PhD position in tumor immunology

A PhD position is available to explore the role of B cells and plasma cell subsets in tumor immune surveillance through a comprehensive exploration of tumors associated with paraneoplastic syndromes (PNS).

PNS are rare auto-immune disorders that develop in patients with cancer, spontaneously or occasionally after immune checkpoint blockade, and reflect clinical manifestations of spontaneous antitumor immune responses targeting neuronal proteins expressed by tumor cells. Patients with PNS develop strong cellular and antibody responses and our lab recently revealed that ovarian and breast carcinomas from PNS patients differed from their non-PCD counterpart by a massive infiltration by CD8 T cells and antibody producing plasma cells, as well as signs of tumor immune attack, suggesting efficient and concomitant *in situ* anti-tumor cellular and humoral immunity. The project, performed in collaboration with the team of J. Honnorat at INMG aims to perform a comprehensive comparison of tumors from PNS and non-PNS patients with breast, ovarian or lung cancer to

i) Identify key immune cell features underlying efficient anti-tumor B cell mediated immunity by characterizing the identity, activation state, density, structuration of B cell entities and their interactions with other immune cells using single cell RNA-seq, in situ IF multispectral imaging, spatial transcriptomics and flow cytometry

ii) Analyze and visualize Ag-specific T and B cell responses in tumors by the profiling of the Ag repertoire of tumor T and B cells and characterization of the proteins targeted by antibodies locally produced.

iii) Deeply characterize tumor cells and their interplay with immune cells (B, T, DC, NK) using scRNA-seq and spatial transcriptomics

Host Lab

The team "Cancer Immune Surveillance and Therapeutic Targeting" (CISTAR) is part of the Cancer Research Center of Lyon (CRCL, www.crcl.fr) and is composed of researchers, clinicians, technicians and PhD students all devoted to identify new tumor immune surveillance and escape networks to improve cancer treatment. The team benefits from long-standing interactions with clinicians of CLB and HCL and is part of various networks/consortiums, including the RHU-BETPSY, which partly fund the project. The CRCL is a renowned and dynamic research center which benefits from state-of-the-art technological facilities for flow cytometry, cell and molecular biology, bulk and single cell sequencing, spatial tissue imaging and in vivo/ex vivo models.

Recent publications from the lab related to the field

- Hubert et al. (2020). IFN-III Is Selectively Produced by cDC1 and Predicts Good Clinical Outcome in Breast Cancer. Science Immunology 5(46).
- Chefdeville et al. (2019) Immunopathological characterization of ovarian teratomas associated with anti-N-Methyl-D-Aspartate receptor encephalitis. Acta Neuropathol. Com. 7(1):38.
- Small M et al. (2018) Genetic alterations and tumor immune attack in Yo paraneoplastic cerebellar degeneration. Acta Neuropathol. 135(4):569-579.

Candidates

The successful candidate should be highly motivated, with a previous laboratory-based work experience in the immunology field or at least a strong interest for onco-immunology with solid fundamental bases. Strong organizational and communication skills, and team spirit are required and a desire to acquire/improve basic computational and bioinformatics skills will be appreciated.

Funding is available for 3 years starting no later than December 1st 2021.

Application

Interested candidates should submit a motivation letter, CV, master 2 marks and ranking with contact details of 1 or 2 references to Bertrand Dubois (Bertrand.dubois@lyon.unicancer.fr) before October 1st 2021.

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