

CURRICULUM VITAE ET STUDIORUM – GIORGIA AILUNO

Born in Genova, on the 20/04/1993.

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EDUCATION AND TRAINING

- **November 2017 – May 2021:** Achievement of the PhD in Science and Technology of Chemistry and Materials, curriculum in Pharmaceutical, Food and Cosmetic Sciences, with a thesis entitled “Development and characterization of nanoconjugated systems for therapeutic targeting of pathological inflammatory markers” (cum laude); Department of Pharmacy, University of Genova.
- **December 2017:** Obtainment of the license to practice as a pharmacist.
- **September 2012 – July 2017:** Achievement of the Master’s Degree in Pharmaceutical Chemistry and Technologies, with an experimental thesis entitled “Novel selective inhibitors of phosphodiesterases 4D (PDE4D) with 3-phenyl-1H-pyrazole structure as potential useful agents in the treatment of neurodegenerative diseases” (final grade: 110/110 cum laude), University of Genova, 18 July 2017.

ATTIVITÀ LAVORATIVA

- **1 June 2022 – current:** Fixed-term researcher, type A (art. 24, comma 3, letter a) according to the Italian law 30.12.2010, n. 240), academic recruitment field 03/D2, academic discipline CHEM08-A (ex CHIM/09), at the Department of Pharmacy, University of Genova.

The current research activity includes: the development of bio-derived nanosystems for therapeutic applications; the development of nanosystems capable of selective targeting towards specific cancer markers; the synthesis and characterization of a drug conjugate for the active targeting of prostate cancer; the development of gastroretentive matrices for the controlled release of drugs; the development of matrices for 3D cell culture.

Assigned courses:

- “Biotechnological drugs” (1 CFU) for Pharmacy students;
 - “Medical Devices” (1 CFU) for Pharmacy and Pharmaceutical Chemistry and Technologies students;
 - “Veterinary drug formulations” (1 CFU) for Pharmacy and Pharmaceutical Chemistry and Technologies students;
 - “Regulatory aspects in the production and marketing of biologically active substances, medicines and medical devices of biotechnological origin” (2 CFU) for Biotechnologies students;
 - “Classification and use of medical devices and in vitro diagnostic medical devices” for the Specialization School in Hospital Pharmacy;
 - Type B course entitled “Innovative pharmaceutical dosage forms: preparation and control methods” for the doctoral course in Science and Technology of Chemistry and Materials, (4 hours lesson);
 - Preparatory lessons and assistance during the didactic laboratory of the Technology and Legislation II course for Chemistry and Technologies students.
- **1 October 2021 – 31 May 2022:** Pharmacist at Parafarmacia E’QUI s.p.a.

PARTICIPATION AT NATIONAL AND INTERNATIONAL CONGRESSES

Oral communications

- Ailuno, G.; Donghia, D.; Baldassari, S.; Drava, G.; Cavalleri, O.; Florio, T.; Caviglioli, G. **"Biomimetic hybrid vesicles for boron neutron capture therapy of glioblastoma"**. *CRS Italy Local Chapter Workshop 2025 – Bioinspired therapeutics: upcoming promise or new challenges for design and characterization?*, Bari (Italy), 15 May 2025.
- Ailuno, G.; Donghia, D.; Baldassari, S.; Caviglioli, G. **"Development and characterization of cell membrane-derived vesicles for glioblastoma treatment"**. *Workshop "Intreccio di saperi tra accademia e industria: il caso dei complex drugs"*, Milano (Italy), 28 November 2024.
- Ailuno, G.; Balboni, A.; Baldassari, S.; Donghia, D.; Cavalleri, O.; Angeli, E.; Tremonti, B.F.; Barbieri, F.; Florio, T.; Caviglioli, G. **"Biomimetic vesicles for glioblastoma treatment"**. *14th World Meeting on Pharmaceutics, Biopharmaceutics and Pharmaceutical Technology*, Vienna (Austria), 20 March 2024.
- Ailuno, G.; Balboni, A.; Baldassari, S.; Thellung, S.; Tremonti, B.F.; Lagomarsino, A.; Cavalleri, O.; Florio, T.; Caviglioli, G. **"Bioinspired nanoparticles for glioblastoma treatment"**. *NanoBalkan International Conference*, Tirana (Albany), 20 October 2023.
- Ailuno, G.; Baldassari, S.; Pastorino, S.; Zuccari, G.; di Francesco, V.; Decuzzi, P.; Caviglioli, G. **"Development of a theranostic system for the treatment of inflammatory-based diseases"**, *NanoInnovation 2020* (workshop YoungInnovation), Roma (Italy), 17-18 September 2020 (as di Invited Speaker).
- Ailuno, G.; Pastorino, S.; Baldassari, S.; Zuccari, G.; Caviglioli, G. **"Development of a new theranostic agent for inflammatory diseases"**, *CRS Italy chapter annual workshop 2019 "Steering the Clinical Translation of Delivery Systems for Drugs and Health Products"*, Catania (Italy), 7-9 November 2019.
- Ailuno, G. **"A theranostic approach for treatment of atherosclerosis"**, *Convegno NOI (Nord Ovest of Italy Nano Innovation of Drug Delivery)*, Novara (Italy), 26 February 2018.

