



## CONTENTS

Asterisks \* preceding page numbers refer to studies using human-derived material.

### BASIC SCIENCES

- 453 **Effect of Hyperglycemia on the Thermal Response of Murine Normal and Tumor Tissues.** Muneyasu Urano, Vernon Montoya, and Ann Booth.
- 456 **Spatial Distribution of Proliferating Cells in Avian Sarcoma Virus-induced Gliomas.** Dennis R. Groothuis, Joseph F. Pasternak, Joan M. Fischer, Darell D. Bigner, and Nicholas A. Vick.
- 460 **Effect of Anthracycline Antibiotics on Oxygen Radical Formation in Rat Heart.** James H. Doroshow.
- 473 **Nitrosourea-induced Sister Chromatid Exchanges and Correlation to Cell Survival in 9L Rat Brain Tumor Cells.** Philip J. Tofilon, Mary E. Williams, and Dennis F. Deen.
- 476 **Activation of Some Aromatic Amines to Mutagenic Products by Prostaglandin Endoperoxide Synthetase.** Iain G. C. Robertson, Kandiah Sivarajah, Thomas E. Eling, and Errol Zeiger.
- 481 **Cytocidal Action of the Quinone Group and Its Relationship to Antitumor Activity.** Asher Begleiter.
- \*485 **Systemic Excretion of Benzo(a)pyrene in the Control and Microsomal Induced Rat: The Influence of Plasma Lipoproteins and Albumin as Carrier Molecules.** Helen P. Shu and Edwin N. Bymun.
- \*491 **Cell Growth-dependent Variation in the Sensitivity of Human and Mouse Tumor Cells to Complement-mediated Killing.** S. H. Ohanian, M. Yamazaki, S. I. Schlager, and M. Faibisch.
- 496 **Pyrazole Effects on Mutagenicity and Toxicity of Dimethylnitrosamine in Wistar Rats.** Ritva P. Everts, Mandy M. Raab, Emily Haliday, and Carolyn Brown.
- 500 **Role of N-Methylolpentamethylmelamine in the Metabolic Activation of Hexamethylmelamine.** Matthew M. Ames, Mark E. Sanders, and William S. Tiede.
- 505 **Podophyllotoxin-resistant Mutants of Chinese Hamster Ovary Cells: Cross-Resistance Studies with Various Microtubule Inhibitors and Podophyllotoxin Analogues.** Radhey S. Gupta.
- \*513 **Hormonal and Metabolic Regulation of Human Chondrosarcoma *in Vitro*.** William D. McCumbee, John M. Harrelson, and Harold E. Lebovitz.
- 517 **Temperature Dependence of Adriamycin, *cis*-Diamminedichloroplatinum, Bleomycin, and 1,3-Bis(2-chloroethyl)-1-nitrosourea Cytotoxicity *in Vitro*.** Terence S. Herman.
- \*521 ***In Vitro* Growth Control Phenotypes of Transformed Rodent Cells prior to and following Tumorigenesis.** Frank J. O'Neill and Laurence Renzetti.
- 529 **Identification of a High-Molecular-Weight Nonfunctional Protein in L1210 Leukemia Cells with Common Antigenic Determinants to Dihydrofolate Reductase.** Sheldon P. Rothenberg and M. Perwaiz Iqbal.
- 536 **Relationship between Cellular Procoagulant Activity and Metastatic Capacity of B16 Mouse Melanoma Variants.** Linda C. Gilbert and Stuart G. Gordon.
- 541 **Cytotoxicity of Alkyl-lysophospholipid Derivatives and Low-Alkyl-Cleavage Enzyme Activities in Rat Brain Tumor Cells.** Wolfgang E. Berdel, Eva Greiner, Ulrich Fink, Dimitrios Stavrou, Anneliese Reichert, Johann Rastetter, Dennis R. Hoffman, and Fred Snyder.
- \*546 **Improved Therapeutic Benefits of Doxorubicin by Entrapment in Anionic Liposomes.** Eric A. Forssen and Zoltán A. Tökés.
- 551 **Effects of Folinic Acid on Hepatoma Cells Containing Methotrexate Polyglutamates.** John Galivan and Zenia Nimec.
- \*556 **Growth of Mammalian Multicellular Tumor Spheroids.** Alan D. Conger and Marvin C. Ziskin.
- 561 **Modulation of 5-Fluorouracil-induced Toxicity in Mice with Interferon or with the Interferon Inducer, Polyinosinic-Polycytidylic Acid.** Robert L. Stolfi, Daniel S. Martin, Robert C. Sawyer, and Sol Spiegelman.
- 567 **Retinoid Effects on Cell-Cell Interactions and Growth Characteristics of Normal and Carcinogen-treated C3H/10T1/2 Cells.** Lawrence J. Mordan and John S. Bertram.
- 572 **Characterization of Interleukin 2-dependent Cytotoxic T-Cell Clones: Specificity, Cell Surface Phenotype, and Susceptibility to Blocking by Lyt Antisera.** Michael A. Palladino, Yuichi Obata, Elisabeth Stockert, and Herbert F. Oettgen.
- 577 **Mutagenic Responses of Thirteen Anticancer Drugs on Mutation Induction at Multiple Genetic Loci and on Sister Chromatid Exchanges in Chinese Hamster Ovary Cells.** Bhag Singh and Radhey S. Gupta.

