

CURRICULUM VITAE

PERSONAL INFORMATION

Family name: Manca

First name: Claudia

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Researcher unique identifier(s) (such as ORCID, Research ID, etc.): <https://orcid.org/0000-0002-4081-9550>

Nationality: Italian

EDUCATION

March, 2010 - April, 2013: PhD in Toxicology, Unit of Experimental Oncology and Molecular Pathology, Faculty of Medicine, Department of Biomedical Sciences, University of Cagliari, Italy

Name of PhD Supervisor: Prof. Amedeo Columbano

2007-2009: Master Degree in "Neuropsychobiology"

Faculty Biology/ Department of Experimental Biology, University of Cagliari, Italy

2004-2007: Bachelor Degree in Experimental Biology

Faculty Biology/ Department of Biomedical Sciences, University of Cagliari, Italy

CURRENT POSITION

March 2024- Current position: Type B researcher (RTDB) at the Department of Biomedical Sciences University of Cagliari, Italy

Name of Supervisor: Prof. Sebastiano Banni

PREVIOUS POSITIONS

December 2021- February, 2024: Type A researcher (RTDA) at the Department of Biomedical Sciences University of Cagliari, Italy.

Name of Supervisor: Prof. Sebastiano Banni.

During this contract, I completed a 6-month internship at SOREMARTEC ITALIA SRL, a member of the Ferrero Group, Alba (CN), Piemonte.

Name of Supervisor: Dr. Mélanie Charron.

May, 2020 – December, 2021: Postdoctoral research fellowship in Physiology of Nutrition

Faculty of Biology/ Department of Biomedical Sciences, University of Cagliari, Italy

Name of Supervisor: Prof. Sebastiano Banni

February, 2018 – January, 2020: Postdoctoral research fellowship in eCBome – microbiome crosstalk and metabolic health

Université di Laval, Institut Universitaire de Cardiologie et de Pneumologie de Québec, Québec City, Canada

Name of Supervisor: Prof. Vincenzo Di Marzo

April, 2017 – January, 2018; June, 2016 – September, 2016; January, 2016 – April, 2016; December, 2014 – August, 2015: Postdoctoral research fellowship in Physiology of Nutrition

Faculty of Biology/ Department of Biomedical Sciences, University of Cagliari, Italy

Name of Supervisor: Prof. Sebastiano Banni

TEACHING ACTIVITIES

2024 – 2025: Teaching activity – Cellular and Molecular Bases of Nutrition, Master Degree Course: Cellular and Molecular Biology Curriculum. Faculty of Biology and Pharmacy, University of Cagliari, Italy.

2024 – 2025: Teaching activity – Morphological and Functional Bases of Life (module of physiology), Degree Program in Nursing, Faculty of Medicine and Surgery, University of Nuoro affiliated with the University of Cagliari, Italy.

2023 – 2024: Teaching activity – Morphological and Functional Bases of Life (module of physiology), Degree Program in Nursing, Faculty of Medicine and Surgery, University of Nuoro affiliated with the University of Cagliari, Italy.

2022 – 2023: Teaching activity – Morphological and Functional Bases of Life (module of physiology), Degree Program in Nursing, Faculty of Medicine and Surgery, University of Nuoro affiliated with the University of Cagliari, Italy.

2021 – 2022: Tutor activity – Cellular and Molecular Bases of Nutrition, Master Degree Course: Cellular and Molecular Biology Curriculum. Faculty of Biology and Pharmacy, University of Cagliari, Italy.

INSTITUTIONAL RESPONSIBILITIES

2024 – present: Member of the Faculty of Biology and Pharmacy, University of Cagliari, Italy.

2024 – present: Member of the Committee for Subject Experts, Department of Biomedical Sciences, University of Cagliari, Italy.

2021 – present: Member of the Faculty of Medicine and Surgery, University of Cagliari, Italy.

2020 – present: Supervision of graduate and PhD students in Physiology of Nutrition, Department of Biomedical Sciences, University of Cagliari, Italy.