Organization of congresses: Member of the Local Organizing Committee of the CRS Italy Workshop entitled "Unmet Medical Needs - Opportunities and Challenges", held in Genova from 7 to 9 October 2022.

PATENTS

- Caviglioli, G.; Baldassari, S.; Zuccari, G.; Ailuno, G. Metodo di produzione di matrici compatte gastroritensive per il rilascio controllato di sostanze attive e matrici compatte così ottenute, Italian Patent Application n. 102021000006776, filed on 22 March 2021.
- Caviglioli, G.; Baldassari, S.; Zuccari, G.; Pastorino, S.; Florio, T.; Sambuceti, G.; Ailuno, G. Compounds and methods for detecting early atherosclerotic lesions in blood vessels, PCT International Application No. WO2019175019A1, filed on 7 March 2019, published on 19 September 2019.
- Caviglioli, G.; Baldassari, S.; Zuccari, G.; Pastorino, S.; Florio, T.; Sambuceti, G.; Ailuno, G. Compounds and methods for detecting early atherosclerotic lesions in blood vessels, Italian Patent n. 102018000003508, licensed on 27 March 2020.

FUNDED PROJECTS

Team member of the project "Development of the industriability of the patent related to a scaffold for 3D cell culture for its use in drug testing kits and molecular biology", funded following the winning of the Poc Instrument 2023 established by Fondazione Compagnia San Paolo.

AWARDS

- Winning of the "Top Poster Award" for the poster entitled "Boron-loaded bio-vesicles for BNCT of glioblastoma", presented at the CRS 2024 Annual Meeting and Exposition held in Bologna (8-12 July 2024).
- Special price for Women Entrepreneurship in the MED TECH technological field conferred by INVITALIA in the context of the INTELLECTUAL PROPERTY AWARD 2023, organized by the General Directorate for the protection of the intellectual property-Italian Patent and Trademark Office of the Ministry of Business and Made in Italy in collaboration with NETVAL, for the patent "Metodo di produzione di matrici compatte gastroritensive per il rilascio controllato di sostanze attive e matrici compatte così ottenute". The prize consists of a 10.000,00 € prize.

The patent has been also presented, by one member of our research team, at the Osaka Universal Exposition 2025.

- Winning of the "Best Oral Presentation Award" at the workshop "Intreccio di saperi tra accademia e industria: il caso dei complex drugs" held in Milano on the 27-28 November 2024, with a presentation entitled "Development and characterization of cell membrane-derived vesicles for glioblastoma treatment".

SCIENTIFIC PUBLICATIONS

Scientific articles:

- Donghia, D.; Baldassari, S.; Drava, G.; Ailuno, G.*; Caviglioli, G. Insights on Natural Membrane Characterization for the Rational Design of Biomimetic Drug Delivery Systems. *Pharmaceutics* **2025**, *17*, 7. DOI: 10.3390/pharmaceutics17070841.
- Balboni, A.; Ailuno, G.; Repellin, M.; Catania, G.; Baldassari, S.; Petretto, A.; Dugas, P.Y.; Chaveroux, C.; Caviglioli, G.; Lollo, G. Biomimetic hybrid vesicles for colorectal cancer targeting. *Journal of Drug Delivery Science and Technology* **2025**, *111*. DOI: 10.1016/j.jddst.2025.107124.
- Caviglioli, G.; Drava, G.; Pivetta, L.; Di Meco, C.; Livoti, E.; Paoli, G.; Baldassari, S.; Ailuno, G.; Franchina, M.P.; Bonsignore, A.; Di Giorgio, D.; Rebesco, B. Medicine Shortages: An Algorithm for Evaluating the Substitution with Equivalent or Alternative Products. *Healthcare* **2025**, *13*, 10. DOI: 10.3390/healthcare13101139.

