



**DEPARTMENT OF THE NAVY**  
NAVY ENVIRONMENTAL HEALTH CENTER DETACHMENT  
NAVAL DOSIMETRY CENTER  
BETHESDA, MD 20889-5614

6470  
Ser 00/00031  
30 NOV 1994

From: Head, Human Radiation Experimentation Task Force  
To: Chief of Bureau of Medicine and Surgery

**NAV1.941208.010**

Subj. HUMAN RADIATION EXPERIMENTS

Encl. (1) Supplemental Report of Human Radiation Experiments, 30 November 1994

1 Enclosure (1) is forwarded.

2. This report summarizes search activities for November 1994. Forty-one additional studies were identified bringing the total Navy studies reported to 869.

3 Copies of documents listed in the section titled "Findings" have been provided directly to the Presidents Advisory Committee and the DoD Radiation Experimentation Command Center.

4. If you have any questions, please call me on (301) 295-5410.

*J. A. George*  
J. D. GEORGE

**BUREAU OF MEDICINE AND SURGERY**  
**SUPPLEMENTAL REPORT OF HUMAN RADIATION EXPERIMENTS**  
**30 November 1994**

**I. Introduction.**

A This is a supplemental report to the Secretary of Defense (Atomic Energy) request for a DoD-wide review of Human Radiation Experiments. Previous supplemental reports were submitted on.

March 31, 1994  
April 29, 1994  
May 26, 1994  
July 15, 1994  
August 31, 1994  
October 31, 1994

B. *This report summaries search activities for November, 1994. It reports documents identified in the Office of Naval Research archive search, an expanded search of the Naval Radiological Defense Laboratory archives at San Bruno, and a further search of the Directives archives at the Bureau of Medicine and Surgery. In addition, documents identified and provided by the President's Advisory Committee's staff search of the National Archives, Washington D.C. are included for documentation purposes. Forty-two additional studies are reported. This brings the **total Navy studies reported to 869**. Of these **850 have a primary purpose of clinical research**, i.e., treatment of disease or injury, examination of human physiology, and **19 were conducted primarily for a military application**, e.g., development of saturation diving decompression tables, decontamination of skin, determination of a racial or sexual bias in body weight standards, etc.*

C. Indexes of documents identified in the archive search of the Office of Naval Research records are provided in Section III, under parts A and F. Section A lists source and other documents identifying Navy studies. Abstracts of studies identified are provided in Section E. Section F lists "Notices of Research Projects" distributed by the Smithsonian for a number of government agencies and private foundations. Copies of the documents and Notices are attached

D. Indexes of Naval Radiological Defense Laboratory documents identified during an expanded search of the San Bruno archives are provided in Section III, under part C. Copies of documents identified are attached.

E. Indexes of documents (Research Progress Reports) identified in the Advisory Committee staff's archive search are provided in Section III, under part D. Copies of the documents are attached to ensure various activities in the Navy and DoD Command structure have copies. The Progress Reports are currently being reviewed to ensure research projects mentioned have been researched, abstracted and reported.

F. Abstracts of additional research projects and supporting documentation are provided in Section III, under part E. Supporting documentation is indexed under the appropriate Archive Search section.

**II. Search Activities.** The following search activities have been completed since the last report.

A. The Office of Naval Research has completed its search and review of the archives for years 1940 through 1994. Approximately 750 cubic feet of records were reviewed. The review consumed approximately 150 person-days.

B. An expanded search, 15 person-days, was conducted of the records archived at the San Bruno National Archives.

C. BUMED Circular Letters and Directives pre-dating the Manual of the Medical Department have been reviewed, 2 person-days.

D. Advisory Committee Staff have searched selected accessions at the National Archives, Washington, D C.

E. The total person-days expended by Navy personnel totals 2,021 as of 30 November 1994.

### **III. Findings.**

#### **A. Office of Naval Research Administrative Correspondence and Research Proposals involving Human Research**

The following documents were identified in the search of the Office of Naval Research's archives located at the National Archives, Suitland Maryland. Copies are attached.

<b>Date</b>	<b>Subject</b>
8 March 1949	Progress Report, Contract N6ori-126, Immunologic Studies on Red Blood Cells
3 February 1949	Progress Report, Contract N6-ori-126, Immunologic Studies on Red Blood Cells
31 August 1948	Progress Report, Contract N6-ori-126, Immunologic Studies on Red Blood Cells
1 January 1948	Progress Report, Contract N6-ori-126, Immunologic Studies on Red Blood Cells
28 December 1946	Progress Report, Contract N6-ori-126, Immunologic Studies on Red Blood Cells
19 May 1951	Strong Memorial Hospital Ltr with Copy of Manuscripts "Hereditary Spherocytosis I and II", accepted for publication in <u>Blood</u> .
May 1963	Bimonthly Progress Report No. 2, Research on Procedures for the Low-Temperature Preservation of Blood, Contract No. Nonr-3003(00)
July 1963	Bimonthly Progress Report No. 3, Research on Procedures for the Low-Temperature Preservation of Blood, Contract No. Nonr-3003(00), July 1963
August 1963	Bimonthly Progress Report No. 4, Research on Procedures for the Low-Temperature Preservation of Blood, Contract No. Nonr-3003(00)
November 1963	Bimonthly Progress Report No. 5, Research on Procedures for the Low-Temperature Preservation of Blood, Contract No. Nonr-3003(00)

November 1970	Szymanski, I. O., and Valeri C. R., Analysis of Erythrocyte Survival Curves Obtained Simultaneously by Cr-51 and an Automated Differential Agglutination Technic, Transfusion, Vol 10, No. 6, Nov.-Dec. 1970 pgs 287-297
1971	Szymanski, I. O., and Valeri, C. R., Lifespan of Preserved Red Cells, Vox Sanguinis. 21: 97-108 (1971)
July-Aug 1974	C. R. Valeri, H. Feingold, and L. D. Marchionni, The Relation Between Response to Hypotonic Stress and the Cr-51 Recovery in Vivo of Preserved Platelets, Transfusion, Vol 14, No 4, July-Aug 1974.
June 1974	Valeri, C. R., Feingold, H., Zaroulis, C. G., Sphar, R. L., and Adams, G. M , Effects of Hyperbaric Exposure on Human Platelets, Aerospace Medicine, June 1974
16 June 1978	Summary of All Research at Naval Blood Research Laboratory with Bibliography performed under ONR Contract 70-C-0111
March 1971	NAMRUGRAM, U. S. Naval medical Research Unit No. 2, Taipei, Taiwan (Command Newspaper describes activities of radioisotope research program.).
19 November 1974	Univ. of California ltr forwarding Human Subject Protection Committee Final Approval Notice for project ONR N00014-69-A-0200-4039 NR 136-912
28 December 1979	Protection of Human Subjects Assurance/Certification/Declaration from New York University Medical Center for proposal titled: "The Distribution, saturation Rate, and Desaturation Rate of Xenon in the Healthy Human Brain
1975	Copy of internal Office of Naval research <u>Clearance Memorandum</u> to verify completion of contract management and review requirements. Note Item 13.a: Use of Human Volunteers clause is applicable.
28 April 1947	Minutes of the Meeting of the COMMITTEE ON RADIOACTIVITY of the NATIONAL RESEARCH COUNCIL
2 December 1960	Minutes of Thirty-fifth Meeting of National Academy of sciences-National Research Council Subcommittee on Water Supply

16 October 1947	Minutes of Subcommittee on Radiobiology, National Research Council
10 November 1947	Minutes of Committee on Nuclear Science of the National Research Council
28 April 1948	Minutes of Meeting of Subcommittee on Instruments and Techniques of Committee on Nuclear Science, National Research Council
5 November 1948	Subcommittee on Radiobiology of Committee on Nuclear Science, National Research Council
9 November 1948	Minutes of the Meeting of the Committee on Nuclear Science of the National Research Council
8 November 1949	Committee on Nuclear Science of the National Research Council
8 November 1949	Minutes of the Meeting of the Committee on Nuclear Science of the National Research Council
15 February 1950	Minutes of the Meeting of the Subcommittee on Beta and Gamma Ray Measurements and Standards of the Committee on Nuclear Science of the National Research Council
28 March 1950	Minutes of the Meeting of the Committee on Nuclear Science of the National research Council
28 March 1950	Minutes of the Meeting of the Committee on Nuclear Science of the National Research Council
14-15 July 1950	Minutes of the first meeting of the Committee on Nuclear Science, Subcommittee on the Penetration of Charged Particles in Matter
23 June 1950	Minutes of the Meeting of the Subcommittee on Instruments and Techniques of the Committee on Nuclear Science of the National Research Council
4 October 1950	Ltr to Authors of 1950 Nuclear Science Review
13 January 1951	Minutes of the Meeting of the Committee on Nuclear Science of the National Research Council

29 January 1951	Minutes of the Subcommittee on Radiobiology of Committee on Nuclear Science
19 October 1951	Meeting of the Subcommittee for Radiobiology, Board Room National Research Council
4 December 1951	Minutes of the Meeting of the Committee on Nuclear Science of the National Research Council
17 February 1953	Minutes of the Meeting of the Subcommittee on Instruments and Techniques of the Committee on Nuclear Science of the National Research Council
22 September 1952	Minutes of the Meeting of the Subcommittee on Instruments and Techniques of the Committee on Nuclear Science of the National Research Council
4 May 1952	Minutes of the Meeting of the Subcommittee on Radiochemistry of the Committee on Nuclear Science of the National Research Council
30 December 1952	National Research Council Committee on Nuclear Science Subcommittee on Nuclear Geophysics
8 November 1952	US Atomic Energy Commission's Isotope Distribution Program, Summary of Progress and Plans, report to Committee on Nuclear Science, National Research Council
February, 1956	Goldenberh, I. S., Lutwak, L., Rosenbaum, P. J., and Hayes, M. A., Thyroid activity During Operation, Surgery, Gynecology & Obstetrics, February 1956, Vol 102, 129-133
No date	Annual summary Report, NR 105057, Contract Number NONR-609 (10)
10 January	Annual Summary Report, 1959-1960, Submitted 10 January 1960, NR 105057 Contract No. NONR-609 (10)
1956	Annual Summary Report, NR 105057, Contract # Nonr-609 (10), 1956
24 January 1962	Special Notice. List of conferences dealing with bone marrow transplantation and chemical protection against radiation damage.

10 February 1955 Application for Research Grant: A Study of the Prevalence and Severity of Thyroid Deficiency in Young and Mature Adult Males

1954-55 Application for Research Grant: The Physiologic Effects of Hypometabolism Upon Cardiovascular Dynamics in Patients with Cardiac Insufficiency.

3 October 1947 Harper, H. A., Kinsell, L. W., and Barton, H. C., Plasma L-Methionine Levels Following Intravenous Administration in Humans, Science, Vol. 106, No. 2753, October 3, 1947

1 Jan 1949 Research Proposal: N7onr-295, Tack V (1/15/47 to 6/1/49)

30 January 1950 US Naval Hospital Oakland ltr to ONR Ref: Contract N7-295/V; Project NR-121-278 giving a bibliography of all publications issued under the contract.

7 March 1979 Quarterly Project Summary, as of 7 March 1949 from the Regents of the University of California and U. s. Naval hospital Oakland. Ref: Research on the Pathological Physiology of the Liver

2 November 1949 Abstract: Studies in Protein Metabolism with the Aid of Sulfur-35 labeled Methionine

February 1950 Kinsell, L.W., Margen, S., Tarver, H., McB Frantz, J., Flanagan, E K., Hutchin, M. E., Michaels, G. D. and McCallie, D. P., Studies in Methionine Metabolism. III. The Fate of Intravenously Administered S-35 Labeled Methionine in Normal Adult Males in Patients with Chronic Hepatic Disease, Idiopathic Hypoproteinemia and Cushing's Syndrome, Journal of Clinical Investigation, Vol. XXIX, No. 2, pp. 238-250, February 1950

September 1949 Isotopes. Supplement No. 1 to Catalogue and Price List No. 3, Isotopes Division, U. S. Atomic Energy Commission. Note Page 3. Conditions for the protection of the patient.

July 1950 B T Skoloff, Florida Southern College Ltr to Dr. F. H. Quimby Office of Naval research Re. Approval of project "Radiation Injury to the Capillary Wall"

14 November 1955 United Nations Conference Papers

15 March 1955      ONR, NY Ltr to Chief of Naval Research Ref: Proposal on "Determination of the Effect of High Dosage Betatron Irradiation to the Pituitary and Hypothalamus in Man" from Sloan-Kettering Institute

1947                Office of Naval Research Contract N5-ori-76, Ref: A Study of Cellular Biochemistry in Surgical Patients from Massachusetts General Hospital, Harvard Medical School.

15 January 1948    Office of Naval Research Contract N5-ori-76, Ref: A Study of Cellular Biochemistry in Surgical Patients from Massachusetts General Hospital, Harvard Medical School., Periodic Status Report No 2

29 July 1953        Semi-Annual Progress Report, N5-ori-76, Project XIII, Intracellular Changes in Trauma, Depletion and Repair with Special Reference to Burns

November 1965     Mobley, J. E , Schlegel, J. U.,: Radiohippuran accumulation in the transplanted kidney as a signal of rejection, Surgery, St. Louis, Vol 58, No. 5, Pages 815-818

February 1963     J. U. Schlegel: Therapeutic application of Renal Physiology, Journal of the Arkansas Medical Society, Vol 59, No. 9, February, 1963

December 1963     Schlegel, J. U.: Urology and Renal Physiology, Journal of the Louisiana State medical society, Vol. 115, No. 12, PP. 401-405, December, 1963

30 September 1967    Joint Operation of Clinical Investigation Center by the Department of Medicine, University of California, San Francisco Medical Center and the staff of the Naval Hospital, Oakland. Annual Summary Report for period 1 October 1966 to 30 September 1967

20 July 1963        V. Richards Ltr dtd 20 July 1963 to Joseph Saunders, Office of Naval Research discussing progress report on research being conducted in Wisconsin under the direction of Dr. Bjorsten.

14 January 1964     Annual report: Clinical Studies on the use of PVP Preserved Blood, Contract No. NONR-4039(00) dtd 14 January 1964

13 August 1962     Proposal for Clinical Studies on PVP Preserved Blood, dtd 13 August 1962

6 April 1964	V Richards Ltr dtd 6 April 1964 to Col. H. W. Whitcher, Royal Army Medical College, Millbank, London S. W. 1, England
No Date	Clinical Studies on the Use of PVP Preserved Blood, No date
No Date	Effect of Polyvinyl Pyrrolidone on Plasma Coagulation Factors, Herbert A Perkins, Mary R. Rolfs, Caroline Thacher and Victor Richards
19 July 1960	CO, NMRU-3 Ltr 19 July 1960 to Chief, Bureau of Medicine and Surgery, Subj: Nutrition Studies at NAMRU-3 by ON Contract Investigators from Vanderbilt University School of Medicine. information concerning
7 January 1965	William J. Darby Ltr dtd 7 January 1965 to Dr Roger Reid, Office of Naval Research containing "Final Report to Office of Naval Research Re: A Program of Research on Problems of Malnutrition in the Middle East and Africa (NAMRU-3 Region)
1951-52	Application for renewal of Naval Research Grant NR 102-043, Contract Nonr-211(00)
12 April 1948	Shields Warren, Atomic Energy Commission Ltr to Captain Shilling, Office of Naval Research, Re: Review and advice on various research projects.
19 May 1948	Procurement Justification, Office of Naval Research, NR 171 677 Contract to Wake Forest College. Re: Distribution and Turnover of Sodium and Potassium in Acute Infections.
1948	Research Proposal for the Investigation of Protein Synthesis by Use of the Isotope N-15, 1948
No Date	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 745 The Study of Hemorrhagic Tendencies of Irradiated Subjects
June 1950	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 659 Skin Changes Produced by Low-Voltage Roentgen Ray Irradiation
February 1949	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 650 Study of Treatment of Neoplasm by Direct Infiltration with Radio-active Colloids

September 1951	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 604 Radio-Autographs
November 1950	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 601 Blood Flow Volume in Kidney and Liver
December 1949	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLG 556 Response of Cells (Desquamate) to Deep Radiation
December 1952	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 294 The Use of I-131 in Treatment of Heart Diseases and Long Term Radiation Effects of I-131 in Man
1947-1958	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 228 Mass Spectrometer Development and Application
No date	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 120 A Study of the Effects of Radiation on the Microscopic Vascular Supply of Various Organs of the Body by Means of Microradiography
1949-1952	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 915X-ray Camera for Use on Human Centrifuge
January 1953	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 820 The Use of the Artificial Kidney in Human Patients
1950-1954	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLJ 8 C1 NR 182-008 Oral and Alimentary Effects of Ingestion of radioactive Elements
No Date	Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLJ 35 Research on the Production of Clinical Roentgenograms by Means of Compact Radioactive x-ray and Gamma-ray sources.

**B. Naval Radiological Defense Laboratory Archive Search.** The previous search of the Naval Radiological Defense Laboratory archives covered years 1954 to 1962. Statements from members at the laboratory and controls in the Nuclear Regulatory License indicated human research had not occurred at the laboratory outside that time-frame. At the suggestion of the Committee staff the rest of the NRDL record holdings, with the exception of two boxes sent to the Washington D.C. archives for declassification, were searched to verify no human experiments had been conducted. (Arrangements are underway to review the two boxes at the Washington DC archives Anticipate the results of this search will be reported in the next report.) Indexes of documents identified in the archive search of the Naval Radiological Defense Laboratory are provided below. Copies of the documents are attached.

