European School of Molecular Medicine

2026 spring call PhD selections

AVAILABLE POSITIONS

Principal Investigator	Giuseppina Arbore
Institute of Affiliation	Fondazione Istituto Nazionale Genetica Molecolare "Romeo ed Enrica Invernizzi" (INGM)

*PROJECT INFO	
Title of the proposed project:	**Deciphering novel Immuno-Molecular mechanisms of Aggressiveness in Gastric Cancer**
Short description of the project	Gastric cancer (GC) resistance to neoadjuvant chemotherapy (nCT) is closely linked to defective immune surveillance and a lack of tumor regression. This PhD project will investigate how nCT response shapes and stimulates T cell responses against tumor neoantigens (TNAs) derived from non-synonymous mutations, gene fusions, and retroelement insertions. The student will utilize the cutting-edge HLA-Agnostic Neoantigen Screening (HANSolo) platform on existing patient DNA/RNA sequencing data to identify immunogenic TNAs. They will characterize anti-tumoral immune responses using patient-derived blood cells, tumor-infiltrating lymphocytes (TILs), and lymph node T cells, validating specificities via co-cultures with autologous B-cell APCs. Furthermore, the candidate will generate patient-derived tumor organoids to prime PBMCs and assess the reactivity of expanded T lymphocytes. By comparing pathological complete responders against non-responders, this project aims to define the breadth of TNA-specific T cell responses and nominate novel personalized immunotherapeutic targets for patients resistant to conventional nCT.
Main research area for the project	Immunology
Second research area for the project	Cancer Biology, Molecular and Cellular biology
3 key words for the project	Cancer Immunology, Tumor antigens, Therapy resistance

LAB INFO	
Main topic/s of the lab	Translational Cancer Genomics, Tumor Immunology & T-Cell Reactivity, tumor spatial transcriptomics and proteomics, Chemo-immunotherapy Resistance Mechanisms, Patient-Derived Tumor Organoids
Short description of the lab activity	The laboratory bridges translational oncology and tumor immunology to overcome treatment resistance in gastroesophageal cancer. By integrating cutting-edge genomics with advanced computational screening, the group identifies immunogenic tumor neoantigens. To capture the full complexity of the tumor microenvironment, the lab applies spatial transcriptomics and proteomics. Utilizing patient-derived biospecimens and 3D tumor organoids, the lab models tumor-immune interactions in vitro to characterize T-cell reactivity and define why certain patients fail chemo/immunotherapy. Ultimately, the laboratory aims to translate these insights into

	novel, personalized immunotherapies that revitalize immune surveillance and prevent cancer progression.
Recent bibliography	- Cancer treatment alters mutant selection in normal esophagus. Fowler JC, Arbore G, Sood RK, Abnizova I, Albarello L, Pickering O, Murai K, Banerjee U, Brunon S, Ong SH, Cossu A, Elmore U, Puccetti F, Fernandez-Antoran D, Tonon G, Dellabona P, Rosati R, Hill L, Underwood T, Hall BA, Shorthouse D, Jones PH. Nature Genetics 2026 (accepted, in press) - Spatial Dissection of the Immune Landscape of Solid Tumors to Advance Precision Medicine. Di Mauro F, Arbore G. Cancer Immunol Res. 2024 Jul 2;12(7):800-813. - Preexisting Immunity Drives the Response to Neoadjuvant Chemotherapy in Esophageal Adenocarcinoma. Arbore G, Albarello L, Bucci G, Punta M, Cossu A, Fanti L, Maurizio A, Di Mauro F, Bilello V, Arrigoni G, Bonfiglio S, Biancolini D, Puccetti F, Elmore U, Vago L, Cascinu S, Tonon G, Rosati R, Casorati G, Dellabona P. Cancer Res. 2023 Sep 1;83(17):2873-2888.
Group composition	Dr. Arbore is moving her research activities to establish a new laboratory at INGM. Dr. Arbore is currently supervising 1 post-doc bioinformaticians, 1 PhD student, 1 Physician Scientist and 1 junior research fellow.
Institutional page link	https://ingm.org