- Baldassari, S.; Yan, M.; Ailuno, G.; Zuccari, G.; Bassi, A. M.; Vernazza, S.; Tirendi, S.; Ferrando, S.; Comite, A.; Drava, G.; Caviglioli G. A Novel Hydrogel Sponge for Three-Dimensional Cell Culture. *Pharmaceutics* **2024**, *16*, 1-23, ISSN: 1999-4923, doi: 10.3390/pharmaceutics16101341.
- Neduri, K.; Ailuno, G.; Zuccari, G.; Bassi, A. M.; Vernazza, S.; Schito, A. M.; Caviglioli, G.; Baldassari, S. Development of a Multilayer Film Including the Soluble Eggshell Membrane Fraction for the Treatment of Oral Mucosa Lesions. *Pharmaceutics* **2024**, *16*, 1-23. DOI: 10.3390/pharmaceutics16101342.
- Trebesova, H.; Monaco, M.; Baldassari, S.; Ailuno, G.; Lancellotti, E.; Caviglioli, G.; Pittaluga, A.M.; Grilli, M. Unveiling Niprazine's Potential: Behavioral Insights into a Re-Emerging Anxiolytic Agent. *Biomedicines* **2024**, *12*, 2087. DOI: 10.3390/biomedicines12092087.
- Balboni, A.; Ailuno, G.*; Baldassari, S.; Drava, G.; Petretto, A.; Grinovero, N.; Cavalleri, O.; Angeli, E.; Lagomarsino, A.; Canepa, P.; Corsaro, A.; Tremonti, B.; Barbieri, F.; Thellung, S.; Contini, P.; Cortese, K.; Florio, T.; Caviglioli, G. Human glioblastoma-derived cell membrane nanovesicles: a novel, cell-specific strategy for boron neutron capture therapy of brain tumors. *Scientific Reports* **2024**, *14*, 1. DOI: 10.1038/s41598-024-69696-7.
- Ailuno, G.*; Baldassari, S.; Balboni, A.; Pastorino, S.; Zuccari, G.; Cortese, K.; Barbieri, F.; Drava, G.; Tullio, F.; Caviglioli, G. Development of biotinylated liposomes encapsulating metformin for therapeutic targeting of inflammation-based diseases. *Pharmaceutics* **2024**, *16*, 2. DOI: 10.3390/pharmaceutics16020235.
- Ailuno, G.; Baldassari, S.; Balboni, A.; Drava, G.; Spalletti, C.; Tantillo, E.; Mazzanti, M.; Barbieri, F.; Thellung, S.; Florio, T.; Caviglioli, G. Development and validation of a GC-MS method for determination of metformin in normal brain and in glioblastoma tissues. *Journal of Pharmaceutical and Biomedical Analysis* **2023**, *234*. DOI: 10.1016/j.jpba.2023.115503.
- Rotondi, S.M.C.; Ailuno, G.; Mattioli, S.L.; Pesce, A.; Cavalleri, O.; Canepa, P. Morphological Investigation of Protein Crystals by Atomic Force Microscopy. *Crystals* **2023**, *13*, 7. DOI: 10.3390/cryst13071149.
- Baldassari, S.; Balboni, A.; Drava, G.; Donghia, D.; Canepa, P.; Ailuno, G.*; Caviglioli, G. Phytochemicals and Cancer Treatment: Cell-Derived and Biomimetic Vesicles as Promising Carriers. *Pharmaceutics* **2023**, *15*, 5. DOI: 10.3390/pharmaceutics15051445.
- Ailuno, G.*; Balboni, A.; Caviglioli, G.; Lai, F.; Barbieri, F.; Dellacasagrande, I.; Florio, T.; Baldassari, S. Boron Vehiculating Nanosystems for Neutron Capture Therapy in Cancer Treatment. *Cells* **2022**, *11*, 4029. DOI: 10.3390/cells11244029.
- Cannito, S.; Bincoletto V.; Cristian, T.; Pontisso, P.; Scupoli, M.T.; Ailuno, G.; Andreana, I.; Stella, B.; Arpicco, S.; Bocca, C. Hyaluronated and PEGylated Liposomes as a Potential Drug-Delivery Strategy to Specifically Target Liver Cancer and Inflammatory Cells. *Molecules* **2022**, *27*, 1062. DOI: 10.3390/molecules27031062.
- Baldassari, S.; Cirrincione, P.; Ailuno, G.; Drava, G.; Arpicco, S.; Caviglioli, G. Towards a better understanding of thermally treated polycarbophil matrix tablets for controlled release. *International Journal of Pharmaceutics* **2021**, *3*, 100098. DOI: 10.1016/j.ijpx.2021.100098.
- Casula, L.; Lai, F.; Pini, E.; Valenti, D.; Sinico, C.; Cardia, M.C.; Marceddu, S.; Ailuno, G.; Fadda, A.M. Pulmonary Delivery of Curcumin and Beclomethasone Dipropionate in a Multicomponent Nanosuspension for the Treatment of Bronchial Asthma. *Pharmaceutics* **2021**, *13*, 1300. DOI: 10.3390/pharmaceutics13081300.

