

PERSONAL INFORMATION

Enrica Chiesa



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Sex Female | Date of birth 04/08/1989 | Nationality Italy

Research Fellow SSD CHIM09 (Applied pharmaceutical chemistry and technology), University of Pavia, Department of Drug Sciences

WORK EXPERIENCE

2022- current

Research fellow (RTDA 240, 2010)

University of Pavia, Department of Drug Sciences (Italy)

Research activities in the field of pharmaceutical nanotechnology for drug delivery and tissue engineering purposes by exploiting new emerging technologies (microfluidic and electrospinning).

Institutional didactic activity (AA 2023-2024):

- 504852 - FORMULAZIONE DI FARMACI BIOTECNOLOGICI - FORMULATION OF BIOTECH DRUGS (3 CFU) - Master degree course: CHIMICA E TECNOLOGIA FARMACEUTICHE
- 508331 - LABORATORIO INTEGRATO DI BIOTECNOLOGIE FARMACEUTICHE - INTEGRATED LABORATORY OF PHARMACEUTICAL BIOTECHNOLOGIES (3 CFU) - Master degree course: BIOTECNOLOGIE
- 508356 - NANOMATERIALI E APPLICAZIONI FARMACEUTICHE - MODULO 2 - NANOMATERIALS AND PHARMACEUTICAL APPLICATIONS - PART 2 (3 CFU) - Master degree course: BIOTECNOLOGIE
- 510531 - NANOTECHNOLOGY - BASED MEDICINES (3 CFU) - Master degree course: 07402 - INDUSTRIAL NANOBIOTECHNOLOGIES FOR PHARMACEUTICALS

2021-2022

Research fellow

Fondazione I.R.C.C.S. Policlinico S. Matteo, U.O.C Chirurgia Generale II. Pavia (Italy)

Supporting the research activity on the project "Digital Fluidic for the Life Sciences, P-20210028153"
<http://www.sanmatteo.org/site/home/attivita-scientifica/articolo4857.html>

2020-2021

Post-doctoral research fellow

University of Pavia, Department of Civil Engineering and Architecture (Italy)

Research title: "Development and validation of a microfluidic device for biomedical applications"
SSD CHIM09

Supervision: Prof. Ferdinando Auricchio

Collaboration in the project "Digital Fluidic for the Life Sciences" funded by Regione Lombardia – POR FESR 2014-2020: Call HUB Ricerca e Innovazione, 2020-2022 of Regione Lombardia nell'ecosistema salute e life science.

<https://compmech.unipv.it/projects/ongoing-projects/dsf-project/>

2018 - 2020

Post-doctoral research fellow

University of Pavia, Department of Drug Sciences (Italy)

Research title: "In-vitro characterization of nanosized drug delivery systems in biological media"
SSD CHIM09

Supervision: Prof. Tiziana Modena

- 2019 - current **Teaching** to I level master course of EMJMD Nanomed (European Master Joint Master Degree Nanomedicine for Drug Delivery)
University of Pavia (Italy)
Training module: "BIOTECH AND ADVANCED THERAPY MEDICINALS: formulation development and regulatory aspects".
Title: "Ocular drug delivery. The role of excipients" - 8 hours.
Training module: "Industrialization of Nanosystems- Special Technique".
Title: "Microfluidic approach to nanoparticles development as drug delivery systems" - 8 hours.
- 2019 - 2021 **Teaching** to Biotechnology course, curriculum Chem-Pharma-Tech
University of Pavia (Italy)
Training module: "INTEGRATED LABORATORY OF PHARMACEUTICAL BIOTECHNOLOGIES" - 24 hours
- 2017 - 2018 **Post-doctoral research fellow**
University of Pavia, Department of Drug Sciences (Italy)
Research title: "Study of new technology for the production of polymeric and lipid nanoparticles to deliver macromolecules". SSD CHIM09
Supervision: Prof. Ida Genta
- 2016 - 2017 **Technical adviser**
Schaefer South-East Europe S.r.L, Rovigo
Technical advice and the installation of the NanoAssemblr™ Benchtop instrumentation.
- 2015 **Visiting PhD student**
Aston Pharmacy School, School of Life and Health Sciences, Aston University (Birmingham, UK).
Project title: "Optimization of the preparation protocol for surface- modified liposomes loaded with a poorly water- soluble drug".
Supervision: Prof. Yvonne Perrie

