

Valentina Pirola, Ph.D. – Curriculum Vitae



Valentina Pirola, Ph.D.

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Google Scholar: Valentina Pirola

Valentina Pirola is an organic chemist working at the interface of chemical biology and nucleic acid science, with a focus on non-canonical nucleic acid secondary structures, particularly G-quadruplexes (G4s). Her research aims to understand and selectively modulate higher-order DNA and RNA architectures through the development of chemical tools that combine molecular recognition, reactivity, and functional control. Her work is driven by the hypothesis that G-quadruplex structures represent actionable regulatory elements in complex biological systems, and that their selective targeting can enable new therapeutic and diagnostic strategies in cancer, neurodegeneration, and infectious diseases. Her research integrates synthetic chemistry, biophysical characterization, and functional studies, with particular emphasis on operating under physiologically relevant conditions and in complex biological environments.

Current research lines include:

- **Selective targeting of G-quadruplex structures** through small molecules, with a focus on structure-activity relationships and control of folding/unfolding equilibria.
- **Sequence- and structure-selective targeting strategies** based on conjugation of small molecules with peptide nucleic acids or other DNA derivatives.
- **Targeted delivery of G-quadruplex ligands**, including peptide- and nanomaterial-based systems (e.g., RGD-functionalized platforms) for enhanced selectivity in cellular environments.
- **DNA-based functional systems and biosensing platforms**, including G4/hemin DNAzymes and visible-light detection strategies.
- **G-quadruplex architectures in complex biological contexts**, including extracellular nucleic acids and disease-relevant genomic regions.
- **Reactive and metal-based systems** for site-selective cleavage and chemical modulation of G4 structures.

Her research is supported by an extensive network of national and international collaborations spanning chemical biology, structural biology, and biomedical sciences, enabling a multidisciplinary approach to the study and targeting of nucleic acid architectures.

Current Position: October 01, 2026 - present

Assistant Professor / Researcher (RTT), CHEM-05/A – Organic Chemistry, University of Pavia, Italy

Research in Medicinal Chemistry focused on the design, synthesis and characterization of selective ligands targeting nucleic acids, with particular emphasis on G-quadruplex structures. Development of chemical strategies for the recognition and modulation of nucleic acid structures and their application to biologically

relevant targets. Coordination of research activities and supervision and mentoring of PhD students, research fellows and undergraduate students.

National Scientific Qualification (ASN) for Associate Professor in:

03/C1 - Organic Chemistry

03/B2 - Chemical Fundamentals for Technologies

03/D1 - Pharmaceutical, Toxicological and Nutraceutical Chemistry and Technologies

Since 2021, VP has served as Co-Principal Investigator (together with Prof. Filippo Doria and Prof. Mauro Freccero) of the G4Lab at the University of Pavia, a multidisciplinary research group in organic and medicinal chemistry focused on the development of small molecules and functional systems for the selective targeting, modulation, and detection of DNA and RNA G-quadruplex structures. The group integrates synthetic chemistry, biophysical methods, and functional assays in biomedical and diagnostic contexts and currently comprises 2 postdoctoral researchers, 5 PhD students, 4 Master's thesis students, and 8 BSc students. Since 2020 - Founder and Managing Director of "G4_Interact – G-quadruplexes as INnovative ThERapeutic Targets", an international network of early-career researchers focused on nucleic acid secondary structures, officially recognized by the worldwide scientific organization USERN.

