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184

# Adhesion in Leukocyte Homing and Differentiation

Edited by D. Dunon, C. R. Mackay
and B. A. Imhof

With 37 Figures and 13 Tables

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DOMINIQUE DUNON, Ph.D.
CHARLES R. MACKAY, Ph.D.
BEAT A. IMHOF, Ph.D.

Basel Institute for Immunology
Grenzacherstr. 487
4005 Basel
Switzerland

*Cover illustration: Colonization of different organs (large spheres) by leukocytes (small spheres) is mediated by adhesion molecules. Leukocyte subsets can also undergo differentiation which is indicated by the colour changing to red. (Designed by André Traunecker, Basel Institute for Immunology.)*

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# Preface

This volume of *Current Topics in Microbiology and Immunology* was planned in parallel with an EMBO workshop on cell–cell Interactions in Leukocyte Homing and Differentiation held at the Basel Institute for Immunology in November 1992, and many of the workshop speakers have contributed to it.

Cell adhesion is one of the most dynamic fields of biological research and presented in this book is the current knowledge on the structure and function of the major families of cell adhesion molecules—the integrins, the selectins, the immunoglobulin superfamily, and CD44. Complex interactions between the members of these families mediate diverse adhesion functions, including leukocyte—leukocyte interactions, lymphocyte homing, inflammation, and lymphocyte—stromal cell interaction during hematopoiesis. A great deal of emphasis is placed on the regulatory elements that control the expression and function of adhesion molecules. Cytokines not only induce the expression of certain adhesion molecules, but may also modify their functional status. For instance, the integrins exist in either an inactive nonfunctional form or an active functional form, and a number of intracellular or extracellular stimuli modify integrin function. This is particularly important during leukocyte binding to endothelium and transendothelial migration, which proceeds through a cascade of adhesion events. Although cell adhesion molecules play an important role in many processes, this book concentrates on their role within the immune system. A number of chapters discuss the migration of lymphocytes between hematopoietic organs such as the thymus, lymph nodes, Peyer's patches, and spleen. Other chapters discuss the changes in leukocyte migration during an inflammatory response. The underlying theme in all of these chapters is the regulation and function of cell adhesion molecules.

In brief, this book introduces new aspects of cell adhesion on the molecular and biological level. The tables in the appendix should be especially helpful for newcomers to the field.

DOMINIQUE DUNON
CHARLES R. MACKAY
BEAT A. IMHOF

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# Contributors

(Their addresses can be found at the beginning of their respective chapters.)