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Edited by

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Humana Press Totowa, New Jersey

© 1999 Humana Press Inc.
999 Riverview Drive, Suite 208
Totowa, New Jersey 07512

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This publication is printed on acid-free paper.
ANSI Z39.48-1984 (American Standards Institute) Permanence of Paper for Printed Library Materials.

Cover illustration: XXX

Cover design by Patricia Cleary.

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Printed in the United States of America. 10 9 8 7 6 5 4 3 2 1

Library of Congress Cataloging in Publication Data

Adhesion protein protocols / edited by Elisabetta Dejana, Monica Corada

p. cm.—(Methods in molecular biology : 96)
Includes index.

ISBN 0-89603-417-8 (alk. paper)

1. Cell adhesion molecules—Laboratory manuals. I. Dejana, Elisabetta. II. Corada, Monica.
III. Serial: Methods in molecular biology (Totowa, N.J.) ; 96.

[DNLM: 1. Cell Adhesion Molecules. W1 ME9616J v.96 1999 / QU 55 A2352 1999]
QP552.C42A347 1999

572'.4—dc21

DNLM/DLC

for Library of Congress

98-47841

CIP

Preface

Adhesion molecules are of fundamental importance in the regulation of immunity, inflammation, tissue remodeling, and embryonic development. They comprise different families of homologous proteins, such as selectins, integrins, cadherins, and immunoglobins. In addition, beyond these groups, other structures with adhesive properties, such as proteoglycans, occludin, and CD44, have been characterized recently.

An understanding of the type and characteristics of adhesive molecules expressed by the different cell types and the possibility of manipulating their activity promises considerable clinical potential. Antibodies, small peptidic and nonpeptidic molecules, have recently been used to inhibit thrombosis by blocking platelet aggregation or inflammation through inhibition of leukocyte infiltration and adhesion. Inhibitors of adhesive molecules are used in experimental systems for the study of tumor growth and dissemination.

Among major goals in the field are the identification of new members of the known adhesive protein families and of independent new adhesive structures. After structural characterization, even more demanding is the study of the biological activity of the new proteins, and the development of simple, rapid tests for the screening of possible inhibitors. In this regard, the production of such reagents as fragments and antibodies would help define the structure–function relationship of individual proteins. Data available in the literature show the complexity of the adhesive process and how different molecular epitopes might contribute to the adhesive properties of a single structure. Finally, a new area of investigation is the characterization of the intracellular signaling cascade triggered by the engagement of transmembrane adhesive proteins.

Because of the multidisciplinary nature of research on adhesion mechanisms and the overlapping biological properties of many adhesive proteins *in vitro*, it did not seem appropriate to devote a chapter of *Adhesion Protein Protocols* to each currently identified adhesion protein. This book has thus been designed to serve different purposes: to describe strategies for the identification and cloning of new adhesive proteins; to provide methodologies for the production of inhibitors of the adhesive activity; to provide a spectrum of

biological models to assay cell-to-matrix and cell-to-cell adhesion in vitro; and to provide techniques for the measurement of adhesive protein signaling activities.

The protocols reported in *Adhesion Protein Protocols* also constitute a guide to many of the major assays in cell biology, with a potential use not only by those interested in adhesion processes, but also by scientists across many different disciplines.

Authoritative contributors to the field have here contributed descriptions of their experimental protocols in a clear and reproducible way, providing scientists in many disciplines with practical tools that will speed their research and help develop new experimental strategies.

Elisabetta Dejana
Monica Corada

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