PREFACE

“The chief beauty of this book lies not so much in its literary style, or in the extent or usefulness of the information it conveys, as in its simple truthfulness. Its pages form the record of events that really happened.” Preface to the first edition of “Three men in a boat (to say nothing of the dog)” by Jerome K. Jerome, 1889.

As such, the following pages are simple...

Part I focuses on lymphoid tissue development in the large intestine.

Chapter 1 gives an overview of the host defense mechanisms present in the gastrointestinal tract. Specifically, we provide a concise summary of our knowledge on the formation of organized gut-associated lymphoid tissues prior to the work described in this thesis.

Chapter 2 provides a detailed characterization of the organized lymphoid tissues present within the colon, which sets the foundation for the studies described later. The role of chemokines in the development of these tissues is addressed.

Chapter 3 elucidates the role of the IL1R signaling pathway in the maturation of colonic solitary intestinal lymphoid tissues (SILTs), i.e. in the accumulation of B cells within these lymphoid tissues.

Chapter 4 describes the critical role of intestinal epithelial cells in colonic SILT development. We show intestinal epithelial cells to control the migration and clustering of LTi cells in the colonic lamina propria.

Part II concerns lymph node stromal cells and their role as crucial regulator of immune cell function.

Chapter 5 provides a general overview on the role of lymphoid stromal cells in the regulation of the homeostasis and functionality of the immune system.

Chapter 6 emphasizes the role of lymph node stromal cells in the maintenance of peripheral tolerance. We show lymph node stromal cells to induce peripheral tolerance by inducing Foxp3+ regulatory T cells via the presentation of endogenous antigens on MHC-II.

Chapter 7 describes a new mechanism by which lymph node stromal cells are able to regulate the development of immune responses. By expressing Toll-like receptors, lymph nodes stromal cells are able to recognize infection and recruit and activate lymphocytes to fight it.

Finally, in Part III/Chapter 8, we integrate our findings into the current literature. We propose new comprehensive models of lymphoid tissue development and lymphoid tissue function.