Aim of the study

Upon antigen encounter dendritic cells migrate to secondary lymphoid organs and interact with naïve T cells to initiate a differentiation program leading to the formation of follicular B helper T cells (T_{FH}). These cells are essential for initiating T-cell dependent B cell immune response. Interaction of B and T cells leads to the generation of germinal centers, which are important for developing high affinity antibodies. Previous studies from our group have shown that T_{FH} cells express chemokine receptor CXCR5 and relocate in B cell follicles for cognate interactions with B cells and support immunoglobulin production.

Approximately, 60% of tonsillar CD4 T cells obtained from routine tonsillectomy express CXCR5 indicating an obvious heterogenous population. It was hypothesized that follicular B helper T cell activity might be confined to a subset within CXCR5 expressing cells. Several studies have indicated that CD4 T cells expressing CD57 to be the actual T_{FH} cells. The aim of this study was to investigate the following aspects of B helper T cell biology:

- The heterogeneity within the CXCR5 expressing CD4 T cells in order to define the subset with B helper activity.
- Functional characterization of T_{FH} cells.
- Investigate the role of CD57 as a surrogate marker for T_{FH} cells.
- Generate large-scale gene expression profiles of tonsillar and peripheral blood CD4 T cell subsets in order to compare and identify T_{FH}-restricted gene expression patterns and lineage relationships among the subsets.