EXPERIMENTAL RHEUMATOLOGY

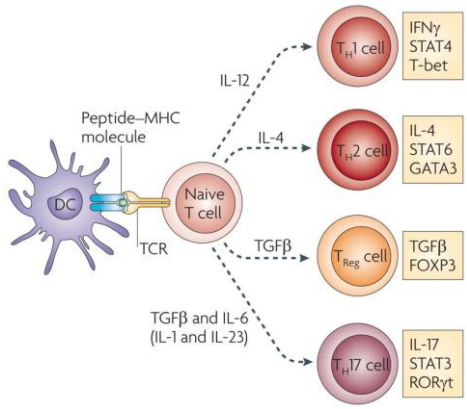
The influence of TGFβ signaling on T helper cell differentiation and hereby contributing to the Th17/Treg disbalance in inflammatory arthritis patients.

Clinical relevance

Rheumatoid Arthritis (RA) and psoriatic arthritis (PsA) are systemic autoimmune diseases that affect up to 1% of the population worldwide. The pathology is characterized by psoriasis and chronic inflammation of the joints, leading to progressive physical disability and pain. Although the development and use of various biologicals targeting specific pathways has improved prognosis for some RA and PsA patients, approximately 30% of patients still fail to respond adequately. Therefore, the search for new therapeutic targets in RA and PsA treatment needs to continue.

Background

Inflammatory arthritis is a group of auto-immune diseases which includes rheumatoid (RA) and psoriatic arthritis (PsA) as the main forms. The mechanism of these diseases is still unclear. However, it is known that the balance between Th17 and Treg cells is disturbed in patients resulting in more inflammation. Both of these two developmental pathways share the growth factor TGF-β. The cause of the Th17/Treg disbalance during RA and PsA is not yet fully known, so in this study we will find out which role TGFβ has in driving more pathogenic T cell differentiation, thereby contributing to the pathophysiology of RA and PsA. The objective of this study is to analyze the TGF-β receptor balance, TGF-β related genes and SMAD2/3 signaling in naïve CD4+ T cells of RA/PsA patients and healthy controls. At the moment there is no treatment available to cure RA and PsA, only to suppress the symptoms. With more knowledge about the mechanisms of inflammatory arthritis, we may not only suppress the autoimmune responses, but may even restore immune tolerance.



Goal

The department of Experimental Rheumatology is an internationally renowned laboratory with high output in the arthritis field. Under the supervision of a PhD student and a group leader you will participate in a very interesting research project in the arthritis field, while using various techniques like western blot, qPCR, luminex, and FACS analysis. In addition, you will use viral overexpression, neutralizing antibodies and soluble receptors to answer the research question. During this internship you will have your own specific research topic within this Th17/Treg project, and have the opportunity to learn from and contribute to our ongoing arthritis and immunology research.

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