

**Call for a research position** (one-year duration and possible renewal) on project funded by MUR (PRIN PNRR).

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**Start Date:** March 1<sup>st</sup> 2024.

**Research Project Title:** *Placental secretome effects on reprogramming prenatal neuronal development and life-long function under environmental stress condition*

**Supervisor:** Prof. Marco Fiocchetti

**Project description:** *The “developmental origins of health and disease” (DOHaD) paradigm affirms that maternal diet, environmental insults, and lifestyle can interfere with the fetus-placental development, thus setting up the conditions for future diseases later in life. The brain is a primary target for programming influence during the sensitive period of neurodevelopment, and prenatal exposure to environmental stressors (pollutants, deficiency/oversupply of nutrients) may result in unwanted long-term changes in brain structure and functionality, which increases the risk of neurodevelopmental disorders (NDDs) and adult-onset neurodegenerative disease (NDs). The gestational exposure to single and/or multiple environmental stressors can significantly derange the homeostasis between maternal, placental and fetal factors involved in development. The present proposal is aimed at defining, by using in vitro and ex-vivo methodologies, the direct and placental-dependent effect of environmental stress on neurons to find out the mechanisms affecting neuronal developmental reprogramming and life long-function. In particular, the project is aimed at evaluating the direct effects of environmentally significant concentration of diethyl phthalate (DEP) and fine particulate matter (PM). Furthermore, in collaboration with **Prof. Leonardo Ermini (University of Siena, Department of Life Science)**, the effect of secretome of placental explant exposed or not to environmental stressors on neuron differentiation and functionality will be evaluated. The applicant will actively participate in conducting experiments, performing analyses, and conceptualizing the necessary components to achieve the project's goals. The focus will be on working with neuron cell cultures under both undifferentiated and differentiated conditions to assess the direct impact of exposure to environmental stressors, either alone or in combination with placental-derived secretome. This involves utilizing various techniques such as cell culture, biochemical assays, morphological analysis, immunocytochemistry, and cell imaging.*

**Requirements:** Master or equivalent degree in biology/biotechnology/medicine/pharmacy and a CV demonstrating expertise in the research field. **Skills:** expertise in cell culture, western blotting, imaging techniques and analysis, signal transduction analyses. Expertise in conditioned media/exosomes handling and in neuron differentiation protocol will be preferentially evaluated.

*For more information about the project and application, interested candidates are invited to contact **Prof. Marco Fiocchetti** ([marco.fiocchetti@uniroma3.it](mailto:marco.fiocchetti@uniroma3.it)) by sending by e-mail a letter of interest and a CV.*

Marco Fiocchetti, PhD  
Department of Science  
Section Biomedical Science and Technologies  
Cell Physiology Lab  
University Roma Tre  
V.le G. Marconi, 446  
00146 Rome - Italy  
Phone +39-0657336455  
E-mail: [marco.fiocchetti@uniroma3.it](mailto:marco.fiocchetti@uniroma3.it)