



TEMPLATE RICHIESTA ATTIVAZIONE TOPIC AGGIUNTIVI SU FONDI PNRR

D.M. 9 aprile 2022 n. 351

Project title/Titolo del Progetto	Mapping of stromal cells in high-grade gliomas to identify new antitumoral targets
Principal Investigator	Raffaella Bonocchi
Main field of interest/Ambito principale di ricerca	Chemokines, Innate immunity, neutrophils, Inflammation and cancer,
Abstract	<p>High-grade gliomas are aggressive brain tumors with a limited response to treatments. Stromal cells, in particular neutrophil granulocytes, are considered major players in the immunosuppression of glioma patients. However, granulocyte progenitors can be reprogrammed by metabolic and epigenetic mechanisms to give rise to antitumoral neutrophils.</p> <p>Our preliminary data indicated that in HGGs patients there are changes in the granulopoiesis giving rise to different forms of circulating and infiltrating neutrophils compared to healthy donors. The aim of this project is to dissect the transcriptional profile, phenotype, and function of neutrophils in HGG patients and if these parameters correlate with the patient outcome. Single cell RNA sequencing and multiparametric FACS analysis of patient samples will allow the identification of new targets to promote better responses to treatments.</p>
Type of Co-funding	<ul style="list-style-type: none"> ○ D.M. 351/2022 - Borse di dottorato per la transizione digitale
Lab name and address	<ul style="list-style-type: none"> ○ Laboratory of chemokine biology
Brief description of the coherence of the Project in relation to the PNRR objectives ³	The project will provide a significant development of knowledge in the field of neuroscience and neuropharmacology. It will give a precise description of the glioma composition using single-cell technologies, RNA sequencing and multiparametric FACS analysis that will be analysed with artificial intelligence methods such as dimensionality reduction (PCA, tSNE and UMAP). These results will identify new targets for precision medicine of glioma patients.
N. of months abroad (min. 6, max. 18) [compulsory]	6 months
Name of the research institution/company abroad	<p>Department of Microbiology, Immunology and Transplantation Rega - Herestraat 49 - box 1042 3000 Leuven</p> <p>or</p> <p>Department of Infection and Immunity Immuno-Pharmacology and Interactomics Luxembourg Institute of Health</p>
N. of months of internship (min. 6, max. 18) [compulsory only for D.M. 352/2022]	NA
Name of the company ³	NA



Scientific references	<ol style="list-style-type: none">1. Bonecchi R, Mantovani A, Jaillon S. Chemokines as Regulators of Neutrophils: Focus on Tumors, Therapeutic Targeting, and Immunotherapy. <i>Cancers (Basel)</i>. 2022 Jan 28;14(3):680.2. Simonelli M, Persico P, Capucetti A, Carezza C, Franzese S, Lorenzi E, Dipasquale A, Losurdo A, Giordano L, Pessina F, Navarra P, Politi LS, Mavilio D, Locati M, Della Bella S, Santoro A, Bonecchi R. Immunotherapeutic early-phase clinical trials and malignant gliomas: A single-center experience and comprehensive immunophenotyping of circulating leukocytes. <i>Neurooncol Adv</i>. 2021 Nov 13;3(1):vdab160.3. Jaillon S, Ponzetta A, Di Mitri D, Santoni A, Bonecchi R, Mantovani A. Neutrophil diversity and plasticity in tumour progression and therapy. <i>Nat Rev Cancer</i>. 2020 Sep;20(9):485-503.4. Massara M, Bonavita O, Savino B, Caronni N, Mollica Poeta V, Sironi M, Setten E, Recordati C, Crisafulli L, Ficara F, Mantovani A, Locati M, Bonecchi R. ACKR2 in hematopoietic precursors as a checkpoint of neutrophil release and anti-metastatic activity. <i>Nat Commun</i>. 2018 Feb 14;9(1):676.5. Massara M, Persico P, Bonavita O, Mollica Poeta V, Locati M, Simonelli M, Bonecchi R. Neutrophils in Gliomas. <i>Front Immunol</i>. 2017 Oct 26;8:1349
Type of contract	PhD scholarship of € 18.000 gross per year awarded by Humanitas University. This sum is exempt from IRPEF income tax according to the provisions of art. 4 of Law no. 476 of 13th August 1984, and is subject to social security contributions according to the provisions of art. 2, section 26 and subsequent sections, of Law no. 335 of 8th August 1995 and subsequent modifications.