30/09/2024

Curriculum vitae
Elena Maria Ghibaudi

Date and place of birth: 20th February 1968, Torino, Italy
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Current position

- Since 2/08/1999 – Assistant Professor at the Dept. of Chemistry, University of Torino, Italy
- Member of the SENDS research group in chemical education (www.sends.unito.it – Storia ed Epistemlogia per una Nuova Didattica delle Scienze))

Academic education

- 1991 Master degree in Chemistry, University of Torino, Italy
  Title of the experimental master thesis: *Studies on the catalytic site of 'zucchino' ascorbate oxidase by EPR and optical spectroscopy*
- 1996 Ph.D. in Chemistry, University of Torino, Italy
  Title of the experimental PhD thesis: *Structure-function relationships in metalloproteins and their models*

Research experiences

- 1992-1994, Research fellowship at the Institute for Pharmacological Research "Mario Negri", Lab. of enzymology, Protein Chemistry Unit, Milano, Italy.
- 1997-1999, Marie Curie Post-Doctoral Fellowship in the Département de Biologie Céllulaire et Moleculaire - Section de Bioénergétique - CEA/Saclay (Gif-sur-Yvette) - France. (Head: Dr. A.W.Rutherford).
- 2004 - FEBS Short Mobility Fellowship for a 3-month research stay at the DBCM (Section de Bioénergétique)/ CEA/Saclay (Paris).
- 2005 - Italian CNR fellowship for a 3-week research stay at the DBCM (Section de Bioénergétique)/ CEA/Saclay (Paris).

Research interests

I began my academic career as an *experimental bioinorganic chemist*. My research dealt with the following issues:

- Spectroscopical characterisation of paramagnetic metal binding sites in biological and model systems through the concerted use of optical and ESR (electron spin resonance) spectroscopy
- Studies on the conformational dynamics of proteins and peptides by ESR spectroscopy and site-directed spin-labeling (SDSL), optical spectroscopy and circular dichroism
- Functional and structural investigation of enzymes adsorbed on nanomaterials through the concerted use of optical spectroscopy, circular dichroism, ESR spectroscopy associated with site-directed spin-labeling (SDSL) and activity assays

My research interests subsequently turned towards *chemical education and philosophy of chemistry*. At present, my main research topics are:

- Epistemological investigations on foundational chemical notions (e.g. chemical element, substance, molecular shape, orbital, redox chemical changes, etc.)
- Development of teaching sequences on several chemical notions and basic chemical models, for college and high school levels, with a specific focus on the relationship between the physical realm and its models.

I coordinate the research-action group SENDS (History and epistemology for renovating science education, www.sends.unito.it) that includes school teachers and university researchers, with the aim of promoting innovative approaches to science and chemistry teaching based on the epistemological reflection.

Teaching experience and thesis supervision

I've taught the following courses:

- General chemistry for geological sciences - theoretical course, bachelor degree (1999-2000)
- General chemistry for biological sciences - theoretical course, bachelor degree (2013-present)
- General chemistry and stoichiometry for chemists - stoichiometry and laboratory course, bachelor degree (2001-2008)
- Inorganic chemistry for chemists - laboratory course, bachelor degree (2007-2010)
- Enzyme catalysis for chemists, Master degree (2003-2010)
- Bioinorganic chemistry for chemists, Master degree (2010-2021)
- Structural chemistry (EPR module) for Molecular Biotechnology, bachelor degree (2006-2010)
- Biologically active metal complexes, for *PhD students* in chemistry (2003-2007)
- History of science and epistemology, for *PhD students* in chemistry (2008-2010)
- How is chemistry changing? An historic and epistemic analysis of recent developments in the area of molecular sciences, for *PhD students* in chemistry (2016-17)
- An insight into epistemological and didactic issues related with science teaching for *PhD students* in chemistry (2016-17, 2018-19, 2020-2021, 2024-25)
- History and epistemology of experimental science for the training of prospective science and chemistry teachers at SSIS Piedmont (one module) - Classes A060 and A013 - (2004-2007)
- Chemical education for the training of prospective science teachers at college (Class A059) at Italian teachers' training pathways TFA (2012) and PAS (2013-2016)
- Chemical education for chemists, Master degree (2018-present)
- Chemical education and foundations of chemistry for the training of prospective chemistry teachers (Class A034) and science teachers (Class A050) at Italian teachers' training pathways (PF60) (2024-present)

I supervised more than 30 Bachelor thesis, 9 Master thesis, 1 PhD thesis in Chemistry and 3 PhD thesis in Chemical education and epistemology of chemistry (one of which was co-supervised by Prof. Raffaele Pisano, University of Lille, France, and one in Co-tutelle with Prof. David Cross, University of Montpellier, France). I have also supervised habilitation theses within the Italian teachers' training pathways TFA and PAS.

