

Short CV Prof. Cristina AIROLDI

Bergamo, February 13, 1979

Associate Professor of Organic Chemistry

Department of Biotechnology and Biosciences (BTBS), University of Milano-Bicocca UNIMIB.

2003	Graduated "magna cum laude" in Industrial Biotechnology at UNIMIB
2005	Visiting PhD Student, CIB-CSIC Madrid, Spain (Prof. J. Jimenez-Barbero's lab, protein / carbohydrate interaction studies).
2006	Visiting PhD Student, University of Verona, Italy (Prof. H. Molinari's lab, Protein NMR).
2007	PhD in Chemical Science
2007 -2012	PostDoc Fellow Organic Chemistry at BTBS, UNIMIB.
2010	Visiting PostDoc, CIB-CSIC Madrid, Spain.
2012-2016	Temporary Researcher (RTDa) of Organic Chemistry at BTBS, UNIMIB.
2016-2019	Tenure track Assistant Professor (RTDb) of Organic Chemistry at BTBS, UNIMIB.
2019-	Associate professor of Organic Chemistry
2021-	Member of the board of BTBS

RESEARCH ACTIVITY

CA obtained the **Degree in Industrial Biotechnology** discussing an experimental thesis on the design and synthesis of bioactive compounds deriving from carbohydrates.

She then continued his academic training by deepening his knowledge of bio-organic chemistry through a **PhD in Chemical Sciences**. In this period, she had the opportunity to integrate the synthesis skills with the NMR characterization of the interaction between potential inhibitors synthesized and the target protein. To this end, she worked in a leading group in Europe in carbohydrate-protein interaction studies (Prof. J. di Jimenez-Barbero group, CIB, CSIC, Madrid). She also deepened his knowledge of protein NMR spectroscopy by attending the laboratory of Prof. H. Molinari (University of Verona).

Acquired these new skills, she moved her scientific interest to this research field, focusing on the application of NMR spectroscopy to molecular recognition studies of biomedical relevance and, later, also to metabolomics, founding a new bio-NMR laboratory at the Department of Biotechnology and Biosciences, University of Milano-Bicocca.

Main research interests and topics

- Molecular recognition studies by NMR spectroscopy.
- NMR-based conformational analysis of bioactive compounds.
- Design and synthesis of bioactive (antibacterial, antitumor, antiamyloidogenic) compounds.
- Identification and characterization of natural bioactive (antibacterial, antitumor, antiamyloidogenic) compounds.
- NMR & MS-based metabolomic studies of biofluids, cells, tissues, and natural extracts.

PRIZES and AWARDS

- **2007**: selected as IUPAC representative at the ICSU Symposium "Global Scientific Challenges: Perspectives from Young Scientists", April 4-6, Lindau, Germany.
- **2013**: Gastone de Santis Prize, assigned by the Division of Chemistry of Biological Systems of the Italian Chemical Society.
- **2013**: selected for the participation to the 63rd Lindau Nobel Laureates Meeting 2013, 30 June – 5 July 2013, Lindau, Germany, (edition dedicated to Chemistry).
- In this context she has been also selected by Prof. Wuthrich for an oral communication in his

masterclass titled “Magnetic Resonance in Chemistry, Structural Biology and Medical Diagnosis”.

- **2014:** invited to the Bürgenstock Conference 2014, Junior Scientists Participation (JSP) Program.
 - **2014:** invited for a special issue title “Early Career Series” [http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)2192-6506/homepage/2688_earlycareer.html](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2192-6506/homepage/2688_earlycareer.html)
 - **2016:** selected by AIRC for the participation to the “Day for cancer research”, October 26, 2016, Presidency of the Italian Republic, Rome.
 - **2019:** invited for the special issue *ChemBio Talents*, [https://chemistry-europe.onlinelibrary.wiley.com/doi/toc/10.1002/\(ISSN\)1439-7633.ChemBioTalents](https://chemistry-europe.onlinelibrary.wiley.com/doi/toc/10.1002/(ISSN)1439-7633.ChemBioTalents)
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MEMBERSHIPS OF SCIENTIFIC SOCIETIES

- 2004 Member of the Italian Chemical Society.
- 2014- Member of NeuroMi- Milano Center for Neuroscience.
- 2010 Member of NanoMIB - Center for Nanomedicine, UNIMIB.
- 2010 member of SysBio Center of Systems Biology, UNIMIB.
- 2015-2017 Elected member of the Board of the Interdivisional Group of Magnetic Resonances (GIRM) of the Italian Chemical Society (SCI).
- 2017-2020 Elected member of the Board of the GIRM (SCI).
- 2021- Elected coordinator of the Board of the GIRM (SCI).
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PARTICIPATION to DOCTORATE SCHOOLS

