

# Preface

This book focuses on the differentiation and regulation of various subsets of CD4+ T cells. It also covers CD4+ T cell subset plasticity and CD4+ T cell function in physiological and diseased states. Where the classic T cell model describes that every subset or subpopulation of T cells develops by producing its own unique cytokines and master regulators, more recent research has shown that the truth may be a bit more complicated. With new technologies such as ChIP-seq, RNA-seq, and data-based analysis, potential transcript factors and binding sites have been identified in different T cell subsets and differentiation stages. These results suggest that T cell differentiation is not a linear process from start to finish that can be switched “on” and “off,” but is the result of complex molecular signaling cascades, subtly controlled by a variety of master regulators. Additionally, epigenetic regulation, the modification of DNA or histones, might help to decide T cell fate by facilitating or blocking the binding of transcript factors. While correct and moderate stimulation will lead to precise T cell responses, incorrect signals cause dysfunctions like autoimmune diseases and allergies. As CD4+ T cells play the key role in our adaptive immune system, examining chemokine receptor interference by small molecules or antibodies represents a new approach to disease treatment. This book provides researchers, graduate students, and clinic practitioners with a cutting-edge and comprehensive summary of research on CD4+ T cells and their potential applications in the clinic. I sincerely thank all the chapter authors for their great contribution to the book. I also thank Qiaoshi Lian, Haiyan Zhou, and Wenjing Xuan for their coordination and help.

T Helper Cell Differentiation and Their Function

Sun, B. (Ed.)

2014, XI, 230 p. 22 illus., 21 illus. in color., Hardcover

ISBN: 978-94-017-9486-2