

Project title: New approaches to characterize Th17/Treg cell balance contributing to anti-tumour immune responses

Acronym: T7RegCancer

ABSTRACT FOR THE GENERAL PUBLIC

Cancer is a leading cause of death worldwide. Colorectal cancer is the third most common type of cancer globally. Even with recently developed immune-checkpoint blockade therapy, the durable responses are still observed in a fraction of cancer patients, suggesting better molecular understanding to develop new targeted therapies to treat cancer is urgently needed. In recent years, Th17 and Treg cells have been identified to play critical roles in inflammatory diseases and tumour. Manipulating Th17/Treg cell balance in the treatment of inflammation and tumour is the most active research area to develop tumour immunotherapy.

The overall goals of this study is to **identify and functionally characterize novel regulators of Th17/Treg cell balance for cancer immunotherapy**. This project will approach the problem with four linked objectives through collaboration between two research teams in Poland and China with respective expertise on Th17 and Treg cells. A central and unique aspect of this project is **comprehensive, from in vitro to in vivo and from mouse to human**. The joint funding provides the **excellent opportunity to combine expertise from Th17 (Chen, Poland) and Treg (Li, China) cells**. The proposal is also to join the efforts of the two groups from recently established state-of-the-art systems biology approaches, including single-cell sequencing (Li's team from China), proteomics (Chen's team from Poland) combined with mouse models of human diseases (both teams) to characterize the new regulators of Th17/Treg cell balance. Data generated from this study will facilitate ongoing efforts in targeting these pathways in treatment of cancer.