In 2017, I was appointed to a PhD jury in Physical science at the University of Lille, France, at the invitation of prof. Abdelkader Anassar.
In 2024, I was appointed to an HDR jury (Habilitation à Diriger des Rècherches) in *Sciences de l'éducation et de la formation* at the University "Claude Bernard - Lyon1", Lyon, France.

Lecturer activity
Since 2004, I have been actively involved as a lecturer in training activities addressed to science teachers in collaboration with:

- the Italian PLS (Piano Lauree Scientifiche) programme;
- the Division of Chemical education of the Italian Chemical Society;
- the SPAIS summer school for the continuous training of secondary school science teachers, organized by Prof. Michele Floriano, University of Palermo;
- several Italian universities (Università di Genova, Bologna, Parma, Modena e Reggio Emilia, Padova, Palermo), as well as the IPRASE (Istituto Provinciale di Ricerca e Sperimentazione Educativa Trento) and the Intendenza scolastica italiana (Ufficio Aggiornamento e didattica, Provincia autonoma di Bolzano).

From 2010 on, I've also been invited to act as a lecturer in several editions of the educational schools organised by the Division of chemical Education of the Italian Chemical Society, addressed to science school teachers (Del Re school) and to university teachers "Ulderico Segre school".

In 2019, I was invited lecturer at "Mendeleev 150 - 4th International conference on the Periodic table, endorsed by IUPAC", ITMO University, Saint Petersburg, July 26-28th 2019.
IN the same year, I was invited lecturer at the Conference "Il sistema periodico di Primo Levi. Letture", organised by the University of Padova, Italy, with a talk related to the chapter "Carbonio" of Levi's book.

A full account of my training activity addressed to school teachers can be found at this address: https://www.sends.unito.it/it/node/8

Technical skills

- CW-EPR spectroscopy
- UV-Vis absorption spectroscopy
- Circular dichroism
- Enzyme assays
- Solid-phase peptide synthesis
- Protein purification techniques
- Automated solid-phase protein sequencing
- Electrophoresis: SDS-PAGE, Analytical isoelectrofocusing, Preparative isoelectrofocusing, for the quantitative separation of isoenzymes
- Site-directed spin-labeling for the investigation of protein folding processes

Organizational tasks

Since 1999, along the years, I've been member of the following boards at the Turin University:

- Board of studies of the bachelor degree in Chemical sciences (1999-2010)
- Didactic commission of bachelor degree in Chemical sciences (2004-2010)
- Laboratory commission of the of bachelor degree in Chemical sciences (2002-2010)
- Committee for Mentoring and Job Placement of the School of Natural Sciences (2013-2017)
- Joint Review Committee of the bachelor degree in Biological sciences (2013-2022)
- Committee for Public Engagement activities of the department of chemistry (2019-2021)
- Board of studies of the master degree in Chemistry (2003-present);
- Board of studies of the bachelor degree in Biological sciences (2013-present)
- Library Board of the department of chemistry (2013-present);
- Didactic commission of the department of chemistry (2021-2024);
- Coordinator of the educational pathway for the training of prospective chemistry teachers (PF60 - class A034) (2023-present)