Previous Positions Department of Chemistry, University of Pavia, Italy

- 2023 – 2026 **Assistant Professor / Researcher (RTD-A), CHEM-05/A – Organic Chemistry**
Research in chemical biology and medicinal chemistry, with a focus on the design, synthesis and characterization of bioactive molecules targeting nucleic acids, including G-quadruplex structures. Coordination of research activities and supervision of PhD students and research fellows.
- 2022 - 2023 **Research Fellow**
Project: "Synthesis and characterization of selective ligands for secondary structures of nucleic acids". Supervisor: Prof. F. Doria.
- 2021 - 2022 **Senior Postdoctoral Researcher** (Type A fellowship supported by UNIPV).
Project: "Synthesis and characterization of photoactivable selective ligands for nucleic acids". Supervisor: Prof. F. Doria
- 2020 - 2021 **Senior Postdoctoral researcher** (Type B fellowship)
Project: "Synthesis and characterization of antibiotics binding nucleic acids".
Supervisor: Prof. M. Freccero
- 2016 - 2020 **Junior Postdoctoral Researcher.**
ERC-funded fellowship (ERC Consolidator Grant No. 615879)
Project: "Reactive and selective ligands for quadruple helical nucleic acids".
Supervisor: Prof. M. Freccero
- 2015 - 2016 **Junior Postdoctoral Researcher**
AIRC-funded fellowship (AIRC IG2013-14708)
Project: "Photoactive and selective ligands for telomere G-quadruplex structures as anticancer agents". Supervisor: Prof. M. Freccero

Education Department of Chemistry, University of Pavia, Italy

- 2012 - 2015 **Ph.D. in Chemical Science** supported by MIUR.
Thesis defense: January 27th, 2016. Final evaluation: Excellent
Thesis Title: "Model systems for oxidative processes" within the PRIN project 2010M2JARJ_004 and MIUR-PRIN 2015 n. 2015T778JW. Supervisor: Prof. L. Casella
- 2013 **Ph.D. Training School** within the COST programme "Biological oxidation reactions-mechanism and design of new catalysts". Louvain-La-Neuve, Belgium.
- 2012 State qualification to practice as a Chemist.
- 2010 – 2012 **M. Sc. in Chemistry**. Final grade: 110/110 cum laude.
- 2007 – 2010 **B.Sc. in Chemical Sciences**. Final grade: 110/110

Training Courses

- Nov. 2024 Masterclass: *“Empowering tomorrow’s innovators: Masterclass in project management and scientific communication”*. Italbiotech
- Jan. 2024 Course on *“Innovative Teaching and Learning in Higher Education”*. University of Pavia
- Nov. 2015 GENERAL e-Learning Training Course on *“Health and Safety in the Workplace”*. University of Pavia

Research Metrics

54 publications, including 52 scientific articles and 2 book chapters

8 publications as corresponding author (including shared corresponding authorship)

20 publications as first author (including shared first authorship)

H-index: 21 (Scopus)

Citations: 1198 (Scopus)

1 Hot Paper in Medicinal Chemistry identified by the Editors of *“Chemistry, A European Journal”*, Wiley, for its importance in a rapidly evolving and highly topical sector.

63.6% of publications in the top 25% most cited documents worldwide (Scopus)

86.4% of publications in journals within the top 25% by CiteScore (Scopus)

The full list of publications is provided at the end of this CV.

Bibliometric indicators are based on Scopus.

Patent

- 2024 Among the inventors of the patent untitled *“Enzymatic process for the preparation of 7-[2-(tetrazol-1-yl)acetamido]-3-[(5-methyl-1,3,4-thiadiazol-2-yl)thiomethyl]-8-oxo-5-thia-1-azabicyclo[4.2.0]oct-2-ene-2-carboxylic acid and its production on industrial scale”*. Assignee: ACS DOBFAR S.P.A. Number: 102024000018640