<b>Date</b>	<b>Subject</b>
17 Dec 1952	Report on Protective Clothing and Decontamination
1951	Naval Hospital Oakland NH48-1/A11/M3-4/ (056):mj Ser: 59505 Ltr to NRDL Ref: Approval of Joint Research Projects with US NRDL, Hunters Point, California; forwarding of (REF: Clinical Studies with Radioactive Iron)
16 August 1948	Procedure for analyzing urine for plutonium. Three samples from men exposed on Operation Sandstone. Procedure for analyzing fecal samples for Radium. Seven samples from NAS Alameda.
27 November 1946	Rough Draft. Conference on Radiological Safety; Report of Memorandum discusses radiological safety for decontamination of Bikini ships. Meeting discussed formation of a lab to study ship decontamination.
16 February 1948	Decontamination Studies - Lab Al 541. Copies from pages of laboratory workbook documenting decontamination studies on metal surfaces, rats and two individuals.
9 March 1949	Use of Complexing Agents in Cancer Treatment. Notebook entry discussing the use of cancer seeking agents that could be activated by neutron bombardment to destroy the cancer cells.
9 June 1950	NRDL Internal Memo From Clinical Radiochemistry Laboratory to Head, Health Physics Section reporting results of Radium Analysis
18 Jan 1950	NAS Alameda request to NRDL for analysis of fecal samples for radium.

22 March 1954

Task Group 7.3 ltr FF3/7.3/32:mf, J15-9 Ser: 00666 Subj:  
Radioactive Contamination of Ships and Radiological Exposure of  
Personnel of Task Group 7.3 due to bravo , the First Nuclear  
Explosion of CASTLE

**C. Washington D.C. Archive Search** A member of the Committee's staff provided copies of relevant documents he identified in the Bureau of Medicine and Surgery records at the National Archives Washington D.C. These are indexed below for record purposes. Copies are attached.

<b>Date</b>	<b>Subject</b>
26 May 1950	BUMED Memo: Recommendation that the Armed Services Conduct Experiments on Human Subjects to Determine Effects of Radiation Exposure
3 May 1950	SECNAV MEMO: Recommendation that the Armed Services Conduct Experiments on Human Subjects to Determine Effects of Radiation Exposure
24 April 1950	BUMED Memo: Recommendation that the Armed Services Conduct Experiments on Human Subjects to Determine Effects of Radiation Exposure.
17 April 1950	BUMED Memo: Recommendation that the Armed Services Conduct Experiments on Human Subjects to Determine Effects of Radiation Exposure.
22 March 1950	UCLA School of Medicine. Recommendation that the Armed Services Conduct Experiments on Human Subjects to Determine Effects of Radiation Exposure.
26 December 1950	VA ltr: Radioisotope Program of U S Veterans Administration
16 May 1947	BUMED Circular Ltr 10-47: Medical Procedure in Connection with Release of Personnel Formerly on Duty with "Operation Crossroads" or with Radiological Safety Program.
16 May 1947	SECNAV MSG: Medical Procedure in Connection with Release of Personnel Formerly on Duty with "Operation Crossroads" or with Radiological Safety Program
31 July 1951	NRDL Ltr: Calculated Risk Figures for Exposure of Personnel to External Ionizing Radiations, Comments on
27 August 1951	BUMED Ltr: Radioactive Isotopes Program: Request for Comments and Recommendations.
30 August 1951	BUMED Ltr: Membership of "Isotope Committees"

27 September 1951 BUMED Ltr: Request for AEC Forms 313, stating intention for BUMED to control Naval Medical Activities use of isotopes

18 October 1951 BUMED Memo: Legal Comments Relative to Proposed Means of Proper Authorization and Safeguard in Use of Radioisotopes

18 October 1951 BUMED Memo: Proposed Means of Proper Authorization and Safeguard in Use of Radioisotopes

20 April 1950 BUMED Memo: Committees, Panels, etc., Membership on

13 November 1950 AEC Ltr: Resume of Advisory Board of Div. of Biology and Medicine Meeting; Subj: Radiation Effects on Humans

5 June 1951 NRDL Ltr: Monthly Report of Medical Service Functions for May 1951, w/o enclosure

1 January 1948 Quarterly Project Summary, Office of Naval Research, index and pages 316-326.

1 April 1951 Atomic Warfare Operations, Research and Development Annual Technical Progress Report, Part IV, Office of Naval Research

15 February 1950 Research and Development Progress Report from Naval Medical Research Institute, Bethesda, Md to Bureau of Medicine and Surgery

15 March 1950 Research and Development Progress Report from Naval Medical Research Institute, Bethesda, Md. to Bureau of Medicine and Surgery

30 June 1950 Project Report on Clinical and Nutritional Biochemistry from the Research Group 442 to the Office of Naval Research

30 June 1950 Progress Report to Bureau of Medicine and Surgery

30 June 1950 Progress Report to Bureau of Medicine and Surgery

01 July 1950 Project Report on "Physiological Basis of Treatment and Rehabilitation" from the Research Group, Physiology Branch of the Office of Naval Research to the Office of Naval Research

01 July 1950 Project Report of "The Effects of Radiation on Living Organisms" to the Office of Naval Research

03 January 1951	Combined Project Description and Project Progress from Naval Medical Research Institute, Bethesda, Md. to Bureau of Medicine and Surgery
03 January 1951	Combined Project Description and Project Progress from Naval Radiological Defense Laboratory to Bureau of Medicine and Surgery
01 April 1951	Combined Project Description and Project Progress Report from the Research Group, Physiology Branch of the Office of Naval Research to the Office of Naval Research
01 January 1952	Combined Project Description and Project Progress Report from the Research Group, Physiology Branch of the Office of Naval Research to the Office of Naval Research
03 January 1952	Combined Project Description and Project Progress from Naval Medical Research Institute, Bethesda, Md. to Bureau of Medicine and Surgery
07 April 1952	Combined Project Description and Project Progress Report from the Research Group, Microbiology Branch of the Office of Naval Research to the Office of Naval Research
12 June 1952	Project Report ("The Determination of Addiction Liability of Synthetic Analgesics of the Codeine Type") from the Office of Naval Research (Contracted to National Institute of Mental Health, Addiction Research Center, USPHS Hospital, Lexington, KY) to the Bureau of Medicine and Surgery
19 June 1952	Security Investigation from Naval Radiological Defense Laboratory to Bureau of Medicine and Surgery
01 January 1953	Project Report on Physiological Basis of Treatment and Rehabilitation from the Research Group, Physiology Branch of the Office of Naval Research to the Office of Naval Research
03 January 1953	Combined Project Description and Project Progress from Naval Medical Research Institute, Bethesda, Md. to Bureau of Medicine and Surgery
25 June 1953	Combined Project Description and Project Progress from Naval Radiological Defense Laboratory to Bureau of Medicine and Surgery

10 September 1953	Security Investigation from Naval Medical Research Institute, Bethesda, Md. to Bureau of Medicine and Surgery
01 January 1954	Project Report on "Physiological Basis of Treatment and Rehabilitation" from the Research Group, Physiology Branch of the Office of Naval Research to the Office of Naval Research
03 January 1954	Combined Project Description and Project Progress from Naval Medical Research Institute, Bethesda, Md. to Bureau of Medicine and Surgery
03 January 1954	Combined Project Description and Project Progress from Naval Hospital, Oakland, CA. to Bureau of Medicine and Surgery
03 January 1954	Combined Project Description and Project Progress from Naval Radiological Defense Laboratory to Bureau of Medicine and Surgery
03 January 1954	Combined Project Description and Project Progress from Naval Hospital, Bethesda, Md to Bureau of Medicine and Surgery
03 January 1954	Combined Project Description and Project Progress from Naval Hospital, St. Albans, NY to Bureau of Medicine and Surgery
08 July 1954	Termination Report of Project Entitled "Thermal Burn and Blast Injury" from the Research Group, Physiology Branch of the Office of Naval Research to the Office of Naval Research

#### **D. Bureau of Medicine and Surgery, Archived Directives Search**

A search of the archived directives, principally BUMED Circular Letters, yielded the following directives related to Radiation Safety, and Medical Research Policy.

<b>Date</b>	<b>Subject</b>
6 September 1943	BUMED Circular Ltr No. 43-143: Luminous Materials for Shipboard Use.
23 January 1948	BUMED Circular Ltr No. 48-10: Radiological Safety Regulations
23 March 1948	BUMED Circular Ltr No. 48-35: Record of Radiological Health Data.
26 April 1948	BUMED Circular Ltr No. 48-46: Medical Research in the Navy, Opportunities for Medical and Dental Officers to engage in.
29 November 1948	BUMED Circular Ltr No. 48-133: Clinical Research in Naval Hospitals.
29 November 1948	BUMED Circular Ltr No 48-134: Radiological safety Regulations, Changes to.
16 December 1948	BUMED Circular Ltr No 48-146: Use of Radioactive Isotopes: Control of.
8 February 1949	BUMED Circular Ltr No. 49-10: Medical Research in Ships and Shore Stations other than Hospitals.
20 April 1950	BUMED Circular Ltr No. 50-41: Pathological slide study sets on ionizing radiation lesions: use of by civilian physicians, Regular and Reserve medical officers of the Armed Forces, and Federal agencies.
26 April 1950	DoD Press Release: Navy Makes Available to Civilian Physicians Its Research Data on Atomic Radiation Effects
14 August 1950	BUMED Circular Ltr No. 50-88: Instructions for collection of air and breath samples for radon content
4 January 1951	BUMED Circular Ltr No 51-1: Radon samples; instructions on shipping to National Bureau of Standards.

10 January 1951 BUMED Circular Ltr No 51-5: Radiological Safety Regulations:  
modification of

18 June 1951 BUMED Circular Ltr No. 51-93: Radiological Safety Regulations,  
Revised 1951, NAVMED-P-1325.

**E. Study Abstracts:** Abstracts for studies identified in the November searches are provided below by activity performing or sponsoring the research:

- A. Naval Medical Research Institute (NMRI), Bethesda, MD.
- B. Naval Hospital St. Albans.
- C. Naval Medical Research Unit No. 3, Cairo, Egypt.

**Study # -NMRU3-33:** Studies on the Mechanism of Anemia in Parasitic Diseases

**Location:** U. S. Naval Medical Research Unit No. 3, Cairo, Egypt, U.A.R.

**Date:** 1960

**Primary**

**Researchers:** Dr. William J. Darby, Vanderbilt University  
Dr. August Miale, Jr., NMRU-3, Cairo

**Sponsors:** Office of Naval Research, ONR Contract No. 2149

**Human**

**Subjects:** Unknown

**Purpose:**

1. To evaluate iron absorption loss, and metabolism in various parasitic diseases.
2. To evaluate red cell and plasma volumes, red cell life span, blood proteins and blood loss in the same patients
3. To evaluate changes in these parameters subsequent to specific anti-parasitic or iron therapy.
4. To provide a basis for planning effective methods for prevention and therapy of anemia associated with parasitic disease.

**Category:** Clinical Research

**Records:**

CO, NMRU-3 Ltr 19 July 1960 to Chief, Bureau of Medicine and Surgery, Subj: Nutrition Studies at NAMRU-3 by ON Contract Investigators from Vanderbilt University School of Medicine: information concerning

William J. Darby Ltr dtd 7 January 1965 to Dr. Roger Reid, Office of Naval Research containing "Final Report to Office of Naval Research Re. A Program of Research on Problems of Malnutrition in the Middle East and Africa (NAMRU-3 Region)

**Classification:** Unclassified

- D National Naval Medical Center, Bethesda
- E. Naval Hospital Chelsea/Navy Blood Lab

**Study # -NHCEL-23** : Effects of Hyperbaric Exposure on Human Platelets

**Location:** Naval Blood Research Laboratory, Chelsea, Massachusetts  
Naval Submarine Medical Research Laboratory

**Date:** June 1974

**Primary**

**Researchers:** C. R. Valeri, H. Feingold, C. G. Zaroulis, R. L. Sphar, and  
G. M. Adams

**Sponsors:** Bureau of Medicine and Surgery

**Human**

**Subjects:** 8 divers

**Purpose:** To study Platelet survival and function to determine whether the thrombocytopenia occurred as a result of decreased platelet survival. Thrombocytopenia and changes in blood coagulation have been reported in healthy individuals and animals subjected to hyperbaric exposure. Blood coagulation studies were also performed to determine whether exposure to compression-decompression produced intra-vascular coagulation.

**Category:** Clinical Research

**Records:** C. R. Valeri, H. Feingold, C. G. Zaroulis, R. L. Sphar, and  
G M. Adams, Effects of Hyperbaric Exposure on Human Platelets, Aerospace  
Medicine, June, 1974

**Classification:** Unclassified

**Study # -NHCHL-24:** Factors that Influence the Process of Cr-51 Labeling of Human Granulocytes Isolated from blood by Counterflow Centrifugation

**Location:** Naval Blood Research Laboratory, Boston Massachusetts

**Date:** 1978-79

**Primary**

**Researchers:** S. R. KurtZ, R. Carciro and C. R. Valeri

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** 10 healthy volunteers

**Purpose:** To study the factors that influence the uptake of Cr-51 by human granulocytes isolated from blood.

**Category:** Clinical Research

**Records:** Unclassified

**Classification:** Unclassified

- F. Naval Hospital San Diego
- G. Naval Hospital Oakland, CA

**Study # -NHOAK-44:** The Pathological Physiology of the Liver

**Location:** Department of Biology, University of San Francisco,  
Departments of Medicine, University of California  
U.S. Naval Hospital, Oakland

**Date:** 1947-1948

**Primary**

**Researchers:** Harold A. Harper, Laurance W. Kinsell, and Harry C. Barton

**Sponsors:** Office of Naval Research, Bureau of Medicine and Surgery

**Human**

**Subjects:** Unknown, 11 Normal subjects plus patients are mentioned.

**Purpose:** To conduct research on pathological function of liver, including:

1. Protein balance in liver disease
2. Effects of therapeutic procedures on liver pathology.
3. Usefulness of standard and new liver function tests.
4. Role of liver in conjugation of steroids.
5. Effectiveness of protein anabolic steroids in liver disease.

**Category:** Clinical Research.

**Records:**

Harper, H. A., Kinsell, L. W., and Barton, H. C., Plasma L-Methionine Levels Following Intravenous Administration in Humans, *Science*, Vol. 106, No. 2753, October 3, 1947

Research Proposal: N7onr-295, Tack V (1/15/47 to 6/1/49)

Harper, H. A., Kinsell, L. W., and Barton, H. C., Plasma L-Methionine Levels Following Intravenous Administration in Humans, *Science*, Vol. 106, No. 2753, October 3, 1947

Research Proposal: N7onr-295, Tack V (1/15/47 to 6/1/49)

US Naval Hospital Oakland ltr to ONR Ref: Contract N7-295/V;  
Project NR-121-278 giving a bibliography of all publications  
issued under the contract.

Quarterly Project Summary, as of 7 March 1949 from the Regents of the University of California and U. s. Naval hospital Oakland.  
Ref: Research on the Pathological Physiology of the Liver

Abstract: Studies in Protein Metabolism with the Aid of Sulfur-35 labeled Methionine

Kinsell, L.W., Margen, S., Tarver, H., McB Frantz, J., Flanagan, E.K., Hutchin, M. E., Michaels, G. D. and McCallie, D. P.,  
Studies in Methionine Metabolism. III. The Fate of Intravenously Administered S-35 Labeled Methionine in Normal Adult Males in Patients with Chronic Hepatic Disease, Idiopathic Hypoproteinemia and Cushing's Syndrome, *Journal of Clinical Investigation*, Vol. XXIX, No. 2, pp. 238-250, February 1950

**Classification:** Unclassified

**Study # -NHOAK-45:** Clinical Studies with Radioactive Iron

**Location:** Metabolic Research Facility, Naval Hospital Oakland and  
Naval Radiological Defense Laboratory, Hunters Point, CA

**Date:** 1951

**Primary**

**Researchers:** Personnel of Met. Res Facility & NRDL

**Sponsors:** Chief, Bureau of Medicine and Surgery

**Human**

**Subjects:** Unknown

**Purpose:** To study erythropoiesis and the effect of irradiation upon this process in humans. When radioactive iron is administered to normal rats the rate of disappearance of this substance from blood follows a characteristic pattern which correlates well with the rate of appearance of Fe-59 in bone marrow. The rate is altered when the animals are exposed to irradiation.

**Category:** Clinical Research

**Records:** 12 Oct 1951 Ltr from Naval Hospital Oakland to NRDL referencing proposed study.

**Classification:** Unclassified

**Study # -NHOAK-46:** The Effect of Radiation on Antibody Production in the Human.

**Location:** Naval Hospital Oakland

**Date:** 1951

**Primary**

**Researchers:** Personnel of Metabolic Research Facility & NRDL

**Sponsors:** Chief, Bureau of Medicine and Surgery

**Human**

**Subjects:** Unknown

**Purpose:** To study appropriate patients receiving large doses of therapeutic abdominal irradiation and patients being treated with such drugs as nitrogen mustard or amino pterin to see if the treatment increase the patients susceptibility to infection.

**Category:** Clinical research.

**Records:** 12 Oct 1951 Ltr from Naval Hospital Oakland to NRDL referencing proposed study.

**Classification:** Unclassified

**Study # -NHOAK-47:** A Study of the Use and Effects of I-131 in Patients with Thyroid Carcinoma.

**Location:** Naval Hospital Oakland

**Date:** 1951

**Primary**

**Researchers:** Personnel of Metabolic Research Facility & NRDL

**Sponsors:** Chief, Bureau of Medicine and Surgery

**Human**

**Subjects:** Unknown

**Purpose:** To study I-131 excretion and distribution using localized counting in vivo and counting of serum inorganic and protein-bound iodine. An attempt will be made to calculate radiation dosage delivered to various areas of the body and to correlate these dosages with functional changes.

**Category:** Clinical research.

**Records:** 12 Oct 1951 Ltr from Naval Hospital Oakland to NRDL referencing proposed study.

**Classification:** Unclassified

**Study # -NHOAK-48:** The Effect of Radiation on Plasma Phospholipids in Humans

**Location:** Naval Hospital Oakland

**Date:** 1951

**Primary**

**Researchers:** Personnel of Metabolic Research Facility & NRDL

**Sponsors:** Chief, Bureau of Medicine and Surgery

**Human**

**Subjects:** Unknown

**Purpose:** To study plasma phospholipid levels in patients receiving x-ray treatments for therapeutic purposes. Information will be correlated with NRDL's findings observed in experimental animals

**Category:** Clinical Research

**Records:** 12 Oct 1951 Ltr from Naval Hospital Oakland to NRDL referencing proposed study.

**Classification:** Unclassified

- H. Naval Hospital Portsmouth, VA
- I. Naval Hospital Great Lakes
- J. Naval Hospital Philadelphia
- K. Naval Medical Research Unit, Taipei

**Study # -NMRU-2-18:** Tissue Copper, Zinc, and Manganese Levels in Wilson's Disease: Studies with the Use of Neutron Activation Analysis

**Location:** Naval Medical Research Unit No. 2, Taipei, Taiwan

**Date:** March 1971

**Primary**

**Researchers:** Mei Ling Leu, G Thamas Strickland, and S. J. Yeh

**Sponsors:** Chief, Bureau of Medicine and Surgery

**Human**

**Subjects:** 5 Patients (deceased)

**Purpose:** To study the mean copper concentration in tissues of individuals with Wilson's disease compared to normal individuals.