EDUCATION AND TRAINING

- 2020 - 2021 **II level master's degree in "Pharmaceutical care"**
University of Pavia (Italy)
Pharmacy practice, pharmacy services, cognitive services, medication management, medication review.
Thesis title: "L'evoluzione della Farmacia dei Servizi ed il ruolo del farmacista alla luce dell'emergenza COVID-19"
- 2013 - 2016 **PhD degree in "Chemical and Pharmaceutical Sciences"**
University of Pavia, Pavia (Italy)
Pharmaceutical sciences, pharmaceutical nanotechnology, pharmaceutical technology, applied pharmaceutical chemistry, molecular biology, and industrial pharmacy.
Thesis title: "Study of innovative pharmaceutical formulations specific for paediatric patients"
- 2008 - 2013 **Master's degree in "Medicinal chemistry and Pharmaceutical Technology"**
University of Pavia, Pavia (Italy)
Organic and Inorganic chemistry, Biochemistry, Pharmaceutical Technology, Analytical chemistry.
Thesis title: "Caratterizzazione chimico-fisica e biologica di scaffolds compositi a base di matrice bovina e collagene per la rigenerazione ossea"
Score: 110/110 cum laude
- 2013 **Qualified pharmacist**

WORK ACTIVITIES

- Awards**
- 2024 - Young Scientist Travel Grant for the 2024 Annual Meeting
 - 2022 - Gian Giacomo Drago e Fausta Rivera Drago award given by Istituto Lombardo Accademia di Scienze e Lettere (Milan - Italy). Award for a young researcher in the field of "Nanostructures for human healthcare".
 - 2021 - vCRS 2021 Travel Award given by Controlled release society (CRS) - Italy chapter.
 - 2019 - Nano-Day Presentation Award given by Università Milano Bicocca for the quality of the oral presentation.
 - 2017 - CRS Italy Chapter Young Scientist Travel Grant given by Controlled release society (CRS International).
- Editorial activity**
- 2023 Author of the book chapter: Microfluidic manufacture of polymeric nanoparticles. Book title: Emerging Drug Delivery and Biomedical Engineering Technology: transforming Therapy. Edited By Dimitrios Lamprou. ISBN: 9781032122717
 - 2020 - Guest Editor of Polymers Open Access Journal- MDPI (IF = 4.43), Special Issue "Degradation and Biological Application of Polymers".
https://www.mdpi.com/journal/polymers/special_issues/Degradation_Biological_Application_Polymers
 - Member of the Reviewer Board di Pharmaceutics, Open Access Journal- MDPI.
 - Reviewer for Pharmaceutics- MDPI, Pharmaceuticals-MDPI, Applied Science-MDPI, Materials-MDPI, Nanomaterials-MDPI, Marine Drugs- MDPI, International Journal of Molecular Sciences-MDPI, Polymers -MDPI, Journal of Nanomaterials- Hindawi
- Invited presentations**
- E. Chiesa, POLYMERIC NANOPARTICLES FOR ACTIVE TARGETING, Making pharmaceuticals, session: Nanoparticles in modern medicine, Milano, 26 March 2024.
 - E. Chiesa, DEVELOPMENT OF A RAPID AND LOW-COST MICROFLUIDIC PROCESS ENABLING EFFICACIOUS AND SPECIFIC CD44 TARGETED DELIVERY BY USING HA BASED NANOPARTICLES- NANO-DAY IV, Milano Bicocca University, 11-14 December 2019.
 - E. Chiesa, PROGRAMMABLE ASSEMBLY OF POLYSACCHARIDE NANOPARTICLES IN MICROFLUIDICS AS BIOCOMPATIBLE SELECTIVE DRUG DELIVERY SYSTEM- Nanomanufacturing, Advances in Nanoparticle Production, Genova, 13 December 2019.
 - E. Chiesa, MICROFLUIDIC: A NEW TECHNOLOGICAL APPROACH FOR THE SYNTHESIS OF CD44 TARGETED HYALURONIC ACID/CHITOSAN NANOPARTICLES LOADED WITH EVEROLIMUS- 2nd NANOMED workshop, University of Patras, Patras, Greece, 8-10 July 2019.
- Grants**
- 2024 - 2025** Programma NODES - Nord Ovest Digitale E Sostenibile (codice ECS 00000036) (PNRR) – MISSIONE 4 COMPONENTE 2, "Dalla ricerca all'impresa" INVESTIMENTO 1.5, "Creazione e rafforzamento di "Ecosistemi dell'innovazione" costruzione di "leader Territoriali di R&S" - Bando PoC Accademici – Spoke-2 Progetto Cutina: BIOPolimero sostenibile e atossiCo ottenuto da biomassa di scarto per uso biomedicalE. (Participant)
 - 2022 - 2025** "Functional Nano-Scaffolds for Regenerative Medicine" - NANOREMEDI Horizon 2020, H2020-MSCA-ITN-2020 (Marie Skłodowska-Curie Innovative Training Networks), Type of action: MSCA-ITN-EJD. (Participant and member of the training board)
 - 2020 - 2022** "BIOFIBER Advanced Textured Fiber Dressing" VV3TT POC Venture Program Edition 2020, European Investment Fund CDP Cassa depositi e Prestiti.
 - 2020 - 2022** Integrated platform for the sustainable production of bio-based surfactants from renewable resources (BioSurf) Fondazione Cariplo - Circular Economy for a sustainable future ID 2020-1094 PI: Prof.ssa Daniela Ubiali

