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Th17 helper cells are a subset of T helper cells. T helper cells play role in adaptive immune system and control the immune response by directing other cells to do their jobs. This is reached by release of specific proteins called cytokines that influence the activity of other cell types. Th17 lymphocytes are characterized by almost exclusive pattern of cytokine production (interleukin 17A and 17F) and expression of RORγT transcription factor. Th17 cells are very important in clearing pathogens during host defense reactions however, they are considered as a destructive cells inducing tissue inflammation in several autoimmune diseases including multiple sclerosis, rheumatoid arthritis, psoriasis, and Crohn's disease. In autoimmune diseases the immune system is overactivated and attacks and damages its own tissues.

Th17 cells are a relatively recently discovered class of lymphocytes, that is why they are not well characterized at molecular level: e.g. it is still not known which groups of genes change their expression during Th17 differentiation from naïve precursors, and how the genetic information is regulated during the process. Furthermore, the known markers of Th17 lymphocytes are not ideal because they are also present in other cell types. We believe that future results obtained during project progression will allow identification of more specific molecular markers of Th17 cells and allow better understanding of the role of Th17 in human organism. The result of the project could be in longer term also useful for understanding of pathogenesis of certain autoimmune diseases and immunodeficiencies leading to practical consideration regarding their diagnosis and treatment.