



Dr. Asaf Madi, Head of Systems Immunology Lab

Can we activate our immune system to fight cancer? What immune cells are important and what prevents them from exercising their anti-tumor functions? Can we trigger these specific immune cells to destroy cancer cells and at the same time provide an immunological memory to prevent recurrence of the disease?

The primary interest of the lab (<u>www.asafmadilab.com</u>) is to understand gene circuits of immune cells involved in differentiation, activation and regulation. Specifically, we are focusing on exploring these cells and circuits in the context of the tumor microenvironment following stimulation, immunotherapies or cell-cell interactions.

We apply cutting-edge technologies including mouse tumor models, molecular biology, single cell RNAseq and other high-throughput genetic and genomic methods combined with advanced computational approaches to identify and functionally characterize genes that play an important role in immune cell circuits and their effect on tumor growth.

This approach will enable in-depth studies of immune-cell signaling with tumor-resident cell types and the tumor microenvironment. Moreover, this approach can be readily adapted explore the effects of these genetic circuits in other settings, such as immune cells in organ-specific autoimmunity.

These unique signaling signatures could become new 'biomarkers' and facilitate our understanding of both disease pathogenesis, diagnosis and treatment.

Dr. Madi completed his Ph.D. studies at Tel Aviv University in computational immunology. Dr. Madi then continued to do a postdoctoral fellowship at Harvard Medical School, Brigham and Women Hospital, Broad Institute of Harvard and MIT, Boston, USA where he mainly focused on the study of T-cell differentiation and cancer immunology.