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sure and provide additional evidence that another organ system (possibly the liver) is responsible for at least part of the manifestations of chronic radiation injury. (auth)

30451 (NP-10730) BIOLOGICAL AND MEDICAL ASPECTS OF IONIZING RADIATION. TASK NO. 1. METABOLISM IN RADIATION INJURY. Period Covered, July 1, 1960-June 30, 1961. Laurence M. Corwin, Bhupendra P. Doctor, Olive E. McElroy, E. M. Beier, William J. Campbell, William C. Purdy, and Edward C. Knoblock (Walter Reed Army Medical Center. Inst. of Research, Washington). 76p.

Information on the various projects is presented in abstracts. Projects reported include metabolism in radiation injury, clinical uses of radioisotopes, dosimetry, effects of whole-body irradiation in man, immunological response following total body radiation. Methods of casualty assessment in nuclear warfare, whole body counting facility, radiation effects on animals in germ-free environment, prevention and care in cases of decubitus ulcers, chemical protection against total body radiation, and mechanisms of protection and recovery in cellular radiation injury. (J.R.D.)

30452 (TID-13095) INVESTIGATIONS ON THE CYTOGENETIC EFFECTS OF RADIATION. Progress Report, June 1, 1960-May 31, 1961. Norman H. Giles (Yale Univ., New Haven). Contract AT(30-1)-572. 54p.

Progress is reported in studies of interallelic complementation at various genetic loci in *Neurospora*. Detailed studies were completed on the *ad-5* locus which controls the enzyme adenylosuccinate synthesis. A comparison of the complementation map with the genetic map shows a general co-linearity between the two maps, with several significant exceptions. These exceptions suggest the existence of a particular genetic region of this locus related to each of the three basic complementation units. The analysis of complementation at the *ad-4* locus controlling the enzyme adenylosuccinase was continued and data are included. A preliminary genetic map localizing complementing mutants was established and found to be generally co-linear with the complementation map. Studies of forward and reverse mutations induced by chemical mutagens were continued and preliminary results are included. Data are also included from studies of gene conversion employing mutants at the *pan-2* locus. A search was made for systems suitable for detailed studies of gene protein relationships. (C.H.)

30453 (TID-13186) THE BIOLOGIC EFFECTS OF RADIATION ON THYROID TISSUE. Annual Progress Report, September 15, 1960 through September 14, 1961. Oliver Cope (Massachusetts. General Hospital, Boston). June 17, 1960. Contract AT(30-1)-667. 11p.

Observations collected in this period in the course of a follow-up investigation of thyrotoxic patients treated with radioiodine are summarized. Out of a total of 1786 patients, two tumors were found, one benign and the other malignant, and their cases are discussed in detail. Results of studies of possible leukemia and genetic effects of radioiodine are negative. (D.L.C.)

30454 (TID-13216) A QUANTITATIVE STUDY OF LIFETIME SICKNESS AND MORTALITY AND PROGENY EFFECTS RESULTING FROM EXPOSURE TO PENETRATING RADIATION. Summary of Progress and Contemplated Work Program, Fiscal Year 1961-62. John W. Gower and Janice Stadler (Iowa State Univ. of Science and Tech., Ames). Contract AT(11-1)-107. 113p.

Progress is reported in studies on the effects of radiation

on life shortening and aging. A theory and supporting evidence is presented to account for primary factors affecting radiation life-shortening and senescence. Data are included from studies on the effects of radiation on the interrelations of reproductive performance and inheritance in mice, the effects of inheritance on the number of litters, the effects of radiation and genotype on the life spans of mice, effects of radiation on chromosomes, the cause of genetic male sterility following irradiation, the effects on continuous Co^{60} gamma irradiation through 10 generations on viability in the mouse, the production of a new radiation-induced dwarf mouse, the effects of x irradiation on physical activity of inbred and hybrid mice, the effects of irradiation on brain functioning, the effects of irradiation on disease resistance and immunity in mice, and sex determination as illustrated by x-ray induced chromosomal and gene reorganization in *Drosophila*. (C.H.)

30455 (TID-13866) IRRADIATION EFFECTS ON THE CENTRAL NERVOUS SYSTEM. Progress Report, January 1, 1961 to date. Lloyd J. Roth (Chicago. Univ.). Oct. 2, 1961. Contract AT(11-1)-847. 13p.

Blood brain barrier changes resulting from application of x irradiation to the isolated heads of rats were investigated utilizing such radioactively labeled compounds as I^{131} -human serum albumin, S^{35} -sodium sulfate, and the quaternary ammonium drug Aprobit. The rats were sacrificed by rapid immersion in a mixture of dry ice and acetone (-75 C). No significant change in the permeability properties of the blood brain barrier was detected for the human serum albumin or the sulfate in the irradiated rat brain at levels of 10000 r. The results are tabulated. (P.C.H.)

30456 (TID-13867) THE EFFECT OF NEUTRONS AND OTHER RADIATIONS ON OCULAR LENS. Progress Report [for contract period] January 1961-December 1961. V. Everett Kinsey (Kresge Eye Inst., Detroit). Contract [AT(11-1)-152]. 21p.

The transport of amino acids across the blood aqueous barriers, the capsule and epithelium of the lens, and some factors which affect the processes involved were studied. Investigations were also made of the relative concentration of free amino acids in the aqueous and vitreous humors, lens, and plasma of normal animals, and some experiments were performed in which the transport of potassium into the lens was determined. Carbon labeled alpha-amino isobutyric acid and other carbon-14 labeled compounds show that aspartic acid reduces the transport of glutamic acid, but not the basic amino acids. Three different mechanisms are involved in transporting amino acids into the lens. Elevated concentrations of glucose inhibit amino acid transport, and other sugars have similar effects. Evidence that naturally occurring amino acids are actively transported across the ciliary epithelial cells is shown. An incubation medium was developed which allows a lens dispersion to consume glucose and produce lactate at rates which are accepted as normal for intact lenses incubated in Tyrode's solution. The use of this medium in the study of fructose production in the lens culminated in a report showing the source of fructose in the lens, the mechanism by which it is formed, and speculation as to the function of this mechanism. The relative concentration of free amino acids in aqueous humor in the posterior and anterior chambers, vitreous humor, and plasma of rabbits was determined by ion exchange chromatography. (P.C.H.)

30457 (UCD-101) THE EFFECTS OF X-RADIATION ON WORK CAPACITY AND LONGEVITY OF THE DOG. TENTH ANNUAL PROGRESS REPORT. A. C. Andersen

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