



Institut
Cochin

recherche biomédicale

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Project: Physiopathology of reproduction

Keywords: endometriosis – fertility - reproduction - uterus

Scientific field : physiology- endocrinology- development- gynecology – stem cell

Strategy of the host institution (Inserm)

Endometriosis is a major issue in women medicine. It is a disease where tissue similar to the uterus lining grows outside of the uterus, forming lesions. It is a major cause of infertility and pain in women of reproductive age. With its diverse symptoms and difficult visualization of the lesions, there is 7-year diagnosis delay. Since more than two years, INSERM has established a strategy to cope with this pervasive feminine disease. In this strategic plan, a series of priorities was defined, and took into consideration - priority fields of research, including epidemiology (better definition of prevalence and actual incidence of the pathology), identify the risk factors, better classify the disease which is actually very heterogeneous, identify the comorbidities, genetics, epigenetics, mechanisms of pain, inflammation and infertility and identification of biomarkers, aiming at decreasing the diagnosis uncertainty and improve prognostic. INSERM, as WHO, is committed to support more research and awareness raising to ensure effective prevention, early diagnosis, and improved management of the disease.

Strategy of the host laboratory

Institut Cochin (IC) has an ongoing development strategy to support reproduction research as it is a major theme within one of the scientific priority axis of the Institute (“Cellular and genetic plasticity”). Several groups are working on endometriosis, infertility, gametes development, and these research programs have been developed in close collaboration with the Obstetrics-Gynecology II service of the Cochin hospital. These research groups focus on topics related to signaling, immune responses and inflammation, genetics and epigenetics. They benefit from interactions with each other and with the whole scientific community from IC, which brings together 41 teams focused on biomedical research at the interface of other scientific axes (cancer, metabolism-endocrinology, microbiology and immunology). In addition to this stimulating environment, IC provides technical support by 9 state-of-the art core facilities.

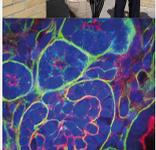
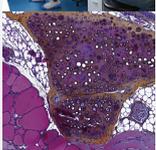
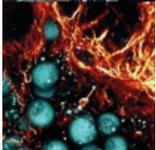
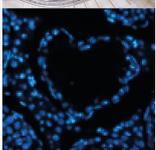
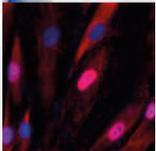
The applicant’s project will take part in the development of innovative approaches to study endometriosis and reproduction that will complement the investigations already explored within IC and Cochin hospital. The candidate is expected to demonstrate autonomy in the management of research projects and collaborations, as well as the ability to supervise young researchers, as head of an emerging team. Of note, prior research on endometriosis is not a prerequisite.

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Summary of the scientific project

The scientific project will strengthen the importance of reproductive biology at Institut Cochin. Endometriosis is a major cause of female infertility, as half of the feminine infertilities are linked to this pathology. Endometriosis is a multifactorial disease for which an interdisciplinary approach is essential to achieve a transfer of scientific and technical innovations from basic research to translational research and clinical care. The proposed project should bring innovative approaches to tackle questions related to the heterogeneity of the disease and the plasticity of the cell populations within the lesions/uterus/ovary and their microenvironment, in order to better understand the mechanisms supporting the disease progression or the development of inflammation and infertility. The project could, for example, build on recent developments in the genetic field to identify novel genes involved in endometriosis, such as evaluating epistatic interactions in the genomic variants, or investigating how epigenetic modifications could contribute to the disease. It could also focus on stem cells, microbiota, endocrinology, environment interactions or mathematical models. Important criteria for selection will be the originality and relevance of experimental models. The project is therefore expected to provide understanding and tools for female infertility beyond endometriosis.

Summary of the teaching project

The person recruited will have to demonstrate his/her ability to teach at the interface of several disciplines focused on molecular biology/development by developing innovative teaching methods. The candidate will participate in teaching at the licence and master levels. The project must include teaching participation in medical studies, Master 2 (Repr Master BIP, M2 "Reproduction et Développement" (reprodevodev) Université Paris Cité and M2 sciences chirurgicales et nouvelles technologies interventionnelles, Université Paris Saclay.) or Masterclass. The candidate will also be involved in international continuous training sessions recently organized by Institut Cochin for the PhD students.

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ANR package	200k€
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