Supervisor Project Idea

Supervisor

Insert a brief CV and/or external link, the total number of publications, the ORCID link, 5 of the most significant/recent publications, and a list of funded projects and awards. max 300 words

Dr. Oliana Carnevali is **Full Professor** in Developmental Biology and **President** of "Master course in Molecular and Applied Biology".
Author of more than **280 peer-reviewed publications** in international journals, with an ***h* index= 59**, FWCI 2.022 and more than 16,000 citations (from Scopus)
Scopus ID: 55861380700,
https://www.scopus.com/authid/detail.uri?authorId=55861380700
ORCID ID: 0000-0001-5994-0572, https://orcid.org/0000-0001-5994-0572

Most relevant publications

1. Giommi C, et al. The probiotic SLAB51 as agent to counteract BPA toxicity on zebrafish gut microbiota-liver-brain axis. Sci Total Environ. 2024. https://doi.org/10.1016/j.scitotenv.2023.169303
2. Maradonna F, et al. A zebrafish HCT116 xenograft model to predict anandamide outcomes on colorectal cancer. Cell Death Dis. 2022. https://doi.org/10.1038/s41419-022-05523-z
3. Santangeli S, et al. Transgenerational effects of BPA on female reproduction. Sci Total Environ. 2019. https://10.1016/j.scitotenv.2019.06.029
4. Forner-Piquer I, et al. Endocrine disruptors in the diet of male *Sparus aurata*: Modulation of the endocannabinoid system at the hepatic and central level by Di-isononyl phthalate and Bisphenol A. Environ Int. 2018. https://10.1016/j.envint.2018.06.011
5. Santangeli S, et al. BPA-Induced Deregulation of Epigenetic Patterns: Effects on Female Zebrafish Reproduction. Sci Rep. 2016. https://10.1038/srep21982.

Member of the Committee of Experts for Research Policy - (CEPR) MIUR, **Member** of GEV 05 Committee, Coordinator of subGEV "Integrated Biology" for National Evaluation of Research Quality, **Research Delegate** UNIVPM, **Delegate** of International Relations UNIVPM; **Vice President** of the International Society Fish Endocrinology (ISFE).

International Projects

2021-2023 National research Council of Thailand*: Manipulation of the endocannabinoid system for cancer treatment: Zebrafish as a model-Co PI*
2019-2024 EU-*ICCAT* Swordfish conservation program
GFI 2014-2018 (Grant for Fertility Innovation) IR Microspectroscopy on GCs: a new non-invasive oocyte assessment-Funded by Merk Serono (total Budget of about 1 MIL euro). Role Co PI2018 H2020-MSCA-ITN-2017 Type of action: MSCA-ITN-ETN Proposal number: 766347 acronym: BioMedaqu.
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Research Group Description

Provide the name the reference department and a brief description of the research group, including external links, and available instrumentations and infrastructures. max 300 words

The group of Developmental and Reproductive Biology, led by Prof. Oliana Carnevali, concerns the Reproductive Biology, from zebrafish to humans; an activity that has been developed within the framework of European projects or in collaboration with assisted fertilization centers. In the last years, major interest has been focused on the reproductive, metabolic, and bone-related disorders induced by environmental pollutants with hormones-like activities (EDCs). The molecular basis of such dysfunctions and the alterations of endocannabinoid system were investigated. To achieve our goals, we are conducting experiments *in vivo* (using zebrafish) and *in vitro* both in 2D (human fetal osteoblast) and 3D (human gut organoids and bone spheroids) cell models. Moreover, we are investigating the role of gut microbiota in the well-being of organisms and, very recently, we started to explore the use of probiotics as a mitigating strategy against EDCs toxicity using multidisciplinary approaches that encompass confocal microscopy, molecular biology, and OMICs studies.

Other research fields include the investigation of the effects of environmental pollutants and climate change on the reproductive biology, embryonic development and health status of some important key species inhabiting different areas of the Mediterranean Sea (led by Prof. Giorgia Gioacchini), and the assessment of the physiological effects of innovative aquafeed formulations (in terms of ingredients and attractive properties) and on microplastic-contaminated diets in aquatic species (led by Prof. Ike Olivotto).

The infrastructure encompasses a laboratory for histological and molecular analysis, a fish facility, a cell culture room, and a room devoted to the analysis by fluorescent and confocal microscopy, flow cytometry, Fourier-transform infrared spectroscopy (FTIR) as well as Raman spectroscopy.

Title and goals

Provide the title of the topic and a short summary of the project idea. max 200 words

PROBIOTICS AS AN EMERGING STRATEGY TO COUNTERACT EDCs TOXICITY (PROXY)

Consumer products and their underlying chemistry have been altering our planet since the industrial revolution. These alterations, caused by the release of many chemical substances are endangering the health of ecosystems and living organisms. Current research is mainly focused on compounds that can interfere with the synthesis, secretion, transport, binding, or elimination of endogenous hormones, also known as endocrine-disrupting chemicals (EDCs). Despite the implementations of different measures to reduce human and animal exposure to BPA, new strategies are devoted to mitigating its toxicity, such as the use of natural compounds and probiotics.

In this respect, PROXY will develop the following research **objectives** aimed to:

1. **Establish a comprehensive atlas about the impact of EDCs on host-microbe dialogue** will be performed ***in vivo*** (using zebrafish as model) and in **3D *in vitro* models** (gut organoids).
2. **Evaluate the power of the probiotics to counteract the gut dysbiosis and metabolic disorders triggered by EDCs exposure *in vivo.***

3. Assess whether the restoration of gut microbiota by **probiotic administration can mitigate the disruption of gametogenesis and breeding capacity caused by EDCs, using *in vivo*** (zebrafish) **and *ex vivo*** (testicular culture) models.

Contact details (*including email address of the supervisor*)

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