Contents

Asterisks preceding the title refer to studies in humans.

663 * Selective Cell Survival and Changes of Marker Properties during Cryopreservation for up to 16 Years.
   Barbara A. Holdridge and Theodore S. Hauschka.

672 In Vitro Activity of Lymphocytes and Serum of C3Hf/Bu Mice during the Growth of Methylcholanthrene-induced Tumor and Its Regression following Local Irradiation.
   Mislav Jurin and Herman D. Suit.

679 Reverse Transcription of the Viral Genome Associated with the Plasma Membrane after Infection with RNA tumor Viruses.
   Tsuyoshi Kakafuda, C. Wesley Dingman, Tina M. Bak, Masakazu Hatanaka, and Yoshiyuki Kitano.

689 Sequential Cytological Changes during Development of Respiratory Tract Tumors Induced in Hamsters by Benzo(a)pyrene-Ferric Oxide.

699 Alterations of Liver DNA after X-Irradiation.
   Julien L. Van Lancker and Takanori Tomura.

705 Nucleotide Contents of Ascites Hepatoma Cells and Their Changes Induced by d-Galactosamine.
   Dietrich O. R. Keppler and David F. Smith.

712 * Nonspecific Antiviral Substances in Human Milk Active against Arbovirus and Murine Leukemia Virus.
   A. Howard Fieldsteel.

716 Light Microscopic Observations of Transplantable Mouse Hepatomas.
   Elizabeth H. Leduc, Linda E. Malick, and Henry E. Holden, Jr.

722 A Direct Relationship between Immune Competence and the Subcutaneous Growth Rate of a Malignant Murine Lung Tumor.

729 * Increased Incidence of Placenta-like Alkaline Phosphatase Activity in Breast and Genitourinary Cancer.
   B. Joanne Cadeau, Martin E. Blackstein, and Aaron Makin.

733 Distinction between Inhibition of Purine Nucleotide Synthesis and the Delayed Cytotoxic Reaction of 6-Mercaptopurine.

738 A Biochemical Mechanism for the Delayed Cytotoxic Reaction of 6-Mercaptopurine.

747 * Lethal Activity of Camptothecin Sodium on Human Lymphoma Cells.
   B. Drewinko, E. J. Freireich, and J. A. Gottlieb.

751 Increase of RNA Synthesis during Mammary Tumor Regression.

758 Prolactin Receptors in Mammary Carcinoma Cells.
   Roger W. Turkington.

764 Strain- and Age-dependent Transplacental Carcinogenesis by 1-Ethyl-1-nitrosourea in Inbred Strains of Mice.
   Bhakchandra A. Diwan and Hans Meier.

771 Macromolecular Synthesis following a Single Application of Polycyclic Hydrocarbons Used as Initiators of Mouse Skin Tumorigenesis.

778 Antagonism between DNA Synthesis Inhibitors and Protein Synthesis Inhibitors in Mammalian Cell Cultures.
   Bijoy K. Bhuyan and Terence J. Fraser.

783 Differential Effects of Urethan on the Transcriptional Activity of Chromatin from Regenerating Liver.
   Kou M. Hwang, Sandra A. Murphree, and Alan C. Sartorelli.

788 Histocompatibility Typing and Course of Canine Venereal Tumors Transplanted into Unmodified Random Dogs.
   Robert B. Epstein and B. Taylor Bennett.

794 The Enzymology of Methionine Metabolism in Rat Hepatomas.

801 * Tissue Culture Studies on Pleural Effusions from Breast Carcinoma Patients.
   Relda Cailleau, Bruce Mackay, Russell K. Young, and William J. Reeves, Jr.

810 Sites of Synthesis of Murine RNA Tumor Virus (Oncornavirus) Group-specific Antigens.

818 Tumor-associated Antigen(s) from Granulosa Cell Carcinomas of the Ovary.
   Mulaya Bhattacharya, Joseph J. Barlow, Tsann Ming Chu, and M. Steven Piver.

823 Sensitivity of Transformed and Nontransformed Cells to Amphotericin B and Several Rifaximycin Derivatives.
   Gerald Medoff, David Schlessinger, and George S. Kobayashi.

827 Thioacetamide-induced Alterations in Nuclear RNA Transport.
   Edward A. Smuckler and Marlene Koplitz.

839 Effect of (+)-1,2-Bis(3,5-dioxopiperazin-1-yl)-
propane on Tumor Blood Vessels and Its Relationship to the Antimetastatic Effect in the Lewis Lung Carcinoma.

Sandra E. James and Alan J. Salsbury.

