

Identifying immunological, metabolome- and microbiome- based parameters influencing efficacy of immunotherapy in kidney cancer patients

Summary

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Supervisor: Prof. Dr. Martin Pichler
Availability: This position is available.
Offered by: Medical University of Graz
Application deadline: Applications are accepted between August 03, 2022 00:00 and September 20, 2022 23:59 (Europe/Zurich)

Description

Background:

The treatment landscape in uro-genital cancers including renal cell carcinoma (RCC) has been significantly changed through the introduction of immunotherapy. Despite these new treatment options, the response rates with these agents range between 42 to 71 % in RCC. Thus, much space for improving the efficacy of these cost-intensive and potentially toxic drugs is still left and a better understanding of predictive and influential factors might help to improve the clinical outcome. Recent work indicated that the gut microbiome might influence the response of immunotherapy in melanoma and beyond other types of cancer. Other factors such as immune cell subtypes, cytokines or metabolites might also influence the efficacy of immunotherapy in genito-urogenital cancers.

Hypothesis and Objectives:

In this project we aim to address the following hypothesis:

- Non-eubacterial microorganisms (archaea) in the gut microbiome correlate with treatment re-sponse, progression free survival and overall survival of patients treated immunotherapy across different urogenital cancers.
- Microbiom-associated metabolites and immunological blood-based cellular and humoral factors, identified in the patient blood and stool, correlate with treatment response, progression free survival and overall survival of patients treated with immunotherapy across different urogenital cancers.

Methodology:

Investigator-initiated trial design, Biostatistical Analysis of longitudinal data, untargeted NMR-spectroscopy, Microbiome profiling, amplicon sequencing, immune cell and parameter measurement

References:

Patterns of Peripheral Blood B-Cell Subtypes Are Associated With Treatment Response in Patients Treated With Immune Checkpoint Inhibitors: A Prospective Longitudinal Pan-Cancer Study. Barth DA, et al. Front Immunol. 2022 Apr 1;13:840207
Gut microbes as biomarkers of ICI response - sharpening the focus.
Bhutiani N, Wargo JA. Nat Rev Clin Oncol. 2022 Aug;19(8):495-496. doi: 10.1038/s41571-

022-00634-0



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