



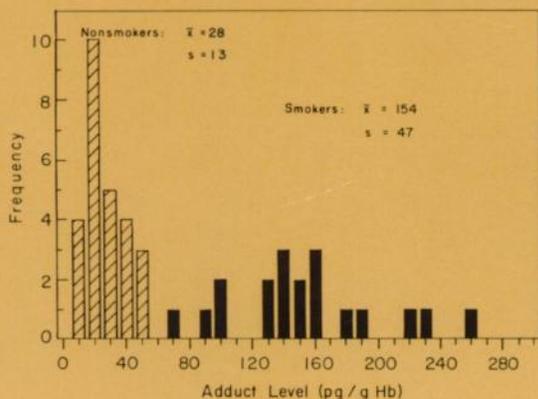
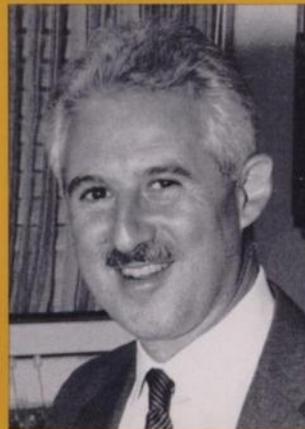
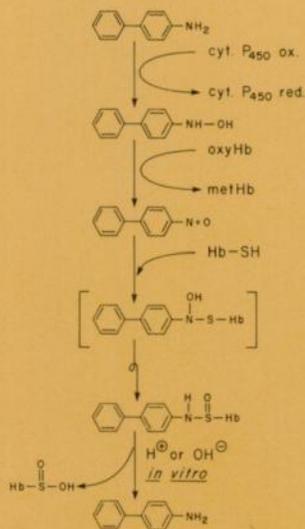
Cancer Research

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FORMATION OF 4-AMINOBIIPHENYL-HEMOGLOBIN ADDUCTS



CANCER CENTER DIRECTOR

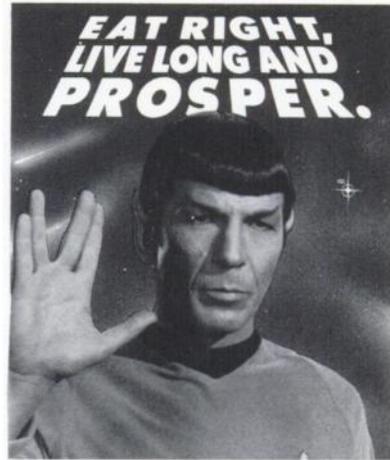
The University of Florida College of Medicine is seeking a Cancer Center Director which will hold a 12 month academic administrative appointment and reports to the Dean of the College of Medicine. This individual will hold a tenure track faculty appointment as Professor. The candidate should have an M.D. Degree with excellent clinical credentials and a solid track record in research achievement.

Responsibilities include: The Cancer Center Director will serve as the Medical Director of the ambulatory Cancer Center and will serve as Director of the Cancer Center. The Director will promote multidisciplinary clinical and research activities in areas related to cancer. The Director will direct activities in support of the institution's application for the Cancer Center core grant; will recruit research faculty to endowed chairs related to cancer research. The Director will develop cancer screening and community education projects as appropriate. The Director will serve as chairperson of the Cancer Center Steering Committee and administer space assignments for the Cancer Center.

Letters of application should consist of a current vitae and include a summary of relevant research, clinical and administrative experience. The application deadline is 03/15/92. Applications should be sent to:

James E. McGuigan, M.D., Search Committee Chairman
Chairman, Department of Medicine
University of Florida College of Medicine
Box 100277
Gainesville, FL 32610-0277

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EATING RIGHT IS HIGHLY LOGICAL.

Recommendations:

Eat high-fiber foods, such as fruits, vegetables, and whole grain products. Eat fewer high-fat foods. Maintain normal body weight. And live long and prosper.

CALL THE AMERICAN CANCER SOCIETY AT 1-800-ACS-2345 FOR FREE NUTRITION INFORMATION.



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Cancer Research

Dr. A. Smith

"In Vivo and in Vitro Analysis of..."

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Hardware, Operating system, Software

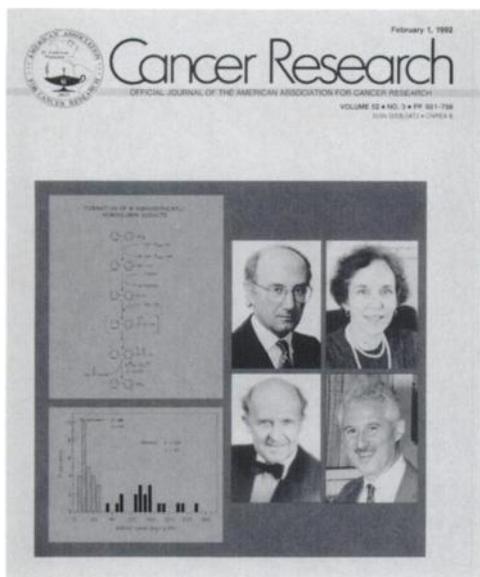
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COVER LEGEND



L. Ehrenberg and his associates (Cancer Res., Cover Legend, September 15, 1987) discovered that an alkylating agent, ethylene oxide, reacted with blood proteins, especially hemoglobin, to yield a product that could be used as a marker of exposure. The limiting element was the lifetime of the protein. This key discovery was extended to a number of environmentally important genotoxic carcinogens. H-G. Neumann (Chem.-Biol. Interact., 4: 409, 1971-1972; Xenobiotica, 10: 527, 1980; Arch. Toxicol., 40: 17, 1978; Xenobiotica, 56: 1, 1984) developed an experimental system to measure the persistence of alkylating and arylating carcinogens, especially aromatic amines, attached to hemoglobin. This principle was applied to demonstrate adduct formation and dose-response relationships with a number of carcinogens to hemoglobin and tissue DNA (IARC Sci. Publ., 59: 115, 1984; Arch. Toxicol., 64: 97, 1990).