- 585 **Retinoid Feeding, Hormone Inhibition, and/or Immune Stimulation and the Genesis of Carcinogen-induced Rat Mammary Carcinomas.** Clifford W. Welsch and Jane V. DeHoog.
- 592 **Plasma and Cerebrospinal Fluid Pharmacokinetics of 5-Aza-2'-deoxycytidine in Rabbits and Dogs.** Guy G. Chabot, Georges E. Rivard, and Richard L. Momparler.
- 598 **Expression of Friend Leukemia Virus and Spleen Focus-forming Virus-specific Sequences in Erythroid Bursts and Granulocyte-Macrophage Colonies from Spleen and Marrow of Mice Infected with Friend Leukemia Virus.** Giulia Colletta, Pier Paolo DiFiore, Alfredo Fusco, Federico Lettieri, Alfredo Covelli, and Cesare Peschle.
- 604 **Limitations of DNA Histogram Analysis by Flow Cytometry as a Method of Predicting Chemosensitivity in a Rat Renal Cancer Model.** Ralph deVere White, Arline D. Deitch, and Carl A. Olsson.
- 611 **Augmentation of Carcinogenesis by N-Nitrosobis(2-oxopropyl)amine Administered during S Phase of the Cell Cycle in Regenerating Hamster Pancreas.** Dante G. Scarpelli, M. Sambasiva Rao, and Vadrevu Subbarao.
- 617 **Orthotopic Implantation of Primary N-[4-(5-Nitro-2-furyl)-2-thiazolyl]formamide-induced Bladder Cancer in Bladder Submucosa: An Animal Model for Bladder Cancer Study.** El Housseiny I. Ibrahim, Vijai N. Nigam, Carlos A. Brailovsky, P. Madarnas, and Mostafa Elhilali.
- 623 **High-Affinity Nitrosamine Dealkylase System in Rat Liver Microsomes and Its Induction by Fasting.** Yityoong Yong Tu and Chung S. Yang.
- 630 **Tissue Distribution of the Tobacco-specific Carcinogen 4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanone and Its Metabolites in F344 Rats.** Andre Castonguay, Hans Tjälve, and Stephen S. Hecht.
- \*639 **Effects of Dibutryl Cyclic Adenosine 3':5'-Monophosphate on the Growth of Cultured Human Small-Cell Lung Carcinoma and the Specific Cellular Activity of L-Dopa Decarboxylase.** Joseph Francis, RoxAnna Thompson, Samuel D. Bernal, Gordon D. Luk, and Stephen B. Baylin.
- 646 **Ultrastructural Changes in the Mitochondria of Intestinal Epithelium of Rodents Treated with Methylglyoxal-bis(guanylhydrazone).** A. Pleshkewych, T. C. Maurer, and Carl W. Porter.
- 653 **Mutagenic Response of Ames Strains Cured of Their Inducible Fels 1 and Fels 2 Prophages.** Markus Affolter, Carmen Parent-Vaugeois, and Alan Anderson.
- \*660 **Heterogeneity in the Expression of HLA and Tumor-associated Antigens by Surgically Removed and Cultured Breast Carcinoma Cells.** P. G. Natali, P. Giacomini, A. Bigotti, K. Imai, M. R. Nicotra, A. K. Ng, and S. Ferrone.
