

General Principles of Tumor Immunotherapy

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Basic and Clinical Applications of Tumor Immunology

Edited by

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INTRODUCTION

As stated so elegantly by Dr. Alan Houghton in Chapter 1 of *General Principles of Tumor Immunotherapy: Basic and Clinical Applications of Tumor Immunology*, the connection between infection and tumor immunity has been recognized for millennia. However, it is only in the last few decades that the molecular and cellular basis for tumor immunotherapy been elucidated. The promise for manipulating the immune system to fight cancer is enormous given the fine specificity of immune responses and the ability to develop memory responses allowing long term protection from recurrent disease. The practical application of tumor immunotherapy, however, has lagged behind the promise. This is partly due to our incomplete understanding of how the host immune system interacts with tumor cells and partly due to the slow nature of clinical and translational research. Nonetheless, a clearer understanding of the complex host-tumor interactions coupled with new insight from two decades of productive clinical trial activity provides new enthusiasm for the use of tumor immunotherapy in the armamentarium of therapeutic strategies for patients with cancer.

General Principles of Tumor Immunotherapy: Basic and Clinical Applications of Tumor Immunology seeks to bring together the most current information related to how the immune system recognizes and eradicates cancer with a particular focus on the application of tumor immunotherapy in the clinic. This volume is organized into four sections designed to focus on particular aspects of tumor immunotherapy. In Part I the basic principles upon which tumor recognition and rejection are based will be discussed and includes chapters on the identification of tumor antigens, the mechanisms used to present tumor antigens to the immune system, features of the innate and adaptive immune systems as they relate to tumor immunology and an examination of the tumor microenvironment as it relates to host-tumor interactions. In Part II a highly focused discussion of the various active vaccine strategies that have been brought forward over the last decade is presented. In Part III we focus on the role of passive immunotherapy in cancer treatment. Finally, in Part IV we discuss some of the current clinical applications of immunotherapy and provide a provocative discussion on the future of combination therapy utilizing immunotherapy and more standard cancer therapeutics. These chapters have been authored by world class tumor immunologists and clinical investigators dedicated to pursuing the potential of tumor immunotherapy.

There are many people to thank when writing a book such as this. First, we want to thank all of our authors who so willingly agreed to contribute to this endeavor. The final product speaks for itself. We also want to express our sincerest gratitude to Dr. Alan Houghton, who not only provided one of the most comprehensive

and insightful reviews of the history of tumor immunotherapy, but also provided significant inspiration in the pursuit of writing this book. Finally we want to thank Melania Ruiz and the folks at Springer for their encouragement, patience, and dedication to excellence. Our hope is that this volume will be a useful guide to those scientists and physicians who seek to understand the current status of tumor immunotherapy and the basic biology that supports its use as a cancer therapeutic. We also hope that this book will help motivate the students of tumor immunology and immunotherapy to keep working in this important and exciting field.

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