Project abstract

Name of DKFZ research division/group:	***Dendritic Cells in Infections and Cancer (F171)***
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Group homepage: Please visit our website for further information on our research and recent publications.	***https://www.dkfz.de/en/virus-assoziierte-karzinogenese/groups/AGAutenrieth/index.html***

PROJECT PROPOSAL

One focus of our research group is the phenotyping of immune cells using spectral flow cytometry (AURORA from Cytek). With this method, around 40 proteins that are expressed on or in cells can currently be determined simultaneously, which enables, for example, the detailed characterization of all immune cells in the blood of patients in the course of clinical trials.
Although in general great progress has been made in the field of personalized oncology leading to more appropriate treatments, research is still in its infancy regarding gynaecologic cancers (GC) outside breast cancer. Data from retrospective cohorts suggest that malignancies arising from the ovary, endometrium, and cervix are each highly heterogeneous in their genetic composition but also in the patient's immune response and ability to clear circulating or resident tumour cells. Despite radical surgery and adjuvant chemotherapy disease relapse occurs in up to 70 % of cases, indicating persistence of cancer cells. Several studies addressed the prognostic and/or predictive role of tumour infiltrating immune cells in GCs showing that increased rates of tumour-infiltrating lymphocytes were associated with improved prognosis. Thus, there is a clinical need for comprehensive analysis of the immune cells which are essential for tumour eradication before and during therapy in order to predict response, resistance and relapse.
The project, which is perfectly suited for a clinician scientist interested in translational research and state-of-the-art immunomonitoring with spectral flow cytometry, aims to, thoroughly characterize the immune cells and their expression of immunoregulatory proteins in patients with primary or recurrent GCs in the periphery and (1) compare these to the tumour area and (2) identify cell populations or biomarkers to understand sensitivity to chemotherapy and response to treatment and thereby develop improved immunomodulatory therapies. Peripheral blood and primary tissue samples from GC patients will be analyzed using a 40-color immunomonitoring panel for spectral flow cytometry. The obtained data from patients before and during therapy will be correlated with treatment response. This project will be done in cooperation with Prof. Schneeweiss, and PD Dr. Carlo Fremd, NCT Heidelberg. Prospectively, this project could be extended to other tumour entities like breast, lung, and pancreatic cancers.