- \*669 **Immunohistochemical Localization of the Mouse Stage-specific Embryonic Antigen 1 in Human Tissues and Tumors.** Niles Fox, Ivan Damjanov, Barbara B. Knowles, and Davor Solter.
- \*679 **Immunological Heterogeneity of Carcinoembryonic Antigen: Purification from Meconium of an Antigen Related to Carcinoembryonic Antigen.** F. James Primus, James W. Freeman, and David M. Goldenberg.
- \*686 **Immunological Heterogeneity of Carcinoembryonic Antigen: Antigenic Determinants on Carcinoembryonic Antigen Distinguished by Monoclonal Antibodies.** F. James Primus, Keith D. Newell, Anelle Blue, and David M. Goldenberg.
- \*693 **Immunological Heterogeneity of Carcinoembryonic Antigen: Immunohistochemical Detection of Carcinoembryonic Antigen Determinants in Colonic Tumors with Monoclonal Antibodies.** F. James Primus, William J. Kuhns, and David M. Goldenberg.
- 702 **Presence of  $\alpha$ -Fetoprotein-positive Cells in Hepatocellular Foci and Microcarcinomas Induced by Single Injections of Diethylnitrosamine in Infant Mice.** Hirofumi Koen, Thomas D. Pugh, Douglas Nychka, and Stanley Goldfarb.
- 709 **Neoplastic Transformation of Newborn Rat Oligodendrocytes in Culture.** Joseph P. Bressler, Ruth Cole, and Jean de Vellis.
- \*716 **Selective Toxicity of Rhodamine 123 in Carcinoma Cells *in Vitro*.** Theodore J. Lampidis, Samuel D. Bernal, Ian C. Summerhayes, and Lan Bo Chen.
- 721 **Hematoporphyrin Derivative Photoradiation Therapy for the Treatment of Intraocular Tumors: Examination of Acute Normal Ocular Tissue Toxicity.** Charles J. Gomer, Daniel R. Doiron, James V. Jester, Bernard C. Szirth, and A. Linn Murphree.
- \*728 **Definition of Antigenic Heterogeneity and Modulation among Human Mammary Carcinoma Cell Populations Using Monoclonal Antibodies to Tumor-associated Antigens.** Patricia Horan Hand, Marianna Nuti, David Colcher, and Jeffrey Schlom.
- \*736 **Radiolocalization of Human Mammary Tumors in Athymic Mice by a Monoclonal Antibody.** David Colcher, Michael Zalutsky, William Kaplan, Donald Kufe, Faye Austin, and Jeffrey Schlom.
- 743 **Immunological Detection of Carcinogen-modified DNA Fragments after *in Vivo* Modification of Cellular and Viral Chromatin.** Michael Seidman, Hiroshi Mizusawa, Hanoch Slor, and Michael Bustin.
- \*749 **A Novel Dye Exclusion Method for Testing *in Vitro* Chemosensitivity of Human Tumors.** Larry M. Weisenthal, Joye A. Marsden, Patricia L. Dill, and Cindy K. Macaluso.
- \*758 **Monoclonal Antibodies to an Ectopically Expressed Alkaline Phosphatase in a Human Malignant Cell Line.** Larry K. Wray and Harry Harris.