Funding and Competitive Research Support

- Jan 2026 IS3NA contribution (€ 2,000) to support the INTERACTION WINS 2026 School
- June 2025 CERIC-ERIC proposal 20252078 *“Structural Characterization of the pSNCA G-Quadruplex as a Therapeutic Target for Synucleinopathies”*. Awarded competitive in-kind research support: transnational access to the Slovenian NMR Centre (168 h, 800 MHz NMR; 120 h, 600 MHz NMR).
- May 2024 IS3NA contribution (€ 2,500) to support the INTERACTION WINS 2025 School
- May 2024 University of Pavia *“Intensive Summer and Winter School of Ateneo 2024”* (GlobeC grant, €7,000) Principal Investigator of the winter school INTERACTION WINS 2025.
- Dec. 2023 IS3NA contribution (€ 1,000) to support the INTERACTION WINS 2024 School
- Sept. 2021 University of Pavia *“International Summer & Winter School 2021 – II edition”* (GlobeC grant, €2,000). Principal Investigator of the INTERACTION WINS 2021 school.
- Sept. 2021 Funding from the Federal Research and Clinical Center of Physical-Chemical Medicine, Moscow, Russian Federation (€1,000) to support INTERACTION WINS 2021
- May 2021 Winner of the University of Pavia project *“Strengthening and attractiveness of the research system - Strengthening”* (€30,000)
- Oct. 2017 Teaching Staff Mobility Grant, University of Pavia (€2,220) for teaching activity at Universidade Estadual de Campinas, Brazil.
- May 2013 COST Action CM1003 grant (€1,000) for participation in the training school in Louvain-la-Neuve, Belgium

Independent Research Projects and Collaborations

- 2026-present *“Single-molecule analysis of translesion DNA polymerases during replication of G-quadruplex-containing DNA”*; Institute of Molecular Genetics, CNR, Pavia, Italy; Human Technopole, Milano, Italy.

2025-present	<i>“Engineering G4-hemin catalytic systems for visible light DNA detection in point-of-care diagnostics”</i> ; School of Pharmaceutical Sciences, University of Geneva, Geneva, Switzerland; Department of Life and Environmental Sciences, Marche Polytechnic University, Ancona, Italy.
2025-present	<i>“Structural characterization of G-quadruplex targets”</i> ; Slovenian NMR center, Ljubljana, Slovenia; CERIC-ERIC NMR access.
2024-present	<i>“Disruption of G-quadruplex structures using peptide-based systems”</i> ; Department of Biotechnology, Chemistry and Pharmacy, University of Siena, Siena, Italy.
2022-present	<i>“Ligand delivery strategies in cancer and neurodegenerative disease models (nanoparticles, peptide conjugates)”</i> ; Department of Pharmaceutical Sciences, University of Piemonte Orientale, Novara, Italy.
2022-present	<i>“Multimeric G4s in CANVAS - Dissecting the role of DNA secondary structure forming at RFC1 pentanucleotide expansion in CANVAS onset and progression”</i> ; Department of Neuromuscular Diseases, UCL Queen Square Institute of Neurology, London, United Kingdom; Institute of Molecular Genetics, CNR, Pavia, Italy.
2022-2024	<i>“TAIE4Alzheimer - ApoE modulation via G4 targeting”</i> ; Institute of Molecular Genetics, CNR, Pavia, Italy; Laboratory of Neurobiology and Neurogenetic, Golgi-Cenci Foundation, Abbiategrasso, Milano; Genomic and post-Genomic Center, IRCCS Mondino Foundation, Pavia, Italy.
2021-2024	<i>“SNCA G-quadruplex targeting in Parkinson’s disease models”</i> ; Pediatric Clinical Research Center “Fondazione Romeo ed Enrica Invernizzi”, Department of Biomedical and Clinical Sciences, University of Milan, Milan, Italy; Genomic and post-Genomic Center, IRCCS Mondino Foundation, Pavia, Italy.
2020-2021	<i>“G-Quadruplex in relationship with RNaseH2 catalytic activity”</i> ; Institute of Molecular Genetics, CNR, Pavia, Italy.

Institutional Responsibilities and Academic Service University of Pavia, Italy

From 2026	Member, Joint Committee for Internationalization, Department of Chemistry
From 2024	International Mobility Contact Person, Department of Chemistry
From 2024	Member, Joint Committee for the Assignment of Student Tutors, Department of Chemistry
From 2018	Technical and Scientific Contact for Experimental Optimization and Management of the Jasco J-1500 Spectropolarimeter at the Centro Grandi Strumenti
2024-2026	Classroom Commissioner for TOLC@CASA admission tests
2022-2024	Ambassador for the <i>My Ph.D. Mentor</i> program
2020 – 2023	Postdoctoral Representative
2013 – 2015	Ph.D. Students’ Representative

These roles demonstrate active involvement in institutional governance and infrastructure management.

