Preface

The role of dendritic cells in the immune system has been the subject of intense study for the past two decades, and it is now beyond question that these cells play a critical role in determining all aspects of the immune response, including its kinetics, magnitude, direction and character. During an acute challenge such as that presented by many infections, dendritic cells in peripheral sites must internalize antigens and migrate to secondary lymphoid tissues to initiate immune responses. With chronic exposure to antigens in states such as cancer, however, dendritic cells are bombarded with conflicting signals. A complex environment within the tumor or tumor-bearing host determines the magnitude and polarity of numerous changes in dendritic cells induced by surrounding cells and factors.

The goal of this book is to assemble and integrate, for the first time, our knowledge of how dendritic cells function in the setting of cancer, providing a comprehensive survey of the field in a single volume. To this end, chapters are organized within thematic sections, each addressing major areas of current research. The authors of each chapter were chosen for their expertise and standing in their respective fields and have provided up-to-date accounts of the latest research findings. Specific topics include analysis of dendritic cell behavior in the tumor microenvironment, including endogenous and exogenous dendritic cells, multiple dendritic cell populations, molecular pathways responsible for dendritic cell dysfunction, tumor-derived factors altering dendritic cell polarization and activation, mechanisms of dendritic cell alterations and the role of dendritic cells in tumor escape from immune recognition and elimination. Furthermore, additional chapters provide extensive analysis of the consequences of cancer therapy on dendritic cells and how aging impacts dendritic cell function in the tumor microenvironment. Finally, chapters are included examining strengths and pitfalls of current methodologies for generating dendritic cells from cancer patients for therapeutic purposes and on the role of tumor-mediated modulation of the dendritic cell system in cancer immunotherapy.

This book should prove to be an essential reference guide for researchers in the fields of tumor immunology, immunotherapy and vaccine development and will be highly useful for students and others entering the field and seeking an introduction to the exciting and dynamic topic of immunobiology of dendritic cells in cancer.

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