BSc/MSc: Real-Time Monitoring of Immunological Biomarkers for Cancer Immunotherapy

Motivation and Background

Cancer immunotherapy has become a promising strategy in the treatment for tumors. However, the activation of the patient's own immune system to combat tumor cells can also cause immune-mediated adverse effects including colitis, hepatitis, type 1 diabetes. acute kidney injury and myocarditis. Real-time monitoring of the patient's immunological biomarkers will help the physician pinpoint the specific immunological factors involved in identifying which patients are most likely to develop an inflammatory response from immune therapy. This will reveal new drug development tactics and approaches to this expensive treatment.

Research project

The immunological biomarkers on the skin of tumor immunotherapy patients remains widely unknown. The aim of this project is to explore the changes in sweat immunological biomarkers on patients with immunotherapy. We will design skin patches for sweat collection and collaborate with Erasmus Medical Center to collect patient samples and analyze the complex immunological biomarker profile. This will lead to further insights into the immune response from cancer immunotherapy.

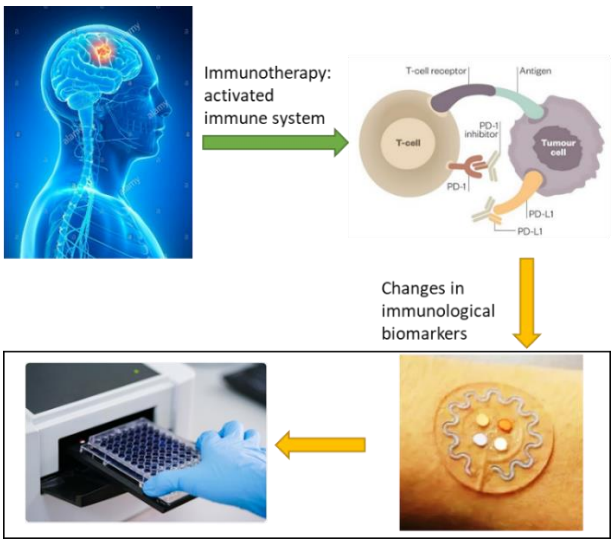

Figure. During cancer immunotherapy, the immune system is activated to combat the tumor tissue. However, such treatment methods are also accompanied by systemic immune side effects. In this project, we aim to develop a biomarker profile from sweat analysis to better understand the real-time immune response during cancer immunotherapy.

What's in it for you?

Working on this topic in our group allows you to
- deepen your knowledge on transport phenomena, analytical chemistry and biology
- develop your skills in clinical interactions between physicians and patients
- maneuver at the *Biology-Chemical Engineering Interface*

Contact

Highly motivated BSc and MSc students interested in conducting exciting and rewarding projects are encouraged to contact Dr. Alina Rwei (e-mail: a.y.rwei@tudelft.nl)