PERSONAL SKILLS

- Mother tongue(s) Italian
- Other language(s) English (B2 level)
- Digital skills Microsoft Office (Word, Excel, Power Point) • Graphpad Prism • Endnote • ImageJ • Statgraphic Centurion • Chemdraw

ADDITIONAL INFORMATION

Statement of Research Interests

My research is multi-disciplinary and focuses on pharmaceutical nanotechnology by developing drug delivery systems to facilitate the delivery of drugs and macromolecules (protein, siRNA, mRNA), thus providing practical solutions for current healthcare problems. In that regard, the projects I have been working on during the last years have been aimed at the production and characterization of polymer- and lipid- based nanoparticles through a suite of microfluidic systems that provide the underpinning support for these projects.

Specific research lines include:

- polymer chemical functionalization to improve the nanoparticles selectivity against cancer cells and tumor microenvironment.
- gene delivery by polymeric and lipid nanoparticles.
- understanding the effect of nanoparticles properties on cellular behaviour.
- design and application of fibrous electrospun scaffolds (made of polymer and/or new peptides-based materials) that that display the structural, mechanical, and electrochemical properties needed for a specific biological context (NANOREMEDI Horizon 2020, H2020-MSCA-ITN-2020).

Publications

total number of publications in peer-review journals: 47

total number of citations: 1329

H index (Scopus): 17

1. Chiesa, E.; Caimi, A.; Bellotti, M.; Giglio, A.; Conti, B.; Dorati, R.; Auricchio, F.; Genta, I. Effect of Micromixer Design on Lipid Nanocarriers Manufacturing for the Delivery of Proteins and Nucleic Acids. *Pharmaceutics* 2024, 16, doi:10.3390/pharmaceutics16040507.
2. Chiesa, E.; Clerici, F.; Bucci, R.; Anastasi, F.; Bottiglieri, M.; Patrini, M.; Genta, I.; Bittner, A.; Gelmi, M. Smart Electrospun Nanofibers from Short Peptidomimetics Based on Pyrrolo-pyrazole Scaffold. *Biomacromolecules* 2024, 25, 2378-2389, doi:10.1021/acs.biomac.3c01310.
3. Chiesa, E.; Bellotti, M.; Caimi, A.; Conti, B.; Dorati, R.; Conti, M.; Genta, I.; Auricchio, F. Development and optimization of microfluidic assisted manufacturing process to produce PLGA nanoparticles. *Int J Pharm* 2022, 629, 122368, doi:10.1016/j.ijpharm.2022.122368.
4. Chiesa, E.; Tottoli, E.M.; Giglio, A.; Conti, B.; Rosalia, M.; Rizzi, L.G.; Dorati, R.; Genta, I. Graphene Nanoplatelets-Based Textured Polymeric Fibrous Fabrics for the Next-Generation Devices. *Polymers (Basel)* 2022, 14, doi:10.3390/polym14245415.
