

MARIA LUISA TORRE, PhD
Associate Professor

EDUCATION

1991 5-year degree *cum Laude* in Chemistry and Pharmaceutical Technologies, Pavia University
1991 licence to practice Pharmacy Profession, Pavia University
1995 3-year PhD in Chemistry and Pharmacological Technology, Pavia University
1998 3-years post-graduate specialization in Industrial Pharmacy, Pavia University

PROFESSIONAL EXPERIENCE AND RESEARCH ACTIVITY

1991-2001 Fellowships, Pavia University
2001-2015 Assistant Professor, Dept. of Drug Sciences, Pavia University
2015- Associate Professor, Dept. of Drug Sciences, Pavia University

The scientific activity was devoted to the development of conventional and controlled-release pharmaceutical dosage forms for human and veterinary use. In the field of pharmaceutical **Reproductive Biotechnologies**, a new and original technology for the **Cell Encapsulation** was developed. Controlled-release capsules containing boar, bovid and equine spermatozoa were performed to extend the preservation time of spermatozoa and maximize the efficiency of artificial insemination. Furthermore, the versatility of encapsulation procedure allowed to immobilize human ovary follicular cells in three-dimensional follicle-mimicking structure that enhances *in vitro* maturation yields without hormonal supplementation. In the field of **Tissue Engineering** and somatic cell therapy, in a GMP-based cell factory alginate membrane formulation was performed for cell encapsulation, demonstrating the predictability of alginate capsule properties for large-scale cell encapsulation, intended for **Advanced Therapies** (gene therapy, somatic cell therapy and tissue engineering). Other research activities aimed the tissue regeneration (pancreatic islets, intervertebral disk, cartilage and skin) for the treatment of chronic degenerative, acute or post-traumatic, diseases, through adipose-derived **Mesenchymal Stem Cells** and regenerated **Silk Fibroin Scaffolds** to promote cell adhesion and proliferation. Moreover, **Micro- and Nano- Delivery Systems** were developed using natural and synthetic biopolymers, and loading proteins and anti-oxidant substances (vitamins, flavonoids, phytocomplexes) for therapeutic or nutritional purposes, in several species (human, veterinary and zootechnical species). **Extracellular vesicles** (exosomes and microvesicles) derived from mesenchymal stem cells have been proposed instead of their origin cells for the treatment of degenerative, autoimmune, chronic and inflammatory diseases. The keystone for their preclinical and clinical development is the isolation process standardization to obtain a safe and effective product: a solid pharmaceutical dosage form containing extracellular vesicles has been designed, and a reproducible, robust, and scalable production process has been set up. Finally, stem cell-extracellular vesicles has been investigated and proposed as “next generation” drug delivery system.

In the last five years she has been supervisor of more than 25 thesis (Chemistry and Pharmaceutical Technology and Pharmacy), and she has been tutor of 6 PhD student.

FUNDED PROJECTS (competitive selection)

ATEX, Id 637541, Interreg V-A Italy-Switzerland 2018-21.
MICROFLOWER Id. 2014-0601, Fondazione Cariplo 2014-15.
STEMDELIVERY, id 42617604, Regione Lombardia-Fondazione Cariplo 2013-15.
FIBROPAN, Fondazione Cariplo, Bando Materiali Avanzati 2012-14.
RIPROWEL MICROSEM, Ministero delle Politiche Agricole e Forestali, Decreto MiPAAF 13576 (24/5/2011).
E!5227 FIBROSPHERE, EUROSTARS 2009-2011.
PANAGENESI, ID 5167. Regione Lombardia, Bando Metadistretti (d.g.r. n. 6735/2008).

CITATION METRICS

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