**Category:** Clinical Research

**Records:** NMRU-2-TR-422

**Classification:** Unclassified

- L. Submarine Medical Research Laboratory, Groton
- M. Naval Medical Clinic, Annapolis
- N. Naval Hospital, Jacksonville
- O. Naval Hospital, Guam
- P. Naval Hospital, Pensacola
- Q. Naval Hospital, Orlando
- R. Naval Hospital, Memphis
- S. Naval Hospital, Charleston
- T. Naval Hospital, Naples
- U. Naval Research and Development Command
- V. Naval Radiological Defense Laboratory

W Office of Naval Research. A 150 person-day search of 750 cubic feet of records of the Office of Naval Research archived at the Suitland Federal Records Center and National Archives identified the following research projects and proposals from institutions which indicated either actual or intent to use human test subjects. Cases where it was not clear if ONR approved and funded the project or if human subjects were involved are included.

**Study # -ONR-9:** Skin Changes Produced by Low-Voltage Roentgen Ray Irradiation

**Location:** New York University, Bellevue Medical Center

**Date:** 1949-1950

**Primary**

**Researchers:** M. B. Sulzberger

**Sponsors:** Office of Naval Research, Project No. GLB 659

**Human**

**Subjects:** 335

**Purpose:** Retro-spective study of individuals that had received radiation treatments in 1936, 1937, 1938, 1942, and 1943 to see if any and to what extent there had been skin changes or other long term sequela.

**Category:** Clinical Research

**Records:** Notice of Research Project, Bio-Medical Sciences Information Exchange, 1950

**Classification:** Unclassified

**Study # -ONR-13:** Functional Venography of the Lower Extremities

**Location:** Departments of Surgery and Radiology, Indiana University Medical Center, Indianapolis, Indiana

**Date:** March 1954

**Primary**

**Researchers:** Harris B. Shumacker, Jr, Thomas C. Moore and J. A. Campbell

**Sponsors:** Office of Naval Research & University of Indiana

**Human**

**Subjects:** 115 (23 controls and 92 patients)

**Purpose:** To study the pathophysiology of venous disorders of the lower extremities. Different contrast media were used to evaluate distribution patterns and efficiency. X-rays were taken to see the distribution of the contrast media.

**Category:** Clinical Research

**Records:** Shumacker, Harris B., Moore, Thomas C, Campbell, J. A., Functional Venography of the Lower Extremities, Surgery, Gynecology and Obstetrics, March, 1954, Vol. 98, 257-272

**Classification:** Unclassified

**Study # -ONR-14:** Immunologic Studies on Red Blood Cells

**Location:** Strong Memorial Hospital, University of Rochester  
Rochester, New York

**Date:** September 1946-May 1951

**Primary**

**Researchers:** Lawrence E. Young

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** 37 patients

**Purpose:** To study the immunologic mechanisms by which red blood cells are destroyed in human beings and in dogs.

**Category:** Clinical Research

**Records:** 8 March 1949 Progress Report, Contract N6ori-126  
3 February 1949 Progress Report, Contract N6-ori-126  
31 August 1948 Progress Report, Contract N6-ori-126  
1 January 1948 Progress Report, Contract N6-ori-126  
28 December 1946 Progress Report, Contract N6-ori-126

Young, L. E., Platzer, R. F., and Rafferty, J. A. Differential Agglutination of Human Erythrocytes; Evaluation of Technique, *J. Lab. and Clin. Med.* 32:489, 1947.

Young, L. E., Davis, R. W., and Hogestyn, J., Simplified Equipment for Determination of Urobilinogen in Urine and Stool *J. Lab. and Clin. Med.*

Young, L. E. Hemolytic Disorders: Recent Advances in Diagnosis, Prevention and Treatment. *New York State J Med.* 47:1875, 1947

Stewart, W. B., Stewart, J. M., Izzo, M. J., and Young, L. E., Determinations of Osmotic and Mechanical Fragilities of Tagged Dog Erythrocytes of Approximately Known Ages. *Federation Proceedings.*

Young, L. E., Platzer, R. F., Yuile, C. L., and Woodruff, R. F., Recovery of Group O Recipient after Transfusion of Two Liters of Group A Blood, *Amer. J. Clin. Path.* 17:777, 1947

Strong Memorial Hospital Ltr dtd 19 May 1951, with Copy of  
Manuscripts, Hereditary Spherocytosis I and II, accepted for publication in  
Blood.

**Classification:** Unclassified

**Study # -ONR-15:** Research On Procedures for the Low-Temperature Preservation of Blood

**Location:** Research Laboratory, Linde Company, Division of Union Carbide;  
VA Hospital, Buffalo, NY  
Roswell Park memorial Institute

**Date:** 1963

**Primary**

**Researchers:** Rinfret, A. P., Bloom, M. L., Kibler, R. S.

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** 3 possibly more.

**Purpose:** To develop improved methods of freezing, storing and reconstituting red blood cells for use in transfusions.

**Category:** Clinical Research

**Records:**

Bimonthly Progress Report No. 2, Research on Procedures for the Low-Temperature Preservation of Blood, Contract No. Nonr-3003(00), May 1963

Bimonthly Progress Report No. 3, Research on Procedures for the Low-Temperature Preservation of Blood, Contract No. Nonr-3003(00), July 1963

Bimonthly Progress Report No. 4, Research on Procedures for the Low-Temperature Preservation of Blood, Contract No. Nonr-3003(00), August 1963

Bimonthly Progress Report No. 5, Research on Procedures for the Low-Temperature Preservation of Blood, Contract No. Nonr-3003(00), November 1963

**Classification:** Unclassified

**Study # -ONR-16:** Analysis of Erythrocyte Survival Curves Obtained Simultaneously by Cr-51 and an Automated Differential Agglutination Technic

**Location:** Boston University Medical Center, Boston  
Naval Blood Research Laboratory, Chelsea, Massachusetts

**Date:** August 1969

**Primary**

**Researchers:** Szymanski, I. O., and Valeri C. R.

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** 19

**Purpose:** Using both a radioactive chromium and an automated differential agglutination technic donor erythrocyte survivals were measured in 19 subjects to determine the presence of age-dependent and random destruction.

**Category:** Clinical Research

**Records:** Szymanski, I. O., and Valeri C. R., Analysis of Erythrocyte Survival Curves Obtained Simultaneously by Cr-51 and an Automated Differential Agglutination Technic, Transfusion, Vol 10, No. 6, Nov.-Dec. 1970 pgs 287-297

**Classification:** Unclassified

**Study # -ONR-17:** Lifespan of Preserved Red Cells

**Location:** Boston University Medical Center, Boston  
Naval Blood Research Laboratory, Chelsea, Mass

**Date:** 1971

**Primary**

**Researchers:** I. O. Szymanski and C. R. Valeri

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** 39 patients with traumatic injuries or carcinoma.

**Purpose:** To evaluate and study the long-term red blood cell survival of transfused blood as a function of method of preservation, preservation and health of the patient.

**Category:** Clinical Research

**Records:** Szymanski, I. O., and Valeri, C. R., Lifespan of Preserved Red Cells, Vox Sanguinis. 21: 97-108 (1971)

**Classification:** Unclassified

**Study # -ONR-18:** The Relation Between Response to Hypotonic Stress and the Cr-51 Recovery In Vivo of Preserved Platelets

**Location:** Naval Blood research Laboratory, Chelsea, Massachusetts

**Date:** 1974

**Primary**

**Researchers:** C. R. Valeri, H. Feingold, and L. D. Marchionni

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** 26

**Purpose:** Examined platelet response to hypotonic stress to estimate the Cr-51 recovery in vivo of liquid- and freeze-preserved platelets. This simple in vitro test was examined to see if it may prove helpful in determining and controlling the quality of preserved platelets.

**Category:** Clinical research.

**Records:** C. R. Valeri, H. Feingold, and L. D. Marchionni, The Relation Between Response to Hypotonic Stress and the Cr-51 Recovery in Vivo of Preserved Platelets, Transfusion, Vol. 14, No. 4, July-Aug. 1974

**Classification:** Unclassified.

**Study # -ONR-19:** Research on the Production of Clinical Roentgenograms by Means of Compact Radioactive X-ray and Gamma-ray Sources

**Location:** Ohio State University

**Date:** Unknown

**Primary**

**Researchers:** Harry D. Spangenberg, Dr. M. L. Pool, and Elizabeth Clay  
Howard Scholar

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** To investigate the production of clinical roentgenograms by means of compact radioactive x-ray and gamma-ray sources

**Category:** Clinical Research

**Records:** Notice of Research Project, Bio-Sciences Information Exchange,  
Smithsonian Institution, GLJ 35

**Classification:** Unclassified

**Study # -ONR-20:** Endocrine Interrelations in Man's Metabolic Response to Trauma

**Location:** Samuel C. Harvey Metabolic Unit, Department of Surgery, Yale University School of Medicine, New Haven, Connecticut

**Date:** 1956-1960

**Primary**

**Researchers:** Mark Hayes

**Sponsors:** Office of Naval Research, Contract No. NONR-609 (10)  
Josiah Macy Jr. Foundation  
Public Health Service

**Human**

**Subjects:** 137 Patients

**Purpose:** To determine whether other endocrine glands are involved by depression or activation of function in man's metabolic response to trauma; to evaluate the activity of other endocrine glands in relation to the adrenal cortex as to how the metabolic response of the latter may be modified. To determine alterations in normal convalescence and in the period after trauma that are not characterized as part of the endocrine response to trauma.

**Category:** Clinical Research

**Records:**

Goldenberh, I. S., Lutwak, L., Rosenbaum, P. J., and Hayes, M. A., Thyroid activity During Operation, Surgery, Gynecology & Obstetrics, February 1956, Vol. 102, 129-133

The Effect of Operative Trauma on the Utilization of Thyroid Hormone, Surgery, Gynecology & Obstetrics: 1957: 104, 295-298

Endocrine Responses During Operative Procedures., Annuals of Surgery, 1959, 150: 196

A Study of alterations in Gastrointestinal Absorptive Mechanisms after Operation and Trauma, Surgery, Gynecology & Obstetrics, 1959, 109: 762

Urinary 17-Ketosteroids in Surgical Stress, J.C.E.M. 1959, 19: 849

Annual summary Report, NR 105057, Contract Number NONR-609 (10)

Annual Summary Report, 1959-1960, Submitted 10 January 1960, NR 105057  
Contract No. NONR-609 (10)

Annual Summary Report, NR 105057, Contract # Nonr-609 (10), 1956

Yale Ltr dtd 1 February 1961 requesting continuation of funding for NR 105057  
Contract Number: Nonr-609 (10)

**Classification:** Unclassified

**Study # -ONR-21:** A study of the Prevalence and Severity of Thyroid Deficiency in Young and Mature Adult Males

**Location:** University of Southern California, Los Angeles, CA

**Date:** February 10, 1955

**Primary**

**Researchers:** Paul Starr, M.D

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown (Research proposal, unknown if approved.)

**Purpose:** To study the prevalence and severity of thyroid deficiency in young and mature adult males. Former determinations were made with the basal metabolic rate test which has been found to conceal hypothyroidism. Hypothyroidism is a prime cause of mental sluggishness, poor memory, fatigability, feeble response to stress and prolonged production of vascular and parenchymatous degeneration. Hypothyroidism is not recognized in routine physical examinations but is completely correctible by treatment

**Category:** Clinical research.

**Records:** Application for Research Grant, 10 February 1955

**Classification:** Unclassified

**Study # -ONR-22:** The Physiologic Effects of Hypometabolism Upon cardiovascular Dynamics in Patients with Cardiac Insufficiency.

**Location:** New York Hospital-Cornell Medical Center

**Date:** 1955-57

**Primary**

**Researchers:** David V. Becker, M.D.

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown. Proposal states less than 20 would be needed. Also unknown if proposal was approved.

**Purpose:** To explore the physiological, hemodynamic, metabolic and clinical effects of radioiodine induced hypometabolism in patients with intractable congestive failure.

**Category:** Clinical Research.

**Records:** Research proposal: The physiologic effects of hypometabolism upon cardiovascular dynamics in patients with cardiac insufficiency..

**Classification:** Unclassified.

**Study # -ONR-23:** Radiation Injury to the Capillary Wall

**Location:** Harlem City Hospital, New York 30, N Y.>

**Date:** June 1950

**Primary**

**Researchers:** Isidore Arons

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** 16

**Purpose:** To study injury to the capillary system to see if there is some way to protect it from radiation injury. Ltr includes discussion of clinical results at Harlem City Hospital, N.Y., including names of the patients. It is not clear if the clinical trials are part of the ONR funded research.

**Category:** Clinical Research.

**Records:** July 1950 Boris Sokoloff, Florida southern College, Ltr to Dr. F. H. Quimby, Office of Naval Research, RE: approval of project titled "Radiation Injury to the Capillary Wall".

**Classification:** Unclassified.

**Study # -ONR-24:** Determination of the Effect of High dosage Betatron Irradiation to the Pituitary and Hypothalamus in Man"

**Location:** Sloan-Kettering Institute for Cancer Research, NY, NY

**Date:** 11 March 1955

**Primary**

**Researchers:** Dr. Min-Chiu Li and O. H Pearson

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** To study the effect of high dosage betatron irradiation to the pituitary and hypothalamus. If high dose irradiation is effective at ablation then it would be preferable to the high morbidity incurred with surgical hypophysectomy

**Category:** Clinical Research

**Records:** ONR NY ltr to Chief of Naval Research enclosing a proposal from Sloan-Kettering Institute.

**Classification:** Unclassified

**Study # -ONR-25: A Study of Cellular Biochemistry in Surgical Patients**

**Location:** Massachusetts General Hospital, Harvard Medical School,  
Boston, Mass

**Date:** 30 April 1947

**Primary**

**Researchers:** Oliver Cope and Francis D. Moore

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** 82

**Purpose:**

- 1 To study renal excretion of K-42 and determine a measure of the state of potassium metabolism at the time of injection of the isotope.
2. To study the ratios of potassium in tissues and body fluids.

**Category:** Clinical Research

**Records:**

Office of Naval Research Contract N5-ori-76 Progress Report, A Study of Cellular Biochemistry in Surgical Patients, Oliver Cope and Francis D. Moore dtd 1947

Office of Naval Research Contract N5-ori-76 Progress Report, A Study of Cellular Biochemistry in Surgical Patients, Oliver Cope and Francis D. Moore dtd 15 January 1948

**Classification:** Unclassified

**Study # -ONR-26:** Intracellular Changes in Trauma, Depletion and Repair with Special Reference to Burns

**Location:** Department of Surgery of the Harvard Medical School at the Massachusetts General Hospital

**Date:** 29 July 1953

**Primary**

**Researchers:** Drs. Raker and Rovit, Dr. Nardi; Drs. Raker and Minor

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** 116

**Purpose:** To study the intracellular changes in trauma, depletion and repair to determine better ways to treat burn patients.

**Category:** Clinical Research

**Records:**

Semi-Annual Progress Report, N5-ori-76, Project XIII,  
Intracellular Changes in Trauma, Depletion and Repair with Special Reference to Burns, 29 July 1953

Quinby, W. C., Jr., and Cope, O.: Blood Viscosity and the Whole Blood Therapy of Burns. *Surgery* 32:316, 1952

Wight, A., Raker, J. W., Merrington, W. R., and Cope, O.: The Ebb and Flow of the Eosinophils in the Burned Patient and Their Use in the Clinical Management. *Ann. Surg.* 137:165, 1953

Cope, O., Nardi, G. L., Quijano, M., Rovit, R. L., Stanbury, J. B., and Wight, A.: Metabolic Rate and Thyroid Function Following Acute Thermal Trauma in Man. *Ann. Surg.* 137:165, 1953

**Classification:** Unclassified

**Study # -ONR-27: Urology and Renal Physiology**

**Location:** Tulane University School of Medicine, Department of surgery,  
Division of Urology, New Orleans, Louisiana

**Date:** 1963-1965

**Primary**

**Researchers:** J. U. Schlegel and Jack E Mobley

**Sponsors:** Office of Naval Research  
Public Health Service

**Human**

**Subjects:** 4

**Purpose:** To better understand the function of the kidney and to evaluate the  
viability of kidney transplants.

**Category:** Clinical Research

**Records:**

Mobley, J. E., Schlegel, J. U.,: Radiohippuran accumulation in the transplanted  
kidney as a signal of rejection, Surgery, St. Louis, Vol 58, No. 5, Pages 815-818

J. U. Schlegel: Therapeutic application of Renal Physiology, Journal of the  
Arkansas Medical Society, Vol 59, No. 9, February, 1963

Schlegel, J. U.: Urology and Renal Physiology, Journal of the Louisiana State  
medical society, Vol. 115, No. 12, PP. 401-405, December, 1963

**Classification:** Unclassified

**Study # -ONR-28:** An evaluation of Rapid weight Reduction in Obesity; Body Composition During Therapy in diabetes Mellitus

**Location:** University of California San Francisco Medical Center, San Francisco,  
CA  
Naval Hospital Oakland, Oakland CA

**Date:** 1966-1967

**Primary**

**Researchers:** R. L. Abrams, R. L. Piscatelli, G. M. Cerchio

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** To study radio potassium and radio thyroxine turn-over in obesity and changes in body composition during weight reduction in obesity. In addition, patients with non-insulin-dependent diabetes mellitus (obese and non-obese) will be studied in order to define the course of changes in body composition during therapy in diabetes mellitus.