5. Chiesa, E.; Greco, A.; Riva, F.; Dorati, R.; Conti, B.; Modena, T.; Genta, I. CD44-Targeted Carriers: The Role of Molecular Weight of Hyaluronic Acid in the Uptake of Hyaluronic Acid-Based Nanoparticles. *Pharmaceutics* 2022, 15, doi:10.3390/ph15010103.
6. Chiesa, E.; Greco, A.; Dorati, R.; Conti, B.; Bruni, G.; Lamprou, D.; Genta, I. Microfluidic-assisted synthesis of multifunctional iodinated contrast agent polymeric nanoplateforms. *International Journal of Pharmaceutics* 2021, 599, doi:10.1016/j.ijpharm.2021.120447.
7. Chiesa, E.; Greco, A.; Riva, F.; Dorati, R.; Conti, B.; Modena, T.; Genta, I. Hyaluronic acid-based nanoparticles for protein delivery: Systematic examination of microfluidic production conditions. *Pharmaceutics* 2021, 13, doi:10.3390/pharmaceutics13101565.
8. Chiesa, E.; Dorati, R.; Pisani, S.; Bruni, G.; Rizzi, L.G.; Conti, B.; Modena, T.; Genta, I. Graphene nanoplatelets for the development of reinforced PLA-PCL electrospun fibers as the next-generation of biomedical mats. *Polymers* 2020, 12, doi:10.3390/polym12061390.
9. Chiesa, E.; Riva, F.; Dorati, R.; Greco, A.; Ricci, S.; Pisani, S.; Patrini, M.; Modena, T.; Conti, B.; Genta, I. On-Chip Synthesis of Hyaluronic Acid-Based Nanoparticles for Selective Inhibition of CD44+ Human Mesenchymal Stem Cell Proliferation. *Pharmaceutics* 2020, 12, doi:10.3390/pharmaceutics12030260.
10. Chiesa, E.; Greco, A.; Riva, F.; Tosca, E.M.; Dorati, R.; Pisani, S.; Modena, T.; Conti, B.; Genta, I. Staggered herringbone microfluid device for the manufacturing of chitosan/TPP nanoparticles: Systematic optimization and preliminary biological evaluation. *International Journal of Molecular Sciences* 2019, 20, doi:10.3390/ijms20246212.
11. Chiesa, E.; Dorati, R.; Modena, T.; Conti, B.; Genta, I. Multivariate analysis for the optimization of microfluidics-assisted nanoprecipitation method intended for the loading of small hydrophilic drugs into PLGA nanoparticles. *Int J Pharm* 2018, 536, 165-177, doi:10.1016/j.ijpharm.2017.11.044.
12. Chiesa, E.; Pisani, S.; Colzani, B.; Dorati, R.; Conti, B.; Modena, T.; Braeckmans, K.; Genta, I. Intra-articular formulation of GE11-PLGA conjugate-based NPs for dexamethasone selective targeting—In vitro evaluation. *International Journal of Molecular Sciences* 2018, 19, doi:10.3390/ijms19082304.

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Firma
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