

# Lorena Segale

## BIO AND EDUCATION

Scientific high school degree in 1992 at Liceo Scientifico "B. Cairoli" of Vigevano (PV)

Degree in Pharmaceutical Chemistry and Technology in 2000 at the Faculty of Pharmacy of the University of Pavia. Passing the government exam and licensed as a profession pharmacist in 2001.

PhD degree in Pharmaceutical Chemistry and Technology at University of Pavia.

Postdoctoral fellowship at Department of Pharmaceutical Chemistry of the University of Pavia from 2003 to 2006.

From March 2006, Assistant Professor of Pharmaceutical Technology at the Department of Pharmaceutical Sciences of the University of Piemonte Orientale.

The main scientific skills are in the field of pharmaceutical technology with particular reference to the production techniques, the formulation, the physico-chemical, technological and biopharmaceutical characterization of oral solid pharmaceutical dosage forms. The teaching skills are related to pharmaceutical technology and pharmaceutical legislation.

## UNIVERSITY CAREER

2006-	Researcher, University of del Piemonte Orientale
2003-2006	Postdoctoral fellowship, University of Pavia
2000-2003	PhD, University of Pavia

## MAIN FIELDS OF INTEREST

1. Solid Dosage forms
2. Microparticles
3. Formulation
4. Controlled Release

## CURRENT ISSUES OF RESEARCH

### 1. Pharmaceutical formulation

Scientific activity mainly involves formulating delivery systems containing natural or synthetic molecules of pharmaceutical interest, belonging to different therapeutic categories and of cellular derivation. The goal is to improve or modify some characteristics, such as stability, solubility, absorption, organoleptic properties, or release rate. The research activity has led to the development and optimization of solid dosage systems, either single-dose or multi-unit systems, intended for various fields of application, including pharmaceutical, biomedical, nutraceutical, and food sectors. In addition to the formulation and technological aspects related to production, the activity has also focused on the technological-biopharmaceutical characterization of the developed products.

### 2. Multi-units systems

Micro- and nanocarrier systems for the delivery and targeting of active ingredients of natural, synthetic, and biotechnological origin. The research activity is based on the formulation and production of multi-unit systems, primarily microparticles, using excipients such as synthetic and/or natural polymers and lipids. Various production techniques are employed, mainly ionotropic gelation, spray congealing, and spray drying.

### **3. Technological development of pharmaceutical forms containing mesenchymal stem cell secretome**

The research activity is aimed at developing medicinal products for Advanced Therapies, somatic cell therapy, and tissue engineering, for the treatment of degenerative, autoimmune, and inflammatory diseases, whether acute or chronic.

#### **FUNDED PROJECTS**

RESPONSABILE SCIENTIFICO (Principal Investigator) del progetto “Produzione di microparticelle spray dried con secretoma da cellule mesenchimali per la rigenerazione polmonare e il wound healing” (PROMISE Id. 0200106) finanziato sul PROGRAMMA DI COOPERAZIONE INTERREG V-A ITALIA-SVIZZERA 2021-2027. ASSE1, OBIETTIVO SPECIFICO 1.1. e presentato nell'ambito del primo avviso.

RESPONSABILE SCIENTIFICO (Principal Investigator) del progetto (Id. 3859153) finanziato dal PROGRAMMA DI COOPERAZIONE INTERREG V A ITALIA SVIZZERA – Depositato nell’ambito del quarto avviso per la presentazione di progetti di capitalizzazione e completamento dei progetti già finanziati, ATEx (Id. 637541).

RESPONSABILE SCIENTIFICO (Principal Investigator) del Modulo Aggiuntivo Covid (MAC Id. 23150) del progetto ATEx (Id. 637541) finanziato nell'ambito del PROGRAMMA DI COOPERAZIONE INTERREG V-A ITALIA SVIZZERA - ASSE 1 e presentato nell'ambito del terzo avviso.

RESPONSABILE SCIENTIFICO (Principal Investigator) del progetto “Advanced Therapies Experiences” (ATEx, Id. 637541) finanziato nell’ambito del PROGRAMMA DI COOPERAZIONE INTERREG V-A ITALIA-SVIZZERA 2014-2020. ASSE1, OBIETTIVO SPECIFICO 1.1. e presentato nell'ambito del primo avviso.

#### **TOP FIVE PAPERS**

Foglio Bonda A., Regis L., Giovannelli L., Segale L. Alginate/maltodextrin and alginate/shellac gum core-shell capsules for the encapsulation of peppermint essential oil, 2020. International Journal of Biological Macromolecules 162, 1293-1302. DOI: 10.1016/j.ijbiomac.2020.06.194.

Mocchi M., Bari E., Marrubini G., Foglio Bonda A., Perteghella S., Tartara F., Cofano F., di Perna G., Giovannelli L., Mandracchia D., Sorlini M., Garbossa D., Torre M.L., Segale L. Freeze-dried mesenchymal stem cell-secretome pharmaceuticalization: optimization of formulation and manufacturing process robustness, 2021. Pharmaceutics, 13, 1129. DOI: 10.3390/pharmaceutics13081129.

Candiani A., Milanesi A., Foglio Bonda A., Diana G., Bari E., Segale L., Torre M.L., Giovannelli L. Solid lipid microparticles by spray congealing of water/oil emulsion: an effective/versatile loading strategy for a highly soluble drug, 2022. Pharmaceutics, 14, 2805; DOI: 10.3390/pharmaceutics14122805.

Diana G., Candiani A., Picco A., Milanesi A., Stampini M., Bari E., Torre M.L., Segale L., Giovannelli L. Chitosan for improved encapsulation of thyme aqueous extract in alginate-based microparticles, 2024. International Journal of Biological Macromolecules 270, 132493. DOI: 10.1016/j.ijbiomac.2024.132493.

Diana G., Milanesi A., Candiani A., Sodano A., Rassè P., Foglio Bonda A., Alessandrini L., Giovannelli L., Segale L., Coisson J.D. Spray drying of an oil-in-water emulsion containing vitamin D3: a synergy between formulation and process conditions to obtain microparticles, 2025. International Journal of Pharmaceutics 673, 125384. DOI: 10.1016/j.ijpharm.2025.125384.

