

Biosketch

Prof. Maria Rescigno, PhD

Position in CoE: Key Researcher

Personal Details

Place of birth	Naples, Italy
Nationality	Italian
Children	2002, 2008
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Profile	-
List of publications	ORCID: 0000-0002-6464-509X
Academic age	26 years since PhD



Academic Career and Positions Held

I graduated in Biology from the **University of Milan (IT)** and worked as a visiting scholar at the University of Cambridge (UK), in the Department of Biochemistry. I received my **PhD in Pharmacology and toxicology** from the National Research Council of Milan. I was the **director of the Dendritic cell biology and immunotherapy Unit** at the European Institute of Oncology (Milan, IT) and a **visiting professor at the University of Oslo**. I was member and the chair of the **EMBO council** and I'm seating in the technical and scientific board of several charities, funding agencies and in different companies. In 2016, I founded **Postbiotica s.r.l.**, a spin-off of the University of Milan that exploits microbiota-derived metabolites as new pharmaceutical agents.

Scientific Achievements and Scientific Contribution to the CoE

Scientific Achievements. My main research focus is on **host-microbe interactions in the gut-liver-brain axis** - with the final aim of understanding the role of the microbiota in disease development, prevention and therapeutics. I have devoted almost my entire research activities in **mucosal immunology** and host-microbe interactions. We showed that dendritic cells extend protrusions across epithelial cells to directly sense the luminal content of the gut, including bacteria and food antigens. We also showed that the gut microenvironment was dictating the phenotype of tolerogenic dendritic cells. We extended this analysis to understanding the role of the microbiota in tumorigenesis and cancer treatment. We identified a member of the microbiota capable of **controlling tumorigenesis in colorectal cancer** or **microbiota-derived metabolites enhancing immunotherapy efficacy** and analyzed the **role of the immune system in antibody treatment**. In addition, we found a **new vascular barrier in the gut** that resembles the blood brain barrier whose deregulation leads to several disorders including NASH and colorectal cancer metastasis. We evaluated the vascular interaction between the gut and the brain showing that gut-vascular barrier (GVB) deregulations lead to change in brain permeability with the identification of a new vascular barrier in the choroid plexus. Recently, we analyzed the **role of maternal IgAs in controlling sepsis in the newborn** as well as the **role of the microbiota in pregnancy outcome**.

Scientific Contribution to the CoE. I will continue studying the role of the microbiota in **cancer treatment efficacy** and in controlling the **gut-brain axis**.

10 Most Important Publications (*relevant for the CoE)

1. *Pietrasanta C, Carlosama C, Lizier M, Fornasa G, Jost TR, Carloni S, Giugliano S, Silvestri A, Brescia P, De Ponte Conti B, Braga D, Mihula M, Morosi L, Bernardinello A, Ronchi A, Martano G, Mosca F, Penna G, Grassi F, Pugni L, **Rescigno M**. Prenatal antibiotics reduce breast milk IgA and induce dysbiosis in mouse offspring, increasing neonatal susceptibility to bacterial sepsis. *Cell Host Microbe*. 2024 Dec 11;32(12):2178-2194.e6. <https://doi.org/10.1016/j.chom.2024.11.001>.
2. *Giugliano S, Gatti A, Rusin M, Schorn T, Pimazzoni S, Calanni-Pileri M, Fraccascia V, Carloni S, **Rescigno M**. Maternal gut microbiota influences immune activation at the maternal-fetal interface affecting pregnancy outcome *Nat Commun*. 2025 May 9;16(1):4326. <https://doi.org/10.1016/j.chom.2024.11.001>.
3. *Ferrari, V. Lo Cascio, A., Melacarne, A., Tanaskovic, N. Mozzarelli, A.M. Tiraboschi, L. Lizier, M., Salvi, M., Braga, D., Algieri, F., Penna, G., **Rescigno, M.**, Sensitizing cancer cells to immune checkpoint inhibitors by microbiota-mediated upregulation of HLA class I, 2023, *Cancer Cell* 2023 Oct 9;41(10):1717-1730.e4. <https://doi.org/10.1016/j.ccell.2023.08.014>.
4. Azzolini, ED, Levi, R. Sarti, R., Pozzi, C. Mollura, M. Mantovani, A., and **Rescigno, M**. Association Between BNT162b2 Vaccination and Long COVID After Infections Not Requiring Hospitalization in Health Care Workers *JAMA*. Published online July 1, 2022. <https://doi.org/10.1001/jama.2022.11691>.
5. *Carloni, S. Bertocchi, A., Mancinelli, S., Bellini, M, Erreni, M, Borreca, A., Braga, D., Giugliano, S. Mozzarelli, A., Manganaro, D., Perez Fernandez, D., Colombo, F., Di Sabatino, A., Pasini, D., Penna, G., Matteoli, M., Lodato, S., **Rescigno, M**. Identification of a Choroid Plexus Vascular Barrier Closing during Intestinal Inflammation. *Science*, 2021, 374 (6566), pp.439. <https://doi.org/10.1126/science.abc6108>.
6. *Bertocchi, A. Carloni, S. Ravenda, PS, Bertalot, G. Spadoni, I, Lo Cascio, A., Gandini, S. Lizier, M., Braga, D., Asnicar, F., Segata, N., Klaver, C., Brescia, P., Rossi, E., Anselmo, A., Guglietta, S., Maroli, A., Spaggiari, P., Tarazona, N., Cervantes, A., Marsoni, S., Lazzari, L., Jodice, MG, Luise, C., Erreni, M., Pece, S., and **Rescigno, M**. Gut Vascular Barrier impairment leads to intestinal bacteria dissemination and colorectal cancer metastasis to liver. *Cancer Cell*, 2021, 10;39(5):708-724.e11. <https://doi.org/10.1016/j.ccell.2021.03.004>.
7. *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**. Endogenous murine microbiota member *Faecalibaculum rodentium* and its human homologue protect from intestinal tumour growth. *Nat Microbiol*. 2020 Jan 27. <https://doi.org/10.1038/s41564-019-0649-5>.
8. *Mouries J, Brescia P, Silvestri A, Spadoni I, Sorribas M, Wiest R, Mileti E, Galbiati M, Invernizzi P, Adorini L, Penna G, **Rescigno M**. Microbiota-driven gut vascular barrier disruption is a prerequisite for non-alcoholic steatohepatitis development. *J Hepatol*. 2019 Aug 13. pii: S0168-8278(19)30471-4. <https://doi.org/10.1016/j.jhep.2019.08.005>.
9. Pozzi C, Cuomo A, Spadoni I, Magni E, Silvola A, Conte A, Sigismund S, Ravenda PS, Bonaldi T, Zampino MG, Cancelliere C, Di Fiore PP, Bardelli A, Penna G, **Rescigno M**. The EGFR-specific antibody cetuximab combined with chemotherapy triggers immunogenic cell death. *Nat Med*. 2016 Jun;22(6):624-31. <https://doi.org/10.1038/nm.4078>.
10. *Spadoni I, Zagato E, Bertocchi A, Paolinelli R, Hot E, Di Sabatino A, Caprioli F, Bottiglieri L, Oldani A, Viale G, Penna G, Dejana E, **Rescigno M**. A gut-vascular barrier controls the systemic dissemination of bacteria. *Science*. 2015 Nov 13;350(6262):830-4. <https://doi.org/10.1126/science.aad0135>.