Contents

Asterisks preceding page numbers refer to human studies.


2307 C. N. Frantz and H. V. Malling. Factors Affecting Metabolism and Mutagenicity of Dimethylnitrosamine and Diethylnitrosamine.

2315 Allan Fenselau, Kathleen Wallis, and Harold P. Morris. Acetoacetate Coenzyme A Transferase Activity in Rat Hepatomas.

2321 Michael A. Lea, Michael R. Koch, and Harold P. Morris. Tumor-selective Inhibition of the Incorporation of \(^{3}H\)-Labeled Amino Acids into Protein by Cyanate.

2327 Joseph G. Cory and Mary M. Mansell. Comparison of the Cytidine 5'-Diphosphate and Adenosine 5'-Diphosphate Reductase Activities of Mammalian Ribonucleotide Reductase.


2340 Ming C. Liau, Don W. Smith, and Robert B. Hurlburt. Preferential Inhibition by Homopolyribonucleotides of the Methylation of Ribosomal Ribonucleic Acid and Disruption of the Production of Ribosomes in a Rat Tumor.

*2350 Sukhen Chaudhuri, Irena Koprowska, and Jan Rowinski. Different Agglutinability of Fibroblasts Underlying Various Precursor Lesions of Human Uterine Cervical Carcinoma.


2365 Luka Milas, Ivan Basic, H. D. Kogelnik, and H. Rodney Withers. Effects of Corynebacterium granulosum on Weight and Histology of Lymphoid Organs, Response to Mitogens, Skin Allografts, and a Syngeneic Fibrosarcoma in Mice.


2383 John Banks, John W. Kreider, Chiyoko Satoh, and Eugene A. Davidson. Properties of Acidic Sacccharides Produced by B16 Melanoma Cells Treated with 1-Methyl-3-isobutylxanthine.

2390 Yoshifumi Takeda, Takeshi Tominaga, Noriyuki Tei, Masatsugu Kitamura, Sekiko Taga, Junichi Murase, Tetsuo Taguchi, and Toshio Miwatani. Inhibitory Effect of L-Arginine on Growth of Rat Mammary Tumors Induced by 7,12-Dimethylbenz(a)anthracene.

2394 Leone Castelli, Giovanni Neri, Alberto Frigola, Filippo M. Di Fava, and Maria C. Giuliano. Viral Expression, Oncogenicity, and Antigenicity of a Mouse Salivary Gland Tumor and Two Cell Lines Derived from It.

2403 Kuang-yu Chen, Chao-ming Tsai, and E. S. Canelakis. Comparison of Physical and Immunological Properties of Plasma Membranes of Two Mouse Leukemia Cell Lines, P388 and L1210.

2420 Harmar D. Brereton, Thomas L. Bryant, and Robert C. Young. Inhibition and Recovery of DNA Synthesis in Host Tissues and Sensitive and Resistant B16 Melanoma after 1-(2-Chloroethyl)-3-(trans-4-methylcyclohexyl)-1-nitrosourea, a Predictor of Therapeutic Efficacy.


2440 Robert G. Kemp, Pei-Yung Hsu, and Rene J. Duquesney. Changes in Lymphoid Cyclic Adenosine 3':5'-Monophosphate Metabolism during Murine Leukemogenesis.

*2446 Andras G. Foti, Harvey Herschman, and J. Fenimore Cooper. A Solid-Phase Radioimmunoassay for Human Prostatic Acid Phosphatase.


*2461 John J. Hutton and Carter Hackney. Metabolism of Cigarette Smoke Condensates by Human and Rat Homogenates to Form Mutagens Detectable by Salmonella typhimurium TA 1538.

2469 Adrienne E. Rogers. Variable Effects of a Lipotrope-Deficient, High-Fat Diet on Chemical Carcinogenesis in Rats.

2475 James C. Chan, James L. East, and Leon Dmochowski. Sarcoma-negative Leukemia-positive Transformed Cell Culture Established from a Murine Sarcoma Virus-induced Rat Bone Tumor.


2494 Shigeaki Sato, Takashi Sugimura, Kiyoe Yoda, and Shinji Fujimura. Morphological Differentiation of Cultured Mouse Glioblastoma Cells Induced by Dibutyryl Cyclic Adenosine Monophosphate.

2500 Arpad Somogyi, Wayne Levin, Supra Banerjee, Ronald Kuntzman, and Allan H. Conney. Inhibition of the Acute Toxicity and Adrenocorticoalytic Effect of 7,12-Dimethylbenz(a)anthracene by Isopropylvaleramide and Allylisopropylacetamide in the Rat.

