NEW SUBPOPULATIONS OF CANCER ASSOCIATED FIBROBLASTS AS PROGNOSIS MARKERS FOR IMMUNOTHERAPY TREATMENTS

Tumor microenvironment, including stromal cells, plays a crucial role in tumor development and treatment response. The present invention focuses on Cancer Associated Fibroblasts (CAF) and identifies, with five markers (DPP4, JAM2, OX40L, CD73 and B7-H3), a new immunosuppressive subpopulation that play crucial roles in the establishment of an immunosuppressive microenvironment at the tumor site. This invention relates to the use of at least one of these immunosuppressive CAF markers or a combination thereof as a prognosis marker for immunotherapy treatment.

APPLICATION

In vitro method to assess and predict tumor response to immunotherapy as well as to develop a companion test/kit.

PROBLEM ADRESSED

Immune checkpoint inhibitor therapies are particularly promising. However, some cancers develop an immunosuppressive microenvironment favoring tumor escape. Thus, there is a strong need to identify new markers allowing the detection of immunosuppressive environments and/or factors and to develop new strategies to overcome resistance, thereby making immunotherapy treatments, and in particular immune checkpoint inhibitor treatments, more effective and available for all patients.

COMPETITIVE ADVANTAGES

- More robust and accurate than the available prognosis and companion tests.
- Applicable to all tumors treated by immunotherapy.
- Treatment Optimization as these markers represent also therapeutic targets in many cancer.

Boxplots of normalized log-expression values for CAF markers involved in immunosuppression and PD-1, PD-L1 and PD-L2 according to response to anti-PD-1 therapy. CAF markers show a higher indicative information of response to immunotherapy when compared to the classical markers.
WHAT ARE WE LOOKING FOR?
Interested industrial partners to collaborate on further validating retrospectively and prospectively the invention and/or licensing opportunities for exploitation and commercialization of companion tools.

PUBLICATIONS
- Costa A et al., Cancer Cell, 2018 (DOI: 10.1016/j.ccell.2018.01.011)

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DEVELOPMENT STATUS
The correlation of our five markers together or each alone to response to immunotherapy was assessed retrospectively on available data of patients with different stages of melanoma including metastasis, in comparison to standard used markers such as PD1, PDL1, CD8 and others. First results reveal that the CAF markers show a stronger correlation with response to immunotherapy when compared to the other markers. Studies on pulmonary cancer are ongoing. Next step would be to validate on other types of cancer such as Triple Negative Breast Cancer.

IP STATUS & OWNERS

PROOF OF CONCEPT IN VITRO
PROOF OF CONCEPT IN VIVO
OPTIMISATION & VALIDATION
PROSPECTIVE CLINICAL TRIAL

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