

METHODS IN MOLECULAR BIOLOGY

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Cytotoxic T-Cells

Methods and Protocols

Edited by

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Preface

My memories trace back to when I was an 8-year-old girl, busy searching for information and illustrations about animals in natural science books; eager to search and continually learn. Books have been my world, and my thoughts and wishes have originated from them.

Today, that girl has become a researcher who has edited the present textbook of molecular biology which is expected to stand as a *primum movens* that researchers may use while conducting a research activity applied to immunology; a textbook that can be used to start research for the characterization of Cytotoxic T Lymphocytes (CTL) by employing a systemic approach. The text is intended to outline basic and advanced laboratory methods in a way that will render straightforward and clear results.

This book aims to be an introductory course to Systems Biology in Cytotoxic T Cells. The emerging area of Systems Biology is a holistic approach that strives for a system-level understanding of biology. This means assessing the complex dynamics of how the structure of cells and organisms functions together, rather than the characteristics of isolated parts of a cell or organism.

One problem with this approach is that so far, no book has placed enough emphasis on laboratory methods applied to immunology. Our idea is to provide a book that introduces the concepts of Systems Biology along with the lab protocols that have generated such concepts. We stress the importance of offering clear explanations in order to show both students and researchers the relationship between experiments and concepts. The efforts and enthusiasm of all the contributing authors are apparent in this textbook that treats the main topic as an adventure in discovery. I personally thank all of them for taking part in this challenging project and for sharing their laboratory protocols.

The text is written in a clear-cut manner and elegantly illustrated in full color. It comprises 16 chapters. In the first part the book focuses on the isolation of T cells (Chapter 1), their expansion and characterization according to different methods (Chapters 2 and 3). The required techniques for intracellular signaling, monitoring of antigen T cell specific responses, and CTL exosomes are reported in Chapters 4–7. Microscopy and in vivo imaging applied to CTL studies are found in Chapters 8 and 9. “Omics” approaches are described in Chapters 10–13. Finally, the last three chapters include a specialist application of molecular methods into the study of CTL (Chapters 14–16) such as next generation sequencing of the Jack/stat pathway and CTL involvement in bone remodeling and transplantation.

Foggia, Italy

Elena Ranieri

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