2506 Thomas Lee, Myron Karon, and Richard L. Monparlier. Cellular Phosphorylation of 1-β-D-Arabinofuranosylcytosine and 5-Azacytidine with Intact Fibrosarcoma and Leukemic Cells.


*2520 Vera S. Byers, Alan S. Levin, James O. Johnston, and Adeline J. Hackett. Quantitative Immunofluorescence Studies of the Tumor Antigen-bearing Cell in Giant Cell Tumor of Bone and Osteogenic Sarcoma.

2532 Chiyoko Satoh, John W. Kreider, John Banks, Stephanie Garlick, and Eugene A. Davidson. The Production of Acidic Polysaccharides by 5-Bromodeoxyuridine-treated B16 Mouse Melanoma Cells.


2553 Benjamin L. Van Duuren, Bernard M. Goldschmidt, and Irving Seidman. Carcinogenic Activity of Di- and Trifunctional α-Chloro Ethers and of 1,4-Dichlorobutene-2 in ICR/HA Swiss Mice.

*2558 George Poste. Production of a Serine-Protease with Macrophage Migration-inhibitory Factor Activity by Virus-transformed Cells and Human Tumor Cell Lines.


Endocrine effects in hepatocarcinogenesis in rats fed 2-acetylaminofluorene were discovered almost simultaneously by two groups of workers, Dr. F. Bielschowsky and Dr. Marianne Bielschowsky, in New Zealand, and Dr. K. Paschkis and Dr. A. Cantarow, in Philadelphia.

F. D. Bielschowsky (1902–1965), after medical service on the European continent, was forced to migrate to Sheffield, England, because of the prevailing political problems. There, influenced by Dr. Georgiana Bonser, he turned his interests to cancer research and began to study the involvement of endocrines in the action of the then novel carcinogen 2-acetylaminofluorene. In 1949 he assumed the directorship of the Cancer Research Laboratory of the University of Otago in Dunedin, New Zealand, where Griesbach and Purves assisted in extending his approaches to include goitrogens and modifiers of carcinogen response. By elegant experimentation, applying parabiotic and endocrine-modified animal systems, he developed the now classic concept of pituitary-thyroid and pituitary-gonad-adrenal relationships, still being pursued by his alumnus and successor, Dr. M. Goodall (Brit. J. Cancer, 9: 80, 1955; Acta Unio Intern. Contra Cancrum, 17: 121, 1961; Cancer Res., 26: 347, 1966; New Zealand Med. J., 67: 1, 1968). Additional contributions were made in the field of immunological effects in carcinogenesis. The exceedingly useful New Zealand strains of mice stem from their laboratory, mainly as a result of the patient efforts and vision of Marianne Bielschowsky, his wife and scientific partner for decades (Proc. Univ. Otago Med. School, 37: 9, 1959; Australian J. Exptl. Biol. Med. Sci., 42: 561, 1964). The photograph shows the Bielschowskys during a visit to Bethesda, Maryland, in 1962.

Contemporary with these studies, a group at the Jefferson Medical College in Philadelphia developed similar, yet quite independent approaches in the area of endocrine influences in carcinogenesis. Abraham Cantarow (b. 1901) and Karl E. Paschkis (1896–1961) were also concerned with the mechanisms of endocrine influences in cancer induced by 2-acetylaminofluorene. They likewise utilized goitrogenic chemicals to study pituitary-thyroid relationships (Cancer Res., 8: 257, 1948). Later, they delved into the gamut of endocrine factors controlling the growth of tumors at various sites (Cancer Res., 18: 981—1060, 1958). They formulated the principle that normally functioning hyperplastic tissue does not cancerize as readily as nonfunctioning or abnormally functioning hyperplastic tissue (Acta Unio Intern. Contra Cancrum, 13: 740, 1957). Also from their laboratory came the fundamental biochemical observation on differences between hepatoma and normal liver in incorporation of uracil (Cancer Res., 14: 119, 1954; J. Natl. Cancer Inst., 15: 1615, 1955), which stimulated interest in the metabolism of pyrimidine nucleotides in cancer and led Dr. C. Heidelberger to the development of 5-fluorouracil as a useful agent in cancer chemotherapy.

Dr. A. Cantarow, a former President of the American Association for Cancer Research (1969–1970), and emeritus professor of biochemistry, Jefferson Medical College, is currently with the National Cancer Institute, Bethesda, Maryland.

The photographs of Cantarow (left) and Paschkis (right) were taken ca. 1960. We are indebted to Dr. John H. Weisburger for the photographs and information.

M. B. S.

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