Editorial activities

From 2024	Editor, Proteins and Nucleic Acids section, <i>International Journal of Biological Macromolecules</i> (IF 8.5), Elsevier
From 2024	Member of the Editorial Board, <i>Discover Molecules</i> , Springer Nature
2022	Guest Editor, Special Issue <i>“G-quadruplex Folding Modulation: Structural Insights, Selective Interaction, and Functional Activity”</i> , <i>Life</i> , MDPI
2021	Guest Editor, Special Issue <i>“Principles and Molecular Mechanisms of DNA and RNA G-Quadruplexes in Gene Regulation”</i> , <i>Molecules</i> , MDPI
2016-2022	Member of the Editorial Board, <i>EC Neurology</i> , ECronicon
From 2019	Reviewer for the following international peer-reviewed journals: “Cancer Research” (IF 2024: 16.6), “Nucleic Acids Research” (IF 2024: 13.1), “Communications Biology” (IF 2024: 5.1), “ACS Omega” (IF 2024: 4.3), “European Journal of Medicinal Chemistry” (IF 2024: 5.9), “Biochimie” (IF 2024: 3.0), “Chemico-Biological Interactions” (IF 2024: 5.4), “Results in Chemistry” (IF 2024: 4.2), “Neurochemistry International” (IF 2024: 4.0), “ChemMedChem” (IF 2024: 3.4), “Journal of

Heterocyclic Chemistry” (IF 2024: 2.4), “International Journal of Molecular Sciences” (IF 2024: 5.7), “Biomolecules” (IF 2024: 5.6), “Molecules” (IF 2024: 4.6), and “Pharmaceuticals” (IF 2024: 4.8), “Genes” (IF 2024: 2.8), “Crystals” (IF 2024: 2.4).

Awards and Recognition

- Nov. 2022 Invited evaluator for the Times Higher Education World University Rankings
Oct. 2022 **Gian Piero Spada Award** for significant research on non-canonical DNA structures.
Oct. 2022 Special Mention for Best Poster Award, “2nd Virtual Symposium for Young Organic Chemists (ViSYOChem) 2022”.
June 2021 SCI fellowship granted by the Organic Chemistry Division of the Italian Chemical Society
Sept. 2018 Best poster award, BIONIC 2018 - Biology of non-canonical nucleic acids: from humans to pathogens” International symposium, Padua, Italy.

Scientific Meeting Organization

- June 2026 **Main Organizer and Principal Investigator, INTERACTION WINS 2026 – International School on Innovative Therapeutic Targets in Non-Canonical Nucleic Acid Structures**
In-person international school for junior postdoctoral researchers, Ph.D. students, and master’s degree students; lectures and laboratory activities; 6 CFU
Feb. 2025 **Main Organizer and Principal Investigator, INTERACTION WINS 2025**
In-person international school for junior postdoctoral researchers, Ph.D. students, and master’s degree students; lectures and laboratory activities; 6 CFU
2024 - 2023 **Main Organizer and Principal Investigator, INTERACTION WINS School. International online**
- 2021 school for Ph.D. and master’s degree students; 4 CFU
May 2021 Selected as a Judge for the Poster Competition, European Chemical Biology Symposium 2021
Sept. 2018 **Session Chair**, BIONIC 2018 - Biology of non-canonical nucleic acids: from humans to pathogens, International symposium, Padua, Italy.
Oct 2017 Member of the organizing staff, Organic Chemistry Day 2017, Pavia, Italy
June 2014 Member of the organizing staff, International Symposium on Metal Complexes 2014, Pavia, Italy