Conference and summer school boards

- Organising board of the conference of the Division of Biological Systems of the Italian Chemical Society (2003)
- Local organizing committee for events related to the 2011 International Year of Chemistry. In years 2011-2012, I was Editorial secretary of the monthly popular science magazine "The Alembic - distillate of news on chemistry and society" published by the University of Turin (www.alambicco.unito.it).
- 10th EFEPR conference (International EPR Society), September 4-8th 2016.
- Scientific and organising board of the annual conference of the division of chemical education of the Italian Chemical Society (years 2014-15-16, and 2023-24).
- Scientific and organising board of the workshop on "Teaching chemical education in Italy", held in Bertinoro, Italy (September 2-4th 2022) by the *Division of chemical education* of the Italian Chemical Society.From 2017 on, organiser of teacher training seminars in chemistry, in the frame of the PLS programme of the University of Torino.
- Scientific Board of the "Ulderico segre" School of chemical education and educational research organised by the *Division of chemical education* of the Italian Chemical Society - Editions 2010-2011-2013-2014-2015-2016-2017-2020-2021-2022-2024.
- Organiser of the 2017 edition of the "Ulderico Segre" School at the University of Torino, Italy.
- Organiser of the 23rd edition of the annual conference of International Society for the Philosophy of Chemistry (ISPC), July 15-17th 2019, at the University of Torino, Italy (held in Italy for the first time).

Memberships

- Member of the *Division of chemical education* of the Italian Chemical Society *(https://www.soc.chim.it/it/divisioni/didattica/home),* where I served in the executive

committee in years 2013-16 (as secretary and treasurer) and 2021-2024 (as vice-president);

- Member of the *Gruppo di fondamenti e storia della chimica* (Foundations and history of chemistry group - http://www.gnfsc.it/);
- Member of the *Interdivisional group on the epistemology and history of chemistry of the Italian Chemical Society;*
- Member of the executive committee of the *International Society for the Philosophy of Chemistry* (https://sites.google.com/site/socphilchem/home);
- Italian delegate in the *Division of Chemical Education of EuChems.*

Journal Boards

I'm in the editorial board of the journals *Foundations of chemistry* (Springer) and *CnS-Chimica nella Scuola* (Italian Chemical Society).

Review activity

- Referee for the following International journals:
  - Biochimica and Biophysica Acta - Proteins and Proteomics (Elsevier)
  - Archives of Biochemistry and Biophysics (Elsevier)
  - Journal of Inorganic Biochemistry(Elsevier)
  - BioMetals (Springer)
  - Biophysical Chemistry (Elsevier)
  - Journal of Peptide Science (Wiley)
  - Cell Biology International (Elsevier)
  - Biodegradation (Springer)
  - Letters in Drug Design & Discovery (Bentham)
  - Biomacromolecules (ACS)
  - African Journal of Pharmacy and Pharmacology
  - BioMed Research International (Wiley)
  - European Journal of Medicinal Chemistry (Elsevier)
  - Centaurus (Wiley)
  - BioNanoScience (Springer)
  - Substantia (Florence University Press)
  - Foundations of Chemistry (Springer)
  - Foundations of science (Springer)
  - Education Quimica (UNAM)
  - Journal of chemical education (ACS)

- Projects' reviewer for the:
  - European Commission (Years 2009-2014) - evaluator for the Marie Curie Fellowships (Life Sciences Panel)
  - Austrian Science Fund (FWF)
  - Polish National Science Centre

- Reviewer of books' projects on the history and philosophy of chemistry for Oxford University Press and Cambridge University Press.

Other training experiences:

- 2001 - ECA-UNESCO pilot course for training university researchers in mentoring, organised by the UNESCO Center of Torino, Italy.
- IRIDI 2018 training course "Designing, conducting and evaluating teaching activities in universities" organised by the Teaching Research Incubator for Innovation of the University of Torino, Italy

Spoken languages:

- Italian (mother tongue)
- French (fluent)
- English (fluent)

Publication record

At September 2024, about 110 publications, whereof 51 papers on experimental chemistry and 60 papers and book chapters in chemical education/epistemology/philosophy of chemistry, in national and international peer-reviewed journals.

Experimental research papers

1. Tagliavini F., Prelli F., Verga L., Giaccone G., Sarma R., Gorevic P., Ghetti B., Passerini F., Ghibaudi E., Forloni G., Salmona M., Bugiani O. and Frangione B. (1993) Synthetic Peptides Homologous to Prion Protein Residues 106-147 Form Amyloid-Like Fibrils in-Vitro. PNAS (*Proceedings of the National Academy of Sciences of the United States of America) 90*, 9678-9682.

2. Selvaggini C., Degioia L., Cantù L., Ghibaudi E., Diomede L., Passerini F., Forloni G., Bugiani O., Tagliavini F. and Salmona M. (1993) Molecular Characteristics of a Protease-Resistant, Amyloidogenic and Neurotoxic Peptide Homologous to Residues-106-126 of the Prion Protein. *Biochemical and Biophysical Research Communications 194*, 1380-1386.

