

NOTICE OF RESEARCH PROJECT
BIO-SCIENCES INFORMATION EXCHANGE

114800008 Ex

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

SMITHSONIAN INSTITUTION
SOURCE DATA

PROJECT NO. (Do not use this space)
GPM 113 C10
AT(30-1) 1243

SUPPORTING AGENCY: Atomic Energy Commission

1314 NYO

TITLE OF PROJECT: "A Study of the Physiological Function and Histological Changes of Thyroids Irradiated with Radioactive Iodine"

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Brown M. Dobyns, M. D., Ph. D.
Professor of Surgery, Western Reserve University
Department of Surgery, Cleveland Metropolitan General Hospital

718389

NAME AND ADDRESS OF INSTITUTION:

Western Reserve University at Cleveland Metropolitan General Hospital
2040 Adelbert Road, Cleveland 6, Ohio

SUMMARY OF PROPOSED WORK — (200 words or less—Omit Confidential data.)

In the Bio-Sciences Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The work here represents long term studies. The general pattern remains the same as previously reported.

This project has been in progress for quite a number of years. It consists of two parts. The first concerns the immediate and long term effects of a single therapeutic dose of I¹³¹ for treatment of hyperthyroidism in man. A series of quantitative chromatographic fractionations of the iodinated compounds in the blood are made beginning shortly after the I¹³¹ administration and repeated thereafter as long as the radioactivity is measurable. The changing of I¹³¹ in the various compounds in the blood are related to the rate of disappearance of I¹³¹ from the thyroid, the compounds appearing in the urine, and the results of various other clinical and laboratory tests. All results are ultimately considered in the light of physiologic changes in the thyroids thereafter. When a second treatment dose of I¹³¹ is needed, a special opportunity for repetition of the studies is afforded and gives a more precise measure of the effects of the first radiation.

The second part of the study concerns the morphologic changes in the thyroid of animals and man following I¹³¹ administration. Desoxyribonucleic acid (DNA) determination in the individual nuclei of the cells is being made by histochemical and spectrophotometric methods. This is an effort to further explore the nature of the cells with the bizarre nuclei which are found long after the damaged cells would have been expected to survive. The nature of these nuclei is being studied with tritiated thymidine in order to learn more about the normal mitoses that develop following radiation.

06-01-01-05
Submitted for period beginning January 1962

SMY - 0.25
TMY - 2

SIGNATURE OF PRINCIPAL INVESTIGATOR

Brown M. Dobyns

Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified:
SCHOOL of Medicine, Western Reserve University

INVESTIGATOR — DO NOT USE THIS SPACE

	Period of Operation	Amt. Appr.		Period of Operation	Amt. Appr.
GPM 113	8/51 - 12/52	\$ 8,208	GPM 113 C6	1/58 - 12/58	\$9,000
113 C1	1/53 - 12/53	6,862	113 C7	1/59 - 12/59	9,370
113 C2	1/54 - 12/54	5,986	C8	1/60 - 12/60	9,740
113 C3	1/55 - 12/55	7,536	C9	1/61 - 12/61	10,614

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animals.

Chang, M. C. AT(30-1)1943
A1G22 EFFECTS OF RADIOCOBALT IRRADIATION OF RABBIT GERM CELLS AND EMBRYOS.
Worcester Foundation for Experimental Biology, Shrewsbury, Mass. NYOO. October 1961-September 1962. PMYr 1.0; TMYr 1.0.

Ex. 2
Descriptive cataloging

Following previous study of the effects of irradiation of rabbit spermatozoa and eggs *in vitro* under the Contract AT(30-1)-1943 (Anat. Rec., 129: 211, 1957; 132: 161, 1958) and recent study of irradiation of rabbit eggs *in vitro* before implantation (Anat. Rec. to be published) it is proposed to study (1) the effect of radiation on embryonic development when pregnant rabbits at 8, 10, 12, and 14 days of pregnancy were exposed to radiocobalt, (2) cytological and histochemical changes in the rabbit blastocyst following irradiation and (3) the effect of irradiation on the rabbit eggs at pro-nuclear stage.

