Anticancer Drug Resistance

Advances in Molecular and Clinical Research

edited by

LORI J. GOLDSTEIN
Fox Chase Cancer Center
Philadelphia, Pennsylvania

ROBERT F. OZOLS
Fox Chase Cancer Center
Philadelphia, Pennsylvania

1994 KLUWER ACADEMIC PUBLISHERS
BOSTON/DORDRECHT/LONDON
# Table of contents

List of contributors vii

Preface xi

Acknowledgments xiii

1. Genetics of drug resistance  
   JUNE L. BIEDLER and BARBARA A. SPENGLER 1

2. P-glycoprotein homologues  
   ELLEN BUSCHMAN, PIERRE LEPAGE, and PHILIPPE GROS 17

3. Role of protein kinase C in multidrug resistance  
   CATHERINE A. O'BRIAN, NANCY E. WARD, KAREN R. GRAVITT,  
   and DOMINIC FAN 41

4. Transcriptional regulation of multidrug resistance gene expression  
   SNORRI S. THORGEIRSSON, TIMOTHY W. GANT, and  
   JEFFREY A. SILVERMAN 57

5. In vitro models of multidrug resistance  
   LEE M. GREENBERGER, DALIA COHEN, and SUSAN BAND HORWITZ 69

6. In vivo models of P-glycoprotein-mediated multidrug resistance  
   MICHAEL M. GOTTESMAN, GERALD H. MICKISCH, and IRA PASTAN 107

7. Molecular diagnosis of multidrug resistance  
   CYNTHIA E. HERZOG and SUSAN E. BATES 129

8. Clinical reversal of multidrug resistance  
   BRANIMAR I. SIKIC, GEORGE A. FISHER, BERT L. LUM,  
   NATHALIE A. BROPHY, ANNE M. YAHANDA, KENT M. ADLER, and  
   JOANNE HALSEY 149
9. Role of gene amplification in drug resistance
   PATRICIA V. SCHOFENLEIN 167

10. Biochemical modulation as an approach to reversal of antimetabolite resistance
    PETER J. O'DWYER 201

11. Mechanisms of acquired resistance to cisplatin
    PAUL A. ANDREWS 217

12. Mechanisms of resistance to alkylating agents
    O. MICHAEL COLVIN 249

13. Mechanisms of resistance to topoisomerase inhibitors
    ALLAN Y. CHEN and LEROY F. LIU 263

Index 283