**Category:** Clinical Research

**Records:** University of California San Francisco Medical Center, San Francisco, CA, School of Medicine department of Medicine: Joint Operation of clinical Investigation Center by the Department of Medicine, University of California, San Francisco Medical Center and the staff of the Naval hospital, Oakland. Annual summary Report for period 1 October 1966 to 30 September 1967, Contract Number: Nonr-222(51), NR 105 156

**Classification:** Unclassified

**Study # -ONR-29: Clinical Studies on the Use of PVP Preserved Blood**

**Location:** Presbyterian Medical Center, San Francisco  
Children's Hospital, San Francisco

**Date:** 1963-1964

**Primary**

**Researchers:** Victor Richards

**Sponsors:** Office of Naval Research, Research Contract ONR 4039(00)  
Public Health Service, Research Grant (HE 05652)

**Human**

**Subjects:** Unknown, 25-50

**Purpose:** To evaluate the clinical use of blood frozen and preserved by the Linde method employing polyvinylpyrrolidone as the preservative to freezing.

**Category:** Clinical Research

**Records:**

V. Richards Ltr dtd 20 July 1963 to Joseph Saunders, Office of Naval Research discussing progress report on research being conducted in Wisconsin under the direction of Dr. Bjorsten.

Annual report: Clinical Studies on the use of PVP Preserved Blood, Contract No. NONR-4039(00) dtd 14 January 1964

Proposal for Clinical Studies on PVP Preserved Blood, dtd 13 August 1962

V Richards Ltr dtd 6 April 1964 to Col. H. W. Whitcher, Royal Army Medical College, Millbank, London S. W 1, England

Clinical Studies on the Use of PVP Preserved Blood, No date

Effect of Polyvinyl Pyrrolidone on Plasma Coagulation Factors, Herbert A Perkins, Mary R. Rolfs, Caroline Thacher and Victor Richards

**Classification:** Unclassified

**Study # -ONR-30:** The Study of the Plasma Substitute, Dextran

**Location:** Unknown

**Date:** 1951

**Primary**

**Researchers:** Joan Humphrey-Long, M.D.

**Sponsors:** Office of Naval Research, Contract NR 102-043, Nonr-211(00)

**Human**

**Subjects:** 47 patients

**Purpose:** To study the use of Dextran as a plasma substitute and its effect on blood pressure, venous pressure, pulse and changes in plasma volume.

**Category:** Clinical Research

**Records:** Application for renewal of Naval Research Grant NR 102-043,  
Contract Nonr-211(00)

**Classification:** Unclassified

**Study # -ONR-31:** Distribution and Turnover of Sodium and Potassium in Acute Infections

**Location:** Wake Forest College

**Date:** May 1948

**Primary**

**Researchers:** Dr. George T. Harrell

**Sponsors:** Office of Naval Research, Contract No. NR 171 677

**Human**

**Subjects:** Unknown

**Purpose:** To study the distribution and turnover of sodium and potassium in acute infections.

**Category:** Clinical Research

**Records:** Procurement Justification, Office of Naval Research, NR 171 677 Contract to Wake Forest College. Re: Distribution and Turnover of Sodium and Potassium in Acute Infections.

**Classification:** Unclassified

**Study # -ONR-32:** Investigation of Protein Synthesis by Use of the Isotope N-15

**Location:** Tulane University

**Date:** 1948

**Primary**

**Researchers:** Unknown, Cooperation with Dr. William Parson

**Sponsors:** Office of Naval Research (Unknown if work was funded. Abstract based on research proposal.)

**Human**

**Subjects:** Unknown

**Purpose:** To continue and enlarge an investigation in protein metabolism.

**Category:** Clinical research.

**Records:** Research Proposal for the Investigation of Protein Synthesis by Use of the Isotope N-15, 1948

**Classification:** Unclassified

**Study # -ONR-33:** The Investigation of the Biological Effects of Radioactive Sulfur

**Location:** Harvard Medical School

**Date:** 1947

**Primary**

**Researchers:** Dr. R. H. Williams, Dr H. Jaffe

**Sponsors:** Office of Naval Research (Unknown if work was funded Abstract based on research proposal.)

**Human**

**Subjects:** Unknown

**Purpose:** To study: (a) the effects of S-35 irradiation in the body, (b) its usefulness in the treatment of hyperadrenocorticism and hypertension, and (c) its aid in studying fundamental aspects of sulfur metabolism.

**Category:** Clinical research.

**Records:** Application for Aid in the Investigation of the Biological Effects of Radioactive Sulfur

**Classification:** Unclassified

**Study # -ONR-34:** The Study of Hemorrhagic Tendencies of Irradiated Subjects

**Location:** Northwestern University

**Date:** Circa 1948-50

**Primary**

**Researchers:** Dr. Everett F. Davis

**Sponsors:** Office of Naval Research, Project No GLB 745

**Human**

**Subjects:** Unknown

**Purpose:** To study the hemorrhagic tendencies of irradiated subjects

**Category:** Clinical research.

**Records:** Notice of research Project, Medical sciences Information Exchange,  
National Academy of Sciences-National Research Council

**Classification:** Unclassified

**Study # -ONR-35:** Study of Treatment of Neoplasm by Direct Infiltration with Radio-active Colloids

**Location:** Meharry Medical College, Nashville, Tenn

**Date:** 1948-1949

**Primary**

**Researchers:** Dr Paul F. Hahn

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** To develop a treatment for tumors.

**Category:** Clinical Research

**Records:** Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution. Study of Treatment of Neoplasm by Direct Infiltration with Radio-active Colloids GLB 650

**Classification:** Unclassified

**Study # -ONR-36:** Radio-Autographs

**Location:** Ohio state University, Columbus, Ohio

**Date:** 1948-1951

**Primary**

**Researchers:** M. L. Pool

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** To investigate the effect of strong magnetic fields in increasing the resolution of radio autographs.

**Category:** Unknown (This may have been animal work but can't tell from the write-up. However, auto-radiographs are only used in animal work.)

**Records:** Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 604, Radio-Autographs

**Classification:** Unclassified

**Study # -ONR-37:** Blood Flow Volume in Kidney and Liver

**Location:** University of North Carolina

**Date:** 1948-1950

**Primary**

**Researchers:** H. D. Bruner

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** To measure the volume flow of blood in the kidney and liver of unanesthetized man by the use of radioisotope procedures.

**Category:** Clinical research

**Records:** Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 601, Blood Flow Volume in Kidney and Liver

**Classification:** Unclassified

**Study # -ONR-38:** Response of Cells (Desquamate) to Deep Radiation

**Location:** Massachusetts General Hospital, Boston, Mass.

**Date:** 1948-1949

**Primary**

**Researchers:** Dr. J. V. Meigs

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** Unknown

**Category:** Unknown

**Records:** Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 556, Response of Cells (Desquamate) to Deep Radiation.

**Classification:** Unclassified

**Study # -ONR-39:** The Use of I-131 in Treatment of Heart Diseases and Long Term Radiation Effects of I-131 in Man

**Location:** Beth Isreal Hospital, 330 Brookline Avenue, Boston, Mass.

**Date:** 1947-1952

**Primary**

**Researchers:** Dr. Herrman L. Blumgart, A Stone Freedberg, Dr. George S Kurland

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** Studies have been undertaken to establish:

1. The dosage range of I-131 possible without functional or anatomic changes in the thyroid gland.
2. The dosage range producing functional and anatomic changes but associated with reversible phenomena.
3. The dosage range producing permanent functional and pathologic change.
4. The functional and pathologic changes produced in other organs by I-131.

**Category:** Clinical Research

**Records:** Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 294, The Use of I-131 in Treatment of Heart Diseases and Long Term Radiation Effects of I-131 in Man

**Classification:** Unclassified

**Study # -ONR-40:** Mass Spectrometer Development and Application

**Location:** Department of Physics Tulane University, New Orleans

**Date:** 1947-1958

**Primary**

**Researchers:** R. T. Nieset

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** By use of N-15, rates of nitrogen utilization as a function of nitrogen intake and as influenced by ACTH and testosterone in normal man and in some cases of Addison's Disease are studied.

**Category:** Clinical Research

**Records:** Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 228

**Classification:** Unclassified

**Study # -ONR-41:** A Study of the Effects of Radiation on the Microscopic Vascular Supply of Various Organs of the Body by Means of Microradiography

**Location:** Caylor-Nickel clinic 303 south Main Street Bluffton, Indiana

**Date:** Circa 1947-50

**Primary**

**Researchers:** Dr. Wallace S. Tirman

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** Study microscopic vascular changes due to irradiation.

**Category:** Clinical Research

**Records:** Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 120

**Classification:** Unclassified

**Study # -ONR-42:** X-ray Camera for Use on Human Centrifuge

**Location:** Johns Hopkins University, Baltimore, MD

**Date:** 1949-1952

**Primary**

**Researchers:** Dr. R. H. Morgan  
Dr. A. E. Ruark

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** To x-ray individuals while actively on a centrifuge.

**Category:** Clinical Research

**Records:** Notice of Research Project, Bio-Sciences Information Exchange,  
Smithsonian Institution, GLB 915

**Classification:** Unclassified

**Study # -ONR-43:** The Use of the Artificial Kidney in Human Patients

**Location:** University Hospitals of Cleveland

**Date:** 1953

**Primary**

**Researchers:** Dr. William E Abbott, Jack Leonards, Ph.D., Harvey Krieger, M.D., William MacIntyre, Stanley Levey

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** Application and evaluation of the Skeggs-Leonard artificial kidney.

**Category:** Clinical Research

**Records:** Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLB 820

**Classification:** Unclassified

**Study # -ONR-44:** Oral and Alimentary Effects of Ingestion of Radioactive Elements

**Location:** George William Hooper Foundation, College of Dentistry, University of California, San Francisco, CA

**Date:** 1950-53

**Primary**

**Researchers:** Dr. Hermann Becks

**Sponsors:** Office of Naval Research

**Human**

**Subjects:** Unknown

**Purpose:** To study local and systemic effects of irradiation of the alimentary canal and oral cavity, to include description of gross pathological changes, histopathological changes, biochemical analysis of gastric, and intestinal and salivary secretions.

**Category:** Clinical Research

**Records:** Notice of Research Project, Bio-Sciences Information Exchange, Smithsonian Institution, GLJ 8 C1, NR 182-008

**Classification:** Unclassified

**F. Notices of Research Projects:** The search of the Office of Naval Research archives at Suitland Maryland identified 1,018 "Notice of Research Project" announcements for the late 1940s and early 1950s time-frame. A few of the notices reflect Navy extra-mural research but most reflect work funded by other agencies and private foundations. The notices are indexed below and copies are attached.

U S Navy, Office of Naval Research (USN-ONR)

- USN-1 X-ray camera for use on human centrifuge, 1952.
- USN-2 The Use of the Artificial Kidney in Human Patients, (GLB 820) 1953.
- USN-3 The Study of hemorrhagic tendencies of irradiated subjects, (undated)
- USN-4 Skin changes produced by low voltage roentgen ray irradiation, 1950.
- USN-5 Study treatment of neoplasm by direct infiltration with radioactive colloids, 1949.
- USN-6 Radio-Autographs, (GLB 604) 1951
- USN-7 Blood Flow in kidney and liver, 1950.
- USN-8 Response of cells (desquamate) to deep radiation, (GLB 556) 1949.
- USN-9 The use of I 131 in Treatment of Heart Diseases and Long Term Radiation Effects of I 131 in Man, (GLB 294) 1952.
- USN-10 Mass Spectrometer Development and Application, (GLB 228 C9) 1958.
- USN-11 A study of the effects of radiation on the microscopic vascular supply of various organs of the body by means of microradiography, (undated)
- USN-12 Research on the production of clinical roentgenograms by means of compact radioactive x-ray and gamma-ray sources, (undated)
- USN-13 Oral and alimentary effects of ingestion of radioactive elements, 1954.

United States Air Force (USAF)

- USAF-1 Studies of fat metabolism utilizing C14 labeled fatty acids.  
1952-1955
- USAF-2 The Effect of Environmental Factors on the Metabolism of Plasma

- Proteins using C14 & S35 labeled Amino Acids. 1952-1956
- USAF-3 Study of Intellectual etc. Abilities Following Radio-Therapy. 1951-1954
- USAF-4 Bone Marrow and Radiation Sickness, 1951.
- USAF-5 Metabolism of Radioactive Ascorbic acid and its relation to adrenal cortical responses, 1953.
- USAF-6 Effects of irradiation of P32 uptake by bone marrow, 1954

United States Army (USA)

- USA-1 A Study to Correlate Total Body Radiation in Humans with Bone Marrow Depression as Reflected by the Plasma Iron Turnover Rate. 1952
- USA-2 A Study of the Effects of Total and Partial Body Radiation on Iron Metabolism and Hematopoiesis. 1954-1955 GF-428, 1953-1956 GF-428 C2, 1953-1956 GF-428 C1
- USA-3 Study of the Post-Irradiation Syndrome in Humans. 1954-1955
- USA-4 Isotopically Labeled Intermediates of Red Blood Cell Metabolism. 1955-1957 GF 611, 1955-1957 GF611 C1
- USA-5 Studies on Lipid Metabolism Using C14 Labeled Materials. 1955-1956
- USA-6 To Study the Post-Irradiation Syndrome in Humans. 1955-1956
- USA-7 Investigation of a Human Brain Extract in the treatment of Thrombocytopenic States. 1956
- USA-8 Study of Platelet Physiology. 1956
- USA-9 A Proposal for the study of C14 Labeled Blood Substitutes. 1952-1955 GF10425
- USA-10 Ionization effects on experimental animals and human subjects. 1950-1956
- USA-11 Observations of Radiobiological Effects in Animals and Humans

1951-1957 GF191, GF191 C3 & C4 1951-1957

USA-12 A Proposal for the Study of C14 Labeled Blood Substitutes. 1951-1952  
GF236

Veterans Administration (VA)

- VA-1 Further Investigations of the Use of Silver-Coated Radioactive Gold Colloid Administered Intrapleurally following Lobectomy and Beneath the Mediastinum Following Pneumonectomy 1956
- VA-2 The Measurement of Body Potassium by the Use of Tracer Doses of Radioactive Potassium. 1953
- VA-3 Uric Acid Metabolism in Cancer Patients. 1955
- VA-4 Investigation of the Blood-encephalic Barrier. 1952
- VA-5 Effective Half-life of Gamma Globulin in Prematurely Born Infants. 1955
- VA-6 Use of isotopic iron in study of familial hemochromatosis. 1954
- VA-7 The Effect on Thyroid Function of Para-amino Salicylic Acid as administered to patients with chronic Pulmonary Tuberculosis. 1954
- VA-8 Studies of the effect of intrinsic factors in prevention of dental caries: Methods for quantitative measurement of dentinal maturation. 1955
- VA-9 To investigate the potentialities of radioactive rubidium-86 as a tool for brain tumor localization. 1954
- VA-10 Investigations of the Function of D-amino Acid Oxidase. 1954
- VA-11 Pituitary Growth Hormone Studies in Man. 1955
- VA-12 The treatment of metastatic (to bone) prostatic cancer with P-32 and stilbestrol. 1954
- VA-13 The treatment of Multiple Myeloma with P-32 and testosterone. 1954
- VA-14 The evaluation and possible beneficial effects of I-131 therapy in chronic pulmonary disease. 1955

- VA-15            Determination Life Span: Red Blood Cells. 1955
- VA-16            Red Cell Survival in Polycythemia Vera. 1955
- VA-17            The study of the Permeability of Synovial Membrane in Human Beings Using Radioactive Iodinated Human Serum Albumin. 1956
- VA-18            Study of the Hypometabolic State Induced in Chronic Pulmonary Invalids. 1956
- VA-19            Red Cell Life Span in Cardiac Decompensation. 1956
- VA-20            Neurological Hodgkin's Disease. 1956
- VA-21            Plasma I-131 Concentrations after Oral Administration of I-131 Labeled Albumin. 1956
- VA-22            Tri-iodothyronine and Thyroxine in Serum 1956
- VA-23            Studies in Copper Metabolism. 1956
- VA-24            Concentration of I-131 in Gastric Contents. 1956
- VA-25            Uptake, effective half-life and distribution of precipitated radioactive iodinated human serum albumin (RIHSA). 1954
- VA-26            Lymphatic Drainage of Large Radioactive Particles. 1956
- VA-27            Measurement of the life span of leukocytes. 1954
- VA-28            Mathematical analyses of experimentally determined blood cell life spans 1954
- VA-29            RBC survival of patients with anemia: comparison of Cr-51 tag and Ashby method. 1954
- VA-30            Radioisotopic tagged Coombs serum as a more delicate test of an immune mechanism. 1954
- VA-31            Simultaneous analysis of rates of production and destruction of red cells and plasma clearance using Cr-51 and Fe-59. 1954
- VA-32            Evaluation of Multiple tests of thyroid function in the diagnosis of thyroid disease. 1954.

