Progress in Cancer Research and Therapy Vol. 1

CONTROL MECHANISMS IN CANCER

Edited by

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Raven Press ▪ New York

Raven Press, 1140 Avenue of the Americas, New York, New York 10036

Made in the United States of America

International Standard Book Number 0-89004-083-4
Library of Congress Catalog Card Number 75-30234

Dedication

The organizers and participants of the Japanese–Australian–American Cancer Symposium dedicate this volume to an outstanding scientist and friend, Dr. Gordon M. Tompkins, who would have openly shared his knowledge with us during this symposium if tragedy had not prevented it. Gordon pursued his love of people, science, and music with great energy and enthusiasm all his life. His approach to problems was unique, as he attacked them with fervor and foresight. And the very high esteem that the world's scientists hold for Gordon speaks of the value of his enthusiastic efforts. Many of us will remember Gordon, not only for his science but also for his informal style and warm words of wisdom.

Preface

Extensive studies of the cancer cell have led to the concept of faulty regulatory control mechanisms. We now know that cancer cells have wide ranges of differentiation and rates of growth and that they exhibit vast arrays of molecular and cellular alterations, some of which are obviously not detrimental to the cells. Therefore, many of the recent research efforts have involved investigations of "modified" cellular and molecular control mechanisms in cancer and non-cancer systems.

Studies of regulatory control mechanisms in normal and neoplastic tissues have led to a considerable understanding of the processes involved in cellular differentiation and cellular proliferation. It has become obvious that cellular and regulatory controls function at the level of the cellular membrane and within all geographical areas inside the cell. With the use of new and very sensitive assay techniques, we have just begun to specifically define and delineate these areas of potential controls, e.g., binding of hormones to membranes and activation of membrane-bound enzymes; cytoplasmic and nuclear steroid hormone receptors; role of "second messenger" systems such as the cyclic nucleotides; regulation of both host and viral genomic transcription; the many forms of posttranscriptional regulatory controls; the role of the plasma membrane in regulating intracellular functioning; and the formation of tumor specific molecules.

Many of these areas of cellular controls have been elucidated using tumor cell systems. In other instances, the areas of control have been defined with nonneoplastic tissues, and complementary control mechanisms are being examined in neoplastic tissues. This volume resulted from a cancer symposium that brought together outstanding investigators from Japan, Australia, and the United States who are currently investigating these many areas of cellular and molecular controls in both nonneoplastic and neoplastic cells and tissues. The conference was held at the East-West Convention Center, University of Hawaii, Honolulu, Hawaii, in December 1975. It was supported by the National Cancer Institute, the National Science Foundation, the Japanese Society for the Promotion of Science, and the Australian Department of Science under the auspices of the Cancer Treaty between Japan and the United States and the Science Treaties between Japan, Australia, and the United States.

Each of the authors was asked to write a mini-review covering an area of basic cancer research that encompassed his own current research efforts. Since this volume includes chapters on basic research in normal and neoplastic cells and tissues (including human and animal systems), it should be of interest and direct benefit to all physicians, scientists, technologists, stu-

dents, and medical personnel who are involved in the research and treatment of cancer.

The Editors
(*February 1976*)

Acknowledgments

The editors wish to express their sincere appreciation to Dr. Takashi Sugimura, Vice Director of the National Cancer Center Research Institute, Tokyo, and to Dr. Arthur C. Upton, Dean of Basic Health Sciences, State University of New York, Stony Brook, N.Y., for their support in our organizational efforts. We especially thank Dr. Lawrence H. Piette, Executive Director of the Cancer Center of Hawaii, and Mr. James P. McMahon, Logistics Officer of the East-West Center on the University of Hawaii campus in Honolulu, for providing such a lovely atmosphere for the cancer symposium. We also wish to thank Dr. Henry Pitot, Director of McArdle Laboratory for Cancer Research, Madison, Wisconsin, Dr. Russell Hilf, Professor of Biochemistry at University of Rochester, Rochester, N.Y., and Dr. Francis Kenney, Professor of Biology Division, Oak Ridge National Labs, Oak Ridge, Tennessee, for their able efforts in the selection of the American delegation.

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