- \*763** **Effect of 5-Azacytidine on Differentiation and DNA Methylation in Human Promyelocytic Leukemia Cells (HL-60).** Judith K. Christman, Naomi Mendelsohn, David Herzog, and Natalie Schneiderman.
- \*770** **Effects of Alkyl-Lysophospholipids on Human Leukemic Cell Lines Measured by Nuclear Magnetic Resonance.** R. C. Long, Jr., W. C. Small, R. K. Brynes, T. Tidwell, J. H. Goldstein, and W. R. Vogler.
- 776** **Carcinogenicity Study with Technical-Grade Dichlorodiphenyltrichloroethane and 1,1-Dichloro-2,2-bis(*p*-chlorophenyl)ethylene in Hamsters.** Lorenzo Rossi, Ottavia Barbieri, Marina Sanguineti, Josè R. P. Cabral, Paolo Bruzzi, and Leonardo Santi.
- 782** **Effect of Polycyclic Aromatic Compounds and Phorbol Esters on Ornithine Decarboxylase and Aryl Hydrocarbon Hydroxylase Activities in Mouse Liver.** Hannu Raunio and Olavi Pelkonen.
- 787** **Dose-responsive Growth Inhibition by Glucocorticoid and Its Receptors in Mouse Teratocarcinoma OTT6050 *in Vivo*.** Kazuo Kubota, Roko Kubota, and Taiju Matsuzawa.
- \*794** **Calcitonin Effects on Growth and on Selective Activation of Type II Isoenzyme of Cyclic Adenosine 3':5'-Monophosphate-dependent Protein Kinase in T 47D Human Breast Cancer Cells.** K. W. Ng, S. A. Livesey, R. G. Larkins, and T. J. Martin.
- 801** **Differential Induction of Altered Gene Expression by Carcinogens at Mutant Alleles of a *Drosophila* Locus with a Transposable Element.** Myrtle J. Fahmy and O. G. Fahmy.
- 808** **Promotion by Verapamil of Vincristine Responsiveness in Tumor Cell Lines Inherently Resistant to the Drug.** Takashi Tsuruo, Harumi Iida, Kuniko Naganuma, Shigeru Tsukagoshi, and Yoshio Sakurai.
- 814** **Unusual Sensitivity to Bleomycin and Joint Resistance to 9- $\beta$ -D-Arabinofuranosyladenine and 1- $\beta$ -D-Arabinofuranosylcytosine of Mouse FM3A Cell Mutants with Altered Ribonucleotide Reductase and Thymidylate Synthase.** Dai Ayusawa, Kimiko Iwata, and Takeshi Seno.
- 819** **Contributions of Two Inducible Forms of Cytochrome P-450 in Rat Liver Microsomes to the Metabolic Activation of Various Chemical Carcinogens.** Kaname Kawajiri, Hiromichi Yonekawa, Osamu Gotoh, Junko Watanabe, Shigeyuki Igarashi, and Yusaku Tagashira.
- 824** **Enhancement of Antitumor Activity of Ascorbate against Ehrlich Ascites Tumor Cells by Copper:Glycylglycylhistidine Complex.** Eiji Kimoto, Hidehiko Tanaka, Junichiro Gyotoku, Fukumi Morishige, and Linus Pauling.
- 829** **Carcinogenicity of Single Doses of *N*-Nitroso-*N*-methylurea and *N*-Nitroso-*N*-ethylurea in Syrian Golden Hamsters and the Persistence of Alkylated Purines in the DNA of Various Tissues.** Alexei J. Likhachev, Mikhail N. Ivanov, Henriette Brésil, Ghyslaine Planché-Martel, Ruggero Montesano, and Geoffrey P. Margison.
- 834** **Proton-Cation Translocation in Tumor Cell Mitochondria.** S. Papa, F. Capuano, N. Capitanio, M. Lorusso, and T. Galeotti.
- 839** **Promotion of Spontaneous Preneoplastic Cells in Rat Liver as a Possible Explanation of Tumor Production by Nonmutagenic Compounds.** Rolf Schulte-Hermann, Irene Timmermann-Trosiener, and Jörg Schuppler.
- 845** **Selective Cytotoxicity of Purified Homologues of Tunicamycin on Transformed BALB/3T3 Fibroblasts.** Miri Seiberg and Dan Duksin.
- \*851** **Biological Behavior of Human Breast Carcinoma-associated Antigens Expressed during Cellular Proliferation.** D. W. Kufe, L. Nadler, L. Sargent, H. Shapiro, P. Hand, F. Austin, D. Colcher, and J. Schlom.
- \*858** **Synthesis of Antigens, Cross-Reactive with Bovine Serum Albumin, by Cultured Neuroblastoma Cells.** D. A. Beck, R. D. Rossen, D. B. DuBois, and C. O. Felice.
- \*864** **Cellular Specificity of NB70K, a Putative Human Ovarian Tumor Antigen.** J. P. Bizzari, W. J. Mackillop, and R. N. Buick.