- VA-33        Studies on the metabolism of serum albumin in the nephrotic stage of glomerulo-nephritis using iodinated human serum albumin. 1955
- VA-34        Treatment of urological tumors by interstitial injection of radioactive chromic phosphate. 1954
- VA-35        *Treatment of unreogical tumors by interstitial injection of radioactive chromic phosphate.* 1956
- VA-36        An investigation of erythrocyte metabolism in Sickle Cell Anemia. 1954
- VA-37        Differential counting of I-131 and Cr-51 in single samples of whole blood. 1954
- VA-38        Determinations of Plasma: Whole Blood Ratios and Volumes by simultaneous counting of I-131 and Cr-51. 1956
- VA-39        Biologic labeling of foodstuffs for the purpose of studying iron absorption in humans: the incorporation of radioiron 59 into chicken eggs. 1954
- VA-40        Biologic labeling of foodstuffs for the purpose of studying iron absorption in humans: the incorporation of radioiron 59 in meats, yeast, and algae. 1954
- VA-41        Biologic labeling of foodstuffs for the purpose of studying iron absorption in humans: the incorporation of radioiron 59 in vegetable greens 1954.
- VA-42        Factors in the absorption of food iron. 1955.
- VA-43        The study of erythropoiesis and iron metabolism with iron 59. 1955
- VA-44        The determination of the presence or absence of intrinsic factor in the gastric juice of normals and in patients with pernicious anemia. 1954
- VA-45        Relationship of blood volume and blood kinetics to body density 1952
- VA-46        The kinetics of I-131 clearance in the dog and the human. 1953.
- VA-47        Determination of total body water using deuterium oxide. 1952
- VA-48        Determination of total body water using deuterium oxide. 1956.
- VA-49        Quantitative evaluation of the radiocardiogram. 1952

- VA-50 The metabolism of C-14 labeled intermediates in human diabetes. 1952.
- VA-51 The reaction of the thyroid gland to stress. 1952
- VA-52 The blood volume in congestive heart failure. 1953
- VA-53 The measurement of body potassium by the use of tracer doses of radioactive potassium. 1954
- VA-54 *The pathologic physiology of the anemia of cancer.* 1953.
- VA-55 A study of the absorption of iron in normal, anemic and hemochromatotic subjects. ZOR-65. 1953
- VA-56 A study of the absorption of iron in normal, anemic and hemochromatotic subjects. ZOR-65 C1. 1954
- VA-57 The blood volume in cirrhosis of the liver. 1953.
- VA-58 Muscular disorders. 1953.
- VA-59 Neuromuscular diseases. 1955.
- VA-60 Jet injection of isotopes. 1953
- VA-61 Protein transfer in cirrhotic patients. 1953
- VA-62 Myelography. 1953
- VA-63 Gall bladder function. 1953
- VA-64 Diagnosis and localization of intracranial neoplasms. 1953
- VA-65 Diagnosis of hepatic neoplasms. 1953
- VA-66 Measurement of thyroid hormone formation using an anionic resin. 1955.
- VA-67 The renal excretion of I-131. 1954
- VA-68 The binding of I-131 by anion exchange resins. 1954
- VA-69 Cardiac output by surface counting of I-131 human serum albumin. 1956.

- VA-70 The determination of I-131 activity in human bile after intravenous administration of tableted thyroxine and triiodothyronine. 1955
- VA-71 Anti-thyroid action of PAS. 1955
- VA-72 Determination of blood volume, using Cr-51, for cardiacs 1954.
- VA-73 Development of a laboratory radioiodine method for the determination of thyroid functional states. 1953
- VA-74 Determination of blood volume, using chromium-51, in malignancies, cardiac and kidney disease. 1952.
- VA-75 The increase of iodine-131 uptake in the thyroid gland induced by hesperidine methyl chalcone. 1953.
- VA-76 Antithyroid action of Phenylbutasone in humans. 1953
- VA-77 Long term effect of ACTH and cortisone on thyroid function 1954
- VA-78 The nature of circulating thyroid hormone in Graves' disease. The study of the circulating hormone under therapeutic doses of radioiodine. 1952.
- VA-79 Directional counters and tumor localization. 1952.
- VA-80 Antithyroid effect of Phenylbutazone. 1953
- VA-81 Localization of brain tumors using radioactive iodine. 1953
- VA-82 The topical application of chromic phosphate (P-32) in gelfoam to post operative brain tumor sites. 1953.
- VA-83 Localization of brain tumors using radioactive phosphorus employing a needle type Geiger counter. ZOR-12. 1953
- VA-84 Localization of brain tumors using radioactive phosphorus employing a needle type Geiger counter. ZOR-12 C1. 1953.
- VA-85 Use of colloidal radioactive chromic phosphate in intracavitary radiation. 1953
- VA-86 Determination of blood volumes in various diseases. 1954
- VA-87 Use of Gold-198 in the treatment for intraperitoneal and intrathoracic radiation. 1953

- VA-88      Use of Gold-198 and chromic phosphate in the treatment of intraperitoneal and intrathoracic metastases. 1954.
- VA-89      The development of a needle size radiation probe for medical studies using cadmium sulphide crystals. 1954.
- VA-90      Turn-over rate of protein in various disease states. 1953.
- VA-91      Phosphorus Metabolism of the Thyroid Gland. 1955
- VA-92      Evaluation of Thyroxine Synthesis as a Diagnostic Aid in Thyroid Dysfunction. 1955
- VA-93      Application of tissue clearance techniques to studies of differential capillary permeability and of capillary filtration. 1953.
- VA-94      Critical evaluation of techniques for the determination of peripheral blood flow and circulation time. 1953
- VA-95      The metabolism of uracil in the human. 1953
- VA-96      The evaluation of colloidal radiochromic phosphate as a radio-therapeutic agent. 1955
- VA-97      Phospholipid turnover rates in coronary heart disease. 1955.
- VA-98      The Effects of Sympathectomy in Peripheral Vascular Disease, a radioisotope study. 1955.
- VA-99      Loci of absorption of Vitamin B12 in Gastrointestinal Tracts of Normal and pernicious Anemia Patients. 1956.
- VA-100     The Relationship of Bacteria to Absorption and Utilization of Vitamin B12, 1956.
- VA-101     Abnormal Hemoglobins in Various Anemias, 1956.
- VA-102     Metabolic Study of Patients with Subtotal Gastrectomy, IIB Protein-Bound Iodine as observed in Patients with Subtotal Gastrectomy, 1956
- VA-103     A study of the Effects of Radiation on Connective Tissue, 1956.
- VA-104     Pulmonary Functions Alteration Secondary to Irradiation of the Lung, 1956.

- VA-105      Red Cell Survival Time in Rheumatoid Arthritis in Untreated and  
Cortisone      Treated Patients, 1956.
- VA-106      Gastro-intestinal absorption of vitamin B12 labeled with radiative cobalt,  
1955
- VA-107      Study of Anemia in Hepatic Cirrhosis, 1956.
- VA-108      Evaluation of technique for determining the presence of hepatic  
metastases of cancer involving the use of I-131 HAS, 1954.
- VA-109      Erythrocyte survival as measured by radioactive chromium technique in  
various hemolytic disorders prior to and following splenectomy, 1954.
- VA-110      Excretion of Antibiotics, by Dyes, and Radioactive Substances, through  
External Pancreatic fistula, 1953.
- VA-111      Studies of Hemolysis Hereditary Spherocytosis, 1953.
- VA-112      Studies of Hemolysis in Leukemia and Lymphoblastoma, 1953.
- VA-113      Modification of Radioactive Chromium Methods of Blood Volume  
Determination and the Application of this technique in various  
disease      states, 1954.
- VA-114      Study of million volt irradiation on the gastrointestinal tract of patients  
receiving such therapy for testicular tumor and its metastases, (GO 1481)  
1952.

The Upjohn Company (UJ)

- UJ-1          Vitamin B-12, 1955

American Medical Association (AMA)

- AMA-1      Localization of Brain Tumors and Localization of Intra-abdominal  
Neoplasms    1955
- AMA-2      Abnormal dentition incidental to therapeutic X-radiation of other  
structures, 1955

- AMA-3 Clearance of radioactively tagged Bengal red by the liver in the diseased state, 1956.
- AMA-4 Absorption of Vitamin B-12 in Man, as measured by fecal excretion of Cobalt-60-labeled vitamin B-12. 1955
- AMA-5 The Effect of Chloride on Iodide Metabolism, 1955

Arthritis and Rheumatism Foundation (ARF)

- ARF-1 Spectrophotometric Determination of Uric Acid and Its Metabolism in Gout. 1953

Jane Coffin Childs Memorial Fund (JCCMF)

- JCCMF-1 The Relationship of Estrogenic Hormones to Cancer in Man and Animals as Studied by the Use of Radioactive Estrogens and Allied Substances. 1951
- JCCMF-2 Adrenal Hyperfunction Including Adrenal Cancer. 1959

Dazian Foundation for Medical Research (DFMR)

- DFMR-1 The Metabolism and Distribution of Iodinated Human Serum Albumin in Patients with Congestive Heart Failure. 1955

Anna Fuller Fund (ANF)

- ANF-1 Radioactive Iodine in Thyroid Cancer in Man. 1953

Life Insurance Medical Research Fund (LIMRF)

- LIMRF-1 Research on Vascular Physiology and Disease, with Special Reference to Total Body Water. 1953
- LIMRF-2 Research on the Earliest Stages of Heart Failure, with Special Reference to the Use of Radioactive Gases. 1951
- LIMRF-3 Research on the Adenosinetriphosphate and Dehydrogenase Systems and on Calcium Metabolism by the Use of Radioactive Tracers. 1949
- LIMRF-4 Radioactive Iodinated Albumin in the Study of the Peripheral Circulation. QD-158. 1953
- LIMRF-5 Radioactive Iodinated Albumin in the Study of the Peripheral Circulation. QD-158 C1. 1953

- LIMRF-6 The Synthesis of Lipids from Isotopically Labeled Acetate. 1954  
LIMRF-7 The Biosynthesis and Metabolism of Radioactively Labeled Ethanolimine.  
1954.

Josiah Macy, Jr. Foundation (JMJ)

- JMJ-1 Development of a "Physiology of Bone" synthesis 1956

John and Mary R. Markle Foundation (JMMF)

- JMMF-1 A physiological evaluation of mitral valve surgery. Physiological studies of congenital heart disease. A study of the ballistocardiogram in congenital heart disease. 1956  
JMMF-2 Man in Various Disease States. 1955  
JMMF-3 The effect of cortisone and ACTH upon intestinal absorption with special reference to fat. 1954

Muscular Dystrophy Association of America, Inc. (MDAA)

- MDAA-1 Biochemistry of muscle in progressive muscular dystrophy. 1956  
MDAA-2 Study Muscle Disorders by Means of Exchangeable Radio-active Potassium Determinations. 1955  
MDAA-3 Studies in Neuromuscular Diseases. 1956  
MDAA-4 Potassium exchange, actomyosin tensile strength; metabolic changes and endocrinological studies on a series of neuromuscular cases. 1953  
MDAA-5 Studies in the Metabolism of Creatine. 1955

National Foundation for Infantile Paralysis (NFIP)

- NFIP-1 To study tissue calcification and decalcification in laboratory animals and human beings with the aid of radiocalcium. 1954 thru 1956  
NFIP-2 To continue to study the effect of poliomyelitis upon the water and electrolyte metabolism of monkeys and humans. Changes in the various fluid

compartments of the body as a whole and of the central nervous system will continued to be studied with a view toward obtaining objective data regarding fluid and electrolyte requirements in acute poliomyelitis. 1951 thru 1955

- NFIP-3 To complete: 1) Laboratory analyses of clinical material from studies now under way and expected to continue through April, 1950, and rechecking pertinent analyses of material accumulated from the studies of the past three and one-half years; 2) preparation for publication of the extensive data of the work of the past three and one-half years; and 3) the studies of circulation by the radio-sodium technique, enabling the measurement of circulation in muscle and evaluation of the effects of various therapeutic measures and procedures upon intramuscular circulation. 1946 thru 1956
- NFIP-4 To investigate the rate of movement of isotopes inside nerve axons. 1951
- NFIP-5 To continue to study the effect of poliomyelitis upon the water and electrolytes metabolism of monkeys and humans, 1951 thru 1955.
- NFIP-6 To investigate the rate of movement of isotopes inside nerve axons, 1951.
- NFIP-7 The studies of circulation by the radio-sodium technique, enabling the measurement of circulation in muscle and evaluation of the effects of various therapeutic measures, 1946 thru 1956.
- NFIP-8 To attempt to prepare a vaccine against poliomyelitis with the ultraviolet irradiation method, 1948 thru 1949.
- NFIP-9 To attempt to prepare a vaccine against poliomyelitis with the ultraviolet irradiation method. 1948 thru 1949

National Vitamin Foundation, (NVF)

- NVF-1 Relationship of vitamin B12 and experimental amyloidosis: Intracellular localization of Co 60 labeled in vitamin B12.

Sugar Research Foundation, Inc., (SRF)

SRF-1 To study the possible effect of sugar in preventing liver cirrhosis as a result of special diets and to utilize radio-active sugars in tracing the disposition of sugars in the animal body, 1945 thru 1948.

American Urological Research Foundation (AUR)

AUR-1 Treatment of urological tumors by interstitial injection of radioactive chromium phosphate, 1955.

Foundation Fund for Research Psychiatry (FFRP)

FFRP-1 Interdisciplinary Research Program in Psychiatry, 1955.

FFRP-2 Interdisciplinary Research Program on Non-Conformist Behavior, 1954 thru 1958.

Whitney (Helen Hay) Foundation, (WF)

WF-1 Studies on the participation of the tissues in red cell destruction, 1954 thru 1957

Damon Runyon Memorial Fund (DRMF)

DRMF-1 Localizing the effects of radioisotopes by intra-arterial and intra-cavitary administration. 1951 thru 1956

DRMF-2 1) Practical Physical Aspects in the Use of Radio-active Cobalt<sup>60</sup> as a Radium Substitute.  
2) Determination of Blood Loss in Radical Surgery for treatment of various types of malignant disease.  
1951 thru 1952

DRMF-3 Development of practical methods for determining dosage to the tumor in radiation therapy. 1951 thru 1952

DRMF-4 Clinical Research in Malignant Problems in Children. 1951 thru 1952

- DRMF-5 Relationship of Steroid Changes to Therapeutic Response with Hormone Therapy and Radiation Therapy in Female Mammary Carcinoma. 1951 thru 1953
- DRMF-6 A comparison of the Biological Effects on Rabbits skin of Co 60 radiation as compared with Radium, 1951 thru 1952
- DRMF-7 Evaluation of the Relative Biological Effect of Radium and Cobalt Radiation on Normal Rabbit Skin, 1950 thru 1951.
- DRMF-8 Studies on the growth of embryonic and neoplastic tissue; Effects of steroids, metabolism of electrolytes and nitrogen and application of isotopes. 1950 thru 1952.
- DRMF-9 Co 60 Irradiator - designing, construction, testing, and investigation of clinical applications. 1950 thru 1954.
- DRMF-10 A 1000 Curie Cobalt 60 Irradiator, 1950 thru 1951.
- DRMF-11 Steroid Metabolism Studies, 1950 thru 1951.
- DRMF-12 Steroid Metabolism, Especially in Relation to Cancer, 1950 thru 1951
- DRMF-13 The therapeutic management of carcinoma of the thyroid with radioactive iodine (I 131.) QU 42 C1, 1949 thru 1950.
- DRMF-14 The therapeutic management of carcinoma of the thyroid with radioactive iodine, QU 42, 1949 thru 1950
- DRMF-15 Physiological and Biochemical studies of cancer, 1949 thru 1953.
- DRMF-16 Proteolytic and Anti proteolytic Enzyme System in the Blood of animals and Humans with special reference to their changes in patients with tumors, 1949 thru 1951.
- DRMF-17 Effect of radioactive alloxan on Pancreatic islet tissue, 1951 thru 1952.
- DRMF-18 Physiological and Biological Characteristics of tumors and agents influencing them, 1948 thru 1950.
- DRMF-19 Radioactive iodine in the treatment of metastatic carcinoma of the thyroid, 1948 thru 1949.
- DRMF-20 Study of growth in normal and malignant tissue using radioactive labeled amino-acids, 1948 thru 1949.

- DRMF-21 The use of Co 60 in Gamma Ray Therapy, 1948 thru 1949.
- DRMF-22 Application of radioactive Isotopes to the diagnosis and treatment of cancer. 1947 thru 1948.
- DRMF-23 Studies on the use and metabolism of radio-isotopes in malignant diseases, 1950 thru 1956.
- DRMF-24 Studies on the Use and Metabolism of Radio-isotopes in malignant diseases, (undated)
- DRMF-25 Protein metabolism in ascites tumor cells, 1955 thru 1965.
- DRMF-26 Chemotherapeutics: The localization of Radioactive compounds, 1955 thru 1957.
- DRMF-27 In-Vivo Radiation Dosimetry by the Use of Radiophotoluminescent implants, 1954 thru 1955.
- DRMF-28 Nucleic Acid Metabolism of Thyroid Cell and other cells in secretion and regeneration, 1955.
- DRMF-29 Incidence of in situ cancer of the lung in males and the relative concentration of protein in cancer in situ cells of the human cervix as compared to normal cells, 1955 thru 1956.
- DRMF-30 Pulmonary function in Radiation Fibrosis, 1953 thru 1955.
- DRMF-31 Investigation of the Transplantation of Tumors into the fungi of the eye, 1953 thru 1955.
- DRMF-32 Metabolic studies in cancer patients, 1954.
- DRMF-33 Combination of chemotherapy in cancer, 1953 thru 1956.
- DRMF-34 Evaluation of diagnostic radioisotope procedures in brain tumors, 1953 thru 1955
- DRMF-35 Practical adaptation of graphics in localizing radium implants. 1952 thru 1953.
- DRMF-36 Turnover of plasma proteins in human subjects, 1952 thru 1953
- DRMF-37 Studies to evaluate role of high energy radiation in cancer treatment , 1953 thru 1956.

- DRMF-38 Studies to evaluate role of high energy radiation in cancer treatment, (QU 226 C2) 1956.
- DRMF-39 Studies on Serum iodine and on serum protein in relation to thyroid function and to treatment with radioiodine, (QU 218 C3) 1952 thru 1956.
- DRMF-40 Studies on serum iodine and on serum protein in relation to thyroid function and to treatment with radiation, (QU 218 C2) 1956.
- DRMF-41 Studies on serum iodine and serum protein in relation to thyroid function and to treatment with radioiodine, (QU 218 C1) 1954
- DRMF-42 Clinical investigation on use of radioactive isotopes, irradiation and chemotherapeutic agents in cancer treatment, 1953.
- DRMF-43 Research on Brain Tumor localization, 1953.
- DRMF-44 Tagging of steroid hormones with radioactive isotopes; study of metabolism of steroid hormones, 1952.
- DRMF-45 Study and experience in applications of radioactive isotopes in cancer research, 1957.
- DRMF-46 The utilization of labeled Carbon 14 amino acids by human placenta in vitro, 1955.
- DRMF-47 Effect if hypophysectomy & Hypothalamic irritation on the growth of mammary cancer, 1953 thru 1955.
- DRMF-48 Bone Marrow Physiology, (QUF 133 C1) 1955
- DRMF-49 A study of Bone Marrow Physiology, (QUF 133) 1954.
- DRMF-50 Studies of the Mechanism of action of chemical radiosensitisers, (QUF 98 C2) 1952 thru 1955.
- DRMF-51 Metabolic pathways of endocrine activity in cancer, 1953.
- DRMF-52 The effect of ionizing radiation on collagen as observed with the electron microscope, 1953.
- DRMF-53 The effects of newer chemotherapeutic agents on hematopopisesis as demonstrated with newer techniques, 1952.

