

Matthias Giese *Editor*

Molecular Vaccines

From Prophylaxis to Therapy - Volume 1

 Springer

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Mens agitat molem.

*To my children Geraldine, Sebastian and Laura, who make
everything worthwhile.*

Preface

The idea of this book was born out of rage.

I am developing vaccines for more than 20 years – a troublesome and laborious business. It can be troublesome because pure theory and successful application of a theory in lab models, and later its translation into clinical practice, are poles apart. And it can be laborious because until now there is no complete scientific compendium covering all essential aspects of modern vaccine development in one book, what makes the busy normal lab day more difficult for a developer.

A developer is obliged to read several textbooks: You will need one book to understand all immunological key aspects; to learn the way of presentation of chemically different antigens by professional cells embedded in various tissues and organs, triggered by different cytokines; to understand the interactions between pathogen recognition receptors and their PAMP or DAMP ligands; to use bioinformatics for prediction of epitopes; to follow the pathways of gene activation and their regulations; and to understand how B- and T-cell memory work or what the consequences of immunosenescence are on vaccines for elderly or how malnutrition strongly influences the immune system in very young people with consequences on vaccine efficacy. Another book would be needed to understand all aspects of modern adjuvant developments, to get a feeling for the different classes and origins of immunostimulants, and to see the multiple immune reactions caused by various adjuvants. Other books would be required to understand the different vaccine types, the different delivery technologies, the right use of nanoparticles, or the helpful assistance of biomarkers.

The here presented two volumes of *Molecular Vaccines: From Prophylaxis to Therapy* cover most of all essential aspects of modern vaccine development in different fields such as infectious, non-infectious or cancer diseases. Moreover, patent claiming strategies will be discussed and also requirements for international licensing. These are two books that will satisfy a great need that up to now has been unfulfilled.

150 authors, from more than 20 nations, from five continents, Asia, Australia, Africa, America, and Europe, contributed to this magnificent book. I am deeply impressed by the enormous responses I got upon my invitation to join our international author team. So I trust that readers of this book, academic and industrial researchers, professors, physicians and graduate students in biochemistry, molecular biology, biotechnology, and (vet) medicine,

will benefit from the comprehensive expertise and will be enabled to provide successful innovative research and development in modern vaccines.

I would like to take this opportunity to thank all authors who generously contributed their knowledge and insights to this book. Special thanks go to Raphael Lekscha, Heidelberg, for his excellent technical preparations of my illustrations. I am grateful to Springer Publishing, particularly to Claudia Panuschka, Vienna, who made my book idea possible, and Wilma McHugh, Heidelberg, for her active support.

Heidelberg, Germany

Matthias Giese

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