

Spontaneous mammary tumors in aging female Sprague-Dawley rats were treated with highly polymerized DNA obtained from homologous testis and given by intraperitoneal injection. Treated and untreated tumors were measured once a week, and the growth of all tumors was recorded over a 7-month period. It was found that most untreated tumors grow very slowly, with a doubling time of about 8 weeks, but a few have a doubling time of about 1½ to 3 or 4 weeks. Among the treated tumors, one showed a gradual slowing of growth over many weeks, the doubling time decreasing from about 4 weeks to about 15 weeks at death, while another grew continuously at a rate of doubling of about 16 weeks. Six other treated tumors showed no growth at all for periods of from 12 to 26 weeks. After 5 months, the DNA treatment was stopped and nearly all the treated tumors then showed a marked acceleration of growth within 1 to 2 weeks. DNA treatment was resumed about 4 weeks after cessation for a group of 5 tumor-bearing rats which had shown that most marked acceleration of growth in the absence of DNA. Three have stopped growing again for a period of 2 to 3 weeks. Attempts will be continued to control tumor growth with "live" nucleic acids. If these preparations slow the growth of established tumors, the question arises whether such nucleic acid preparations in sufficient doses would suppress tumor development altogether in animals exposed to known carcinogens, including irradiation.

J1B Unique Applications of Radioisotopes

See also A2B885, F2C1119, and F2C1120.

See § 1
Harper, Paul V. AT(11-1)-69
J1B621 CLINICAL APPLICATION OF RADIOISOTOPES IN DIAGNOSIS AND TREATMENT. Argonne Cancer Research Hospital, Chicago. SP 5; MYr 4½.

Our work is concerned in the use of radioisotopes as intersitital sources of radiation in the treatment of malignant tumors with special emphasis being placed on surgical application with ease of handling, ease of preparation, availability and shielding. Those isotopes emitting soft x-rays appear to be particularly useful, and we have employed Y⁹⁰, Sr⁹⁰ and Pd¹⁰³ with success.

Our interest in the special diagnostic application of radioisotopes emitting low energy gamma or x-

rays has been stimulated by the studies of Mr. R. N. Beck of our electronics group on the design of detection systems for this and other types of radiation. Diagnostic studies with I¹²⁵ are in progress in a number of clinical applications, technetium-99m appears promising as an agent for radiocardiography, thyroid, liver, kidney and brain scanning.

We are also conducting tumor localization studies on antifibrinogen in collaboration with Dr. Spar at the University of Rochester.

Harper, Paul V. AT(11-1)-69
J1B622 BRAIN TUMOR DETECTION RESEARCH. Argonne Cancer Research Hospital, Chicago. SP 1; MYr 1½.

There is great need for an instrument capable of detecting brain tumors with a high degree of accuracy and a minimum scanning time. This project is devoted to the development of such an instrument, which is now nearing completion. The information gained is essential to the evaluation of all scanning techniques and will give new directions to other problems. It is now apparent that scanning of human internal organs by the use of soft x-ray emitting isotopes is feasible. Scanning studies have been made and are continuing on Co⁵⁷, Hg²⁰³, Hg²⁰¹, I¹²⁵ and Tc^{99m}. Iodine-tagged antifibrinogen is also under investigation. It is feasible to obtain quantitative digital information (from scanning techniques) for computer processing, which will offer additional aid to scanning information interpretation.

Robertson, J. S. AT(30-2)-GEN-16
✓ J1B638 TISSUE AND TUMOR RESPONSE TO Pd-109. Brookhaven National Lab., Upton, N. Y. SP 18; MYr .03.

The use of Pd¹⁰⁹ therapeutically by direct infiltration of tumors has been studied in rabbits and in three patients. Extension by the treatment of additional patients alone and in conjunction with surgery is planned.

Jesseph, J. E. AT(30-2)-GEN-16
J1B639 METABOLIC STUDIES IN NEOPLASTIC DISEASES UTILIZING RADIOACTIVELY LABELED PROTEINS. Brookhaven National Lab., Upton, N. Y. SP 89; MYr 16.4.

The present studies are a continuation of clinical investigations concerned with the physicochemical properties and functions of the serum proteins in neoplastic diseases. In the patient with a known type