#### CLINICAL INVESTIGATIONS

- 868** **Chromosomal Abnormalities and Their Clinical Significance in Acute Lymphoblastic Leukemia.** Third International Workshop on Chromosomes in Leukemia.
- 874** **Tumor Progression Studied by Analysis of Cellular Features of Serial Ascitic Ovarian Carcinoma Tumors.** W. J. Mackillop, J. M. Trent, S. S. Stewart, and R. N. Buick.
- 879** **Correlation of Immune Complexes in Disseminated Neuroblastoma with Serum Antibody to Bovine Serum Albumin.** D. A. Beck, R. D. Rossen, A. Cangir, and D. B. DuBois.
- 886** **Antibodies against Three Purified Proteins of the Human Type C Retrovirus, Human T-Cell Leukemia-Lymphoma Virus, in Adult T-Cell Leukemia-Lymphoma Patients and Healthy Blacks from the Caribbean.** Jörg Schüpbach, V. S. Kalyanaraman, M. G. Sarngadharan, William A. Blattner, and Robert C. Gallo.
- 892** **Seasonality in the Occurrence of Breast Cancer.** Philip Cohen, Yohanan Wax, and Baruch Modan.
- 897** **Immunological Characterization of Homosexual Males.** James M. Reuben, Evan M. Hersh, Peter W. Mansell, Guy Newell, Adan Rios, Roger Rossen, Allan L. Goldstein, and John E. McClure.
- 905** **Cytogenetic Studies and Clinical Aspects of Patients with Plasma Cell Leukemia and Leukemic Macroglobulinemia.** Yoshimi Ueshima, Shirou Fukuhara, Kenichi Nagai, Kiyoshi Takatsuki, and Haruto Uchino.
- 913** **Pharmacokinetics of the Hypoxic Radiosensitizers Misonidazole and Demethylmisonidazole after Intraperitoneal Administration in Humans.** Luca Gianni, Jean F. Jenkins, Raymond F. Greene, Allen S. Lichter, Charles E. Myers, and Jerry M. Collins.

- 917 Clinical Pharmacology of Intraarterial *cis*-Diaminedichloroplatinum(II).** David J. Stewart, Robert S. Benjamin, Stuart Zimmerman, Richard M. Caprioli, Sidney Wallace, Vincent Chuang, Dionesius Calvo III, Melvin Samuels, Jeanne Bonura, and Ti Li Loo.
- 921 Clinical Pharmacokinetics of 5-Methyltetrahydrohomofolate.** Ti Li Loo, Liu Jiushi, Katherine Lu, and Niramol Savaraj.
- 925 Disposition of Bisantrene in Humans and Rabbits: Evidence for Intravascular Deposition of Drug as a Cause of Phlebitis.** Garth Powis and John S. Kovach.
- 930 Kinetics and Metabolism of a New Fluoropyrimidine, 5'-Deoxy-5-fluorouridine, in Humans.** Jean-Pierre Sommadossi, Claude Aubert, Jean-Paul Cano, Joachim Gouveia, Patricia Ribaud, and Georges Mathé.
- 934 Prognosis in Carcinoma of the Urinary Bladder Based upon Tissue Blood Group ABH and Thomsen-Friedenreich Antigen Status and Karyotype of the Initial Tumor.** Jack L. Summers, John S. Coon, Rose M. Ward, William H. Falor, Alexander W. Miller III, and Ronald S. Weinstein.
- 940 Renal Cell Carcinoma: Antitumor Effects of Leukocyte Interferon.** Jorge R. Quesada, David A. Swanson, Antonio Trindade, and Jordan U. Gutterman.
- 948 Special Announcement**
- 948 Announcements**
- 949 Erratum**
- 950 Author Index**