



A 4D ovary to study infertility

A review in collaboration with UniPV has been published on HR Update

Rome-Pavia, 23th August 2022 - The pioneering science of organs created in 4D for the study of human pathologies applied to female infertility: the Developmental Biology Laboratory of the University of Pavia, with Valeria Merico, Paola Rebuzzini, Giulia Fiorentino and Mario Zanoni, coordinated by Silvia Garagna and Maurizio Zuccotti, with the collaboration of the GeneraLife group, are developing a 4-dimensional reconstruction of the mouse ovary, to facilitate the deepening of the morphological and molecular problems that can cause infertility.

"The work at the basis of our collaboration with the University of Pavia - announces Danilo Cimadomo, Science and Research manager at GeneraLife - just landed a few days ago at the publication of a review on 'Human Reproduction Update' (<https://doi.org/10.1093/humupd/dmac031>), the journal with the greatest impact in the reproductive medicine sector. In the article, we show how it is possible, through the 4D reconstruction of the ovary, to describe morphological-functional alterations that cause infertility in women, from polycystic ovary syndrome, endometriosis, premature ovarian failure".

"The digitalization of organs (digital twin) - says Giulia Fiorentino - is an important frontier of biomedical research. 4D digital organs, capable of describing changes in space and time, will allow us to deal with the complexity of the relationships between molecules, cells and tissues that make up the organ and the whole individual and regulate their functions in response to changes in the environment".

The visualization of the ovary with a four-dimensional approach means that the researcher has at his disposal a sort of functional 'box', in which it is possible to identify and study the molecules of the organ, how and where they act, with a resolution never seen before. "The goal of the work team - concludes Cimadomo - is to create a virtual atlas of the ovary, fundamental from the research point of view applicable to a series of pathological situations linked to infertility, but not only. A virtuous example of how to research, histology engineering, microscopy, artificial and clinical intelligence can collaborate in generating a study model, for the evolution of knowledge to improve treatments, in our case against female infertility".

ABOUT GENERALIFE

Generalife is a European group of over 40 clinics specialized in reproductive medicine, present in 7 countries (Italy, Spain, Czech Republic, Portugal, Sweden, Norway, Island). Generalife promotes Research and Development in this sector, using a rigorous scientific method. Several members of the group hold important roles in national and international scientific societies such as the Italian Society of Embryology, Research and Reproduction (SIERR), or the Italian Society of Fertility and Sterility (SIFES) or the European Society of Human Reproduction and Embryology (ESHRE). . They also play editorial roles in various journals in the field of reproductive medicine (Human Reproduction Update, Journal of Assisted Reproduction and Genetics, Human Reproduction, Fertility and Sterility, Reproductive BioMedicine Online, Frontiers in Endocrinology).