



Israiel Tangaram

Place of birth

Master of Pharmacy in
Pharmacology in India
and Advanced master's
programme in Biomedicine in
Sweden



Nicola Bernabò

Veterinary Physiology

Research field: Physiology of
molecular endocrinology, in



Pascal Mermillod

Research Engineer, leader of
and Fertility” laboratory,
recherche agronomique
Val de Loire research Centre,
France



Andrea Landini

CEO, LMPE s.r.l. sede legale a
Montecatini Terme (PT) in Via
Bacci 11
caratterizzare materiali
polimerici biocompatibili
adatti alla stampa 3D e 4D
(materiali a memoria di
forma).

Innovation in in vitro fertilization techniques

➤ General objectives of the project

Due to lifestyle and various environmental and non-environmental factors, fertility in western countries is decreasing. With regard to Europe in particular, the most recent available data say that globally, Europe has the highest number of PMA treatments. In 2005, the most recent year for which global data are available, 56% of Medically Assisted Procreation (MAP) cycles occurred in Europe, followed by Asia (23%) and North America (15%) (Zegers-Hochschild et al., 2014). Given that many European countries have been characterized by ever lower fertility (Kohler, Billari, & Ortega, 2002), the use of MAP is configured not only as a means of alleviating the sufferings of individuals, but also as a potential policy for increase fertility rates in Europe, so the interest in MAP is substantial. In this context, the proposed project aims to create a in vitro culture system in which to carry out in vitro fertilization, designed to mimic the tubal environment in the best possible way. For this purpose, a culture substrate created using 3D molding will be used, in which the culture of tubal epithelial cells will be made. Here the seed capacitation will be carried out at the end of which the IVF will be realized.

➤ Industrial impact of the project

The Industrial partner will play a key role in this project, by contributing with the synthesis and characterization of biocompatible polymers suitable for 3D and 4D printing. In this context, the Company will offer the opportunity to transform research excellence into innovative technologies and products, thus offering better treatment options for infertility, and consequently increasing the quality of life of infertile couples.

➤ The Research products will be enhanced through:

- 1) dissemination initiatives (scientific publications, initiatives for communicating results to the general public, drafting and public discussion of the doctoral thesis),
- 2) technology transfer activities (patent, development of prototypes and / or production of medical devices, activation of academic / university spin-offs).



- Co-projecting: LMPE s.r.l. has co-projected the research and training conducted during the PhD programme and is involved with its structure and equipment, specialized personnel and its background in the field of polymeric materials synthesis.
- Training: LMPE s.r.l. will assist the PhD student's training activities increasing his abilities on technological transfer, in particular on the quality system and polymeric material synthesis and characterization.
- Research: LMPE s.r.l. will actively contribute to the research project by conducting joint experiments with UniTe and INRA. This collaboration, as a result, will allow to produce research products in National and International Journals and Meetings.
- Technological transfer: The company intends to develop a prototype of the 3D printed culture system, designed jointly with UniTe. that, in a long-term vision, could be patented and commercialized.



Publications (underlying the business expert, if present);





Scientific meeting (underlying the business expert, if present)

- Two Poster will be presented (Accepted for presentation in poster session) at ICAR 2020 Meeting 24th - 27th June 2020, Bologna.

