of cancer the turnover rates of a labeled normal and a labeled aberrant globulin are determined. Should a differential metabolic recognition exist between the two in a patient, it might serve as a basis for a diagnostic test. Serial turnovers have been carried out on a group of thirty women with cancer of the breast. There is an apparent slower rate of catabolism of the normal gamma globulin as compared to the aberrant globulin in the same patient with active disease. The future of this study is centered upon the attempt to localize the site of the accelerated catabolism of the aberrant protein and specifically to establish whether it is in the growing neoplastic tissue. For this purpose protein labeling will be done with I^{124}, a positron emitter, thus permitting the use of a positron scanner to establish the possible sites of catabolism.

Fundamental information concerning protein catabolism in multiple myeloma has been established as well as conversion of the method for determining the turnover rate from tedious radiochemical analyses to a much simpler one utilizing the whole-body gamma spectrometer.

#9 Andrews, G. A. AT(40-1)-GEN-33

J1B879 MEDICAL APPLICATIONS OF RADIONUCLIDES.

Oak Ridge Institute of Nuclear Studies, Inc., Tenn. SP 36; MYr 29.0.

This program attempts to extend the clinical usefulness of radioisotopes in diagnostic and therapeutic applications. Radioisotopes are administered to patients and careful studies are made of isotope distribution and effects. New radioisotopes or new labeled compounds are used after trials in experimental animals. The study of cancer of the thyroid with radioiodine is a long-range project. Recent developments enhancing the usefulness of isotopic diagnosis of residual disease after thyroidectomy include: improved scanning equipment, larger test doses of the radioisotope, performance of scans at longer time intervals after doses. With these improvements many lymph node metastases previously non-detectable can now be located. Future work will include refinement and evaluation of these techniques and follow-up studies.

The use of colloidal radioisotopes, especially Au-198, is studied in patients with carcinoma of the ovary. Repeated surgical explorations are done to evaluate the results of therapy and to resect tumor where feasible.

Studies of hematologic disorders are done with Cr-51, Fe-59, and other isotope tracers. Emphasis is placed on problems of polycythemia and myelofibrosis. Experimental therapy of these and other hematologic disorders is carried out.

Other diagnostic tests, particularly those making use of linear and area scanning, and low-sensitivity whole body counting, are performed, using several radioisotopic compounds.

Future research will include continued development and evaluation of techniques now available and extensions to take advantage of a sensitive whole body counter.

Spar, I. L. AT(30-1)-875

J1B1052 STUDY OF TISSUE SPECIFIC ANTIBODIES AS POSSIBLE THERAPEUTIC AGENTS FOR THE TREATMENT OF CANCER.

Rochester, N. Y. Univ. School of Medicine and Dentistry. SP 5; MYr 5.

Research is directed at the production and use of antibodies and other substances able to localize preferentially in cancer tissue after intravenous injection either as carriers of radioactivity for therapeutic radiation of disseminated cancer or as therapeutic agents because of local cytotoxic activity against tumor cells. Current effort is largely directed at the use of I^{131} coupled to antibodies reacting with fibrin for the diagnostic localization and treatment of disseminated malignant disease. In cooperation with the University of Rochester Department of Radiology, M. D. Anderson Hospital and Tumor Institute, and Argonne Cancer Research Hospital tracer studies have been carried out on approximately 115 patients with all known or suspected sites of cancer detected by external scanning in better than one-half of these patients. (Research workers in these institutions are not included on this personnel summary.) Nine cases of advanced cancer have been treated with beneficial effects in some instances but no long remissions. This clinical work is supported by a substantial program of animal and biochemical research and technological development. Major emphasis this coming year will be on investigation of the biochemical and histological nature of the lesions that lead to fibrin deposition in tumors and thus provide sites for antibody localization.

J1C Teletherapy

#85 Griem, Melvin L. AT(11-1)-69

J1C627 POTENTIATION OF RADIATION EFFECTS WITH MODIFIERS.

Argonne Cancer Research Hospital, Chicago. SP 3; MYr 2.