Arnold, W. J. AT(11-1)249
A1F25 PSYCHOLOGICAL EFFECTS OF CRANIAL X-IRRADIATION ON PSYCHOLOGICAL PROCESSES IN RATS.
Nebraska Univ., Lincoln. OROO. February 1962-January 1963. PMYr 1.0; TMYr 1.0.

The purposes of the proposed year's work are as follows: (1) To investigate the effects of cranial irradiation on Pavlovian conditioning. (2) To continue the investigation of the psychological effects of brain irradiation administered by means of the horizontal beam technique. (3) To complete the study of the effects of 5000 r vertical beam irradiation as a function of time interval after irradiation. (4) To continue accumulating data on the effects of brain irradiation on life span. (5) To prepare further reports for publication. (6) To collaborate with Dr. Robert H. Brownson of the Department of Anatomy in the Medical College of Virginia in studying effects of cranial irradiation.

Reference No. 1st Principle Investigator Contract No.

Carlson, W. D. AT(11-1) 895
A1G59 THE EFFECTS OF IONIZING IRRADIATION ON THE FUNCTIONAL AND STRUCTURAL STATUS OF THE BULL TESTICLE.
Colorado State Univ., Fort Collins, COO June 1962-April 1963.

Title
AEC Operations Office

The purpose of this research is to determine the effects of direct ionizing x-irradiation on the testicle of the bull. The effects will be measured by several methods. First, semen will be collected periodically before and after irradiation and evaluated as to quantity and quality. The criteria will include concentration, motility, morphology and percent of alive sperm. Secondly, biochemical tests will be conducted to determine changes in seminal fructose, seminal free amino acids and seminal plasma proteins. Lastly, methods of testicular biopsy, using a needle biopsy technique, will be studied as a means of continually evaluating the testicular damage.

The minimal dose causing detectable damage to the testicle will be sought in this phase of the research.

Dobyns, Brown M. AT(30-1) 1243
A1H8 A STUDY OF THE PHYSIOLOGICAL FUNCTION AND HISTOLOGICAL CHANGES OF THYROIDS IRRADIATED WITH RADIOACTIVE IODINE.
Western Reserve Univ., Cleveland, Ohio. NYO. January 1962-December 1962. PMYr 0.25; TMYr 2.

The work here represents long term studies. The general pattern remains the same as previously reported.

This project has been in progress for quite a number of years. It consists of two parts. The first concerns the immediate and long term effects of a single therapeutic dose of I-131 for treatment of hyperthyroidism in man. A series of quantitative chromatographic fractionations of the iodinated compounds in the blood are made beginning shortly after the I-131 administration and repeated thereafter as long as the radioactivity is measurable. The changing amounts of I-131 in the various compounds in the blood are related to the rate of disappearance of I-131 from the thyroid, the compounds appearing in the urine, and the results of

Composed from Ex. 1

Hicks, Samuel P. AT(30-1)1454
A1F26 THE EFFECTS OF IONIZING RADIATION ON THE DEVELOPING MAMMALIAN NERVOUS SYSTEM.
New England Deaconess Hospital, Boston. NYOO. October 1961-September 1962.

Dobyns, Brown M. AT(30-1) 1243
A1H8 A STUDY OF THE PHYSIOLOGICAL FUNCTION AND HISTOLOGICAL CHANGES OF THYROIDS IRRADIATED WITH RADIOACTIVE IODINE.

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Proposal

Would change position of contractor



PRINCIPAL INVESTIGATOR INDEX

B186 Carlson, J. Gordon AT(40-1)2575
STUDIES OF EARLY EFFECTS OF X
RAYS ON CHROMOSOMES.

de Bernard, B. AT(30-1)2632
E1C85 THE STUDY AND COMPARISON OF
NECROLYTIC AND RADIOLYTIC LESIONS AT
MITOCHONDRIAL LEVEL (LYSOMES) IN ASEPTIC
PERFUSED HEART MUSCLE.