Invited Lectures, Selected Oral Communications, and Poster Presentations

Invited Speaker

- 2026 **Pirola V.** “Exploiting G-Quadruplex Structural Diversity for Selective Chemical Modulation”; Advances in Noncanonical Nucleic Acids (ANNA) 2026 Symposium, 22-24 October 2026, Bled, Slovenia.
Pirola V. “Interfacial Recognition: A Route to Selective Targeting of Telomeric G-Quadruplex Multimers”; Nucleic acid secondary structures, G4s and beyond webinar, 30 April 2026, Online.
2025 **Pirola V.** “Chemical Control of G-Quadruplex Folding for Therapeutic Impact”; VerNAdi webinar, MUR PNRR National Center for Gene Therapy and Drugs based on RNA Technology, Spoke 6: RNA drug development, 27 November 2025, Online.
Pirola V. “Targeting G-Quadruplexes in Neurodegenerative Disorders: A Dual Approach to Modulate Pathogenic Pathways”; Advances in Noncanonical Nucleic Acids (ANNA) 2025 Symposium, 23-25 October 2025, Bohinj, Slovenia.

Selected Oral Communications

- 2026 **Pirola V.** “Dynamic Modulation of G-Quadruplex Folding in Neurodegenerative Diseases”; Ludwig Conference on Alternative Nucleic Acid Conformations in Health and Disease, Worcester College, University of Oxford, UK
2025 **Pirola V.** “Harnessing G-Quadruplex Modulation as a Therapeutic Strategy in Neurodegenerative Diseases”; G4thering 2025, 9th International Meeting on Quadruplex Nucleic Acids, Minneapolis, Minnesota, USA.
Pirola V., Caramiello A.M., Mella M., Freccero M., Doria F.; “Fascinating ploy to the controlled orthogonalization of water-soluble naphthalene diimides”; XXIII GIORNATE SCIENTIFICHE DEL CONSORZIO CINMPIS, Napoli, Italy.

- 2024 **Pirola V.**, Bari E., Bisbano G., Torre M. L., Serra M., Paolillo M., Doria F.; *"Selective delivery of G4-ligands: new strategies for potential cancer therapy"*; G4ME 2024, G4 MEeting 2024, Perugia, Italy.
- 2022 **Pirola V.**, Platella C., Manet I., Zizza P., Freccero M., Montesarchio D., Biroccio A., Doria F.; *"New insights in multimeric telomeric G4s selective targeting"*; G4ME 2022, G4 MEeting 2022, Napoli, Italy.
- Pirola V.***, Lunghi E., Benassi A., Crespan E., Freccero M., Doria F.; *"Selective functional ligands towards parallel G-Quadruplexes"*, 2nd Virtual Symposium for Young Organic Chemists, Online.
- Pirola V.***, Fantini V., Di Geraldo R., Doria F., Carelli S., Pansarasa O., Freccero M., Cereda C.; *"Groundbreaking G-quadruplex in SNCA genome as an innovative therapeutic target in Parkinson's disease"*; G4thering 2022, 8th International Meeting on Quadruplex Nucleic Acids, Marienbad, Czech Republic.
- 2021 **Pirola V.**, Freccero M., Doria F.; *"Selective hydrolysis of water-soluble naphthalene diimides driven by core-substitution"*; "XXVII Congresso Nazionale della SCI", Online.
- Pirola V.**, Lunghi E., Benassi A., Freccero M., Doria F.; *"Peg-like chains make naphthalene diimide-copper complexes more suitable for parallel G-quadruplexes"*; 20th Symposium "Scientific Days of the Consortium CINMPIS", Online.
- Pirola V.**; *"Aims of G4-Interact Group on USERN"*; "Nucleic acid secondary structures: G4s and beyond" Webinar Series 2020-III young scientists, Online.
- 2020 **Pirola V.**; Zuffo M.; Tassinari M.; Sevilla Montalvo A.C.; Doria F.; Nadai M.; Scalabrin M.; Richter S.N.; Freccero M.; *"Sequence-structure conjugates to selectively target G-Quadruplex in HIV-1"*; 1st Virtual Symposium for Young Organic Chemists of SCI, Online.
- Pirola V.**; Zuffo M.; Tassinari M.; Sevilla Montalvo A.C.; Doria F.; Nadai M.; Scalabrin M.; Richter S.N.; Freccero M.; *"New «sequence-structure» conjugates able to discern a specific G-quadruplex in HIV-1"*; 19th Symposium "Scientific days of the CINMPIS", Pavia, Italy.
- 2018 Zuffo M.; Tassinari M.; **Pirola V.**; Sevilla Montalvo A.C.; Nadai M.; Doria F.; Scalabrin M.; Richter S.N.; Freccero M.; *"Targeting of HIV-1 LTR promoter G-quadruplex structures by NDI-PNA conjugates"*; BIONIC 2018 "Biology of non-canonical nucleic acids: from humans to pathogens" International symposium, Padua, Italy.