February, 2018 – January, 2020: Supervision of master and PhD students at Université Laval, Institut Universitaire de Cardiologie et de Pneumologie de Québec, Québec City, Canada.

REVIEWING ACTIVITIES

January, 2024 – present: Guest Associate Editor for *Frontiers in Pharmacology (Inflammation Pharmacology)*. Research topic: “Disentangling the intestinal microbiota-mucus interactions in human health and disease: where are we now?”

2021 – present: Reviewer for *Nutrients* (ISSN 2072-6643, Open Access MDPI); *International Journal of Environmental Research and Public Health*, *Nutrients* (ISSN 1660-4601, Open Access MDPI); *Frontiers in Nutrition* (ISSN 2296-861X); *Molecules* (ISSN 1420-3049, Open Access MDPI); *International Journal of Molecular Science* (ISSN 1422-0067, Open Access MDPI); *Biomedicines* (ISSN 2227-9059, Open Access MDPI).

MEMBERSHIPS OF SCIENTIFIC SOCIETIES (IF APPLICABLE)

2022- present: Member of the Italian Society of Physiology.

MAJOR COLLABORATIONS

Prof. Sebastiano Banni, Prof. Gianfranca Carta and Dr. Maria Elisabetta Murru: collaboration aimed at gaining insights into the physiological role of dietary fat and derived lipid mediators in the control of lipid and energy metabolism and body homeostasis in experimental models and in humans. Faculty of Biology/Department of Biomedical Sciences, University of Cagliari, Italy.

Dr. Alberto Dávalos and María-Carmen López de las Hazas: investigating the bioavailability and functional roles of dairy-derived extracellular vesicles and their miRNAs cargo in metabolic flexibility, lipid metabolism, and gut microbiota composition. IMDEA Food Institute, Madrid, Spain.

Prof. Monica Puligheddu and Dr. Roberta Coa: collaboration aimed at identifying circulating metabolic biomarkers of Vagus Nerve Stimulation (VNS) in candidates for VNS therapy who have drug-resistant epilepsy. Faculty of Biology/Department of Biomedical Sciences, University of Cagliari, Italy, and University Hospital Policlinico Duilio Casula, Monserrato, Cagliari.

Prof. Vincenzo di Marzo and Prof. Cristoforo Silvestri: collaboration in the field of endocannabinoidome and control of body homeostasis, and crosstalk between endocannabinoidome and microbiome in metabolic health. Université di Laval, Institut Universitaire de Cardiologie et de Pneumologie de Québec, Québec City, Canada.

Prof. Patrice Cani and Dr Francesco Suriano: collaboration in the field of microbiome-endocannabinoidome crosstalk in metabolic health. Université Catholique de Louvain, WELBIO, Brussels, Belgium, and Institute of Biomedicine, Department of Medical Biochemistry and Cell Biology, University of Gothenburg, Sweden.

Prof. Filippo Tocco: collaboration in the field of metabolic flexibility in humans through the use of indirect calorimetry and identification of circulating biomarkers of MF. Department of Medical Science and Public Health, University of Cagliari.

Prof. Maria Pina Mollica, collaboration in the study of the physiological role exerted by dietary fat and derived lipid mediators in modifying the cellular energy metabolism, Department of Biology, University of Napoli, Italy.

Prof. Miriam Melis and Prof. Marco Pistis, collaboration aimed at investigating the role played by fatty acids in the contest of neurological and neuropsychiatric disorders. Department of Biomedical Sciences, University of Cagliari, Italy.

