GIORGIA FRACCHIONI

ORGANIC CHEMIST

CONTACT

+39 3476968142

giorgiafracchioni98@gmail.com

LANGUAGES

- Italian (Mother tongue)
- English (B2 level)

PROFILE

I am a curious and science-driven professional with a strong background in organic and medicinal chemistry. I have developed a rigorous and analytical approach to problem solving while cultivating creativity, precision, and adaptability. Enthusiastic and proactive, I enjoy working in dynamic, collaborative environments and bring with me strong communication skills, a keen eye for detail, and a genuine passion for continuous learning.

CURRENT POSITION

University of Pavia, Department of Chemistry OCT 2025 - PRESENT

Research fellowship

Project title: "Synthesis and reactivity study of photo-activatable ligands for G-quadruplex structures"

Supervisor: Prof. Filippo Doria

WORK EXPERIENCE

University of Pavia, Department of Chemistry OCT 2022 - SEPT 2025

Early Stage Researcher | Ph.D. Student in Chemical Science (Supported by Italian MUR) – final defence expected in April 2026

Project title: "Chemical Strategies for Targeting Nucleic Acid Secondary Structures"

Supervisor: Prof. Filippo Doria

Aim: Development, synthesis, and biophysical investigation of covalent and non-covalent ligands to selectively target G-quadruplex structures.

Technical Skills

- Design and synthesis of small molecules capable of selectively interacting with DNA secondary structures, with particular focus on G-quadruplex targets.
- Development and optimization of synthetic protocols in organic and organometallic chemistry for the preparation of functional ligands targeting nucleic acids.
- Design and implementation of photoactivation strategies for DNA-reactive ligands, including visible-light-triggered alkylation systems.
- Optimization of photochemical activation conditions on different molecular scaffolds and substrates.
- Structural and photochemical characterization of small molecules using UV–Vis spectroscopy, HPLC, UPLC-MS, and NMR spectroscopy.
- Development and execution of biophysical assays for DNA–ligand interactions and covalent modification studies.
- Experience in data analysis and interpretation of photochemical and bioorganic experiments.

Soft Skills

- Design and execution of independent and collaborative research projects in the field of synthetic organic chemistry/medicinal chemistry.
- Planning and optimization of experimental procedures, data analysis, and interpretation of results.
- Supervision and training of undergraduate and graduate students.
- Presentation of research outcomes at national and international conferences. Active participation in group meetings, scientific discussions, and collaborative initiatives within the research group and with external partners.
- Management of laboratory resources.

University of Pavia 2021 - PRESENT

Academic Tutor

- Theoretical lectures and exercises of Organic Chemistry, exam assistance for bachelor's students of Biotechnology. Responsible: Prof. Mauro Freccero
- Teaching seminars of Organic Chemistry for bachelor's students of Chemistry. Responsible: Prof. Filippo Doria
- Laboratory assistance of Organic Chemistry for bachelor's students of Chemistry. Responsible: Prof. Filippo Doria
- Thesis co-supervisor of 3 master's degree students in Chemistry, and 3 bachelor's degree students in Biotechnology.

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EDUCATION

Master's Degree in Chemical Science, curriculum: Organic Chemistry SEPT 2020 - JUL 2022

Department of Organic Chemistry | University of Pavia

Advanced training in all major branches of chemistry, including organic, inorganic, and biological chemistry. Development of theoretical and practical skills in molecular design, multistep synthesis, spectroscopic and chromatographic analysis (NMR, MS, IR, UV-Vis, HPLC, GC), and computational chemistry. Completion of an experimental thesis project (one year) in an academic laboratory, involving autonomous laboratory work, literature analysis, and presentation of scientific results. Acquisition of teamwork abilities and scientific writing skills.

Thesis title: "Development of New G-quadruplex Ligands for an Effective Anticancer Activity"
Supervisor: Prof. Filippo Doria

Final Grade: 110/110 cum Laude

Bachelor's Degree in Chemistry SEPT 2017 - JUL 2020

Department of Chemistry | University of Pavia

Comprehensive education in the fundamental areas of chemistry, including general, organic, inorganic, physical, and analytical chemistry. Development of a solid understanding of chemical reactivity, thermodynamics, kinetics, and molecular structure.

Thesis title: "PyroTASQ: a twice as smart ligand for the targeting of G-quadruplex structures"
Supervisor: Prof. Filippo Doria

Final Grade: 110/110

CONGRESSES AND SCHOOLS

CDCO, Villasimius, Italy | Oral communication SEPT 2025

Title of contribution: "MULTIVALENT APPROACH FOT TELOMERIC MULTIMERIC G-QUADRUPLEXES TARGETING"

CIMPIS DAYS, Naples, Italy | Oral communication FEB 2025

Title of contribution: "EXPLORING HEPTACYCLIC LIGANDS: HOW OLIGO-HETEROARYLS INTERACT WITH G-QUADRUPLEX MOTIFS"

INTERACTION WINS (Innovative ThERApeutiC Targets In nOn-canonical Nucleic acids structures Winter InterNational School), **Pavia, Italy** | **Organizing committee member** 2025

G4ME, Perugia, Italy MAR 2024

CDCO, Rome, Italy | Poster presentation SEPT 2023

Title of contribution: "DEVELOPMENT OF NEW PYRAZINE-BASED NAPHTHALENEDIMIDES AS LIGANDS FOR TELOMERIC-MULTIMERIC G-QUADRUPLEX"

PUBLICATIONS

Giorgia Fracchioni, Sabrina Vailati, Marta Grazioli, Valentina Pirota. Structural Unfolding of G-Quadruplexes: From Small Molecules to Antisense Strategies. Molecules. 2024, 29(15), 3488. IF2024: 4.2

Valentina Pirota, Sara Iachettini, Chiara Platella, Pasquale Zizza, **Giorgia Fracchioni**, Serena Di Vito, Alice Carachino, Federica Battistini, Modesto Orozco, Mauro Freccero, Annamaria Biroccio, Daniela Montesarchio, Filippo Doria. Naphthalene diimide-naphthalimide dyads promote telomere damage by selectively targeting multimeric G-quadruplexes. Nucleic Acids Research. 2025, 53(7), gkaf301. IF2024: 13.1

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TECHNICAL SKILLS

Mastery of using Microsoft Office package, LaTex, ChemDraw, MestreNova, MAESTRO, Gaussian, AutoDock4.
Mastery of using preparative and analytical HPLC (Agilent Technologies), semi-preparative HPLC (Waters), Isolera ONE Flash Chromatography System (Biotage), hydrogenation apparatus, microwave reactor (CEM), PNA-Peptide microwave automated synthesizer(CEM), GC-MS (Thermo), UPLC-ESI-ION TRAP-MS (Jasko-Thermo), MALDI-TOF MS (Jasco), UHPLC-HRMS/MS (AB SciexX500B), NMR (Bruker Advance DRX 300 and DRX 400), Freeze Drying Lyophilizer, spectrophotometer (Agilent Cary 60 with Single-Cell Peltier Accessory), spectrofluorimeter (Agilent Cary Eclipse Fluorescence with Single-Cell Peltier Accessory), circular dichroismspectrometer (Jasco J1500), nanosecond laser flash photolysis Q-switched Nd:YAG system (Innolas Laser and Edinburgh acquisitionsystem).

I authorize the processing of my personal data in accordance with the General Data Protection Regulation (GDPR) 679/2016.

Fracchioni Giorgia