



TEMPLATE RICHIESTA ATTIVAZIONE TOPIC AGGIUNTIVI SU FONDI PNRR

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Project title/Titolo del Progetto	Postbiotics as new breakthrough solution for medical applications
Principal Investigator	Maria Rescigno
Main field of interest/Ambito principale di ricerca	Development of postbiotics (active metabolites of the microbiota).
Abstract	<p>Our wellbeing depends on the interaction of our body with the community of microorganisms that co-habit with us. The compounds released during their metabolic activities, called Postbiotics, regulate this interaction and are beneficial for our health. Many pathologies are associated with an unbalance of the microbiota and disequilibrium of its metabolites. Postbiotics can be used to re-establish host-microbe interactions in cases where this equilibrium is lost.</p> <p>Postbiotica is the owner of an innovative fermentation process PBtech® which does not rely on food. This proprietary technology platform allows us to obtain a 'pure' mixture of Postbiotics with different functional properties derived from selected strains of bacteria.</p> <p>The aim of the project relies on the functional characterization of the chemical's identity present in the postbiotic and on the study of their mechanism of action.</p>
Type of Co-funding	X D.M. 352/2022 - Borse di dottorato cofinanziate dalle imprese
Lab name and address	Humanitas Clinical and Research Center Lab. Mucosal Immunology and Microbiota Via Rita Levi Montalcini, 2 20072 Pieve Emanuele, Milan, Italy
Brief description of the coherence of the Project in relation to the PNRR objectives ³	<p>The knowledge of how the microbiota diversity and the dynamics, through the lifespan, by which microorganisms control each other is of relevance to understanding the development of several aging-associated pathologies.</p> <p>Elderly and younger populations do show differences in gut microbe composition. Gut microbiota of elderly people is enriched in pro-inflammatory commensals at the expense of beneficial microbes. The microbiota carries out its functions through the production of metabolites, called postbiotics, which are essential for our health. By proprietary and innovative Postbiotica technology, this project aims to restore microbiota beneficial proprieties by specific postbiotics supplementation to maintain health in old age.</p> <p>Thanks to the close interaction and agreement of Humanitas University with Postbiotica, this project is feasible within the PhD school. The obtained results will follow the Humanitas University rules for open science and FAIR Data and could be rapidly translatable into innovative healthcare solution</p>
N. of months abroad (min. 6,	



max. 18) [compulsory]	
Name of the research institution/company abroad	
N. of months of internship (min. 6, max. 18) [compulsory only for D.M. 352/2022]	18
Name of the company ³	Postbiotica srl
Scientific references	<p>Mileti, E., Matteoli, G., Iliev, I.D. & Rescigno, M. Comparison of the immunomodulatory properties of three probiotic strains of Lactobacilli using complex culture systems: prediction for in vivo efficacy. <i>PLoS One</i> 4, e7056 (2009).</p> <p>Tsilingiri, K., <i>et al.</i> Probiotic and postbiotic activity in health and disease: comparison on a novel polarised ex-vivo organ culture model. <i>Gut</i> 61, 1007-1015 (2012).</p> <p>Zagato E, Pozzi C, Bertocchi A, Schioppa T, Saccheri F, Guglietta S, Fosso B, Melocchi L, Nizzoli G, Troisi J, Marzano M, Oresta B, Spadoni I, Atarashi K, Carloni S, Arioli S, Fornasa G, Asnicar F, Segata N, Guglielmetti S, Honda K, Pesole G, Vermi W, Penna G, Rescigno M. 2020. Endogenous murine microbiota member Faecalibaculum rodentium and its human homologue protect from intestinal tumour growth. <i>Nat Microbiol</i> 5: 511-24</p> <p>Mouries J, Brescia P, Silvestri A, Spadoni I, Sorribas M, Wiest R, Mileti E, Galbiati M, Invernizzi P, Adorini L, Penna G, Rescigno M. 2019. Microbiota-driven gut vascular barrier disruption is a prerequisite for non-alcoholic steatohepatitis development. <i>J Hepatol</i> 71: 1216-28</p> <p>Carloni, S., Bertocchi, A., Mancinelli, S., ...Lodato, S., Rescigno, M. 2021 Identification of a choroid plexus vascular barrier closing during intestinal inflammation. <i>Science</i>, 2021, 374(6566), pp. 439–448</p>