PUBLICATIONS

- 1) "Anti-neuroinflammatory effects of conjugated linoleic acid isomers, c9,t11 and t10,c12, on activated BV-2 microglial cells". Porcedda, Manca, Carta, Piras, Banni, Sogos, Murru. *Front Cell Neurosci*. 2024 Sep 27;18:1442786. doi: 10.3389/fncel.2024.1442786.
- 2) "Impact of prenatal THC exposure on lipid metabolism and microbiota composition in rat offspring". Murru E*, Carta G*, Manca C*, Verce M, Everard A, Serra V, Aroni S, Melis M, Banni S. *Heliyon*. 2024 Aug 2;10(15):e35637. doi: 10.1016/j.heliyon.2024.e35637. **co-first.
- 3) "Astrocytic Cannabinoid Receptor 1 Promotes Resilience by Dampening Stress-Induced Blood-Brain Barrier Alterations and Inflammation". Dudek KA, Paton S, Collignon A, Lebel M, Lavoie O, Bouchard J, Kaufmann FN, Dion-Albert L, Clavet-Fournier V, Binder LB, Manca C, Flamand N, Guzman M, Campbell M, Turecki G, Mechawar N, Lavoie-Cardinal F, Silvestri C, Di Marzo V, Menard C. *Biological Psychiatry* 2024 May; <https://doi.org/10.1016/j.biopsych.2024.02.012>.
- 4) "Indirect Calorimetry-Based Novel Approach for Evaluating Metabolic Flexibility and Its Association with Circulating Metabolic Markers in Middle-Aged Subjects". Murru E, Manca C, Carta G, Ruggiu M, Solinas R, Montisci R, Hodson L, Dearlove D, Mollica MP, Tocco F, Banni S. *Nutrients*. 2024 Feb 14;16(4):525. doi: 10.3390/nu16040525.
- 5) "Identification of metabolic biomarkers of chronic vagus nerve stimulation (VNS) in subjects with drug-resistant epilepsy (DRE)". Manca C, Coa R, Murru E, Carta G, Pinna G, Sanfilippo R, Polizzi L, Pistis M, Follesa P, Puligheddu M, Banni S. *Epilepsia Open*. 2024 Feb;9(1):432-438. doi: 10.1002/epi4.12871.
- 6) "Intake of palmitic acid and its association with metabolic flexibility in middle-aged individuals: a preliminary study". Murru E, Carta G, Manca C, Leone A, Murru C, Ruggiu M, Solinas R, Montisci R, Tocco F, Banni S. 2023(1), e230022. Retrieved May 6, 2024. doi.org/10.1530/REM-23-0022.
- 7) "Reducing Dietary Polyunsaturated to Saturated Fatty Acids Ratio Improves Lipid and Glucose Metabolism in Obese Zucker Rats". Carta G, Murru E, Trinchese G, Cavaliere G, Manca C, Mollica MP, Banni S. *Nutrients*. 2023 Nov 13;15(22):4761. doi: 10.3390/nu15224761.
- 8) "A lipidomics- and transcriptomics-based analysis of the intestine of genetically obese (ob/ob) and diabetic (db/db) mice: links with inflammation and gut microbiota". Suriano F*, Manca C*, Flamand N, Van Hul M, Delzenne NM, Silvestri C, Cani PD, Di Marzo V. *Cells* 2023 Jan 25;12(3):411. doi: 10.3390/cells12030411. *co-first.