- 2013– 2020 PhD Scientific Board Member, PhD in Industrial Biotechnology and Life Sciences, UNIMIB.
- 2019 Tutor for the PhD in Chemistry
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MEMBER OF COMMITTEES (National and International)

- 2017 qNMR day - Politecnico di Bari, November 24, 2017 – Member of the scientific committee.
- 2019 Advances in NMR and MS Based Metabolomics, Lucca - November 20-22, 2019 - Member of the scientific committee.
- 2021 International Congress 7th ECBS-LS (EuChems and EU Openscreen), Milano, 14-16 April 2021 – Member of the scientific committee.
- 2021 XLIX National Congress on Magnetic Resonance Online, September 8-10, 2021 - Member of the scientific committee.
- 2022 Italian-French International Conference on Magnetic Resonance, Milano, September 27-30, 2022 – Chair of the organizing committee; member of the scientific committee.
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REFEREE FOR INTERNATIONAL JOURNALS

- Referee for the following international journals: JACS, ACS Chemical Neuroscience, ACS Omega, Chemistry - A European Journal, Chemistry - An Asian Journal, ChemMedChem, Current Metabolomics, Food Chemistry, Physical Chemistry Chemical Physics, PlosONE, Arabian Journal of chemistry, European Journal of Pharmacology, Frontiers Molecular Biosciences
 - Editor of Frontiers Molecular Neurosciences.
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FUNDINGS OBTAINED FROM COMPETITIVE CALLS

- CARIPLO Foundation, project 2013-0820 (3/2014-12/2016): BALf metabolomics in chronic lung rejection: an innovative approach to identify predictive markers and sub-phenotypes. Role: UNIMIB unit coordinator.
- UNIMIB competitive funding 2014: Targeting of Gastrin-Releasing Peptide receptor expressing tumors: NMR characterization of Bombesin/GRP-R interaction. Role: PI
- Ministry of Health and Regione Lombardia, project VIBRO (12/2014-11/2016): Role of colonization and viral infection on exacerbations and hospitalizations in patients with bronchiectasis. Role: UNIMIB unit coordinator.

- CARIPLO Foundation, project 2015-0763 (10/2015-9/2017): Glycoproteomic studies, a new NMR and synthetic combined approach. Role: PI - Funding reserved for ERC applicants who scored highly in the ERC's evaluation.
- AIRC, Individual Grant – MFAG project 17030 (1/2016-12/2019): Targeting of Gastrin-Releasing Peptide receptor expressing tumors: NMR characterization of Bombesin/GRP-R interaction. Role: PI.
- Fondo per il finanziamento delle attività base di ricerca (FABBR)-MIUR 2018.
- PRIN 2017 - BacHounds: Supramolecular nanostructures for bacteria detection. Role: UNIMIB unit coordinator.
- PNRA 2018 - Exploring the diversity of soil microbes and their biomolecules in Victoria Land. Role: UNIMIB unit coordinator.
- H2020-ITN - PEST-BIN-Pioneering Strategies Against Bacterial Infections. Role: UNIMIB coordinator.

RESEARCH CONTRACTS WITH INDUSTRIES

- Italfarmaco S.p.A.
- IBSA International
- Olon S.p.A.
- Allegrini S.p.A.

PUBLICATION and PATENT FIGURES (updated to March 1, 2023)

Total n. of Papers on ISI Journals: 87

N. of chapters on books or monographies: 8

N. of patents: 3

From **Scopus** - **H-index**: 29; **Citations**: 2078

From **Google Scholar** - **H-index**: 33; **Citations**: 2703

More than 200 communications in national and international meetings among which 30 oral communications (16 invited).

