UNIVERSITÀ
POLITECNICA
DELLE MARCHE

Supervisor: Prof. Maurizio Battino

Dept. of Odontostomatologic and Specialized Clinical Sciences
https://www.disco.univpm.it/

Project idea: : Anticancer effects of dietary bioactive compounds in mammospheres and colonspheres enriched with cancer stem (-like) cells

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Research Group Description: the Supervisor

Prof. Maurizio Battino, PhD, DSc, MS, MD (Hon).

Full Professor in Nutrition and Dietetics, DISCO, UNIVPM **Head of Bioenergetic Lab**, a facility based in the Faculty of Medicine, Marche Polytechnic University, Ancona.

Guest Professor at Jiangsu University, Zhengjiang, China, Director of two Research Centers at European University of the Atlantic, Santander, Spain and at Universidad Internacional Iberoamericana, Campeche, Mexico.

More than 510 peer-reviewed research articles with about 40,000 citations received https://orcid.org/0000-0002-7250-1782 (Publication List, H-index = 109 according to Google Scholar; H-index = 90 according to Scopus). More than 30 years of experience in bioenergetics, nutritional biochemistry and food research with special emphasis on the role of natural bioactive compounds.

Awarded **Doctor Honoris Causa** from University Carol Davila, Bucharest, Romania and named a Thomson Reuters/Clarivate Analytics **Highly Cited Researcher** and listed in the World's Most Influential Scientific Minds during the last 10 consecutive years.

Involved in several national and international projects.

- European fundings:
  - 2023-2026: "Microbial resources for a sustainable olive oil system and a healthier Mediterranean food: from by-products to functional food" (**PRIMA** project).
  - 2011-2014: "The sustainable improvement of European berry production, quality and nutritional value in a changing environment: Strawberries, Currants, Blackberries, Blueberries and Raspberries" (**H2020**, EUBerry Project: EU FP7 KBBE-2010-4 Grant Agreement No. 265942).

- National fundings:
  - 2024-2025: Protein products based on fermented legumes: from food technology to human health funded by European Commission NextGenerationEU.
  - 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.
  - 2023-2025: "Anthocyanin rich adjuvants against dysbiosis and chronic inflammation in metabolic syndrome patients". PRIN project funded by the Italian Ministry of University and Research.
  - 2020-2022: Proof of Concept "FRAgole Per donne Più Sane – FRAPPE", funded by the Italian Ministry of Economic Development.
  - 2018-2020: "Effect of berry consumption on ovarian cancer prevention: the epigenetic role of dietary polyphenols" (UnivPM Strategic Project).
  - 2013-2015:"Cell cycle aberrations and oxidative stress in age related neurodegenerative disease: The role of food antioxidants" Cooperazione Scientifica e Tecnologica, Ministero Affari esteri, Executive Programme Italy/Republic of Serbia.

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Research Group Description: the Group

Bioenergetics Lab

https://twitter.com/Bio_Lab_UNIVPM

STAFF: The group is currently formed by a **full Professor, a Researcher, two post-doc researchers, seven PhD students and two master students.**

RESEARCH ACTIVITY

The main research lines of the Bioenergetic Lab focus on the evaluation of the biological effects exerted by different bioactive compounds present in many food matrices 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.

RESEARCH AND PUBBLICATIONS

https://orcid.org/0000-0002-8151-9132
https://orcid.org/0000-0002-8781-3535
https://orcid.org/0000-0003-2772-2225

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.

Dept. Clinical Sciences– DISCO
UNIVPM

UNIVERSITÀ POLITECNICA DELLE MARCHE

The Department of Odontostomatologic and Specialized Clinical Sciences

Director: Prof. Giovanni Cobellis

The **Department of Odontostomatologic and Specialized Clinical Sciences** is the scientific and educational organizational structure of the UNIVPM University established in 2008, devoted to the promotion of scientific research, education and the dissemination of scientific research results in the community.

AT A GLANCE

DISCO

Last three years
2023-24-25

741 Publications

15 Scientific Areas
MEDS-07/B, MEDS-14/B, MEDS-14/C, MEDS-16/A, MEDS-22/A, MEDS-22/B, MEDS-20/A, MEDS-21/A, MEDS-26/A, MEDS-08/C, MEDS-26/B, BIOS-07/A, BIOS-08/A, BIOS-09/A, BIOS-10/A, PHYS-06/A

>2.900.000 €
Research income

45 Staff

48 PhD, Post-doc, Research fellows

Teaching programs for **undergraduates** in Medicine and Surgery, Dentistry, Professional education, Physiotherapy, Dietetics, Dental hygiene, Nursing, Speech Therapy, Obstetrics, Biomedical laboratory techniques, Prevention techniques in the environment and workplace, Medical, Imaging and Radiation Therapy techniques.
Postgraduate Medical Training specialty in Gynecology and Obstetricia, Medical Physics, Pediatrics, Pediatric Surgery, Radiodiagnostics, Urology, Nuclear Medicine, Oral Surgery, Sport Medicine