- 9) "Profound Modification of Fatty Acid Profile and Endocannabinoid-Related Mediators in PPAR α Agonist Fenofibrate-Treated Mice". Murru E, Muntoni AL, Manca C, Aroni S, Pistis M, Banni S, Carta G. *International Journal of Molecular Sciences*. 2022 Dec 31;24(1):709. doi: 10.3390/ijms24010709.
- 10) "Exploring the endocannabinoidome in genetically obese (ob/ob) and diabetic (db/db) mice: Links with inflammation and gut microbiota". Suriano F*, Manca C*, Flamand N, Depommier C, Van Hul M, Delzenne NM, Silvestri C, Cani PD, Di Marzo V. *Biochim Biophys Acta Mol Cell Biol Lipids*. 2021 Oct 1:159056. doi: 10.1016/j.bbalip.2021.159056. *co-first.
- 11) "Hemp seed significantly modulates the endocannabinoidome and produces beneficial metabolic effects with improved intestinal barrier function and decreased inflammation in mice under a high-fat, high-sucrose diet as compared with linseed". Ben Nacib R, Manca C, Lacroix S, Martin C, Flamand N, Di Marzo V, Silvestri C. *Frontiers in Immunology*. 2022 Sep 26; 13:882455. doi: 10.3389/fimmu.2022.882455.
- 12) "Three of a Kind: Control of the Expression of Liver-Expressed Antimicrobial Peptide 2 (LEAP2) by the Endocannabinoidome and the Gut Microbiome". Shen M, Manca C, Suriano F, Nallabelli N, Pechereau F, Allam-Ndoul B, Iannotti FA, Flamand N, Veilleux A, Cani PD, Silvestri C, Di Marzo V. *Molecules*. 2021 Dec 21;27(1):1. doi: 10.3390/molecules27010001.
- 13) "Dietary Phospholipid-Bound Conjugated Linoleic Acid and Docosahexaenoic Acid Incorporation Into Fetal Liver and Brain Modulates Fatty Acid and N-Acylethanolamine Profiles". Murru E, Carta G, Manca C, Asgeir Saebo, Santoni M, Mostallino R, Pistis M, Banni S. *Frontiers in Nutrition*. 2022 Mar 10;9:834066. doi: 10.3389/fnut.2022.834066.
- 14) "Impact of Dietary Palmitic Acid on Lipid Metabolism". Murru E*, Manca C*, Carta G*, Banni S*. *Frontiers in Nutrition*. 2022 Mar 23;9:861664. doi: 10.3389/fnut.2022.861664. *equal contribution.
- 15) "Milk Fatty Acid Profiles in Different Animal Species: Focus on the Potential Effect of Selected PUFAs on Metabolism and Brain Functions". Mollica MP, Trinchese G, Cimmino F, Penna E, Cavaliere G, Tudisco R, Musco N, Manca C, Catapano A, Monda M, Bergamo P, Banni S, Infascelli F, Lombardi P, Crispino M. *Nutrients*. 2021 Mar 28;13(4):1111. doi: 10.3390/nu13041111.
- 16) "Assessment of the Effects of Dietary Vitamin D Levels on Olanzapine-Induced Metabolic Side Effects: Focus on the Endocannabinoidome-Gut Microbiome Axis". Abolghasemi A, Manca C, Iannotti FA, Shen M, Leblanc N, Lacroix S, Martin C, Flamand N, Di Marzo V, Silvestri C. *Int. J. Mol. Sci.* 2021 Nov 16;22(22):12361. doi: 10.3390/ijms222212361.
- 17) "Conjugated Linoleic Acid and Brain Metabolism: A Possible Anti-Neuroinflammatory Role Mediated by PPAR α Activation". Murru E, Carta G, Manca C, Sogos V, Pistis M, Melis M, Banni S. *Front Pharmacol*. 2021 Jan 8;11:587140. doi: 10.3389/fphar.2020.587140. eCollection 2020.
- 18) "Oral Capsaicinoid Administration Alters the Plasma Endocannabinoidome and Fecal Microbiota of Reproductive-Aged Women Living with Overweight and Obesity". Manca C*, Lacroix S*, Pérusse F, Flamand N, Chagnon Y, Drapeau V, Tremblay A, Di Marzo V, Silvestri C. *Biomedicines*. 2021 Sep 17;9(9):1246. doi: 10.3390/biomedicines9091246. *co-first.
- 19) "Circulating fatty acids and endocannabinoidome-related mediator profiles associated to human longevity". Manca C*, Carta G*, Murru E*, Abolghasemi A, Ansar H, Errigo A, Cani PD, Banni S, Pes GM. *Geroscience*. 2021 Mar 1. doi: 10.1007/s11357-021-00342-0. *co-first.
- 20) "Fatty Acid Metabolism and Derived-Mediators Distinctive of PPAR- α Activation in Obese Subjects Post Bariatric Surgery". Manca C, Pintus S, Murru E, Fantola G, Vincis M, Batetta B, Moroni E, Carta G, Banni S. *Nutrients*. 2021 Dec 1;13(12):4340. doi: 10.3390/nu13124340.