Poster presentations

- 2026 **Pirola V.**, Marušič M.; *"Unveiling the Structural Landscape of pSNCA-G4: A Four-Quartet Antiparallel G-Quadruplex as a DNA-Level Target for Parkinson's Disease"*; Science@CERIC 2026, San Gwann, Malta.
- 2022 **Pirola V.**, Lunghi E., Benassi A., Crespan E., Freccero M., Doria F.; *"Selective functional ligands towards parallel G-Quadruplexes"*, 2nd Virtual Symposium for Young Organic Chemists, Online.
- 2021 **Pirola V.***, Lunghi E., Benassi A., Crespan E., Freccero M., Doria F.; *"A solid mainstay for the development of selective functional ligands towards parallel G-Quadruplexes"*; AMYC-BIOMED 2021, Online.
- Fantini V., Doria F., Carelli S., Pansarasa O., Freccero M., Cereda C.*, **Pirola V.**; *"G-quadruplex in SNCA genome as innovative therapeutic target in Parkinson's disease"*; 19th National Congress of the Italian Society for Neuroscience, Online.
- 2018 Zuffo M.; Tassinari M.; **Pirola V.**; Sevilla Montalvo A.C.; Nadai M.; Doria F.; Scalabrin M.; Richter S.N.; Freccero M.; *"Targeting of HIV-1 LTR promoter G-quadruplex structures by NDI-PNA conjugates"*; BIONIC 2018 "Biology of non-canonical nucleic acids: from humans to pathogens" International symposium, Padua, Italy. **Best Poster.**
- 2017 Zuffo M.; Tassinari M.; Sevilla Montalvo A.C.; **Pirola V.**; Nadai M.; Doria F.; Scalabrin M.; Richter S.N.; Freccero M.; *"NDI-PNA conjugates targeting G4 structures within HIV-1 LTR promoter"*; G4thering 2017, 6th International Meeting on Quadruplex Nucleic Acids, Prague, Czech Republic.
- 2016 **Pirola V.**, Doria F., Grande V., Bergamaschi G., Nadai M., Scalabrin M., Richter S.N., Freccero M.; *"A Multimodal and Functional Cu(II) Complex Targeting G-quadruplex DNA"*; ICC2016, 42nd International Conference on Coordination Chemistry, Brest, France.
- 2015 **Pirola V.**, Dell'Acqua S., Monzani E., Casella L.; *" α -Synuclein quenches the copper (II) oxidation of catecholic substrates"*; 6th EuCheMS in Life Sciences, Lisbon, Portugal.
- 2014 **Pirola V.**, Monzani E., Dell'Acqua S., Casella L.; *"Heme interaction and reactivity with neuronal Tau protein fragment"*; ISMEC2014 International Symposium on Metal Complexes, Pavia, Italy

- 2013 **Pirola V.**, Gennarini F., Dell'Acqua S., Monzani E., Casella L.; *"Bioinspired Catalysts. Cooperation between heme and non-heme complexes"*; COST Summer School "Chemistry of Metals in Biological System", Louvain-La-Neuve, Belgium.