3. Bianchi G., Sironi M., Ghibaudi E., Selvaggini C., Elices M., Allavena P. and Mantovani A. (1993) Migration of Natural-Killer-Cells across Endothelial-Cell Monolayers. *Journal of Immunology 151*, 5135-5144.

4. Gianazza E., Coari P., Lovati M. R., Manzoni C., Ghibaudi E. and Salmona M. (1994) The Purification of Histones by Metal-Chelate Chromatography. *Analytical Biochemistry 222*, 505-507.

5. Salmona M., Diomede L., Algeri M., Ghibaudi E., Selvaggini C., Tagliavini F., Forloni G. (1994) Cell membrane viscosity is increased by a prion protein fragment. *Clinical Neuropathology 13(3),* 164-164.

6. Bugiani O., Del Bo R., Angeretti N., Chiesa R., Smiroldo S., Doni R., Ghibaudi E., Salmona M., Porro M., Verga L., Giaccone R., Tagliavini F., Forloni G. (1994) A neurotoxic prion protein fragment induces hypertrophy and proliferation of rat astroglial cells in vitro. *Clinical Neuropathology 13*(3), 146-146

7. Forloni G., Del Bo R., Angeretti N., Chiesa R., Smiroldo S., Doni R., Ghibaudi E., Salmona M., Porro M., Verga L., Giaccone G., Bugiani O. and Tagliavini F. (1994) A Neurotoxic Prion Protein-Fragment Induces Rat Astroglial Proliferation and Hypertrophy. *European Journal of Neuroscience 6*, 1415-1422.

8. De Gioia L., Selvaggini C., Ghibaudi E., Diomede L., Bugiani O., Forloni G., Tagliavini F. and Salmona M. (1994) Conformational Polymorphism of the Amyloidogenic and Neurotoxic Peptide Homologous to Residues-106-126 of the Prion Protein. *Journal of Biological Chemistry 269*, 7859-7862.

9. Zanetti A., Conforti G., Hess S., Martinpadura I., Ghibaudi E., Preissner K.T. and Dejana E. (1994) Clustering of Vitronectin and Rgd Peptides on Microspheres Leads to Engagement of Integrins on the Luminal Aspect of Endothelial-Cell Membrane. *Blood 84*, 1116-1123.

10. Li Calzi M., Raviolo C., Ghibaudi E., De Gioia L., Salmona M., Cazzaniga G., Kurosaki M., Terao M. and Garattini E. (1995) Purification, cDNA cloning, and tissue distribution of bovine liver aldehyde oxidase. *Journal of Biological Chemistry 270*, 31037-31045.

11. Gianazza E., Coari P., Lovati M.R., Manzoni C., Ghibaudi E. and Salmona M. (1995) Basic-Proteins and Basic Membranes - Adjusting Blotting and Staining Conditions to Immobilon CD. *Journal of Chromatography A 698*, 351-359.

12. Ferrari R.P., Ghibaudi E., Laurenti E., Gambino O. (1995) ESR and optical studies on the reaction mechanism and radical formation during the tyrosinase-catalyzed oxidation of dopamine. *Journal of Inorganic Biochemistry G16*, 337-337.

13. Ferrari R.P., Ferraudo A., Ghibaudi E., Laurenti E., Strasly M., Traversa S. and Sondergaard I. (1995) Investigations on the interaction of bovine lactoperoxidase with some inorganic anions. *Journal of Inorganic Biochemistry I48*, 471-471.

14. De Gioia L., Ghibaudi E.M., Laurenti E., Salmona M. and Ferrari R.P. (1996) A theoretical three-dimensional model for lactoperoxidase and eosinophil peroxidase, built on the scaffold of the myeloperoxidase X-ray structure. *Journal of Biological Inorganic Chemistry 1*, 476-485.

15. Ferrari R.P., Laurenti E., Ghibaudi E.M. and Gambino O. (1996) ESR characterization kinetics of the enzymatically obtained M(II)-dobutamine-o-semiquinone system. *Research on Chemical Intermediates 22*, 459-468.