- 21) "Different Dietary N-3 Polyunsaturated Fatty Acid Formulations Distinctively Modify Tissue Fatty Acid and N-Acylethanolamine Profiles". Murru E, Lopes PA, Carta G, Manca C, Abolghasemi A, Guil-Guerrero JL, Prates JAM, Banni S. *Nutrients*. 2021 Feb 15;13(2):625. doi: 10.3390/nu13020625.
- 22) "Alterations of brain endocannabinoidome signaling in germ-free mice". Manca C, Shen M, Boubertakh B, Martin C, Flamand N, Silvestri C, Di Marzo V. *Biochim Biophys Acta Mol Cell Biol Lipids*. 2020 Dec;1865(12):158786. doi: 10.1016/j.bbalip.2020.158786.
- 23) "Germ-free mice exhibit profound gut microbiota-dependent alterations of intestinal endocannabinoidome signaling". Manca C, Boubertakh B, Leblanc N, Deschênes T, Lacroix S, Martin C, Houde A, Veilleux A, Flamand N, Muccioli GG, Raymond F, Cani PD, Di Marzo V, Silvestri C. *J Lipid Res*. 2020 Jan;61(1):70-85. doi: 10.1194/jlr.RA119000424.
- 24) "Natural CLA-Enriched Lamb Meat Fat Modifies Tissue Fatty Acid Profile and Increases n-3 HUFA Score in Obese Zucker Rats". Carta G, Murru E, Manca C, Serra A, Mele M, Banni S. *Biomolecules*. 2019 Nov 19;9(11). pii: E751. doi: 10.3390/biom9110751.
- 25) "Dietary Conjugated Linoleic Acid-Enriched Cheeses Influence the Levels of Circulating n-3 Highly Unsaturated Fatty Acids in Humans". Murru E, Carta G, Cordeddu L, Melis MP, Desogus E, Ansar H, Chilliard Y, Ferlay A, Stanton C, Coakley M, Ross RP, Piredda G, Addis M, Mele MC, Cannelli G, Banni S, Manca C. *Int J Mol Sci*. 2018 Jun 11;19(6). pii: E1730. doi: 10.3390/ijms19061730.
- 26) "Palmitic Acid: Physiological Role, Metabolism and Nutritional Implications". Carta G, Murru E, Banni S, Manca C. *Front Physiol*. 2017 Nov 8;8:902. doi: 10.3389/fphys.2017.00902. eCollection 2017. Review.
- 27) "Polymorphism rs1761667 in the CD36 Gene Is Associated to Changes in Fatty Acid Metabolism and Circulating Endocannabinoid Levels Distinctively in Normal Weight and Obese Subjects". Melis M, Carta G, Pintus S, Pintus P, Piras CA, Murru E, Manca C, Di Marzo V, Banni S, Tomassini Barbarossa I. *Front Physiol*. 2017 Dec 6;8:1006. doi: 10.3389/fphys.2017.01006. eCollection 2017.
- 28) "MicroRNA/gene profiling unveils early molecular changes and nuclear factor erythroid related factor 2 (NRF2) activation in a rat model recapitulating human hepatocellular carcinoma (HCC)". Petrelli A, Perra A, Cora D, Sulas P, Menegon S, Manca C, Migliore C, Kowalik MA, Ledda- Columbano GM, Giordano S, Columbano A. *Hepatology*. 2014 Jan;59(1):228-41. doi: 10.1002/hep.26616.

MAJOR CONGRESSES

Scientific Committee of the Congress "'Aromatic and Nutritional Quality of Milk, Cheese, and Meat from the Marghine Region and Their Influence on Human Metabolism" for the project "Kent'Erba". Cultural Services Center, Macomer, December 6, 2024.