Teaching activities

University of Pavia, Pavia, Italy

- 2025 - 2026 Professor of *"Solid phase synthesis of macro and biomolecules"* (CHIM/07), M.Sc. in Chemistry, 6 CFU
Professor of *"Chemistry didactics 2"* (CHIM/06), 1 CFU
- 2024 - 2025 Professor of *"Peptide/peptide Mimetics synthesis"* (CHIM/07), Ph.D. program, 1 CFU
Professor of *"Solid phase synthesis of macro and biomolecules"* (CHIM/07), M.Sc. in Chemistry, 6 CFU
Professor of *"Chemistry didactics 2"* (CHIM/06), 1 CFU
- 2023 - 2024 Professor of *"Chemistry didactics 2"* (CHIM/06), 1 CFU
- 2021 - 2022 Supplementary teaching in the *"Organic Chemistry Laboratory 1"* (CHIM/06), B.Sc. in Chemistry, 20 hours.
- 2020 - 2023 Expert on the subject for *"Organic chemistry of biomolecules"* (CHIM/06), B.Sc. in Biotechnology
- May 2019 Invited Lecturer, Master course in Pharmaceutical Chemistry - PSF Master Course, Advanced Pharmaceutical Chemistry: Process of Hit-to-Lead
Lecture topic: *Selective Fluorescence Probes for Non-Canonical Nucleic Acid Structures*

Higher Technical Institute Foundation for New Life Technologies, Bergamo, Italy.

- From 2023 Professor of *"Advanced Organic Chemistry (UF14)"* for the post-diploma training course: *"Higher Technician for Industrial Biotechnology Production"*.
- 2021-2022 Professor of *"Advanced Organic Chemistry UF14"* for two post-diploma training courses: *"Higher Technician for Industrial Biotechnology Production"* and *"Industrial Chemistry, Polymers, and Biopolymers"*
- 2020-2021 Professor of *"Advanced Organic Chemistry UF14"* for three post-diploma training courses: *"Higher Technician for Industrial Chemical Production"*, *"Higher Technician for Industrial Biotechnology Production"*, and *"Industrial Chemistry, Polymers, and Biopolymers"*
- 2019-2020 Professor of *"Advanced Organic Chemistry UF14"* for a post-diploma training course on *"Higher Technician for Industrial Chemical Production"*
- 2018-2019 *"Higher Technician for Industrial Chemical Production"*

Educational seminars at the University of Pavia, Pavia, Italy.

Since 2012, continuous teaching support and educational seminar activity in General, Inorganic, Organic, and Analytical Chemistry for Bachelor's degree programmes in Chemistry, Biotechnology, Geology, Physics, and Natural Sciences at the University of Pavia (~300 hours), including more than 400 hours of laboratory assistance. In the academic year 2021–2022, she was appointed for a two-month assignment to perform highly qualified teaching support and student orientation activities for the National Plan for Scientific Degrees (Chemistry).

Supervision and Mentoring

Supervision of:

- 1 M.Sc. student (University of Geneva, Switzerland), 6-month research project (2026), under a formal interinstitutional agreement - principal supervisor for the experimental research project;
- 1 M.Sc. student in Chemistry;
- 1 M.Sc. student in Biotechnology;
- 2 B.Sc. students in Chemistry;
- 4 B.Sc. students in Biotechnology.

Co-supervisor of 10 Ph.D. students in Chemistry; 2 postgraduate Master scholarship holders; 16 M.Sc. students in Chemistry; 1 M.Sc. student in Biotechnology; 7 B.Sc. students in Biotechnology.

Also provided remote scientific support for 1 Ph.D. student at KAUST, Thuwal, Saudi Arabia.

Memberships in scientific societies and Networks

- Premium member of the American Chemical Society (ACS)

- Member of Universal Scientific Education and Research Network (USERN)
- Founder and Managing Director of G4-INTERACT (G-quadruplexes As INnovative ThERapeutiC Targets) Group
- Member of STEM Women Community
- Member of the Italian Society of Chemistry (SCI)
- Member of e-COST Action networks

Career breaks

19 April 2023 - 20 December 2023 _ Second maternity leave (twins)

25 April 2018 - 26 September 2018 _ First maternity leave

Full list of publications

(* indicates corresponding author; ‡ indicates first authorship)