Highly sensitive and specific methods, such as fluorescence and mass spectrometry, provided an excellent tool to precisely measure individual exposures to specific carcinogens. Even though 4-aminobiphenyl constitutes only a small fraction of the carcinogens in tobacco smoke, quantitation of its presence was achieved in the laboratory of S. R. Tannenbaum (Cancer Res., 44: 4254, 1984; Cancer Res., 47: 602, 1987; J. Natl. Cancer Inst., 83: 1991) by a specific mass spectrometry assay for adducts in the blood of smokers, or even in fetuses exposed *in utero*. Absorbed environmental benzo[a]pyrene was converted to reactive metabolites bound to hemoglobin, identified, and quantitated by a series of steps involving immunoaffinity chromatography, fluorescence and mass spectrometry (Chem. Res. Toxicol., 3: 340, 1990; L. Ernster *et al.*, eds. Xenobiotics and Cancer, p. 351. Tokyo: Japanese Sci. Soc. Press and London: Francis & Taylor Ltd., 1991).

At the same time, immunological methods for the measurement of carcinogen DNA adducts were developed by M. C. Poirier [Nature (Lond.), 270: 186, 1977] and independently by M. F. Rajewsky (Cancer Res., Cover Legend, December 1, 1990; Z. Naturforsch., 33C: 897, 1978). The technique was applied to benzo[a]pyrene-DNA adducts by

Poirier and S. H. Yuspa at the National Cancer Institute (NCI), together with I. B. Weinstein's group (D. Grunberger, R. M. Santella, and F. Perera) at Columbia University in New York (Cancer Res., Cover Legend, October 15, 1991; Cancer Res., 40: 412, 1980). Procedural refinements, together with the work of C. C. Harris (Cancer Res., Cover Legend, January 1, 1987), involving highly sensitive enzyme-linked immunosorbent assays (ELISA) (Cancer Res., 41: 1091, 1981; J. Natl. Cancer Inst., 67: 515, 1981), permitted reliable determination of human occupational exposure [Carcinogenesis (Lond.), 3: 1405, 1982; Mutat. Res., 205: 225, 1988]. Independently, R. Montesano, while studying the metabolism of *N*-nitrosodimethylamine, noted DNA modification and repair [Nature (Lond.), 228: 173, 1970; Proc. Natl. Acad. Sci. USA, 79: 5162, 1982], leading to detailed investigations of methods to quantitate DNA and protein adducts of several important carcinogens in humans (see also Cancer Res., Cover Legend, December 1, 1990), such as those associated with cancer of the esophagus (Int. J. Cancer, 36: 661, 1985) or of the liver (Cancer Res., 50: 245, 1989).

These techniques have permitted the tracing of exposure to a variety of carcinogens associated with smoking, diet, chemotherapeutic drugs, or environmental carcinogens and established the field of molecular epidemiology and dosimetry, using what are currently known as marker techniques. These scientific developments, stemming from the pioneering work of Ehrenberg, are important tools to accurately determine exposure to certain carcinogens and thus strengthen the association between such carcinogens and population studies through the techniques of molecular and metabolic epidemiology.

Dr. Hans-Gunter Neumann earned a doctorate in chemistry at the University of Munich in 1961 while working at the Max Planck Institute for Biochemistry under A. Butanandt. He spent 1 year as a fellow in the laboratory of E. Jensen and C. Huggins in Chicago. Presently, he is Professor in the Institute of Pharmacology and Toxicology, University of Würzburg, Würzburg, Germany.

Dr. Ruggero Montesano received an M.D. at the University of Turin, Italy, in 1965 and a Ph.D. in 1974 at the Courtauld Institute of Biochemistry, University of London, under P. N. Magee. He trained in experimental pathology with P. Shubik at Chicago Medical School and at the Eppley Institute, University of Nebraska, 1966-1969. Since 1980, he has been Chief, Unit of Mechanisms of Carcinogenesis, International Agency for Research in Cancer, Lyon, France.

Dr. Steven R. Tannenbaum was awarded his Ph.D. in 1962 at the Massachusetts Institute of Technology in the Department of Nutrition and Food Science. He became a faculty member and is now Professor of Chemistry and Toxicology in the Department of Chemistry and the Division of Toxicology, MIT, Cambridge, MA. He spent a sabbatical year at Hebrew University in Jerusalem, 1973-1974.

Dr. Miriam C. Poirier received a Ph.D. from the Catholic University of America, Washington, DC, in 1977. During that time, she was concerned with the development of methods to quantitate carcinogen-DNA adducts at NCI. She continues at the NCI as a research chemist in the Laboratory of Cellular Carcinogenesis and Tumor Promotion, Division of Cancer Etiology, Bethesda, MD.

John H. Weisburger