Karakterisering af FoxA1's rolle i T-celleudvikling og autoimmunitet

Lægmandsrapport

The support from the Danish MS society has led to a major progress in this project which is still continuing. However a first part of it aiming to understand how FoxA1+Treg cells are generated in the central nervous system (CNS) and type of molecular signals needed for them to be generated and function, and thereby suppress neuroinflammation.

We identified that neurons in the brain and spinal cord are important to communicate with pathogenic T cells via an endogenous signal generated when a cytokine, IFN-b binds to its receptor IFNAR and activate PI3K and its downstream molecule AKT which in turn makes it to bind to FoxA1 an important transcription factor, now for the first time shown by us to be central for neurons to bind to the DNA and activate certain genes including PDL1 (program death ligand 1). PDL1 then bind to its receptor PD1 on activated and pathogenic T cells and thereby reprogram them to obtain a new identity, namely they become FoxA1+Treg cells which then suppress inflammation in the CNS.

The results of this work were published in a prestigious journal of Nature Communication (below).