843 Histological Analysis of the Antimetastatic Effect of (±)-1,2-Bis(3,5-dioxopiperazin-1-yl)-propane.


850 Mitochondrial Membrane-associated Properties of Morris Hepatomas.


859 DNA-Protein Complexes Produced by a Carcinogen, β-Propiolactone.

W. C. Niertert, L. M. Kellicutt, and H. Kubinski.

865 Hepatocyte Proliferation and α1-Fetoprotein in Pregnant, Neonatal, and Partially Hepatectomized Rats.

Stewart Sell, Mike Nichols, Frederick F. Becker, and Hyam L. Leffert.

872 Lactate and Pyruvate Metabolism and Reducing Equivalent Transfer in Ehrlich Ascites Tumor.


878 Effects of Bleomycin on Progression through the Cell Cycle of Mouse L-Cells.

Michinori Watanabe, Yosinobu Takabe, Takesi Katsumata, and Toyozo Terasima.

882 Factors Affecting the Noncovalent Binding of Chlorambucil to Rabbit Immunoglobulin G.

Dennis Blakeslee and James C. Kennedy.

886 Effects of Methylglyoxal-bis(guanyldihydrazone) on Polyamine Metabolism in Spleens of Mice with Disseminated L1210 Lymphoid Leukemia.

Ole Heby and Diane H. Russell.

893 Studies on the Relationship between Infection with Bovine C-type Virus, Leukemia, and Persistent Lymphocytosis in Cattle.

Jorge F. Ferrer, Donald A. Abt, Diane M. Bhatt, and Robert R. Marshak.

901 Electron Microscopic Study of the Growth and Regression of Leukemic Intradermal Tumors in Guinea Pigs.


915 Errata.

COVER LEGEND

Joseph W. Beard (b. 1901) and W. Ray Bryan (b. 1905) played pioneering roles in the science of tumor virology, contributing more than 40 years to teaching and research on the role of viruses in various animal cancers. They made major contributions in the area of avian cancer viruses.

Dr. Beard was one of the first scientists to study the role of host susceptibility in the induction of cancer by viruses. Working with Peyton Rous, Richard Shope, and associates in New York in the 1930's, he helped demonstrate that a usually benign rabbit tumor caused by a virus sometimes becomes cancerous. Later, he and Rous purified the causative virus. In 1937, Beard helped develop the first useful vaccine for equine encephalitis. He established his research group at Duke University in North Carolina and taught experimental surgery until 1960. In the 1940's by applying the differential centrifugation methods of Albert Claude, Beard and his associates purified the influenza and mumps viruses of humans and a similar virus which causes Newcastle disease in chickens. Since 1949, his work has been devoted primarily to the avian tumor viruses, particularly two leukemia viruses of the chicken, avian myeloblastosis, and erythroblastosis viruses.

Dr. Bryan laid much of the groundwork for today's quantitative research on cancer viruses by applying statistical techniques to the study of viruses in animal cancers. As early as the 1930's, while a National Cancer Institute Research Fellow working at Duke University under Beard, Bryan studied the relationship between amount of Shope virus inoculated and the development of rabbit papillomas. In the early 1940's at the National Cancer Institute, he also analyzed the effects of cancer-causing chemicals on mice and helped show that the mouse breast cancer "agent" was, in fact, a filterable virus.

Bryan turned to the study of Rous sarcoma virus, a solid tumor virus of the chicken, in the 1950's. By applying statistical methods, he demonstrated correlations between the amount of virus inoculated into a chicken, the time to appearance of a tumor, and the amount of virus recoverable from that tumor. On occasion, very small amounts of virus would induce tumors from which no virus was recoverable, establishing the concept that absence of demonstrable virus in tumor tissue extracts does not prove that a tumor is not of viral origin.

The quantitative methods and principles of virus dose and tumor response established by these two leaders of animal cancer virology has enabled others to confirm and extend their studies of leukemias and solid tumors in mammals. Today, viruses of RNA type studied by Beard and Bryan in avian cancers are known to cause many kinds of cancers in mammals and are increasingly suspect as having a role in human cancers.

Now retired from his faculty and research positions at Duke University, Dr. Beard continues to study avian myeloblastosis in St. Petersburg, Florida. Dr. Bryan, retired after 34 years with the National Cancer Institute, now serves as a consultant to the National Cancer Program in Bethesda, Maryland.

We are indebted to the National Cancer Institute for the portraits of Beard (top) and Bryan (bottom) and for the electron microscope photograph, at ×70,000, of the BA1 strain of avian myeloblastosis virus.