- DRMF-54      Radiation sensitivity, 1952.
- DRMF-55      Studies on total body water and water turnover in human subjects, 1952.
- DRMF-56      Metabolic studies with radioactive isotopes, 1952 thru 1953.
- DRMF-57      Application of soft gamma ray and x-ray emitters to diagnosis and treatment of cancer, 1953.
- DRMF-58      Topical application of short lived radioisotopes, 1952 thru 1953.
- DRMF-59      The electro-potential changes in carcinoma of the cervix under radiation therapy, 1952 thru 1953.

The Hematology Research Foundation (HRF)

- HRF-1          In Vivo and in Vitro studies of the bone marrow functions in man by chemical and isotopic techniques, 1955.

California Tuberculosis and Health Association (CTH)

- CTH-1          Studies of the Los Angeles Chest X-ray survey of 1950, 1955.

Field Foundation, Inc. (FFI)

- FFI-1          Studies of Human Growth, 1951.
- FFI-2          Psychological Aspects of The Council's Longitudinal Studies of Human Growth, 1955.

American Heart Association (AHA)

- AHA-1          Measurement of splanchnic red blood cell and plasma volumes and of the splanchnic hematocrit in congestive heart failure, 1957.
- AHA-2          Measurement of Renal Blood Volume in Man, 1955
- AHA-3          The role of the effective circulatory blood volume in congestive heart failure, 1954.
- AHA-4          Fluid and Electrolyte Composition in Patients with essential hypertension studied with Na 24, K 42 and Thiosulfate, 1955.

- AHA-5                    The correlation of studies of pulmonary mechanics with lung  
ventilation                    and circulation, using radioactive gases, 1955.
- AHA-6                    Studies of blood volume in normal and pathologic states.
- AHA-7                    *Studies of blood volume in normal and pathologic states; a  
comparison of                    methods using Tl824 and Cr 51, 1956*
- AHA-8                    Studies of the intra and extracellular distribution of water and  
electrolytes                    in organism as a whole and in tissues by means of radioactive  
indicators,                    1959.
- AHA-9                    *Body and electrolytes studies with tracers, 1957.*
- AHA-10                  The metabolism of calcium, phosphorus and potassium in dog and man,  
1958
- AHA-11                  The utilization of radio isotope techniques in the study of the cardiac  
failure shock state incident to acute cardiovascular stress, 1957.
- AHA-12                  Distribution, penetration and rates of exchange of sodium, potassium and  
water in the gastro-intestinal tract, measured with Na24, K42, and D2O,  
1955.
- AHA-13                  The pulmonary blood flow during graded exercise, 1955.
- AHA-14                  Immunophysiology, 1954.

American Cancer Society - NRC. Committee on Growth (ACS)

- ACS-1                  Pharmacology of the parathyroid, 1956.
- ACS-2                  Micro dosimetry Determinations in Radiation Therapy, 1954.
- ACS-3                  Effect of x-radiation on intestine using formate-c14 as a metabolic  
indicator. A study of enzyme changes which may contribute to an  
understanding of radiation sickness, 1954.
- ACS-4                  The effect of x-radiation on the metabolism of formate C14 in the  
intestine, 1956.
- ACS-5                  Endocrine Study of Factors Controlling the Growth of Various Tissues in  
the Cervix, Uteri, 1955.

- ACS-6 Endocrine study of factors controlling the growth of various tissues in the Cervix, uteri, 1956.
- ACS-7 The synthesis of thyroid hormone by normal and neoplastic thyroid tissues, 1955
- ACS-8 Nutrition and the alarm response in cancer patients, 1954.
- ACS-9 A study of the chemical nature of acid phosphates in human prostatic cancer and adenoma, 1954.
- ACS-10 Development of practical methods for determining radiation dosage to the tumor in radiation therapy, 1955.
- ACS-11 Investigation of the use of serum polysaccharide tests in following treatment of cancer cases, 1954.
- ACS-12 Concomitant fecal and urinary estrogen excretion studies in women with and without cancer. Metabolism of estrogen-16-C14, 1957.
- ACS-13 Influence of steroid hormones on incorporation of P32 into experimental and human tumors, 1955.
- ACS-14 Intermediary metabolism of the steroids, 1956.
- ACS-15 Study of uric acid metabolism by means of heavy isotopes in patients with gout, polycythemia vera and leukemia, 1953.
- ACS-16 Intermediary metabolism of the steroids, (UM 136 C8) 1957.
- ACS-17 The study of certain syntheses in the animal body with radioactive isotopes, 1948.
- ACS-18 The application of the isotope technique to problems of clinical medicine in the human subjects, 1948.
- ACS-19 Cancer of the Thyroid, 1948.
- ACS-20 Standardization of tissue culture media, including quantitative chemical study of cellular growth and metabolism, 1952.
- ACS-21 The nature of the effect of chemical substances and radioactive isotopes on normal and neoplastic tissue, 1949.
- ACS-22 Radioactive materials research, 1949.

- ACS-23 The application of the isotope to problems of clinical medicine in the human subject, 1954.
- ACS-24 The application of the isotope to problems of clinical medicine in the human subject, (UM-26-C5) 1954.
- ACS-25 Cancer of the thyroid, (UM 100 C4) 1951.
- ACS-26 Isotopic tracer studies of biochemical problems basic to the physiology of normal and malignant cells, 1955.
- ACS-27 Study of metastatic malignant neoplasm's by means of radioactive tracers, (UM-121) 1951.
- ACS-28 Adjustment of growth during the neonatal period, in relation to prenatal and natal influences, 1953.
- ACS-29 Synthesis of steroid hormones labeled with deuterium, 1948
- ACS-30 Adjustment of growth during the neonatal period, in relation to prenatal and natal influences, (UM-203) 1951.
- ACS-31 On the metabolism and chemotherapy of human experimental melanomas, (UM 314) 1952.
- ACS-32 An investigation of the fate and mechanism of action of urethane in animal and man, 1954.
- ACS-33 Mechanism of action of penicillin, 1956
- ACS-34 Biology of cancer of the thyroid, (UM 256-C3) 1954.
- ACS-35 An experimental and clinical study of the effects of the local administration of radioactive isotopes with particular reference to the treatment of pleural effusion and ascetics due to metastatic carcinoma, 1953.
- ACS-36 Cancer of the thyroid (UM 394) 1952
- ACS-37 Cancer of the thyroid (UM 394-C2) 1954.
- ACS -38 Study of uric acid metabolism by means of heavy isotopes in patients with gout, polycythemia vera and leukemia, (UM 158-C3) 1950.

- ACS-39      The Influence of Chemotherapeutic Agents Upon the Rate of Incorporation of P-32 into Nucleic acids of Tumors., 1954
- ACS-40      Study of the Functional Nature of Thyroid Tissues with Special Emphasis Upon Thyroid Tumors and Radioiodine, 1955
- ACS-41      Studies of the Mechanism of Action of Ionizing Radiations on Cells
- ACS-42      Clinical Pharmacological studies of Labeled Tumor-Inhibitory Compounds, 1957
- ACS-43      New Radioactive Colloids for Tumor Therapy, I. Yttrium-90 Fluoride, II. Zirconium Phosphate (P-32)
- ACS-44      The Use of P-32 Labeled Diisopropyl Fluorophosphate as a Measure of Circulating Erythrocyte Life Span in Vivo.
- ACS-45      Radium Implants: Development of a system of distribution, dosage calculations and rules of application for combinations of geometrical patterns of radium implants applied in the treatment of advanced, but still curable, malignancies. 1957
- ACS-46      Localization of Brain Tumors with Radioactive Rubidium-86

Research Corporation: Williams-Waterman Fund (WWF)

- WWF-1      Study of partial and latent vitamin B-12 deficiencies and vitamin B-12 absorption defects in man.

James Picker Foundation, NRC- Committee on Radiology (JPF)

- JPF-1      Radiological aspects of the growing normal pelvis; developmental and clinical significance, 1956.
- JPF-2      The effects of roentgen irradiation upon digestion and absorption of materials in the gastrointestinal tract by means of radioactive tagged compounds, 1956.
- JPF-3      Study of the mechanism of the therapeutic effects of radio iodine on hyperthyroidism, 1954.

National Council to Combat Blindness, Inc., (NCC)

- NCC-1      The use of radioactive isotopes in ophthalmology, 1956

Markle Foundation - NRC, Committee on Endocrinology (MFE)

- MFE-1 Adrenal cortical function in diabetic acidosis, 1950.
- MFE-2 Studies of serum iodine in normal and pathological studies, 1950.
- MFE-3 For studies on the metabolism of the thyroid hormone, 1949.
- MFE-4 Chemistry and metabolism of steroid hormones, 1949.
- MFE-5 Tracer studies with isotopic compounds of the endocrine regulation of protein and carbohydrate metabolism, 1949.
- MFE-6 Radioactive iodine and thyroid, 1950.

Rockefeller Foundation, (RF)

- RF-1 Lipogenesis from various radio C 2 donors, 1952 thru 1954.
- RF-2 Exploration and development of plans for a study of the effects of atomic radiation on living organisms, 1955 thru 1958.
- RF-3 Research on biological and medical problems utilizing radioactive isotopes, 1954.
- RF-4 Toward cost of visit to the United States to visit representative American laboratories specializing in Bio-medical effects of radiation. 1953 thru 1954.
- RF-5 Biological applications of isotopic tracers, 1951 thru 1956.
- RF-6 The biological uses of isotopes, 1949 thru 1950.
- RF-7 Enzymatic synthesis of phospholipids, 1954 thru 1957.
- RF-8 Research in genetic epistemology - the study of the methods and criteria of knowledge as they develop in the growing child. 1955 thru 1957.

Nutrition Foundation, (NF)

- NF-1 Inositol metabolism in human subjects with special references to diabetes mellitus, 1951 thru 1954.

- NF-2 Interrelationship of molybdenum, copper and phosphorus in animal metabolism, 1948 thru 1954.
- NF-3 Certain aspects of sugar and fat metabolism, carried out with the aid of isotopes, 1948
- NF-4 Carbohydrate metabolism (with the aid of heavy hydrogen, 1944 thru 1948.
- NF-5 The utilization of radioactive iron, 1947.

Hartford (John A.) Foundation, Inc., (HF)

- HF-1 Investigation of abnormal fat metabolism and the intimate relationship to the development of acute and chronic pancreatitis, 1955 thru 1958
- HF-2 Research concerned with an evaluation of radioactive iodine (I 131) in therapy of pulmonary emphysema, 1956 thru 1960.
- HF-3 Research in peripheral blood flow measurements and clinic studies of vascular impairment, 1956 thru 1959.

Public Health Service (PHS)

- PHS-1 Studies of the purification and properties of a soluble enzyme system which incorporates C14 labeled lysine into liver proteins. 1951-1953
- PHS-2
  1. Studies on the blood level of radioactive digitoxin in human subjects with cardiac insufficiency.
  2. Isolation of digitoxin metabolites from urine of cardiac patients. 1952
- PHS-3 Zinc metabolism in the leukemia's and lymphomas 1951-1952
- PHS-4 Turnover of serum proteins in human metabolic diseases. 1951
- PHS-5 Controlled evaluation of the factors concerned with the metabolism of steroids by human skin. 1955-1956
- PHS-6 Long term preservation of red blood cells. 1955-1956
- PHS-7 Radio cardiography in pediatric cardiac patients. 1955-1956

- PHS-8        Studies of red blood cells in hemolytic anemias as determined by concomitant measurement by radioactive chromium and N15. 1955-1956
- PHS-9        Study of blood platelets by radioactive techniques. 1955-1956
- PHS-10       Studies on body composition in patients with hyponatremia with special reference to total exchangeable sodium, total exchangeable potassium and total body water 1955-1956
- PHS-11       Blood and plasma volumes, Intracellular and extracellular compartments in premature and newborn infants. 1955-1956
- PHS-12       Nitrogen Reduction in Bacteria; Lipid Metabolism using N15 as a tracer. 1954-1956
- PHS-13       Studies on digitalis glycosides and other agents in congestive failure. 1954-1955
- PHS-14       The effects of Cobalt in the anemia of uremic patients. 1954-1955
- PHS-15       The effect of carbonic anhydrase inhibition on fluid and electrolyte metabolism. 1953-1954
- PHS-16       Mechanisms of hemolytic anemia. 1953-1955
- PHS-17       Mechanisms of hemolytic anemia as related to the spleen and other viscera. 1953-1954
- PHS-18       The detection and study of platelet antibodies by means of fluorescein labeling. 1953-1954
- PHS-19       Clinical and physiological correlations in aortic stenosis. 1955-1956
- PHS-20       A study of the rate of utilization of thyroid hormone and its various thyroid states with particular reference to the effect on various stresses on turnover using radioactive iodine. 1953-1954
- PHS-21       The incorporation of exogenous fats into the serum lipoproteins of humans. 1952-1955
- PHS-22       Studies of fatty acid metabolism in human atherosclerosis. 1952-1953 6F-4252F, 1952-1954 6F 4252 FC1
- PHS-23       Ferrokinetic studies in human subjects. 1954

- PHS-24 Studies on the relationship between body composition and serum electrolyte concentration using Na<sup>24</sup>, K<sup>42</sup>, & D<sup>2</sup>O as tracers in patients with congestive heart failure. 1955-1956
- PHS-25 A study of the absorption of I-131 labeled triolein in man. 1955-1956
- PHS-26 Study of the relationship between gastrointestinal motility and absorption 1955-1956
- PHS-27 Sterol and lipid metabolism in the pathogenesis of anemias in neoplastic disease. 1955-1956
- PHS-28 Effects of various radiation doses upon the lungs of experimental animals. 1955-1956
- PHS-29 Metabolism of nucleic acids in leukemia. 1954-1955
- PHS-30 Correlation between renal structure, urinalysis and tests of kidney function and studies of the natural history of kidney disease as shown by serial biopsy. 1954-1955
- PHS-31 The turnover of thyroid hormone in various states of thyroid function. 1954-1955
- PHS-32 A study of the effects of growth hormone on the synthesis of protein, by means of liver perfusion and clinical isotope studies. 1954-1956
- PHS-33 A study in man of intestinal absorption of ions by isotopic techniques. 1954-1956
- PHS-34 Factors affecting radiosensitivity of ascites tumors. 1954-1955
- PHS-35 A study of the rate of utilization of thyroid hormone and its components in various thyroid states with particular reference to the effect of various stressers on turnover. 1953-1954 6M-4461F
- PHS-36 Hepatic factors of tumor protein synthesis. 1952-1954
- PHS-37 Leukocyte survival time in leukemia. 1954-1956
- PHS-38 Metabolism of proteins in nervous tissue 1954-1955
- PHS-39 Investigations into the physiologic mechanisms and alterations that may be responsible for choroidal detachment. 1953-1954

- PHS-40      Development of a method for the quantitative measurement of gastric motility in man by the clearance of a radioactive isotope. 1953-1954
- PHS-41      Investigations of metabolic bone disease with strontium. 1955-1956
- PHS-42      A study of thyroid-adrenal relationships. 1953-1956
- PHS-43      Metabolism of insulin. 1953-1954
- PHS-44      Pathogenesis of diabetic "complications" 1953-1955
- PHS-45      The metabolism of 2 carbon fragments and protein synthesis in subjects with diabetic and starvation ketosis. 1952-1954
- PHS-46      Radioactive isotope studies of absorption and secretion of the intact human intestine. 1954-1955
- PHS-47      The metabolism of I-131 labeled insulin in normals and diabetics. 1955
- PHS-48      Glucosamine metabolism in limulus. 1954
- PHS-49      Pathogenesis of the anemia cancer. 1953-1955
- PHS-50      Studies on central nervous system using isotopes. 1955-1956
- PHS-51      The bromide space and total exchangeable chloride as measured by the isotope dilution principle using bromide-82. 1952-1954
- PHS-52      Colombia River Radiological Studies. 1951
- PHS-53      Correlation of Beta Ray Intensities Measured by Equipment in Project e. as compared with Biological Reaction in Humans. 1951
- PHS-54      Choline, Plasma Levels Measured by the use of C14 Labeled Choline. 1951
- PHS-55      Use of Isotope Labeled Drugs in Metabolic Studies. 1951
- PHS-56      Chemotherapy 1951
- PHS-57      Oral Physiology: Application of the Radioactive Tracers to Studies of the Physiology of Teeth, Periodontium and Salivary Glands. 1951

- PHS-58 Factors affecting the radiosensitivity of ascites tumor cells after in vivo and in vitro irradiation. 1954-1956
- PHS-59 A search for chemical carcinogens in the urines of patients with bladder cancer. 1953-1954
- PHS-60 Effects of roentgen irradiation on corticosteroid excretion. 1953-1954
- PHS-61 Pathogenesis of the anemia cancer. 1953-1954
- PHS-62 Mechanisms involved in the susceptibility of malignant tumors to steroid therapy. 1951-1952
- PHS-63 Assay methods of growth hormones. 1952-1954
- PHS-64 Quantitative Replacement of Sodium on the Basis of Changes in  $\text{Na}^{24}$  and Thiosulfate spaces in Surgical Patients.(RG-2926 C-2) 1950 thru 1954
- PHS-65 Metabolic Fate and Localization of Barbiturates, Diphenylhydantoin and Trimethadione. 1946 thru 1953
- PHS-66 The development of a set of x-ray standards which are spaced according to percent of mature height 1948 thru 1950
- PHS-67 The use of radioactive tracers to study the localization of haptens. 1951 thru 1953
- PHS-68 The use of radioactive material in the localization of brain tumors and other intracranial diseases. 1952 thru 1954
- PHS-69 Studies on the Mechanisms of the Potassium transport Across Cell Membranes. 1953 thru 1956
- PHS-70 Iron Metabolism. 1950 thru 1951
- PHS-71 Biological Significance of Pteroylglutamic Acid; Study of the Intrinsic and Anti pernicious Anemia Factors. 1946 thru 1953
- PHS-72 Study of formation of plasma proteins in normal subjects and patients with cirrhosis of the liver and nephrosis. 1946 thru 1950
- PHS-73 Studies of Protein Metabolism in Burn Patients by Radioisotope Techniques. 1952 thru 1958

