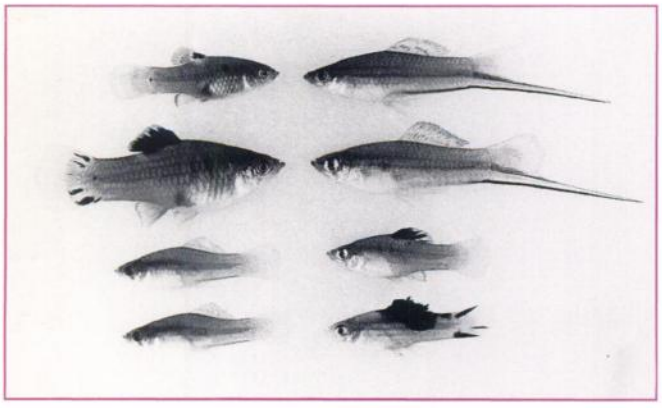
July 15, 1990

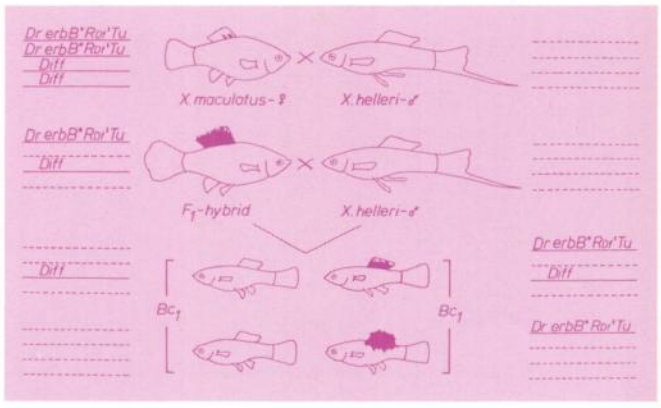
Cancer Research

OFFICIAL JOURNAL OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH

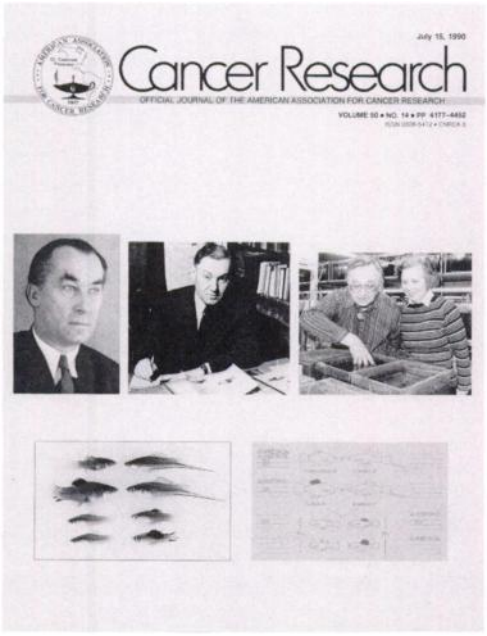
VOLUME 50 • NO. 14 • PP 4177–4452

ISSN 0008-5472 • CNREA 8





COVER LEGEND



Over sixty years ago, Myron Gordon, George Haussler, and Curt Kosswig, working independently, discovered that certain F_1 hybrids of the viviparous Central American fish, *Xiphophorus maculatus* (platyfish) and *Xiphophorus helleri* (swordtail), develop melanoma, inherited in Mendelian fashion. Subsequently, Gordon and Kosswig showed that the melanomas of the hybrids originated from black spots composed of atypical pigment cells contributed by the platyfish to the hybrids. Some thirty years later, Gordon, working in laboratories in a greenhouse on the roof of the Museum of Natural History in New York, published a key review, "The Melanoma Cell as an Incompletely Differentiated Pigment Cell" (*In:* M. Gordon (ed.), Pigment Cell Biology, pp. 215–236. New York: Academic Press, 1959).

With fish provided by Gordon, Fritz Anders and his wife, Annerose, developed advanced systems to study the genetic and molecular events in melanoma formation. Other hybrid fish genotypes were selected that had thyroid adenocarcinoma, reticulosarcoma, and neuroblastoma [Experientia (Basel), *23:* 1–10, 1967], and, with exposure to carcinogens and promoters, yielded hematopoietic mesenchymal and neurogenic neoplasms, or epithelial tumors of thyroid, pancreas, kidney, and liver (Anders *et al.*, Proceedings of the 11th International Symposium, Princess Takamatsu Cancer Research Fund, pp. 289–309, 1981). The Anders team suggested that neoplastic transformation can be traced to a tumor gene, *Tu*, present on distinct sites of specific chromosomes. There are changes in key structural chromosomes and retroviral oncogene-related sequences, involving translocations, deletions, and crossovers involving *Tu* and appropriate regulatory genes. (Anders et al. Natl. Cancer Inst. Monogr., *65:* 97–109, 1984). Carcinogenesis may involve an alteration of the regulatory genes, leading to a depression of *Tu*. Thus, this research has led to the concept that initiation or malfunction in critical regulatory or suppressor genes in somatic cells may be a plausible molecular mechanism of carcinogenesis (Anders et al. Adv. Cancer Res., *42:* 191–275).

Top left, Curt Kosswig (1903–1982), former Director, Zoologic Institute and Museum, University of Hamburg, Germany; *top center*, Myron Gordon (1899–1959), former head, Genetics Laboratory, New York Aquarium, New York Zoological Society; *top right*, Fritz Anders, Director, Genetics Institute, University of Giessen, Germany, and Annerose Anders, member of the Genetics Institute; no photograph is available of G. Haussler, who performed research on this topic for an M.D. degree in Heidelberg, (Klin. Wochenschr., *7:* 1561, 1928) and later had a neurological medical practice in Hamburg. *Bottom left*, swordtail and platyfish and hybrids with melanomas; *bottom right*, the genetically controlled features as revealed in backcross fishes. Among other awards, F. and A. Anders were honored in 1983 with the Myron Gordon Award, International Pigment Cell Society.

Photographs and information were provided by Professor Anders and Gary M. Williams.

John H. Weisburger