
Preface

In Volume I, *Analysis of Cells and Tissues*, we presented a range of protocols aimed at mapping and analyzing the expression of various molecules of potential interest in metastasis research and for examining their production at the genetic level. In this second volume of metastasis research protocols, we move to the level of living cells and tissues and present methodologies applicable to examining metastatic behavior in vitro and in whole animal models.

The methods described in the first section of this volume concentrate on the separation of cell lines with high and low metastatic potential, including the genetic modification of cell lines. The assay systems to test defined aspects of the metastatic cascade are then described in Part II and include cell migration assays, assays for matrix degrading enzymes, basement membrane degrading assays, adhesion assays, and assays of angiogenesis. The role of the specific elements of the metastatic cascade assayed in each of these systems in turn must of course be put into perspective relative to their roles in entire living organisms.

To this end, a range of animal models of metastasis are described in Part III of this book. This section begins with an overview of basic principles for the study of metastasis using animal models and goes on to describe in detail a number of specific animal model systems that have proven of value in metastasis research. The selection presented is by no means comprehensive, but was planned to give a broad spectrum of models, the employment of immunodeficient animals, syngeneic and transgenic models, and orthotopic models of metastasis. Chapters on dissection of tumor and host cells from metastasized organs for testing gene expression directly *ex vivo* and techniques for the labeling of cells with green fluorescent protein for metastasis research are also included.

Cancer mortality will only decrease if metastases can be treated successfully. To do so, it is probably necessary to understand the metastatic cascade first at the molecular level, then at the tissue level, and finally at the level of the whole organism. Based on comprehensive knowledge, rational—and effective—strategies to combat metastatic disease might be developed. We hope that this collection of protocols will help to work toward this goal.

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