Selected papers

1. Airoldi C., Sommaruga S., Merlo S., Sperandeo P., Cipolla L., Polissi A., Nicotra F., Targeting Bacterial Membranes: NMR Characterization of Substrate Recognition and Binding Requirements of D-arabinose 5P Isomerase, *Chem. Eur. J.*, **2010**, 16, 6, 1897-1902, <https://doi.org/10.1002/chem.200902619>
2. Airoldi C., Colombo L., Manzoni C., Sironi E., Natalello A., Doglia S. M., Forloni G., Tagliavini F., Del Favero E., Cantù L., Nicotra F., Salmona M., Tetracycline prevents A β oligomer toxicity through an atypical supramolecular interaction, *Org. Biomol. Chem.*, **2011**, 9, 463-472. <https://doi.org/10.1039/C0OB00303D>
3. Airoldi C., Cardona F., Sironi E., Colombo L., Salmona M., Silva A., Nicotra F., La Ferla B., Cis-glyco-fused benzopyran compounds as new amyloid- β peptide ligands, *Chem. Commun.*, **2011**, 47, 10266–10268, <https://doi.org/10.1039/C1CC13046C>
4. Airoldi C.,* Giovannardi S., La Ferla B., Jiménez-Barbero J., Nicotra F.,* Saturation Transfer Difference NMR experiments of membrane proteins in living cells under HR-MAS conditions: The interaction of the SGLT1 cotransporter with its ligands, *Chem. Eur. J.*, **2011**, 17, 13395-13399, <https://doi.org/10.1002/chem.201102181>
5. Airoldi C.,* Sironi E., Dias C., Marcelo F., Martins A., Rauter A. P., Nicotra F., Jimenez-Barbero J., Natural Compounds against Alzheimer's Disease: Molecular Recognition of A β 1–42 Peptide by Salvia sclareoides Extract and its Major Component, Rosmarinic Acid, as Investigated by NMR, *Chem. Asian J.* **2013**, 8, 3, 596-602, <https://doi.org/10.1002/asia.201201063>
6. Bonanomi M., Visentin C., Natalello A., Spinelli M., Vanoni M., Airoldi C.*, Regonesi M. E.*, Tortora P., How Epigallocatechin-3-gallate and Tetracycline Interact with the Josephin Domain of Ataxin3 and Alter Its Aggregation Mode, *Chem. Eur. J.*, **2015**, 21, 50, 18383–18393, <https://doi.org/10.1002/chem.201503086>.
7. Guzzi C., Colombo L., De Luigi A., Salmona M., Nicotra F., Airoldi C.*, Flavonoids and their glycosides as anti-amyloidogenic compounds: A β 1-42 interaction studies to gain new insights on their potential for

- Alzheimer's disease prevention and therapy, *Chem. Asian J.*, **2017**, 12, 1, 67–75, <https://doi.org/10.1002/asia.201601291>
8. Palmioli A., Ciaramelli C., Tisi R., Spinelli M., De Sanctis G., Sacco E.*, Airoldi C.*, Natural Compounds in Cancer Prevention: Effects of Coffee Extracts and Their Main Polyphenolic Component, 5-O-Caffeoylquinic Acid, on Oncogenic Ras Proteins, *Chem. Asian J.*, **2017**, 12, 18, 2457–2466, <https://doi.org/10.1002/asia.201700844>
 9. Ciaramelli C., Palmioli A., De Luigi A., Colombo L., Sala G., Riva C., Zoia C. P., Salmona M., Airoldi C.*, NMR-driven identification of anti-amyloidogenic compounds in green and roasted coffee extracts, *Food Chemistry* **2018**, 252, 171-180, [10.1016/j.foodchem.2018.01.075](https://doi.org/10.1016/j.foodchem.2018.01.075)
 10. Ciaramelli C., Palmioli A., Airoldi C.* Coffee variety, origin and extraction procedure: implications for coffee beneficial effects on human health, *Food Chemistry*, **2019**, 278, 47-55, [10.1016/j.foodchem.2018.11.063](https://doi.org/10.1016/j.foodchem.2018.11.063)
 11. Palmioli A., Ceresa C., Tripodi F., La Ferla B., Nicolini G., Airoldi C.*, On-cell saturation transfer difference NMR study of Bombesin binding to GRP receptor, *Bioorg. Chem.*, **2020**, 99, 103861, <https://doi.org/10.1016/j.bioorg.2020.103861>
 12. Ciaramelli C., Palmioli A., De Luigi A., Colombo L., Sala G., Salmona M., Airoldi C.*, NMR-based Lavado cocoa chemical characterization and comparison with fermented cocoa varieties: Insights on cocoa's anti-amyloidogenic activity, *Food Chemistry*, **2021**, 341, 2, 128249, <https://doi.org/10.1016/j.foodchem.2020.128249>
 13. Palmioli A., Nicolini G., Tripodi F., Orsato A., Ceresa C., Donzelli E., Arici M., Coccetti P., Rocchetti M., La Ferla B., Airoldi C.*, Targeting GRP receptor: design, synthesis and preliminary biological characterization of new non-peptide antagonists of bombesin, *Bioorg. Chem.*, **2021**, 104739, <https://doi.org/10.1016/j.bioorg.2021.104739>.
 14. Palmioli A.*, Sperandeo P., Bertuzzi S., Polissi A., Airoldi C.*, On-cell Saturation Transfer Difference NMR for the identification of FimH ligands and inhibitors, *Bioorg. Chem.*, **2021**, 112, 104876, <https://doi.org/10.1016/j.bioorg.2021.104876>
 15. Palmioli A.*, Mazzoni V., De Luigi A., Bruzzone C., Sala G., Colombo L., Bazzini C., Zoia C. P., Inserra M., Salmona M., De Noni I., Ferrarese C., Diomede L., Airoldi C.* Alzheimer's disease prevention through natural compounds: cell-free, in vitro, and in vivo dissection of hop (*Humulus lupulus* L.) multitarget activity, *ACS Chem. Neurosci.* **2022**, 13, 22, 3152–3167, <https://doi.org/10.1021/acscemneuro.2c00444>