



# Cancer Research

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#### COVER LEGEND

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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The Journal of Cancer Research (1916–1930) | The American Journal of Cancer (1931–1940)

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