Screening of γδ T cells in breast cancer patients

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Breast cancer (BC) is the most common cancer among women worldwide and a leading cause of death. In order to improve BC patients´ outcome, different immunotherapeutic strategies are currently tested, for which predictive and prognostic biomarkes are urgently needed. T cells carrying the gammadelta (γδ) T cell receptor (TCR) represent a minor population of T cells, which are increasingly being evaluated for tumor immunotherapy. Indeed, they can directly recognise a variety of biomolecules, like several lipids and protein antigens, without the requirement of antigen processing and presentation by classical MHC class I molecules and display cytotoxic activity against malignant cells. Analogous to the conventional αβ T cells, γδ T cells exist in different polarisations, thus their evaluation as a “pan” population results in both positive and negative correlation with patients´ outcome depending on the clinical setting. Therefore, the aim of this study is to perform a deep characterisation of the frequency and phenotype of γδ T cells within the peripheral blood of patients with different forms of BC and to correlate these data with the patients´ clinical outcome and therapy response. A CyTOF panel including the major Vγ and Vδ chains, together with innate receptors, functional molecules, activation markers and different immune checkpoint inhibitor receptors have been established to perfom such characterisation. The acquired knowledge will allow a more rational use of γδ T cells for the therapy and / or stratification of BC patients.