A1G59 Carlson, W. D. AT(11-1)895
THE EFFECTS OF IONIZING IRRADIATION ON THE FUNCTIONAL AND STRUCTURAL STATUS OF THE BULL TESTICLE.

DeBusk, A. Gib AT(40-1)2788
B1A68 THE MOLECULAR BASIS OF FORWARD
AND BACK MUTATION.

C1B108 Castleman, Benjamin AT(30-1)2031
STUDY OF VIABILITY OF STORED BONE
MARROW.

E34 Demorest, Howard L. AT(11-1)401
PARTICLE COLLECTION STUDY.

E2D43 Chace, Fenner A. AT(30-1)2409
SYSTEMATIC ZOOLOGICAL RESEARCH
ON THE MARINE FAUNA OF THE TROPICAL
PACIFIC AREA.

A1A106 Di Luzio, Nicholas R. AT(40-1)1999-6
INFLUENCE OF RETICULO-ENDO-
THELIAL STIMULATION ON RADIATION INJURY
AND RECOVERY.

A1G22 Chang, M. C. AT(30-1)1943
EFFECTS OF RADIOCOBALT IRRADIATION OF RABBIT GERM CELLS AND EMBRYOS.

A1H8 Dobyns, Brown M. AT(30-1)1243
A STUDY OF THE PHYSIOLOGICAL
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THYROIDS IRRADIATED WITH RADIOACTIVE
IODINE.] Ex. 1

A1H101 Cope, Oliver AT(30-1)667
THE BIOLOGIC EFFECTS OF RADIATION ON THYROID TISSUE.

A2A10 Dougherty, T. F. AT(11-1)119
TOXICITY STUDIES OF PLUTONIUM
AND OTHER RADIOACTIVE SUBSTANCES IN
ANIMALS.

A1I12 Dagg, Charles P. AT(30-1)1762
PHYSIOLOGICAL STUDIES ON CON-
GENITAL DEFORMITY IN MICE. MECHANISM
OF ACTION OF RADIATION AND RADIOMIMETIC
TREATMENTS.

D1D71 Ducoff, H. S. AT(11-1)878
RECOVERY FROM RADIATION-INDUCED
DIVISION BLOCK IN PROTISTS.

CONTRACTOR INDEX

Texas Univ., Austin

E1A52 DIRECT AND INDIRECT EFFECTS OF IONIZING RADIATIONS ON THE GENETIC AND DEVELOPMENTAL SYSTEMS OF VERTEBRATES.

Trieste Univ., Italy. Institute of Biological Chemistry

D1C65 THE STUDY AND COMPARISON OF NECROLYTIC AND RADIOLYTIC LESIONS AT MITOCHONDRIAL LEVEL (LYSOMES) IN ASEPTIC PERFUSED HEART MUSCLE.

Utah Univ., Salt Lake City

A2A10 TOXICITY STUDIES OF PLUTONIUM AND OTHER RADIOACTIVE SUBSTANCES IN ANIMALS.

Virginia Fisheries Lab., Gloucester Point

E2A53 FECAL CONCENTRATION OF SUSPENDED RADIOACTIVE WASTES INTO BOTTOM DEPOSITS.

Washington Univ., Seattle. Dept. of Meteorology and Climatology

F2E1 WIND COMPONENT METER.

Western Reserve Univ., Cleveland, Ohio

A1H8 A STUDY OF THE PHYSIOLOGICAL FUNCTION AND HISTOLOGICAL CHANGES OF THYROIDS IRRADIATED WITH RADIOACTIVE IODINE.

Ex. 1

Wisconsin. Univ., Madison

E1C45 RADIOISOTOPE EXCHANGE STUDIES IN LAKES.

E1A46 A DIRECT EVALUATION OF PRODUCTIVITY IN ANIMAL POPULATIONS THROUGH THE DEVELOPMENT OF A NEW TRACER TECHNIQUE FOR ECOLOGICAL RESEARCH.