

# Preface

Insights into the regulation of immune cell lineage differentiation and specification as well as into the control of lineage integrity, stability, and plasticity are of fundamental importance to understand innate and adaptive immune responses. In this volume, leading experts provide an up-to-date and comprehensive overview of recent advances in transcriptional control mechanisms and transcription factor networks that regulate these processes in a variety of different immune cell lineages.

Tomokatsu Ikawa addresses the genetic and epigenetic control of early lymphocyte development, in particular the B versus T cell lineage decision. Ellmeier and Taniuchi discuss the role of BTB-zinc finger transcription factors during T cell development and in the regulation of T cell-mediated immunity. Kronenberg and Engel focus on the transcriptional control of the development and function of *Vα14i* NKT cells. Huehn, Delacher and colleagues focus on regulatory T cells and review the current knowledge about their transcriptional control, while Zhu and Christie discuss transcriptional regulatory networks essential for CD4 T cell differentiation. Brady and Male summarize the transcriptional control of NK cell differentiation and function. Nutt, Pang and Carotta highlight recent advances in the transcriptional control of pre-B cell development and leukemia prevention. Diefenbach and Klose provide an overview about transcriptional regulation of innate lymphoid cell development and function, and Kaisho and Sasaki focus on transcriptional control mechanisms of dendritic cell differentiation. Finally, O'Shea, Bonelli and colleagues discuss helper T cell plasticity and the impact of extrinsic and intrinsic signals on transcriptomes and epigenomes.

Together, the reviews illustrate key transcriptional control mechanisms that regulate the development and function of immune cells. The reviews demonstrate the impressive knowledge gained during the last decade but also remind us that there are still many open questions that have to be addressed in order to understand the transcriptional regulatory circuits underlying innate and adaptive immunity.

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