

SKIN CARCINOGENESIS

**Mechanisms and
Human Relevance**

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Mechanisms and Human Relevance

Proceedings of the Symposium Dermal Carcinogenesis: Research Directions for Human Relevance, Held in Austin, Texas, December 1-4, 1987

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Preface

It has long been acknowledged that valuable scientific information concerning the etiology, the mechanisms of action, and the ultimate prevention of human cutaneous cancer can be obtained from both clinical and laboratory studies; therefore, a presentation of these studies by the world's leading scientists is especially relevant. This book, *Skin Carcinogenesis: Mechanisms and Human Relevance*, represents the most up-to-date knowledge of skin cancer and related scientific investigations. The skin is a major route of exposure to many environmental and industrial chemicals, as well as to radiation, and the effects of many potentially harmful agents on the skin of a variety of animal models have therefore been investigated. These studies not only provide knowledge pertaining directly to human skin cancer but provide insight into carcinogenesis in the general population.

This volume is a compilation of the proceedings of the conference "Dermal Carcinogenesis: Research Directions for Human Relevance" held in Austin, Texas Dec. 1-4, 1987. Included are chapters that discuss and evaluate mechanisms of carcinogenesis and the human relevance of animal studies in terms of risk assessment and future research needs. The skin as a target organ is discussed and the role of papillomaviruses is thoroughly analyzed, as are the metabolism of carcinogens and promoters in mouse skin and the importance and uniqueness of various model systems. The book also includes a comparative morphological evaluation of the effects of carcinogens and promoters. Tumor initiation and the consequences of exposure to initiating levels of carcinogens are examined, as well as cellular and biological aspects of promotion and progression. The biochemical and molecular aspects of promotion and progression are reviewed, including the roles of receptors and free radicals and the critical involvement of the arachidonic acid cascade in the process of tumor promotion. Finally, this volume addresses important considerations in using the skin model as an assay system. This assay system has become a valuable tool to both industry and governmental regulatory agencies. The data presented and the thorough examination of the most recent developments in dermal carcinogenesis further enhance man's understanding of the overall state of cancer research.

It is the general aim of this volume to carefully examine the important scientific role of dermal carcinogenesis and its significant influence on the entire field of carcinogenesis and cancer research. By compiling these findings, a valuable and in-depth resource is provided for the scientific investigator.

This volume will be of interest to cancer research scientists, dermatologists, toxicologists, pharmacologists, and biochemists, as well as radiation biologists and cellular and molecular biologists. Those in governmental administrative and regulatory agencies dealing with environmental health hazards will also find this volume helpful.

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Thomas J. Slaga

Introduction

In December 1987, the University of Texas M. D. Anderson Cancer Center in Science Park, Smithville, hosted the first conference on Research Directions for Human Relevance in Carcinogenesis. The first meeting of this series was entirely devoted to topics of cutaneous carcinogenesis. The program included invited lectures by leading scientists and physicians from the United States, Europe, and Japan.

This book represents the proceedings of that conference, including the discussions that followed each lecture. The major objective of this meeting was to bring together people from academia, regulatory agencies, industry, and public interest groups to discuss and evaluate the state-of-the-art knowledge on the skin as a target organ. Emphasis was placed on mechanisms, human relevance in terms of risk assessment, and future research needs.

Although a large part of the conference was devoted to describing and analyzing the latest developments in diverse but interrelated areas of basic science and clinical investigation, all authors made efforts to emphasize the human relevance of each experimental system.

The first part of this book includes overviews on chemical and viral carcinogenesis, genetic susceptibility, cutaneous bioassays, and the pathobiology of skin cancer. The use of the skin as an experimental model to study mechanisms of carcinogenesis is described in several chapters that contain the most recent advances in the cellular, biochemical, and molecular aspects of skin carcinogenesis. The final section includes a series of chapters devoted to the use of the skin as a bioassay for putative carcinogens, cocarcinogens, and promoters such as petroleum derivatives, tobacco products, and other environmentally relevant compounds.

Thomas J. Slaga
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R.K. Boutwell
Donald E. Stevenson
Hugh L. Spitzer
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