- PHS-74 A Life-cycle Study of the Significance of Individual Differences in Growing Human Beings. (RG-546 C-9) 1947 thru 1959
- PHS-75 Radiological Localization of Placenta by Radioactive Sodium Na<sup>24</sup> (undated preliminary)
- PHS-76 The Study of the Significance of Individual Differences in Growing Human Beings. (RG-546 C-5) 1947 thru 1954
- PHS-77 A clinical and roentgenological follow-up study of all stomach x-ray examinations during a three year period for 8-10 years ago at the County Hospital Odense Denmark (in all 2000 patients) with the object of finding and following the number of peptic ulcer and related diseases. 1948 thru 1950
- PHS-78 The Amide Nitrogen Metabolism of Animal Tissues. 1948 thru 1952
- PHS-79 Determination of Univalent Antibody in Disease States of Man Through the use of I<sup>131</sup> labeled Serum Protein. 1950 thru 1951
- PHS-80 Effect of cortisone on the basal metabolic rate and other tests of thyroid function. 1949 thru 1950
- PHS-81 Estrogen Metabolism in Human Pregnancy: A Study with the Aid of Deuterium. (RG-2796) 1951
- PHS-82 Estrogen Metabolism in Human Pregnancy: A Study with the Aid of Deuterium. (RG-2796 C) 1951 thru 1952
- PHS-83 Estrogen Metabolism in Human Pregnancy: A Study with the Aid of Deuterium. (RG-2796 C-2) 1951 thru 1953
- PHS-84 The use of fluorescein Dyes in the Investigation of Intracranial Lesions. 1953 thru 1955
- PHS-85 National Survey of Congenital Malformations Resulting from Exposure to X-radiations. 1951 thru 1954
- PHS-86 The prevention of Postoperative Nitrogen Loss. 1950 thru 1951
- PHS-87 Iron Metabolism. (RG-1917 C-2) 1949 thru 1952
- PHS-88 Thyroid and Gonadal Function in Sterility, Abortions and Menstrual disorders, and effect of therapy. (undated preliminary)

- PHS-89 Quantitative Replacement of Sodium on the Basis of Changes in Na<sup>24</sup> and Thiosulfate spaces in Surgical Patients.(RG-2926 C-2S) 1950 thru 1954
- PHS-90 A Life-cycle Study of the Significance of Individual Differences in Growing Human Beings. (RG-546 C-7,8) 1947 thru 1959
- PHS-91 The Study of the Significance of Individual Differences in Growing Human Beings (RG-546 C-6) 1947 thru 1954
- PHS-92 Immunochemical Studies of I<sup>31</sup> Labeled Diphtheria Toxin. 1955 thru 1958
- PHS-93 Pathways of Aldehyde Metabolism. 1952 thru 1953
- PHS-94 Continuation of Studies of the Use of Radioactive Iodine Preparations in Neoplastic Diseases, Vascular Disorders and Infections of the Central Nervous Systems. 1952 thru 1955
- PHS-95 The Mechanism of Development of Infectious and Contact Sensitivities. 1952 thru 1955
- PHS-96 Studies of Protein Metabolism in Burn Patients by Radioisotope Techniques. 1952 thru 1958
- PHS-97 Radioactive Techniques in the Study of Protein Metabolism of Severe Burn Patients. 1952 thru 1958
- PHS-98 The Application of Nuclear Resonance Techniques to Pharmacological Problems. 1954 thru 1955
- PHS-99 The influence of the liver and the kidney on the distribution in the body of intravenously injected sodium, potassium, phosphorus, and mercury. 1948 thru 1950
- PHS-100 Continuation of Studies of the Use of Radioactive Iodine Preparations in Chronic Infections, Vascular and Neoplastic Diseases of the Central Nervous System. 1952 thru 1953
- PHS-101 A 5 year follow-up of all the patients (about 100), who during one year (5 years ago) have passed a gastric x-ray examination ( ambulatory or from the hospital wards (550 beds), at the x-ray service of the county hospital Odense , Denmark, on the account of dyspepsia, and in whom were evidence of strong suspicion of peptic ulcer, gastroduodenitis or irritable duodenum either through anamnesis or by x-ray examination or both. 1948 thru 1949

- PHS-102 An isotope injection method for rapid and frequent determination of cardiac output in man; its clinical application. H-1287(C2) 1954
- PHS-103 Physiological Investigation of Isolated Arteries and Veins H-1450 1956
- PHS-104 Physiological Investigation of Isolated Arteries and Veins H-1450(C) 1956
- PHS-105 Physiological Investigation of Isolated Surviving Arteries and Veins. H-1450(C2) 1956
- PHS-106 Sodium and water kinetics and body water distribution. 1956
- PHS-107 Excretion of Hydroxyproline in Rheumatic Fever and other Diseases. 1954
- PHS-108 Excretion of Hydroxyproline in Rheumatic Fever and other Diseases. H-1431(C) 1955
- PHS-109 Investigation of Basic Factors in Sickle Cell Disease and in other Inherited Hemoglobinopathy's.
- PHS-110 Study of intrapulmonary gas mixing. 1956
- PHS-111 Measurement of Blood Flow, Vascular and Extravascular Volumes in Forearm of Man. 1953
- PHS-112 Alterations in General Vascular and Tissue Cellular Permeability to Ions Effected by Diuretic and Anti diuretic Agents. 1956
- PHS-113 An isotope injection method for rapid and frequent determination of cardiac output in man; its clinical application. H-1287(C2) 1955
- PHS-114 An isotope injection method for rapid and frequent determination of cardiac output in man; its clinical application. H1287 1954
- PHS-115 Blood Volume in Relation to Height, Weight and Body Type in Healthy Men and in Selected Disease States. 1956
- PHS-116 Energy Metabolism of Heart Muscle. 1959
- PHS-117 Energy Metabolism of Heart Muscle. H-1272(CS) 1954
- PHS-118 Blood Volume in Relation to Height, Weight and Body Type in Healthy Men and in Selected Disease States. H-1271(C) 1956

- PHS-119 Blood Volume in Relation to Height, Weight and Body Type in Health Men and in Selected Disease States. H-1271 1956
- PHS-120 Mechanism of destruction of red blood cells. H-1263(C2) 1955
- PHS-121 Mechanism of destruction of red blood cells. H-1263 1953
- PHS-122 The Use of Stable Rubidium for Measurements of Total Exchangeable Body Potassium. 1956
- PHS- 123 Effects of Sitosterol and Other Sterols on Fat Absorption. 1956
- PHS-124 Analysis of Factors Such as Vitamins and Hormones Regulating the Rate of Cholesterol Biosynthesis in the Surviving Aorta. 1957
- PHS-125 An Isotope Dilution Study of Total Body Electrolytes as Altered by Hypometabolic Treatment of Heart Disease. H-1909(C) 1957
- PHS-126 An Isotope Dilution Study of Total Body Electrolytes in Heart Disease, as Altered by Hypometabolic Treatment. H-1909 1956
- PHS-127 Transcapillary Exchange of Permeable Tracer Substances. H-1903(C) 1958
- PHS-128 Transcapillary Exchange of Permeable Tracer Substances. H-1903 1958
- PHS-129 The Treatment of Chronic Pulmonary Insufficiency. H-1840(C2) 1956
- PHS-130 The Treatment of Chronic Pulmonary Insufficiency. H-1840(C) 1957
- PHS-131 The Treatment of Chronic Pulmonary Insufficiency H-1840 1957
- PHS-132 Metabolic Studies of the Biosynthesis and Fate of Cholesterol and Fatty Acids. 1956
- PHS- 133 The measurement of the metabolic turnover times of the electrophoretic plasma protein components in cardiac decompensation and in diseases of the vascular system of presumed hyperimmune etiology. H-1511(C2) 1957
- PHS-134 The measurement of the metabolic turnover times of the electrophoretic plasma protein components in cardiac decompensation and in diseases of the vascular system of presumed hyperimmune etiology. H-1511(C) 1955

- PHS-135 The physiological Mechanisms Regulating Myocardial Contractile Force and Coronary Blood Flow.
- PHS-136 The Effects of Various Cardiovascular Drugs on Coronary Blood Flow and Myocardial Metabolism in the Experimental Animal and Human Subject. 1956
- PHS-137 Studies in red cell aging and senescence.
- PHS-138 Measurement of red cell survival in vivo by the combined methods of Chromium 51 labeling and differential agglutination counting and estimation of red cell viability by a modified osmotic fragility test. H-1458(C2) 1956
- PHS-139 Measurement of red cell survival in vivo by the combined methods of Chromium 51 labeling differential agglutination counting and the estimation of red cell viability by a modified osmotic fragility test. H-1458 1956
- PHS-140 Physiological Investigation of Isolated Surviving Arteries and Veins.
- PHS-141 Studies on Pathogenesis of Toxemia of Pregnancy.
- PHS-142 In Vivo Investigation of Cerebral Tricarboxylic Acid Cycle Enzyme Activities in Mental Disease. MH-789(C1) & (C2) 1958
- PHS-143 In Vivo Investigation of Cerebral Tricarboxylic Acid Cycle Enzyme Activities in Mental Disease. MH-789(S) 1958
- PHS-144 Thyrotropic Responsivity In Schizophrenics. 1954
- PHS-145 A Physiologic and Metabolic Study of Radioactive Iodine in Advanced Obstructive Emphysema.
- PHS-146 Variations in Total Exchangeable Potassium in Pregnancy, Investigations on the Circulation of Amniotic Fluid. 1956
- PHS-146 A Study of Left Ventricular Blood Flow and Oxidative Metabolism in Normal and Diseased Hearts. 1958
- PHS-148 Metabolic Activities of Leukocytes. 1958
- PHS-149 An Evaluation of the Role of Anesthesia and various other Factors in the Development of Experimental Traumatic Shock. 1956

- PHS- 150 Evaluation of Therapy in Surgical Shock with Radioactive Sodium. H-1980(C2) 1954
- PHS-151 Evaluation of Therapy in Surgical Shock with Radioactive Sodium. H-1980(C) 1953
- PHS-152 Evaluation of Therapy in Surgical Shock with Radioactive Sodium. H-1980 1952
- PHS-153 Diagnosis of Congenital Heart Disease in Infants.
- PHS- 154 Preservation and sterilization of frozen arterial segments by cobalt 60 gamma irradiation.
- PHS-155 The effect of psychoanalysis on the course of peptic ulcer. 1956
- PHS-156 Survival of Human Blood Stored In EDTA and Raffinose
- PHS-157 To study the effect of ingested cholesterol on sterol synthesis. 1952
- PHS-158 The Relation of Extra-Thyroidal Radioactive Iodide Metabolism to Tissue Cholesterol Metabolism. 1957
- PHS-159 Investigation of Trace Elements in Human Blood. H-1621 1951
- PHS-160 Investigation of Trace Elements in Human Blood. H-1621(C) 1952
- PHS-161 Project on the Biological Synthesis of Protein with Use of Isotopes. 1952
- PHS-162 Study of the Role of Metals in the Metabolism and Preservation of Human Blood Cells. 1953
- PHS-163 Studies of iron metabolism, by means of radioactive isotopes of iron. 1946
- PHS-164 Study of the Sodium, Potassium and Water Content of the Body Spaces in Patients with Essential Hypertension. H-1835(S) 1956
- PHS-165 Study of the Sodium, Potassium and Water Content of the Body Spaces in Patients with Essential Hypertension. H-1835(C) 1956
- PHS-166 Study of the Sodium, Potassium and Water Content of the Body Spaces in Patients with Essential Hypertension. H1835(C2)
- PHS-167 Body fluids in normal and toxic human pregnancy. 1959

- PHS-168 A Study of Cholesterol Metabolism in Human Atherosclerosis. 1955
- PHS-169 Isotopic Studies of Cholesterol Metabolism in Man. H-2157 1958
- PHS-170 Isotopic Studies of Cholesterol Metabolism in Man. H-2157(C) 1956
- PHS-171 The Effects of Nutritional Repletion on the Metabolism, Hemodynamics and body composition in chronic congestive heart failure.
- PHS-172 A study of intravenous colloidal cholesterol and colloidal animal fat suspensions in animals and man. 1958
- PHS-173 Studies of Hypercoagulable State in Humans and Animals
- PHS-174 Preservation and sterilization of frozen arterial segments by cobalt 60 gamma irradiation.
- PHS-175 Mechanism of destruction of red blood cells. 1955
- PHS-176 The Effects of Anoxia, Hypercarbia, Transfusion, Hemorrhage, Infusions of Saline and Dextrose Solutions, and Various Types of Artificial Respiration upon the Volume of Blood in the Lungs, Pulmonary Gaseous Exchange, and Respiration. 1952
- PHS-177 The Function of Plasma Phospholipids. 1956
- PHS-178 The prolonged preservation of red blood cells by storage at low temperatures. 1954
- PHS-179 Mechanisms Regulating Blood and Extracellular Fluid Volumes in Man. 1955
- PHS-180 Research on Immunological Control and Sterilization of Blood Derivatives. 1956
- PHS-181 "Erythrocyte Viability in Man." H-1179(C2) 1953
- PHS-182 Erythrocyte Viability in Man. H-1179(C1) 1952
- PHS-183 Erythrocyte Viability in Man. H-1179 1951
- PHS-184 Studies in cardiovascular-renal physiology and disease. 1955
- PHS-185 Biochemical Studies on Cardiac and Skeletal Muscle. H-1166(C4) 1957

- PHS-186 Biochemical Studies on Cardiac and Skeletal Muscle. H-1166 1953
- PHS-187 Sterilization of Blood Components and Tissue with High Energy Electrons. H-1143(C5) 1957
- PHS-188 Sterilization of Blood Components and Tissue with High Energy Electrons. H-1143(C4) 1957
- PHS-189 Sterilization of Blood Components and Tissue with High Energy Electrons. H-1143(C3) 1955
- PHS-190 Preservation of the Red Cell, Fate of the Erythrocyte after Burn Injury. H-1142(C5) 1956
- PHS-191 Preservation of the Red Cell, Fate of the Erythrocyte after Burn Injury. H-1142(C4) 1956
- PHS-192 The Fate of the Preserved Red Cell in Surgical Patients. H-1142(C2) 1954
- PHS-193 The fate of preserved red cell in surgical patients. H-1142(C) 1952
- PHS-194 Chemical Sterilization of Blood and Blood Components. 1953
- PHS-195 Effect of Dietary Elements on the Serum Lipids and Atherosclerosis. 1956
- PHS-196 Studies on the Physical and Chemical Fractions of the Serum Lipids (a) As Related to Atherogenesis in the Rat, and (b) As Altered in Disorders of the Adrenal and Thyroid Glands in Patients. 1954
- PHS-197 The Enzymatic Components of Human Blood. 1952
- PHS-198 *A Study of the Effect of X-ray Contrast Media Upon the Circulation.* 1953
- PHS-199 Metabolic Activities of Human Leukocytes. 1954
- PHS-200 Metabolism of the Red Blood Cell. H-1071(C2) 1954
- PHS-201 Metabolism of the Red Blood Cell. H-1071(C) 1953
- PHS-202 Metabolism of the Red Blood Cell. H-1071 1952
- PHS-203 Study of the Role of Metals in the Metabolism and Preservation of Human Blood Cells. 1956
- PHS-204 Studies on the Origin and Utilization of the Serum Proteins. 1952

- PHS-205 Further Studies in the Evaluation of the Antigenic Specificity of Human Cancer Tissue. 1956
- PHS-206 Studies on the Metabolism of Sulfur by Use of Radioisotopes. 1951
- PHS-207 Chemistry and Metabolism of the Steroid Hormones. 1953
- PHS-208 Synthesis of Possible Chemotherapeutic Agents For Cancer. 1951
- PHS-209 Spectrochemical Analysis for Trace Elements in Normal and Neoplastic Tissues. 1957
- PHS-210 Study of Tumor Metabolism I. Thyroid Carcinoma. 1953
- PHS-211 Chemotherapy and carcinogens of carbazoles series synthesis of substituted 3, 4-benzocarbazoles. 1951
- PHS-212 Selective filtration of ions by the thyroid. 1951
- PHS -213 Studies on the metabolism of sulfur by use of radioisotopes. 1950
- PHS-214 A Study of the Hemoglobin and Red Cell Metabolism in Patients having Gastric Cancer. C-310(C7) 1951
- PHS-215 Study of Tumor Metabolism I. Thyroid Carcinoma. 1951
- PHS-216 Physiology of patients with cancer and experimental chemotherapy of cancer. 1949
- PHS-217 Physiology of patients with cancer and experimental therapy of cancer. 1950
- PHS-218 1. Study of the physiology and pathology of the thyroid by means of radioactive iodine,  
2. Therapy of hyperthyroidism and Carcinoma of the thyroid with radioactive iodine. 1947
- PHS-219 Determination of thyroid-toxic and thyroid-carcinogenic dosages of radioactive iodine. 1947
- PHS-220 Study of Tumor Metabolism I. Thyroid Carcinoma. 1952
- PHS-221 Spectrochemical Analysis for Trace Elements in Normal and Neoplastic Tissues (extended to include animal tissues). 1957

