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Risk and Progression Factors in Carcinogenesis

With 129 Figures and 31 Tables

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Preface

Cellular transformation and carcinogenesis is a multistep process, starting with initial DNA lesions and progressing through impairment and, finally, loss of cellular growth control and a gain in invasive and metastatic properties. Although the principal features of tumor phenotype among the different cancers may resemble each other, it is well known that at the molecular level various different genes and gene families are involved and altered, depending on the cellular origin as well the state of tumor differentiation and progression. This book demonstrates the important steps in carcinogenesis, ranging from the chemical interaction of carcinogens with cellular DNA in experimental tumors and cell lines to the analysis of selected human tumors. In the first part special emphasis is placed on how the first DNA changes in carcinogenesis are produced and recognized. Chemical carcinogens, UV irradiation, and endogenous oxidative damage and impairment of repair mechanisms and its sequelae are considered. The second part adds new strategies to analyze the relevant cell biological alterations and controlling genes and proteins in established cancer cells. In the final section the relevance of genomic alterations in selected human tumors for cellular transformation and tumor progression is discussed.

Leading scientists met at a SFB 172 International Symposium entitled "Molecular Mechanisms of Primary Carcinogenic Alterations," where in short review articles, the state of the art of specific fields of interest was described, from the chemistry of carcinogens to the cellular biology and clinical course of tumor formation and progression. Given the high specialization in each field, this kind of survey was considered to be especially valuable since it is only seldomly found and

should provide the reader with stimulating results and methods in fields related to his own main interest.

Current trends and methodologically oriented scientific approaches for recognizing relevant pathogenetic mechanisms and factors in carcinogenesis are thus brought together.

The editors of this volume are especially grateful that, due to the great cooperative effort of everyone involved in the writing and publishing process, it was possible to hand over this book to the public in the shortest time possible. In particular, we thank B. Hasenmüller and E. Albero for their excellent secretarial help, which made the hard job of collecting manuscripts an easy task. The rapid evaluation process and editorial process at Springer-Verlag is gratefully acknowledged. In particular, Janet Sterritt-Brunner and Lindrun Weber as desk editors and Sherryl Sundell as copy editor helped considerably in putting this volume together. We hope that this timely report will find an interested readership and be worthwhile in this rapidly progressing field.

Würzburg, April 1996

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Contents

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