16. Ferrari R.P., Laurenti E., Ghibaudi E.M. and Casella L. (1997) Tyrosinase-catecholic substrates in vitro model: Kinetic studies on the o-quinone/o-semiquinone radical formation. *Journal of Inorganic Biochemistry 68*, 61-69.

17. Ferrari R.P., Ghibaudi E.M., Traversa S., Laurenti E., De Gioia L. and Salmona M. (1997) Spectroscopic and binding studies on the interaction of inorganic anions with lactoperoxidase. *Journal of Inorganic Biochemistry 68*, 17-26.

18. Boussac A., Kuhl H., Ghibaudi E., Rogner M. and Rutherford A.W. (1999) Detection of an electron paramagnetic resonance signal in the S-0 state of the manganese complex of photosystem II from Synechococcus elongatus. *Biochemistry 38*, 11942-11948.

19. Ferrari R.P., Traversa S., De Gioia L., Fantucci P., Suriano G. and Ghibaudi E.M. (1999) Catechol(amine)s as probes of lactoperoxidase catalytic site structure: Spectroscopic and modeling studies. *Journal of Biological Inorganic Chemistry 4*, 12-20.

20. Laurenti E., Suriano G., Ghibaudi E.M. and Ferrari R.P. (2000) Ionic strength and pH effect on the Fe(III)-imidazolate bond in the heme pocket of horseradish peroxidase: an EPR and UV-visible combined approach. *Journal of Inorganic Biochemistry 81*, 259-266.

21. Ghibaudi E.M., Laurenti E., Beltramo P. and Ferrari R.P. (2000) Can estrogenic radicals, generated by lactoperoxidase, be involved in the molecular mechanism of breast carcinogenesis? *Redox Report 5*, 229-235.

22. Suriano G., Watanabe S., Ghibaudi E.M., Bollen A., Ferrari R.P. and Moguilevsky N. (2001) Glu375Gln and Asp225Val mutants: About the nature of the covalent linkages between heme group and apo-protein in bovine lactoperoxidase. *Bioorganic & Medicinal Chemistry Letters 11*, 2827-2831.

23. Laurenti E., Ghibaudi E.M., Suriano G., Moguilevsky N. and Ferrari R.P. (2001) A comparison between native and recombinant forms of lactoperoxidase and myeloperoxidase by using organic and inorganic substrates as a probe. *Journal of Inorganic Biochemistry 86*, 310-310.

24. Laurenti E., Ghibaudi E., Todaro G. and Ferrari R.P. (2002) Enzymatic degradation of 2,6-dichlorophenol by horseradish peroxidase: UV-visible and mass spectrophotometric characterization of the reaction products. *Journal of Inorganic Biochemistry 92*, 75-81.

25. Ghibaudi E. * and Laurenti, E. (2003) Review: Unraveling the catalytic mechanism of lactoperoxidase and myeloperoxidase - A reflection on some controversial features. *European Journal of Biochemistry 270*, 4403-4412.
26. Laurenti E., Ghibaudi E.M., Ardissone S. and Ferrari R.P. (2003) Oxidation of 2,4-dichlorophenol catalyzed by horseradish peroxidase: characterization of the reaction mechanism by UV-visible spectroscopy and mass spectrometry. *Journal of Inorganic Biochemistry 95*, 171-176.

27. Ghibaudi E., Laurenti E., Pacchiardo C., Suriano G. Moguilevsky N. and Ferrari R.P. (2003) Organic and inorganic substrates as probes for comparing native bovine lactoperoxidase and recombinant human myeloperoxidase. *Journal of Inorganic Biochemistry 94*, 146-154.

28. Ciaccio C., De Sanctis G., Marini S., Sinibaldi F., Santucci R., Arcovito A., Bellelli A., Ghibaudi E., Ferrari R.P. and Coletta, M. (2004) Proton linkage for CO binding and redox properties of bovine lactoperoxidase. *Biophysical Journal 86*, 448-454.

29. Malusà E., Laurenti E., Ghibaudi E. and Rolle, L. (2004) Influence of organic and conventional management on yield and composition of Grignolino grapes. *Acta Horticolturae 640*, 135-141.

30. Ardissone S., Laurenti E., Frendo P., Ghibaudi E.M. and Puppo A. (2005) Single-site mutations on the catalase-peroxidase from Sinorhizobium meliloti: role of the distal Gly and the three amino acids of the putative intrinsic cofactor. *Journal of Biological Inorganic Chemistry 10*, 813-826.

