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

CV of supervisor Tatiana Armeni: https://www.univpm.it/Entra //Medicina_e_chirurgia_1 /docname/Curriculum_accademico_1

Total number of publications: 63

Orcid link: https://orcid.org/0000-0003-0931-1342

Recent 5 publications:

- Scirè A, Casari G, Romaldi B, De Bari L, Antognelli C, Armeni T. *Antioxidants* (Basel), 2023, 12(11), 1976. Doi: 10.3390/antiox12111976.

-Scirè A, Cianfruglia L, Minnelli C, Romaldi B, Laudadio E, Galeazzi R, Antognelli C, Armeni T. *Antioxidants* (Basel). 2022 Oct 28;11(11):2131. doi: 10.3390/antiox11112131.

-de Bari L, Scirè A, Minnelli C, Cianfruglia L, Kalapos MP, Armeni T. *Antioxidants* (Basel). 2021 Jan 28;10(1):19. doi: 10.3390/antiox10010019.PMID: 33379155.

- Minnelli C, Cianfruglia L, Laudadio E, Mobbili G, Galeazzi R, Armeni T. *Int J Mol Sci.* 2021 Oct 31;22(21):11833. doi: 10.3390/ijms222111833.

-de Bari L, Atlante A, Armeni T, Kalapos MP. *Ageing Res Rev.* 2019 Aug; 53:100915. doi:10.1016/ j.arr.2019.100915.

Funds obtained on competitive calls:

-Title "The Glyoxalase pathway in Cystic Fibrosis: assessment of its role in the disease for the identification of novel targets to treat oxinflammation". Funding organization: Ministero dell'Università e della Ricerca, PRIN 2022- 24. Prog. 2022TZCZ8R. Head of the University Research Unit: Tatiana Armeni.

-Title: "Markers of oxidative stress in Inflammatory Bowel Disease in children and adults: risk factors and implications for a dietetic approach". Funding organization: Ministry of Health, Finalised Research 2018-21 Head of the University Research Unit: Tatiana Armeni.

-Title: "Oxidative stress and cerebral cavernous malformations (CCM): from understanding disease mechanisms towards therapeutic approaches". Funding organization: TELETHON 2015-17 Principal Investigator: Saverio Francesco Retta; Head of the support group of the Ancona Research Unit: Tatiana Armeni.

-Title: "Chushing Syndrome and Inflammation". Funding organization: Ministero dell'Università e della Ricerca, PRIN 2017-19 Prog. 2017HRTZYA. Project coordinator: Pivonello Rosario, Head of the Research Unit UNIVPM: Giorgio Arnaldi. Collaborator: Tatiana Armeni.

-Title: "Myriocin potential as a phenotype-modifying therapeutic agent in Cystic Fibrosis". Funding organization: Cystic Fibrosis Research Foundation, Prog. FFC#11/2016. National Responsible: Paola Signorelli, S. Paolo Hospital, University of Milan. Collaborator: Tatiana Armeni.

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 department referee is Prof. Andrea Giovagnoni director of the Department of Clinical, Specialistic and Odontostomatological Sciences, School of Medicine, UNIVPM; Ancona, Italy. Tatiana Armeni is head of the Laboratory of Cell Biology and Molecular Genetics (LBGM) and leads a research group with one doctoral student and two post-docs, as well as several undergraduate students.

The research group has extensive experience in the field of drug and xenobiotic testing in cell cultures and the evaluation of cytotoxicity in "*in vitro*" systems. Numerous studies have been conducted on molecular redox signaling that influences cellular responses under physiological and disease conditions. In the field of redox biology, the group has experience in the evaluation of antioxidant enzymes, glutathione metabolism, and the study of redox signaling associated with perturbations of metabolic pathways. In general, by means of enzyme assays, chromatography, western blot, real-time PCR, cytofluorimetry, and fluorescence microscopy multiple parameters (cell viability, proliferation, apoptosis, cell cycle, inflammatory parameters, repair capacity, and other specific parameters concerning the activation of certain metabolic pathways) are routinely determined on also high complexity cell systems.

The laboratory is provided with standard equipment for cell biology (flow hoods, incubators, centrifuge and ultracentrifuge, thermostatic baths with basculant agitators, light microscopes) and molecular biology (two cytofluorometers, a spectrofluorometer with microplate reader, a fluorescence microscope with image analysis system, temperature-controlled spectrophotometers, an electrophoresis system, western blotting equipment and two PCR thermal cyclers). Confocal and other microscopes (Nikon 104, Nikon TE300 Eclipse, Nikon TSX with Nikon camera) are available within UNIVPM. A patent application for a newly synthesized molecule was initiated with the participation of Armeni T. and participants in the cell biology group who conducted the cytotoxicity tests. Our laboratory is also supporting ISO9001:2015 certification for cytotoxicity testing (Consultek assistance).

Title and goals

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

Transition to new technologies in the field of "in vitro" cytotoxicity test:

In recent years, also following specific EU directives, robust "*in vitro*" experimental models have been developed to predict potential adverse effects associated with the exposure of organisms or biological systems to compounds including human drugs but also cosmetics, biocides, medical devices and other products. In recent years, the scientific community has relied on the principles of the 3Rs (Replacement, Reduction and Refinement) in the transition from animal models to "*in vitro*" models. To date, advanced technologies for developing increasingly complex "*in vitro*" models are available and evolving, breaking down limitations of animal models, such as difficult extrapolation between species, high cost, artifacts in addition to ethical questions. The project aims at the advancement of knowledge in cytotoxicology to implement strengthen and validate cytotoxicity assays and flow the information to available innovative high throughput platforms. The research group has extensive experience in "*in vitro*" systems on 2D or 3D cell models where to perform advanced cytotoxicity assays, redox signaling, efficacy assessment and cellular response. Implementation of "in vitro" cytotoxicity testing and validation of highly innovative systems could provide a data set to be extrapolated for training an AI bioinformatics system.

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

Prof. Tatiana Armeni, PhD
Dept. of Clinical, Specialist and Odontostomatological Sciences.
Biochemistry, Biology and Physics Section
Marche Polytechnic University
Via Brecce Bianche 12/A, Montedago
60131 Ancona, Italy
Phone: +39.071.2204376
Fax: +39.071.2204609
e-mail: t.armeni@staff.univpm.it