Sciences and Technologies

2005-2012

Headmaster of the Doctorate School in Science and Technology of Chemistry and Materials

2014-2020

Reference person for the School of Sciences for entrance tests and for the anticipated entrance test, called GLUES, and organized together with high schools

2020-today

Member of the organizing committee of the unified entrance test (called TELEMACO) for the University of Genova

2012-2015

Member of the Educational Commission and of the Quality Presidium of Genova University

2014

Member of the University Commission for the Programming of new teaching staff recruiting

1998-oggi

Manager of the post-degree work orientation Service of the Department of Chemistry and Industrial Chemistry

2018-2024

Director of the DEpartment of Chemistry and Industrial Chemistry

2021-2024

Member of the Academic Senate

TEACHING ACTIVITY

From 1992 to now, Luca Banfi has given several teachings for the first level courses in: Chemistry, Chemistry and Chemical Technologies, Material Sciences, Biological Sciences, Biotechnology, Prevention Techniques in the Environment and the Workplace, and for the master courses in Chemical Sciences, Material Science and Technology and Techniques for Restoration and Conservation of Cultural Heritage. Finally, he has also given teachings for the Doctorate School in Science and Technology of Chemistry and Materials and for the High Study School Ianua.

- Organic Chemistry Laboratory 1 (5 years degree in Chemistry)
- Organic Chemistry Laboratory 2 (5 years degree in Chemistry)
- Organic Chemistry 3 (second year) (bachelor degree in Chemistry)
- Bioorganic Chemistry (bachelor degree in Chemistry and Chemical Technologies)
- Organic Chemistry 1 (bachelor degree in Chemistry and Chemical Technologies)
- Organic Chemistry 3 (bachelor degree in Chemistry and Chemical Technologies)
- Organic Special Syntheses and Technoques (master degree in Chemical Sciences)
- Organic Chemistry and Laboratory (bachelor degree in Biotechnology)
- Instrumentation and Quality Control (bachelor degree in Biotechnology)
- Organic Chemistry and Laboratory (bachelor degree in Materials Sciences)
- Organic Chemistry and Laboratory (bachelor degree in Biological Sciences)

- Organic Chemistry (bachelor degree in Prevention Techniques in the Environment and the Workplace)
- Organic Chemistry (master degree in Techniques for Restoration and Conservation of Cultural Heritage)
- Organic Chemistry (master degree in Materials Science and Technology).

EXPERIENCE

PRIZES AND ACCOLADES FOR SCIENTIFIC ACTIVITY, INCLUDING MEMBERSHIP OF ACADEMIES

1992

Ciamician Medal

It is a medal given yearly, by the Organic Chemistry division of the Italian Chemical Society, to the best young italian organic chemist

2016

Mangini Gold Medal

It is a medal given yearly, by the Organic Chemistry division of the Italian Chemical Society, to an outstanding organic chemist.