31. Ghibaudi E.*, Boscolo B., Inserra G., Laurenti E., Traversa S., Barbero L. and Ferrari R.P. (2005) The interaction of the cell-penetrating peptide penetratin with heparin, heparansulfates and phospholipid vesicles investigated by ESR spectroscopy. *Journal of Peptide Science 11*, 401-409.

32. Boscolo B., Laurenti E. and Ghibaudi E.* (2006) ESR spectroscopy investigation of the denaturation process of soybean peroxidase induced by guanidine hydrochloride, DMSO or heat. *Protein Journal 25*, 379-390.

33. Boscolo B., Leal S., Ghibaudi E.M.* and Gomes C.M. (2007) Lactoperoxidase folding and catalysis relies on the stabilization of the α-helix rich core domain: a thermal unfolding study. *Biochimica et Biophysica Acta 1774,* 1164-1172.

34. Suriano G., Azevedo L., Novais M., Boscolo B., Seruca R., Amorim A. and Ghibaudi E. (2007) In vitro demonstration of intra-locus compensation using the Ornithine transcarbamylase protein as model. *Human Molecular Genetics 16*, 2209-2214.

35. Fielding A., Boscolo B., Un S., Ghibaudi E.* and Ivancich A. (2007). A multifrequency (9-285 GHz) EPR spectroscopy investigation of the intermediates in lactoperoxidase: reactivity with different substrates. *Journal of Biological Inorganic Chemistry* 12, P397.

36. Fielding A., Singh R., Boscolo B., Lowen P., Ghibaudi E.* and Ivancich A. (2008) Intramolecular Electron Transfer vs. Substrate Oxidation in Lactoperoxidase: Investigation of Radical Intermediates by Stopped-flow Absorption Spectrophotometry and (9-285 GHz) EPR Spectroscopy. *Biochemistry 47*, 9781-9792.

37. Boscolo B., Leal S., Salgueiro C., Ghibaudi E.M.* and Gomes C.M. (2009) The prominent conformational plasticity of lactoperoxidase: A chemical and pH stability analysis. *Biochimica et Biophysica Acta 1794,* 1041–1048.

38. Boscolo B., Trotta F. and Ghibaudi E.M.* (2010) High catalytic performances of Ps. fluorescens lipase adsorbed on a new type of cyclodextrin-based nanosponges. *Journal of Molecular Catalysis B: enzymatic 62,* 155–161.

39. Turci F., Ghibaudi E., Colonna M., Boscolo B., Fenoglio I. and Fubini B (2010) An Integrated Approach to the Study of the Interaction between Proteins and nanoparticles. *Langmuir. 26,* 8336–8346.

40. Fenoglio I, Fubini B, Ghibaudi E. and Turci F. (2011) Review: Multiple aspects of the interaction of biomacromolecules with inorganic surfaces. *Advanced Drug Delivery Reviews. 63,* 1186–1209.

41. Ghibaudi E.M.*, Boscolo B., Turci F., Fenoglio I. and Fubini B. (2011) SDSL-EPR as a tool for grasping topological information on the interaction between proteins and nanoparticles, *Proceedings of the 4th European Conference on Chemistry for Life Sciences* (Budapest 2011). pp.25-28.

42. Caglio R., Pessione E., Valetti F., Giunta C. and Ghibaudi E.* (2013) An EPR, thermostability and pH-dependence study of wild-type and mutant forms of catechol 1,2 dioxygenase from *Acinetobacter radioresistens* S13. *Biometals*, *26,* 75–84.

43. Sgarbossa S., Diana E., Marabello D., Deagostino A., Cadamuro S., Barge A., Laurenti E., Gallicchio M., Boscaro V. and Ghibaudi E.* (2013) Synthesis, characterization and cell viability test of six vanadyl complexes with acetylacetonate derivatives, *Journal of Inorganic Biochemistry. 128,* 26–37.

44. Diomede L., Rognoni P., Lavatelli F., Romeo M., Del Favero E., Cantù L., Ghibaudi E., Di Fonzo A., Palladini G., Valentini V., Perfetti V., Salmona M. and Merlini G. (2014) A Caenorhabditis elegans-based assay recognizes immunoglobulin light chains causing heart amyloidosis. *Blood*. *123,* 3543-3552, DOI: 10.1182/blood-2013-10-525634.

