

Progress in Cancer Research and Therapy Vol. 1

CONTROL MECHANISMS IN CANCER

Edited by

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Volume 1**

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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*)

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Contents

Hormonal Regulation

- 1 Hormonal Control of Mammary Cancer
Russell Hilf, Joan T. Harmon, Robert J. Matusik, and Mary B. Ringler
- 25 Glucocorticoid Control of Gene Expression
Francis T. Kenney, Stanley E. Lane, Kai-Lin Lee, and James N. Ihle
- 37 Hormonal Induction of Postsynthetic Modifications of Chromosomal Proteins in Mammary Neoplasia
Kenneth S. McCarty and Kenneth S. McCarty, Jr.
- 57 Somatic Genetic Studies of Steroid and Cyclic AMP Receptors
Philip Coffino and Keith R. Yamamoto
- 67 Steroid Receptors in Breast Neoplasia
E. R. DeSombre and E. V. Jensen
- 83 Epinephrine and Corticoid Receptors in Plasma Membranes of Liver and Hepatomas
Hiroshi Terayama, Naomichi Okamura, and Takashi Suyemitsu

Function of Cyclic Nucleotides

- 99 Cyclic GMP and Cyclic AMP in Biological Regulation
Nelson D. Goldberg, Mari K. Haddox, Susan E. Nicol, Ted S. Acott, David B. Glass, and Charles E. Zeilig
- 109 Regulation of Steroidogenesis in Adrenocortical Carcinoma
Rameshwar K. Sharma
- 125 Hormonal Regulation of Glutamine Synthetase and Ornithine Aminotransferase in Normal and Neoplastic Rat Tissues
Chung Wu
- 139 Protein Phosphokinases and Mode of Action of Guanosine 3',5'-Monophosphate
Yasutomi Nishizuka, Yoshimi Takai, Eikichi Hashimoto, Akira Kishimoto, Masanori Inoue, and Masao Takeda
- 153 Cyclic Nucleotides in Normal and Transformed Fibroblasts
George S. Johnson

- 161 Cyclic Nucleotides in Epidermal Proliferative Diseases
John J. Voorhees and Elizabeth A. Duell
- 169 Effects of Cyclic AMP Derivatives on Tumor Cells
John W. Koontz, K. Wagner, J. Wimalasena, B. H. Leichtling, and Wesley D. Wicks
- 183 Action of Adenosine 3',5'-Phosphate in Chinese Hamster Ovary Cells
Abraham W. Hsie, J. Patrick O'Neill, Claus H. Schröder, Kohtaro Kawashima, Linda S. Borman, and Albert P. Li
- 205 Changes in Adenylate Cyclase Activity and Membrane Polypeptides of Cells Transformed with Avian Sarcoma Viruses
M. Yoshida, T. Isaka, Y. Ikawa, M. Owada, and K. Toyoshima
- 217 Effect of Carcinogens and Tumor Promoters on Epidermal Cyclic Adenosine 3',5'-Monophosphate Metabolism
Andrew W. Murray, Ajit K. Verma, and Mario Froscio

Nucleic Acid Metabolism

- 231 Recent Progress in Studies on Poly(ADP-Ribosylation)
Takashi Sugimura, Masanao Miwa, Yoshiyuki Kanai, Kinichiro Oda, Kaoru Segawa, Miyoko Tanaka, and Harutake Sakura
- 241 5'-Cap of Low Molecular Weight and Messenger RNA—Its Importance in Approaches to Comparisons of Tumor and Non-tumor Cell Function
Harris Busch, Dale Henning, Friedrich W. Hirsch, Manchanahalli S. Rao, Tae Suk Ro-Choi, William H. Spohn, and Benjamin C. Wu
- 269 Regulation of RNA Metabolism in Malignant Cells
Michihiko Kuwano, Tadashi Nakashima, Yukio Ikehara, and Hideya Endo
- 279 Endogenous Type-C RNA Viruses of Mouse Cells: A Model for the Study of Gene Regulation in Eukaryotes
Stuart A. Aaronson, John R. Stephenson, Shigo Hino, and Cirilo Cabradilla

Enzymes and Iso-Enzymes

- 295 Mechanism of Alkaline Phosphatase Induction in Cultured Mammary Carcinoma Cells
Tetsuo Ono and Hideki Koyama

- 303 Isozyme Composition, Gene Regulation, and Metabolism of Experimental Hepatomas
Sidney Weinhouse, Mario Gosalvez, Jennie B. Shatton, and Harold P. Morris
- 317 Relation of the Characteristics of Liver Cells During Culture, Differentiation, and Carcinogenesis
Akira Ichihara

Posttranscriptional Regulation

- 329 Intracellular Membranes and Posttranscriptional Regulation in Liver and Hepatoma
Henry C. Pitot, James Cardelli, Byron Long, and Charles McLaughlin
- 343 Control of Cholesterol Synthesis in Normal and Malignant Cells
Millie Hughes Wiley and Marvin D. Siperstein
- 351 Progressive Loss of Cellular Metabolic Controls During Hepatic Carcinogenesis
John R. Sabine
- 363 Lipids and Lipogenesis in a Murine Mammary Neoplastic System
S. Abraham and G. Ananda Rao
- 379 Regulation of Protein Degradation in Cultured Hepatoma Cells
F. J. Ballard
- 389 Use of Lymphoma and Leukemia Cells in Studies of Lymphocyte Surface Immunoglobulins and Alloantigens
John J. Marchalonis

Energy Metabolism

- 401 Regulation of Tumor Cell Metabolism by the Adenylate and Guanylate Energy Charges
Wayne E. Criss and Tapas K. Pradhan
- 411 Mitochondrial Calcium Transport and the Regulation of Metabolism by Calcium in Tumor Cells
Fyfe L. Bygrave
- 425 Pyridine and Adenine Nucleotide Ratios and Futile Substrate Cycling in Regulation of Energy Metabolism and Proposed Hyperthermic Regression of Neoplasms
J. F. Williams, P. C. Cook, K. I. Matthaei, and J. B. W. Halley

441	Glucosamine Phosphate Synthase of Neoplastic and Regenerating Liver
	<i>Shigeru Tsuiki and Taeko Miyagi</i>
	<i>Index</i>