

Two postdoctoral positions are available in Humanitas University (Rozzano, Milan, Italy) in the Laboratory of Experimental Immunopathology.

We are looking for highly motivated postdoctoral researchers for the group of Prof. Cecilia Garlanda and for the group of Dr. Sebastien Jaillon.

Project information:

Cancer-related inflammation in the tumor microenvironment (TME) is recognised as a hallmark of cancer. Exploration of the tumor immune contexture, including the presence and functional activation of inflammatory leukocytes, is crucial for the development of new therapeutic approaches, as demonstrated with immune checkpoints.

In preclinical models, we revealed the essential role played by neutrophils in resistance against primary sarcomagenesis by driving type 1 polarisation of a subset of unconventional T cells (UTCs) (Ponzetta A et al., 2019. Cell).

UTCs display an innate-like signature and express IL-1R8, a member of the IL-1 receptor family with negative regulatory functions. We showed that IL-1R8 acts as a checkpoint in Natural Killer (NK) cells. Genetic deletion of IL-1R8 increased the maturation and functional activities of NK cells towards tumors, metastases and viral infections (Molgora M et al., 2017. Nature). In addition to NK cells, IL-1R8 is expressed by other effector cells, including CD8⁺ and subsets of UTCs.

Using a multitask approach, combining state-of-the-art technologies with the advantage of genetically engineered mice, models of primary carcinogenesis and investigation in human samples, we aim to:

- dissect the cellular and molecular mechanisms involved in the neutrophil-UTC antitumor axis, defining its potential activity in immunotherapy.
- extend the knowledge on the role of IL-1R8 in the functional activity of lymphocytes and to develop IL-1R8 as a therapeutic target in preclinical cancer models.

Requirements:

- A MD and/or PhD degree.
- Strong background in the fields of tumor immunology and inflammation.
- Substantial experience in mouse handling.
- Substantial experience in flow cytometry.
- Ability to work independently as well as in a collaborative research team.
- At least one publication as first author in a high-quality scientific journal.

Applicants should send a letter summarizing his/her past research experience, a CV and two recommendation letters at the following addresses:

cecilia.garlanda@humanitasresearch.it
sebastien.jaillon@humanitasresearch.it

Selected publications:

- Neutrophils driving unconventional T cells mediate resistance against murine sarcomas and selected human tumors.

Ponzetta A, Carriero R, Carnevale S, Barbagallo M, Molgora M, Perucchini C, Magrini E, Gianni F, Kunderfranco P, Polentarutti N, Pasqualini F, Di Marco S, Supino D, Peano C, Cananzi F, Colombo P, Pilotti S, Alomar SY, Bonavita E, Galdiero MR, **Garlanda C**, Mantovani A, **Jaillon S**. **Cell.** **2019.** Jul 11;178(2):346-360.

- IL-1R8 is a checkpoint in NK cells regulating anti-tumor and anti-viral activity.

Molgora M, Bonavita E, Ponzetta A, Riva F, Barbagallo M, **Jaillon S**, Popović B, Bernardini G, Magrini E, Gianni F, Zelenay S, Jonjić S, Santoni S, **Garlanda C**, Mantovani A. **Nature.** **2017.** Nov 2;551(7678):110-114

- PTX3 is an extrinsic oncosuppressor regulating complement-dependent inflammation in cancer.

Bonavita E, Gentile S, Rubino M, Maina V, Papait R, Kunderfranco P, Greco C, Feruglio F, Molgora M, Laface I, Tartari S, Doni A, Pasqualini F, Barbati E, Basso G, Galdiero M.R, Nebuloni M, Roncalli M, Colombo, P., Laghi, L., Lambris J.D, **Jaillon S**, **Garlanda C**, Mantovani A. **Cell.** **2015.** Feb; 160(4):700-14.

- The interleukin-1 family: back to the future.

Garlanda C, Dinarello CA, Mantovani A. **Immunity.** **2013.** Dec 12;39(6):1003-18.

- Neutrophils in the activation and regulation of innate and adaptive immunity.

Mantovani A, Cassatella MA, Costantini C, **Jaillon S**. **Nat Rev Immunol.** **2011** Jul;11(8):519-31.