

PRESS RELEASE

AACR CONGRESS

THE ORIGIN AND LOCATION OF THE MACROPHAGES IN THE TUMORS ARE DECISIVE

Organized from April 14 to 19, 2023, Orlando, Florida (USA), the annual congress of the American Association for Cancer Research (AACR) brings together scientists, clinicians, and oncologists from around the world to discuss the latest advances in cancer research through 6 000 presentations. Professor Florent Ginhoux, an immunology researcher, is the only European expert presenting his work in a plenary session at this flagship event in oncology.

Dedicated to immune ecosystems, the plenary session on April 18 of the AACR congress invited Professor Florent Ginhoux to present the work of his team in the heart of a session entitled : « Understanding the biology of tumor-associated macrophages to develop more effective anti-cancer immunotherapies ».

Heterogeneity of macrophages to target

The interactions between the immune system and cancer cells are complex and only beginning to be better understood. The most recent advances in this field have led to the emergence of immunotherapy, which offers great hope for patients, especially in the earliest stages of cancer. Nevertheless, some of them do not respond to these new protocols, which requires a deeper understanding of the biological mechanisms at the heart of tumors. Current protocols aim to reactivate a subpopulation of immune cells, the T cells, which are normally programmed to destroy tumor cells, but are deactivated within tumors.

In his project, Prof. Florent Ginhoux and his team are interested in another subpopulation of immune cells present in healthy tissue, the macrophages. « *These cells are involved in many biological processes and are often associated with unfavorable responses in cancerology by promoting a tumor microenvironment favorable to growth but especially by repressing the adaptive response via an immunosuppressive role* », explains Prof. Florent Ginhoux.

It has been previously shown that macrophages can be divided according to their origin, deriving either from embryonic precursors established very early in the tissues, or from adult precursors having a shorter residence time in the tissues. The same is true within tumors with macrophages infiltrating the tumor microenvironment at very early or more advanced stages. « *Our preliminary studies suggest that the functions of these two types of tumor-associated macrophages are different. Embryonic macrophages may participate in tumorigenesis by creating a favorable environment for tumor development and then allowing it to grow. When the tumor is detected by the immune system, circulating blood monocytes differentiate into phagocytes including macrophages (Tumor associated macrophages or TAMs), which are*

positioned at different sites within the tumor. We are trying to understand their interaction mechanisms, how macrophages progress over time depending on their origin and location in the tumor », explains Prof. Ginhoux.

Using state-of-the-art technologies, including single cell sequencing and spatial transcriptomics, Prof. Florent Ginhoux's team was able to map the diversity of embryonic and adult macrophages to better understand their evolution, discover cells with different RNA profiles and identify gene signatures.

« Macrophages are the new immune cells to target. This heterogeneity and complexity is an opportunity that opens up more opportunities and new avenues for therapeutic strategies to be developed », concludes Professor Florent Ginhoux.

Background on Gustave Roussy

Ranked as the leading European Cancer Centre and third in the world, Gustave Roussy is a centre with comprehensive expertise and is devoted entirely to patients suffering with cancer. The Institute is a founding member of the Paris Saclay Cancer Cluster. It is a source of diagnostic and therapeutic advances. It caters for almost 50,000 patients per year and its approach is one that integrates research, patient care and teaching. It is specialized in the treatment of rare cancers and complex tumors and it treats all cancers in patients of any age. Its care is personalized and combines the most advanced medical methods with an appreciation of the patient's human requirements. In addition to the quality of treatment offered, the physical, psychological and social aspects of the patient's life are respected. 4,100 professionals work on its two campuses: Villejuif and Chevilly-Larue. Gustave Roussy brings together the skills, which are essential for the highest quality research in oncology: a quarter of patients treated are included in clinical trials.

For further information: www.gustaveroussy.fr/en, [Twitter](#), [Facebook](#), [LinkedIn](#), [Instagram](#)

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