Scientific articles

52. G. Fracchioni, A. M. Caramiello, M. Nadai, A. Lena, M. Freccero, S. N. Richter, V. Pirot*, F. Doria*; Water-Soluble Heptacyclic Oligo-Heteroaryls Targeting G-Quadruplex DNA via Groove-Binding Interactions; *ACS Omega* 2026; 11 (30): 45186-45201.
51. E. Longhi, A. Magni, L. Torielli, G. Lodigiani, E. Carlessi, P. Borsotti, F. Doria, V. Pirot, S.A. Serapian, C. Arrigoni, M. Lolicato, E. Moroni, G. Bergamaschi, G. Taraboletti, G. Colombo; Hijacking client instability to selectively disrupt HSP90-driven glucocorticoid receptor activation; *Pharmacological Research*, 2026, 228, 108205.
50. L. Torielli, et al.; Design of multi-target peptide modulators for protein chaperone networks; *Structure* 2025, 33(11), 1944-1957
49. K. Ovejero-Paredes, et al.; Microfluidic-assisted synthesis of integrin-targeting cRGD liposomes as a scalable strategy for theranostic applications in triple-negative breast cancer; *Eur. J. Pharm. Sci.* 2025, 213, 107216.
48. **V. Pirot**, S. Iachettini, C. Platella, P. Zizza, G. Fracchioni, S. Di Vito, A. Carachino, F. Battistini, M. Orozco, M. Freccero, A. Biroccio, D. Montesarchio, F. Doria; Naphthalene diimide-naphthalimide dyads promote telomere damage by selectively targeting multimeric G-quadruplexes, *Nucleic Acids Res.*, 2025, 53, 7, gkaf301
47. Clua A., Fabrega C., Musumeci D., Doria F., **Pirot V.**, Ghirga F., Platella C., Eritja R., Montesarchio D.; On the interaction of anticancer G-quadruplex ligands with GalNAc-functionalized G-quadruplex-forming carriers for selective recognition and treatment of hepatocellular carcinoma. *Bioorganic Chemistry*, 2025, 108299.
46. **V. Pirot**, E. Salvati, C. Risoldi, F. Manoli, A. Rizzo, P. Zizza, A. Biroccio, M. Freccero, I. Manet, F. Doria; Core-Extended Naphthalene Diimide Dyads as Light-Up Probes with Targeted Cytotoxicity Toward Tumor Cells. *Biomolecules* 2025, 15, 311
45. **V. Pirot**, E. Monzani, S. Dell'Acqua, C. Bacchella; Role of Copper and Zinc Ions in the Hydrolytic Degradation of Neurodegeneration-Related Peptides; *Molecules*, 2025, 30(2), 363
44. N. Garibaldi, R. Besio, **V. Pirot**, B. Albini, G. Colombo, P. Galinetto, F. Doria, A. Carriero, A. Forlino; A novel chemical chaperone ameliorates osteoblast homeostasis and extracellular matrix in osteogenesis imperfecta. *Life Sciences*, 2025, 361, 123320.
43. **V. Pirot**‡, G. Bisbano‡, A. Oldani, E. Bernardi, M. Serra, M. Paolillo, F. Doria; Selective delivery of G-quadruplex ligand in glioma cell lines: the power of cyclic-RGD peptide. *Sci Rep* 2024, 14, 30180
42. Zanetta, A., et al.; Vertically oriented low-dimensional perovskites for high-efficiency wide band gap perovskite solar cells. *Nat Commun*, 2024, 15, 9069.
41. **V. Pirot***, A. Dello Stritto, L.R. Magnaghi, R. Biesuz, F. Doria, M. Mella, M. Freccero; A Novel G-Quadruplex Structure within Apolipoprotein E Promoter: A New Promising Target in Cancer and Dementia Fight?; *ACS Omega*, 2024, 9, 45203–45213
40. **V. Pirot***, F. Rey, L. Esposito, V. Fantini, C. Pandini, E. Maghraby, R. Di Gerlando, F. Doria, M. Mella, O. Pansarasa, P. Gandellini, M. Freccero, S. Carelli*, C. Cereda; Effective lowering of α -synuclein expression by targeting G-quadruplex structures within the SNCA gene; *Int. J. Biol. Macromol.*, 2024, 277, 134417.
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I hereby declare that the information provided in this Curriculum Vitae is true and correct.

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