1 Centre of Artificial Intelligence & Digital Health in Medicine and Biology AIDH
1 Centre of Health Education and promotion (CIESS)

Master's Degree in:
- Nutrition and Dietetics
- Applied Nutrition and Dietetics
- Sports Applied Nutrition and Dietetics
- Vegetarian Nutrition and Dietetics
- Expert in Diet Planning
- Nutrition in Physiological condition
- Nutrition in Patological condition

8 Clinical research Units

19 Research Laboratories

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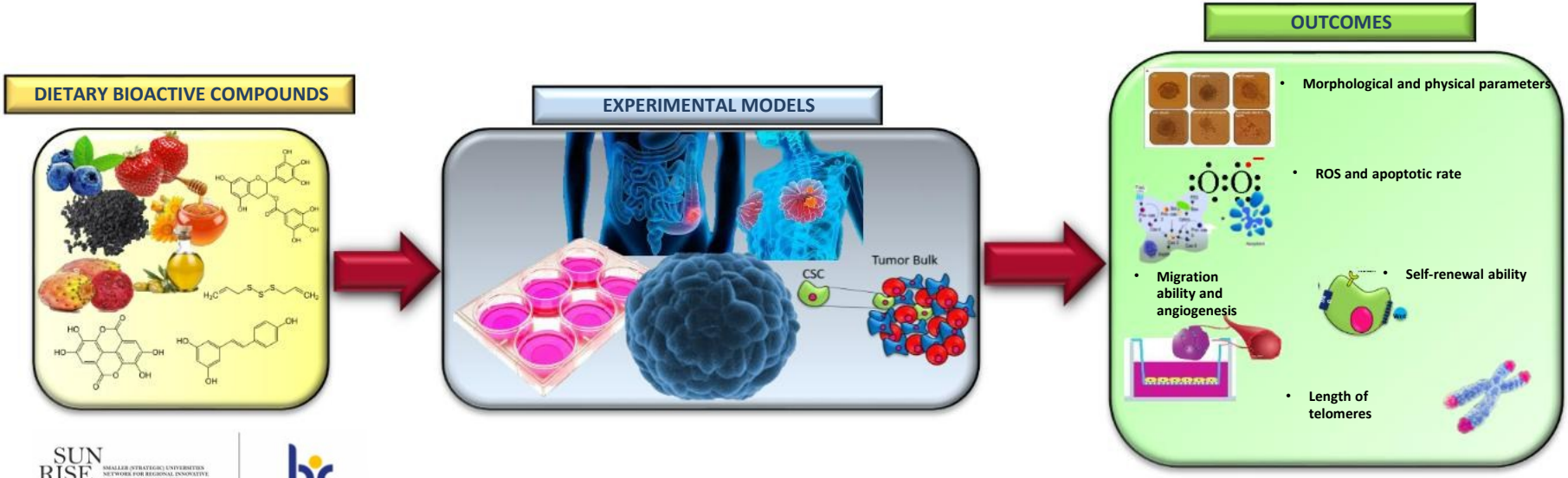
Project Idea: ANTICANCER EFFECTS OF DIETARY BIOACTIVE COMPOUNDS IN MAMMOSPHERES AND COLONSPHERES ENRICHED WITH CANCER STEM (-LIKE) CELLS

Backgroud: Breast and colon cancer represent the most common neoplastic disease worldwide. Many epidemiological studies have found that a diet rich in fruits and vegetables exerts a preventive role in these cancers and, from a preventive point of view, numerous investigations have been made on plant bioactive compounds. The main objective of this project is to evaluate the effect of dietary polyphenols in mammospheres and colonspheres enriched with Cancer Stem (-like) Cells (CSCs-like).

Project OBJECTIVES:

- **To evaluate the ability of dietary polyphenols to decrease the morphological and physical parameters of mammo/colonspheres enriched with CSCs-like.**
- **To investigate the effect of dietary polyphenols on intracellular ROS and apoptotic rate in mammo/colonspheres enriched with CSCs-like.**
- **To evaluate the effect of dietary polyphenols to decrease the self-renewal ability of CSCs-like.**
- **To investigate the effect of dietary polyphenols to reduce the migration capacity of CSCs-like.**
- **To assess the effect of dietary polyphenols on pro-angiogenic factors.**
- **To study the effect of dietary polyphenols on the length of telomeres.**



SUN RISE SMALLER (STRATEGIC) UNIVERSITIES NETWORK FOR REGIONAL INNOVATIVE AND SUSTAINABLE EVOLUTION

HR EXCELLENCE IN RESEARCH