45. Tomasini C., Zerbetto F., Castellucci N., Calvaresi M., Milli L., Larocca M., Ghibaudi E. and Tedesco M. (2014) □□□□-Hybrid Foldamers with 1,2,3-Triazole Rings: Order versus Disorder. *Journal of Organic Chemistry*. *79,* 5958-5969, DOI: 10.1021/jo500963n.

46. Artuso E., Ghibaudi E., Lace B., Marabello D., Vinciguerra D., Lombardi C., Koltai H., Kapulnik Y., Novero M., Occhiato E., Scarpi D., Parisotto S., Deagostino A., Venturello P., Maylish-Gati E., Bier A. and Prandi C. (2015) Stereochemical Assignments of Strigolactones analogues confirm their selective biological activity. *Journal of Natural Products. 11*, 2624-2633, DOI**:** 10.1021/acs.jnatprod.5b00557.

47. Lovisari M., Volpi G., Marabello D., Cadamuro S., Deagostino A., Diana E., Barge A., Gallicchio M., Boscaro V. and Ghibaudi E.* (2017) EPR and photophysical characterisation of six bioactive oxidovanadium(IV) complexes in the conditions of *in vitro* cell tests. *Journal of Inorganic Biochemistry. 170*, 55–62*,* DOI: 10.1016/j.jinorgbio.2017.02.009

48. Diomede l., Romeo M., Rognoni P., Beeg M., Foray C., Ghibaudi E., Palladini G., Cherny R.A., Verga L., Capello G.L., Perfetti V., Fiordaliso F., Merlini G. and Salmona M. (2017) Cardiac light chain amyloidosis: The role of metal ions in oxidative stress and mitochondrial damage. *Antioxidants & Redox Signaling*. 27, 567-582

49. Boscaro V., Barge A., Deagostino A., Ghibaudi E., Marabello D., Diana E., Gallicchio M. (2021) Effects of Vanadyl Complexes with Acetilacetonate Derivatives on non-Tumour and Tumour Cell Lines. *Molecules*, 26(18), 5534. doi.org/10.3390/molecules26185534

50. Costamagna G., Volpi G., Ghibaudi E., Ginepro M. (2022) Quantitative insights on the interactions between metal ions and water Kefir grains: kinetic studies and EPR investigations. *Natural Product Research,* 36(13), 3440-3444, doi.org/10.1080/14786419.2020.1855164

51. Barzan G., Kokalari I., Gariglio G., Ghibaudi E., Devocelle M., Monopoli M., Sacco A., Greco A., Giovannozzi A., Rossi A.M., Fenoglio I. (2022) Molecular Aspects of the Interaction with Gram-Negative

and Gram-Positive Bacteria of Hydrothermal Carbon Nanoparticles Associated with Bac8c2,5Leu Antimicrobial Peptide. *ACS Omega,* 7 (19), 16402–16413 https://doi.org/10.1021/acsomega.2c00305

Epistemology and chemical education

1. Ambrogi P., Floriano M.A. and Ghibaudi E. (2009) Sistemi complessi e didattica delle scienze: l'esperienza di SPAIS 2008. *La Chimica nella Scuola*. 2, 140-146 (Italian Chemical Society, Rome).

2. Ambrogi P., Floriano M.A. and Ghibaudi E. (2010) *La Chimica nella Scuola*. La multidisciplinarità come opzione possibile per l'insegnamento delle scienze: l'aggiornamento degli insegnanti di scienze alla luce dell'esperienza di SPAIS. *1*, 24-30 (Italian Chemical Society, Rome).

3. Ambrogi P., Floriano M.A. and Ghibaudi E. (2010) La multidisciplinarietà come opzione possibile per l'insegnamento delle scienze: l'esperienza di SPAIS. *Le scienze naturali nella scuola. 39,* 5-13 (ANISN, Pisa).

4. Ghibaudi E. and Popolla F. (2010) Il recupero dei concetti di teleonomia e complessità in ambito scientifico nella prospettiva del dialogo tra scienza e teologia. *Archivio teologico torinese. 16* (n°2), 333-351 (Northern-Italy Faculty of Theology,Turin).

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