PHYSICIAN SCIENTIST
LA MEDICINA INCONTRA LA RICERCA
promosso da: AIRC Fondazione CARIPLO | con il supporto di: SEMM UNIVERSITÀ DEGLI STUDI DI MILANO

2026 Physician Scientist Call

AVAILABLE POSITIONS

Principal Investigator	**IANNACONE MATTEO**
Institute of Affiliation	Università Vita-Salute San Raffaele
Title of the proposed project:	Restoring Immune Surveillance in Liver Tumors through Endothelial Reprogramming
Short description of the project	The liver is a frequent site of primary and secondary malignancies, including hepatocellular carcinoma, cholangiocarcinoma, and metastases from colorectal and other cancers. Despite major advances in cancer immunotherapy, many liver tumors remain poorly responsive to immune-based treatments. Emerging evidence suggests that alterations in the tumor vasculature may represent a previously underappreciated mechanism of immune escape. This PhD project will investigate how endothelial cells regulate immune surveillance across different liver tumors and how vascular remodeling influences the ability of cytotoxic lymphocytes to detect and eliminate malignant cells. The candidate will combine analyses of human tumor specimens with advanced mouse models, intravital microscopy, spatial transcriptomics, single-cell genomics, and functional immunological approaches to define the molecular pathways controlling endothelial plasticity during tumor progression. The project will focus on three objectives: (i) identifying endothelial programs associated with immune-permissive and immune-resistant tumor states; (ii) determining how vascular remodeling alters communication between tumor cells and immune cells within the liver microenvironment; and (iii) developing strategies to reprogram the tumor vasculature and restore effective anti-tumor immunity. Particular emphasis will be placed on understanding whether common vascular mechanisms operate across different liver tumor types and can be therapeutically targeted. The candidate will receive multidisciplinary training in cancer immunology, vascular biology, imaging, genomics, and translational oncology within a highly interactive research environment. The project offers extensive opportunities for interaction with clinicians, surgeons, pathologists, and computational biologists, with the ultimate goal of developing innovative therapeutic approaches for patients with liver cancer. Clinical duties (20% effort) can be carried out at IRCCS Ospedale San Raffaele, Milan, within the candidate's specialty program or through affiliated clinical units, subject to agreement with the relevant specialty school.
Main research area for the project	Immunology
5 keywords for the project	Innate immunity – Immunotherapy - Endothelial cells - Hepatocellular carcinoma (HCC) - Metastasis

LAB INFO	
Main topic/s of the lab	Tissue and spatial immunology; Liver immunology and immune surveillance; Cancer immunology and immunotherapy; Tumor microenvironment and vascular biology; Immune cell engineering and RNA-based therapeutics; Translational immunology.
Short description of the lab activity	The Dynamics of Immune Responses laboratory studies how immune responses are orchestrated within tissues, with a particular focus on the liver as a model organ. Our research combines advanced intravital microscopy, spatial transcriptomics, single-cell genomics, systems immunology, and sophisticated mouse models to understand how tissue architecture, vascular biology, and local microenvironments regulate immunity in health and disease. Current research areas include liver cancer immunology, tissue-specific immune surveillance, chronic viral infections, innate and adaptive lymphocyte biology, and the development of innovative immunotherapies. A major goal of the laboratory is to uncover fundamental mechanisms governing immune function within tissues and translate these discoveries into novel therapeutic strategies for cancer and chronic diseases. The laboratory offers a highly multidisciplinary environment integrating immunology, oncology, pathology, imaging, computational biology, genomics, and translational medicine.
Recent bibliography	Identification of a Kupffer cell subset capable of reverting the T cell dysfunction induced by hepatocellular priming. IMMUNITY 2021 Sep; 54: 2089 Group 1 ILCs regulate T cell-mediated liver immunopathology by controlling local IL-2 availability. SCI IMMUNOL 2022 Feb; 7: eabi6112 Priming and Maintenance of Adaptive Immunity in the Liver. ANNU REV IMMUNOL 2024 Jun; 42: 375 CD4+ T cells license Kupffer cells to reverse CD8+ T cell dysfunction induced by hepatocellular priming. NAT IMMUNOL 2025 Aug; 26: 1352 Therapeutic potential of co-signaling receptor modulation in hepatitis B. Cell 2024 Jul; 187: 4078
Group composition	The laboratory consists of approximately 25–30 researchers, including the Principal Investigator, senior scientists, postdoctoral fellows, PhD students, physician-scientists, graduate students, research technicians, and computational scientists. The group works closely with clinicians, pathologists, surgeons, hepatologists, infectious disease specialists, and bioinformaticians within the San Raffaele Scientific Institute and University. The laboratory is embedded within the Institute of Immunology and Infectious Diseases and benefits from extensive interactions with neighboring groups working in immunology, cancer biology, genomics, imaging, and translational medicine.

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Institutional page link	https://research.hsr.it/en/divisions/immunology-transplantation-and-infectious-diseases/dynamics-of-immune-responses/matteo-iannaccone.html
Lab website link	www.iannaconelab.com
Social media links	https://x.com/iannaconelab