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

ACADEMIC POSITIONS

- 2023- : Researcher on Nutrition, Faculty of Medicine, UnivPM, Ancona, Italy
- 2022- : Lecturer at the Faculty of Health Sciences, Degree Course in Human Nutrition and Dietetics, Universidad Europea del Atlantic, Santander, Spain
- 2020-2022: Distinguished Adjunct Professor, Faculty of Sciences, King Abdulaziz University, Jeddah, Saudi Arabia
- 2016- : Professor at the International Master in Vegetarian Nutrition and Dietetics, Faculty of Medicine, Polytechnic University of Marche

BIBLIOMETRIC INDICATORS

- Total publications: 234 (Scopus) 239 (WoS) 334 (Google Scholar)
- Total citations: 16,762 (Scopus) 15,213 (WoS) 30,983 (Google Scholar)
- Average citation per publication: 71.6 (Scopus) 63,6 (WoS) 92.8 (Google Scholar)
- h-index: 55 (Scopus) 52 (WoS) 65 (Google Scholar).
- https://orcid.org/0000-0002-7250-1782

PRIZES AND AWARDS

- from 2019 to 2023: Highly Cited Researcher – Clarivate Analytics – WoS

PUBLICATIONS:

- Pollakova et al., 2023. Nutrition 112:112060.
- Giampieri et al., 2022. Biomolecules 12:760.
- Atanasov et al., 2021. Nat Rev Drug Discov. 20:200.
- Forbes-Hernandez et al., 2020. Food Funct 11:297-304.
- Forbes-Hernandez et al., 2017. Nutrients 9:621.

RELEVANT PROJECTS:

- 2023-2026: PRIMA project: Microbial resources for a sustainable olive oil system and a healthier Mediterranean food: from by-products to functional food.
- 2023-2025: Proof of Concept PNRR VALUE “CREMe naturali a base di BERRIES per la protezione della pelle dallo stress ossidativo e dai raggi UV” funded by the Italian Ministry of Economic Development.
- 2020-2022: Proof of Concept “FRAgole Per donne Più Sane – FRAPPE”, funded by the Italian Ministry of Economic Development,
- 2018-2020: UnivPM Strategic Project: Effect of berry consumption on ovarian cancer prevention: the epigenetic role of dietary polyphenols
- 2013-2015 Cooperazione Scientifica e Tecnologica, Ministero Affari esteri, Executive Programme Italy/Republic of Serbia, cod. n. RS13MO1
- 2011-2014 EUBerry Project: EU FP7 KBBE-2010-4 Grant Agreement No. 265942

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

Laboratory of Bioenergetics, Department of Clinical Sciences, Faculty of Medicine, Polytechnic University of Marche, https://twitter.com/Bio_Lab_UNIVPM

The group is currently formed by a Researcher, a post-doc researcher, five PhD students and two master students.
The main research lines of the Bioenergetic Lab lead by Prof. Maurizio Battino focus on the evaluation of the biological effects exerted by different bioactive compounds present in many food matrices (i.e., berries, honey, olive leaves, olive oil, beeswax byproducts, garlic and prickly pear fruits) in several *in vitro* (fibroblasts, breast/colon/liver cancer cells, macrophages, adipocytes), *ex vivo* (red blood cells and white blood cells) and *in vivo* (mice, rats and humans) experimental models. Targeted diseases are those related with oxidative stress and inflammation, such as aging, cancer, obesity and cardiovascular diseases, with the aim to highlight the molecular mechanisms involved in the beneficial effects exerted by these food matrices.

Infrastructure & Equipment: Benchtop centrifuges; Chemical hoods; Biosafety 1 and 2 biological hoods; Autoclave; Basic laboratory equipment (analytical balance, freezer, grinder, etc.); Water purification system; Rotavapor; Cell incubator; Microplate reader; Flow cytometry; PCR apparatus; Western Blot system; Seahorse XF 24 Extracellular Flux Analyzer; HPLC; Multimodal microplate reader; Fluorescent microscope.

Title and goals

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

The effects of plant-based foods on lipid metabolism and adipogenesis

Obesity, which has been associated with many chronic disorders, is one of the major epidemiological problems of the 21st century worldwide. Approximately 30% of the world's adult population is obese (about 2.1billion) and more than 3 million people die every year as result of this illness. It is well known that obesity is caused by a sustained imbalance between energy intake and expenditure that leads to an expansion of adipose tissue mass, the so called adipogenesis process, as well as to a dysregulation of lipid metabolism. Several plant-based foods have demonstrated not only to inhibit adipogenesis but also to ameliorate obesity by increasing thermogenesis, promoting white adipose tissue browning and improving lipid metabolism, but the mechanisms are still elusive.

The main objective of this project is to evaluate the effects of plant-based foods on lipid metabolism and adipogenesis in both pre-adipocytes and mature adipocytes by assessing the:

- pre-adipocytes differentiation
- induction of brown fat-like phenotype
- intracellular levels of lipids and the total lipid accumulation
- markers of lipid oxidation
- main biomarkers of oxidative stress and inflammation
- principal molecular pathways involved
- mitochondrial respiration

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

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