- Pastorino, S.; Baldassari, S.; Ailuno, G.; Zuccari, G.; Drava, G.; Petretto, A.; Cossu, V.; Marini, C.; Alfei, S.; Florio, T.; Sambuceti, G.; Caviglioli, G. Two Novel PET Radiopharmaceuticals for Endothelial Vascular Cell Adhesion Molecule-1 (VCAM-1) Targeting. *Pharmaceutics* **2021**, *13*, 1025. DOI: 10.3390/pharmaceutics13071025.
- Ailuno, G.; Iacobazzi, R.M.; Lopalco, A.; Baldassari, S.; Arduino, I.; Azzariti, A.; Pastorino, S.; Caviglioli, G.; Denora, N. The pharmaceutical technology approach on imaging innovations from Italian research. *Pharmaceutics* **2021**, *13*, 1214. DOI: 10.3390/pharmaceutics13081214.
- Zuccari, G.; Baldassari, S.; Alfei, S.; Marengo, B.; Valenti, G.E.; Domenicotti, C.; Ailuno, G.; Villa, C.; Marchitto, L.; Caviglioli, G. D-alpha-Tocopherol-Based Micelles for Successful Encapsulation of Retinoic Acid. *Pharmaceutics* **2021**, *14*, 212. DOI: 10.3390/ph14030212.
- Ailuno, G.; Baldassari, S.; Lai, F.; Florio, T.; Caviglioli, G. Exosomes and Extracellular Vesicles as Emerging Theranostic Platforms in Cancer Research. *Cells* **2020**, *9*, 2569. DOI: 10.3390/cells9122569 .
- Drava, G.; Ailuno, G.; Minganti, V. Using tree bark biomonitoring for assessing the health status of urban population. *Atmosphere* **2020**, *11*, 783. DOI: 10.3390/atmos11080783.
- Zuccari, G.; Baldassari, S.; Ailuno, G.; Turrini, F.; Alfei, S.; Caviglioli, G. Formulation strategies to improve oral bioavailability of ellagic acid. *Applied Sciences – Basel* **2020**, *10*, 3353. DOI: 10.3390/app10103353.
- Manca, M.L.; Lai, F.; Pireddu, R.; Valenti, D.; Schlich, M.; Pini, E.; Ailuno, G.; Fadda, A.M.; Sinico, C. Impact of nanosizing on dermal delivery and antioxidant activity of quercetin nanocrystals. *Journal of Drug Delivery Science and Technology* **2020**, *55*, 101482. DOI: 10.1016/j.jddst.2019.101482.
- Ailuno, G.; Baldassari, S.; Zuccari, G.; Schlich, M.; Caviglioli, G. Peptide-based nanosystems for Vascular Cell Adhesion Molecule-1 targeting: a real opportunity for therapeutic and diagnostic agents in inflammation associated disorders. *Journal of Drug Delivery Science and Technology* **2020**, *55*, 101461. DOI: 10.1016/j.jddst.2019.101461.
- Schlich, M.; Lai, F.; Pireddu, R.; Pini, E.; Ailuno, G.; Fadda, A.M.; Valenti, D.; Sinico, C. Resveratrol proniosomes as a convenient nanoingredient for functional food. *Food Chemistry* **2020**, *310*, 125950. DOI: 10.1016/j.foodchem.2019.125950.

Libri:

Co-author of the book chapter “Radiopharmaceuticals and nuclear pharmacy” (Pharmaceutical Technology, Zanichelli 2025).

PARTICIPATION IN THE ACTIVITIES OF ASSOCIATIONS RELEVANT TO THE SECTOR

- From 2018: member of SITELF - Società Italiana di Tecnologia e Legislazione Farmaceutiche
- From 2019: member of SCI – Società Chimica Italiana
- From 2019: member of the CRS Italy Local Chapter

- From 2020: member of the «Young Scientists Communication Team» of the CRS Italy Chapter.
- 2024-2025: member of the CRS – Controlled Release Society

OTHER ACTIVITIES

- Seminar held at the University of Genova, Department of Pharmacy, entitled “Exosomes: emerging nanocarriers for drug delivery”; 22 October 2020.
- Seminar entitled “Nanotecnologie e nanofarmaci” in the context of the PCTO program (February 2023 and 2024, and December 2024).
- Guest Editor of two Special Issues of the journal *Pharmaceutics*, entitled “Novel Technological Approaches for Targeted Drug Delivery Systems” and “Application of Phytochemicals in Innovative Drug Delivery Systems and Formulations”.
- Achievement of an Open Badge for participating in the “Percorso FOR.I.U.: Formazione all'Insegnamento Universitario”, organized by UTLC (Unige Teaching and Learning Centre) of the University of Genova.