Scientific Committee of the Congress for the Specialization School in Food Science. Congress title: "New Frontiers in Nutrition: Multifactorial Strategies for Controlling Body Composition". University of Cagliari, May 6, 2024.

5th International Conference "JIRU-MicroMeNU 2022". Poster title: "Changes of AEA and DHEA levels in rat fetal liver and brain induced by maternal dietary PL-bound CLA and DHA". Murru E, Carta G, Manca C, Saebo A, Santoni Mqueb, Pistis M, Banni S. Roma, October 11 - 13, 2022.

American Society for Nutrition (ASN) Nutrition Live Online 2021. Poster title: "New insights on hepatic de novo lipogenesis in rat's fetus". Manca C, Murru E, Carta G, Santoni M, Pistis M, Banni S. June 07 - 10, 2021.

Sentinel North Scientific Meeting. Oral communication: "Germ free mice as a model to investigate new mechanisms involved in cardiometabolic disorders in the North; how the gut microbiota impacts the endocannabinoidome". Québec City, Canada, August 26 - 28, 2019.

Journées scientifiques de la recherche, Université Laval. Oral communication: “Germ free mice as a model to investigate new mechanisms involved in metabolic disorders; how the gut microbiota impacts the endocannabinoidome”. Québec City, Canada, May 8 - 9, 2019.

Keystone Symposium. Poster title: “Germ free mice as a model to investigate new mechanisms involved in metabolic disorders; how the gut microbiota impacts the endocannabinoidome”. Manca C, Boubertakh B, Leblanc N, Lacroix S, Shen M, Martin C, Tinto F, Houde A, Veilleux A, Flamand N, Di Marzo V, Silvestri C. Montreal, Canada, March 10 - 14, 2019.

Benefiq Congress “The International Rendez-vous on Health Ingredients”. Poster title: “Alteration of the endocannabinoidome in germ free mice: insight into the mechanisms mediating their metabolic phenotype”. Manca C, Boubertakh B, Leblanc N, Shen M, Martin C, Tinto F, Houde A, Veilleux A, Flamand N, Di Marzo V, Silvestri C. Québec City, Canada, October 2 – 4, 2018.

Sentinel North Scientific Meeting. Poster title: “Microbiomes as sentinels for the environment and cardiometabolic health in the North: role of the gut microbiome and its impact on endocannabinoidome-control of metabolism”. Manca C, Boubertakh B, Leblanc N, Martin C, Houde A, Veilleux A, Flamand N, Di Marzo V, Silvestri C. Québec City, Canada, August 27 – 30, 2018.

Sardinian Congress of ADI/SINU (Italian Society of Human Nutrition). Oral communication: “PPAR α gene expression modulation induced by diet and modifications of body composition in human”, University of Cagliari, September 26 - 27, 2016.

JOB RELATED SKILLS

Animal handling, acute and chronic drug treatments in rats and mice, intracardiac perfusion, animal euthanasia, isolation of animal tissues. Tissue Laser-Microdissection, tissues staining methods, immunohistochemistry, immunofluorescence and microscope analysis. Protein extraction, western blot analysis; RNA, microRNAs and DNA isolation, PCR, RT-PCR, microRNAs assays using TaqMan Low Density Array. Lipid extraction with Folch and Bligh and Dyer methods; analysis of unsaturated and saturated fatty acids using HPLC and gas chromatography; eCBome-related molecules analysis using HPLC/MS.

Data analysis, use of GraphPad, Agilent ChemStation, Mass Hunter, Rotor-Gene Q software. Use of software for toxicological analysis: Percepta, Vega, QSAR Toolbox.

PERSONAL SKILLS

Good knowledge of Microsoft office. Good knowledge of English (First Certificate, overall score 166/190, Cambridge English Language Assessment) and French.

January, 2025

In compliance with the Italian legislative Decree no. 196 dated 30/06/2003, I hereby authorize you to use and process my personal details contained in this document.