- PHS-222 Investigation of the role of alterations in calcium and magnesium serum levels (as modified by chelating agents) in benign and malignant lesions of bone. 1952
- PHS-223 Metabolism of Carcinogens Labeled with Radioactive Carbon. 1954
- PHS-224 Investigation of the Biochemistry, Development, and Diagnosis of Melanomas. 1952
- PHS -225 The Relationship of Carbonic Anhydrase to the Secretion of Gastric Hydrochloric Acid, and to Peptic Ulceration and Gastric Cancer in Man. 1952
- PHS -226 Incorporation of radioactive amino acids into protein and phospholipids of human liver. 1952
- PHS-227 The role of sulfur compounds in the intermediary metabolism of aromatic hydrocarbons. 1952
- PHS-228 Effect of Isotonic and X-radiation on the Total Coproporphyrin Excretion<sup>2</sup> in Humans and Animals 1950
- PHS-229 The Effect of Cortisone and ACTH upon Intestinal Absorption and Nutrition with Special Reference to Fat. 1950
- PHS-230 The Study of the Effect of ACTH on Marrow, Peripheral Blood, and Blood Pigment Metabolism. 1955
- PHS-231 Study of Water Metabolism in Brain Tumors: Development of Method using Tritium. C-1346 (C1), 1952
- PHS-232 Study of Water Metabolism in Brain Tumors: Development of Method using Tritium. C-1346 (C2), 1953
- PHS-233 Study of Water Metabolism in Brain Tumors: Development of Method using Tritium. C-1346 (C3), 1954
- PHS-234 Study of Water Metabolism in Brain Tumors: Development of Method using Tritium. C-1346 (C4), 1957
- PHS-235 Study of Water Metabolism in Brain Tumors: Development of Method using Tritium. C-1346 (C5), 1957

- PHS-236 Study of Water Metabolism in Brain Tumors: Development of Method using Tritium. C-1346 (C6), 1956
- PHS-237 The Localization of Radioactive Sulfur Compounds in Tumors. 1952
- PHS-238 Mechanisms Involved in the Susceptibility of Malignant Tumors to Steroid Therapy. 1951
- PHS-239 Mechanism of Radioactive Chromate Uptake By Cells. 1951
- PHS- 240 Measurements of the Life of the Red Blood Cell in Neoplasia and the Anemias. C-1440, 1952
- PHS-241 Measurement of the Life of the Red Blood Cell in Neoplasia and the Anemias. C-1440 C, 1953
- PHS-242 Measurement of the Life of the Red Blood Cell in Neoplasia and the Anemias. C-1440 (C2), 1954
- PHS-243 Human Metabolism as Related to Neoplasia, Leukemia and Anemia. C-1440 (C3), 1957
- PHS-244 Human Metabolism as Related to Neoplasia, Leukemia and Anemia. C-1440 (C4), 1957
- PHS-245 Rotational X-ray Therapy with 2-Million-Volt Radiation. 1954
- PHS-246 Spontaneous chromosome breakage in inter specific hybrid of Bromus similar to chromosome breakage produced by irradiation and certain chemical treatments. 1955
- PHS-247 Metabolic Study in Human Cancer. C-1540 (C), 1952
- PHS-248 Metabolic Study in Human Cancer. C-1540 (C), 1952
- PHS-249 Metabolic Study in Human Cancer. C-1540, 1952
- PHS-250 Newer Methods for the Study of Calcium Metabolism in Man. C-1540 (C2) 1953
- PHS-251 Newer Methods for the Study of Calcium Metabolism in Man. C-1540 (C3) 1955
- PHS-252 Application of Newer Techniques for the Study of Mineral Metabolism of Cancer Patients and the Effects of Therapy Thereon. C-1540 (C5), 1958

- PHS-253 Newer Methods for the Study of Calcium Metabolism in Man. 1955
- PHS-254 Application of Newer Techniques for the Study of Mineral Metabolism of Cancer Patients and the Effects of Therapy Thereon. 1958
- PHS-255 Studies on the role of minerals in carcinogenesis. 1955
- PHS-256 *Factors Influencing Azo Dye Carcinogenesis.*
- PHS-257 *A Cytochemical Investigation of Normal and Neoplastic Lymph Node Cells and Cell Particulate Components: Part I - Physical and Biochemical Studies; Part II - Histochemical Studies.* 1954
- PHS-258 Mechanisms of Analgesia. B-570 (C7), 1956
- PHS-259 Mechanisms of Analgesia. B-570 (C8), 1956
- PHS-260 Mechanisms of Analgesia. B-570 (C9), 1961
- PHS-261 The Histochemical Differentiation of the Eye. 1956
- PHS-262 Relations on cell potentials and ionic permabilities. 1956
- PHS-263 Irradiation of the ciliary body of the eye.
- PHS-264 Study of Certain Aspects of Uveitis.
- PHS-265 Some Relationships Between Respiration and Intracranial Pressure.
- PHS-266 Biological Effects of Radiation. 1955
- PHS-267 A Study of the Hemoglobin and Red Cell Metabolism in Patients having Gastric Cancer 1952
- PHS-268 The efficacy of nasopharyngeal irradiation in the prevention of deafness - cooperative field study in the prevention of deafness in The Johns Hopkins University School of Hygiene and Public Health and The Johns Hopkins University School of Medicine 1949
- PHS-269 Research project on the efficiency of nasopharyngeal irradiation in the prevention of deafness in children. 1951
- PHS-270 The efficacy of nasopharyngeal irradiation in the prevention of deafness in children. 1954

- PHS-271 The efficiency of nasopharyngeal irradiation in the prevention of deafness in children. 1952
- PHS-272 The Metabolism of Calcium in Human Beings. 1955
- PHS-273 Study of the Absorption and Metabolism of Radioactive Calcium (CA<sup>45</sup>) by Human Subjects. 1953
- PHS-274 Metabolism of Calcium in Human Subjects. 1956
- PHS-275 Metabolism of Calcium in Human Subjects. Effect of Food Mass and Calcium Mass on Calcium<sup>45</sup> Absorption
- PHS-276 A Study of Digestion and Absorption From the Gastro-intestinal Tract in Health and Disease Using Radioactive Material.
- PHS-277 The Application of Radioactive Isotopes to Pathological Conditions of the Eye. 1957  
 a. Uptake of radioactive material to ocular tumors.  
 b. Effect of radioactive isotopes upon corneal vascularization (Beta radiation).
- PHS-278 A New Method for In Vivo Study of Fat Metabolism and Deposition in Man.
- PHS-279 Ethionine as a Metabolic Antagonist of Methionine. The Relationship of Disturbances in Protein Metabolism to Pancreatic Neurosis and a trophy, Testicular regeneration and Fatty Liver in Ethionine Treated Rats.
- PHS-280 Metabolic Studies with 17-Hydroxycorticosterone-4-C<sup>14</sup>. 1956
- PHS-281 Metabolic Studies with Hydrocortisone-4-C<sup>14</sup>. A-629(C) 1956
- PHS-282 Metabolic Studies with Hydrocortisone-4-C<sup>14</sup>. A-629(C2) 1958
- PHS-283 Clinical uses of radioactive iodine in normal and disordered thyroid function.  
 1948
- PHS-284 Effect of ACTH and TSH (thyrotropin) on normal and disordered thyroid states in man. 1951
- PHS-285 The Study of Normal and Disordered Thyroid States in Man. A-8(C3) 1952

- PHS-286 The Study of Normal and Disordered Thyroid States in Man. A-8(C4) 1953
- PHS-287 The Study of Normal and Disordered Thyroid States in Man. A-8(C5) 1956
- PHS-288 The Study of Normal and Disordered Thyroid States in Man. A-8(C7) 1956
- PHS-289 *Study of Normal and Disordered Thyroid Studies in Man.* A-8(C8) 1956
- PHS-290 A Study of the Effect of Normal and Diseases Tissues on the Production and Fate of Adrenocortical Hormones. 1958
- PHS-291 Metabolic Interrelations Between Vitamin B<sub>12</sub> and Gastric Intrinsic Hematopoietic Factor in Health and Disease. 1957
- PHS-292 To study the effect of various serum bilir bin levels on the quantitative<sup>---</sup> excretion of gallbladder contrast media =
- PHS-293 Effect of thyroid extract and TSH administration on pituitary-thyroid function in patients with nephrosis, cirrhosis, and diseases associated with hypothyroidism, or other metabolic abnormalities. 1952
- PHS-294 Effect of Thyroid Extract and TSH Administration on Pituitary Thyroid Function in Patients with Nephrosis, Cirrhosis, and Diseases Associated with Hypothyroidism or other Metabolic Abnormalities. 1953
- PHS-295 Factors Controlling Thyroid Function in Nephrosis and Hypo-albuminemic States. Use of Inhibition of Thyroid Function by Ingestion of Thyroid as Diagnostic Aid in Borderline Hyper-thyroidism. Differentiation between Benign and Malignant Thyroid Nodules. 1955
- PHS-296 The Effect of Liver Injury and Disease Upon Metabolism of Plasma Proteins. A-173(C3) 1955
- PHS-297 The Effect of Liver Injury and Disease Upon Metabolism of Plasma Proteins. A-173(C4) 1955
- PHS-298 The Effect of Liver Injury and Disease Upon Metabolism of Plasma Proteins. A-173(C5) 1956
- PHS-299 Studies of the Metabolism of Normal and Abnormal Plasma Proteins. 1956

- PHS-300 Relation of Endocrine Glands to Growth and Development. A-180(C2) 1955
- PHS-301 Relation of Endocrine Glands to Growth and Development A-180(C3) 1960
- PHS-302 Relation of Endocrine Glands to Growth and Development. A-180(C4S)
- PHS-302 Special Aspects of Lipid Metabolism in Man and Animals with Portal-Caval Shunts. 1953
- PHS-304 X-ray Crystal Analyses of Metabolic Factors and Other Biochemicals of Medical Importance. 1954
- PHS-305 X-ray Analyses of Metabolic Factors and other Biochemicals of Medical Importance. 1959
- PHS-306 The Effect of Purified Crystalline Growth Hormone on the Metabolism of Normal Human Beings. 1956
- PHS-307 Use of Radioactive Diiodofluorescein and Potassium in the Study of Vascular, Degenerative, and Neoplastic Diseases of the Central Nervous System. 1952
- PHS-308 Investigation of the Dynamics of Water, and Ionic Exchange in the Central Nervous System and Cerebrospinal Fluid. B-157(C2) 1954
- PHS-309 Investigation of the Dynamics of Water and Ionic Exchange in the Central Nervous System and Cerebrospinal Fluid. B-157(C3) 1956
- PHS-310 Investigation of the Dynamics of Water, and Ionic Exchange in the Central Nervous Systems and Cerebrospinal Fluid. B-157(C4) 1956
- PHS-311 The Application of Radioactive Isotopes to Pathological Conditions of the Eye. B-188R, 1955  
 a. Uptake of radioactive material by ocular tumors.  
 b. Effect of radioactive isotopes upon corneal vascularization (Beta radiation)
- PHS-312 The Application of Radioactive Isotopes to Pathological Conditions of the Eye. B-188(C2) 1957
- PHS-313 The Application of Radioactive Isotopes to Pathological Conditions of the Eye. B-188(C3) 1956

- PHS-314      *A national survey of state laws and administrative practices effecting epileptics.* 1956
- PH S-315      *A National Survey of State Laws Concerning Legal Rights of Epileptics.* 1955
- PHS-316      *Study of the Blood-Brain Barrier with Radioactive and Stable Isotopes.* 1953
- PHS-317      *Study of Osteoporosis* 1958
- PHS-318      *Role of Aminos in Allergy and Inflammation.* 1955
- PHS-319      *Effect of ACTH or adrenocortical oxysteroids on hepatic secretory function in man.* 1956
- PHS-320      *Effect of X-Irradiation on the Gastrointestinal Tract Function in Humans and Large Laboratory Mammals.*
- PHS-321      *Studies on mechanisms of auto-immunization in acquired hemolytic anemia. Relationship of anti-erythrocytic antibodies to other formed elements of the blood and the fixed tissues.*
- PHS-322      *Study of B<sub>12</sub> Stores in Man.*
- PHS-323      *The Formation of Various Hemoglobins.*
- PHS-324      *Chronic and Acute Bone Marrow Failure.*
- PHS-325      *Study of Liver Function in Infants and Children.*
- PHS-326      *Radioactive Food-Iron (Fe<sup>59</sup>) Absorption in Infants and Children.*
- PHS-327      *Effects Of The Prolonged Administration of Thyroid.*
- PHS-328      *Evaluation of Multiple Tests for Thyroid Function.*
- PHS-329      *A Study of Bone and Bone Grafting Materials.* 1956
- PHS-330      *The Study of Parameters of the Thyroid Gland.* 1955
- PHS-331      *Study of Parameters of the Thyroid Gland.* A-446(03)
- PHS-332      *Adrenal Cortical Function and Glutathione Metabolism.* A-451, 1955

- PHS-333 Adrenal Cortical Function and Glutathione Metabolism. A-451(C3)
- PHS-334 Relationship Between Adrenal and Thyroid Function in Normals and in Experimental and Clinical Hyperthyroidism. 1950
- PHS-335 The Relation Between the Disappearance Rate of Labeled Insulin From the Plasma and Its Hypoglycemic Effect in Diabetic Patients. A-504, 1956
- PHS-336 The Relation Between the Disappearance Rate of Labeled Insulin From the Plasma and Its Hypoglycemic Effect in Diabetic Patients. A-504(G), 1956
- PHS-337 The Relation Between the Disappearance Rate of Labeled Insulin From the Plasma and Its Hypoglycemic Effect in Diabetic Patients. A-504(C2), 1957
- PHS-338 The Influence of the Gastric Mucus Substances on the Ionizing and Absorption of Dietary Iron. 1955
- PHS-339 Quantitative Interpretation of Tracer Iron Data. A-514, 1956
- PHS-340 Quantitative Interpretation of Tracer Iron Data. A-514(C), 1956
- PHS- 341 Iron and Hemoglobin Metabolism in the Mother and Her Child. A-515, 1958
- PHS-342 Iron and Hemoglobin Metabolism in the Mother and Her Child. A-515(C), 1958
- PHS-343 Protein Metabolism in the Stabilized Uremic Subject. 1957
- PHS-344 Metabolism and Composition of Calcified Tissues. A-592(C-3), 1951
- PHS-345 Metabolism and Composition of Calcified Tissues. A-592(C5), 1953
- PHS-346 Metabolism and Composition of Calcified Tissues. A-592(C6), 1957
- PHS-347 Corticosteroid Binding by Plasma and Tissue Components. A-255(C4)
- PHS-348 Diagnosis of Potential Avascular Neurosis of the Head of the Femur. 1957

- PHS-349 The turnover rate of serum albumin as measured by iodine 131-tagged albumin in the nephrotic child before, during and after ACTH (adrenocorticotrophic hormone) therapy. 1955
- PHS-350 Quantitative Studies of Human Non-Precipitating Antibodies, Using Radioactive Isotope Techniques. 1954
- PHS-351 Quantitative Studies of Human Non-Precipitating Antibodies, Using Radioactive Isotope Techniques. 1955
- PHS-352 Studies of Intermediary Metabolism in Vivo. 1956
- PHS-353 Biochemical Studies on Rare Carbohydrates.
- PHS-354 Some Metabolic Studies on Diabetic Retinopathy.
- PHS-355 Study of Parameters of the Thyroid Gland. 1956
- PHS-356 Efficacy of Nasopharyngeal Irradiation in the Prevention of Deafness—  
Cooperative Field Study in the Prevention of deafness in the Johns Hopkins School of Hygiene and Public Health and the Johns Hopkins School of Medicine. 1948
- PHS-357 The Metabolism of Uric Acid in Normal and Pre-Eclamptic Pregnant Women Studied with the Aid of Isotopic Uric Acid. 1953
- PHS-358 Three Dimensional Study (X-ray) of Cranio-facial Development. 1956
- PHS-359 Cinefluorography of Temporomandibular Articulation. D-240(C)
- PHS-360 Cinefluorography of Temporomandibular Articulation. D-240(CS)
- PHS-361 Investigation of Craniofacial growth based on Aerial Roentgenographic Data and Measurement of Biting Strength.
- PHS-362 Studies of Radioactive Fluoride Uptake by the Enamel Surface. D-147(C1) 1956
- PHS-363 Studies of Radioactive Fluoride Uptake by the Enamel Surface. D-147(C2) 1956
- PHS-364 Cephalometric X-ray Study of the Growth of the Human Head from the 8th to the 15th year. 1950
- PHS-365 Diagnostic Properties of 1, 2, and 3 Megavolt X-rays. 1956

- PHS-366 Evaluation of Titrated, Regularly Spaced Radioactive Phosphorus Therapy of Leukemia. 1956
- PHS-367 Effect of Chronic X-radiation on the Human Thyroid Gland. 1958
- PHS-368 Exploration of New Techniques for Extending the Usefulness of Radiography in the Detection of Chest Neoplasms. (C-9255) 1956
- PHS-369 *The Exploration of New Techniques for Extending the Usefulness of Radiography in the Detection of Chest Neoplasms. (C-9387)* 1956
- PHS-370 Cancer Therapy by Implantation with Radioisotopes. 1956
- PHS-371 Clinical Investigation of a 22 Mev Betatron in the Treatment of Cancers Infrequently Curable by Conventional Radiotherapy Techniques C-1704 1953
- PHS-372 Clinical Investigation of a 22 Mev Betatron in the Treatment of Cancers Infrequently Curable by Conventional Radiotherapy Techniques. C-9270 1954
- PHS-373 Irradiation Measurement Studies with New Type Scintillation Counter for More Accurate Radiation Dose Standardization and distribution of the Radium Intensities in Pelvic Malignancies. 1955
- PHS-374 Isotopic Localization of Brain Tumors. 1954
- PHS-375 Studies on the Pathological Physiology of Thyroid Diseases Using Radioactive Iodine with Particular Emphasis on Carcinoma. 1952
- PHS-376 Cancer Hazards Associated with Mining and Milling of Uranium and other Radioactive Material. 1955
- PHS-377 Study of Workers and Community Inhabitants in the Colorado Plateau who are exposed to Radioactive substances in the Uranium Mining and Processing Industry 1954
- PHS-378 Interaction of Serum Proteins in Multiple Myeloma 1956
- PHS-379 Effect of Therapeutic doses of Irradiation delivered by a Cobalt 60 Teletherapy unit on Blood Cells, Bone Marrow, Plasma 17 Hydroxycorticosteroids and Urinary Steroid Patterns of Human Cancer Patients.
- PHS-380 Incidence of Neoplasia in Irradiated Children.

- PHS-381 The Potentiation of Radiation Effects on Experimental Tumors with Chemical Agents.
- PHS-382 The Stimulating and Cancerogenic Effects of X-Rays.
- PHS-383 Effect of Chemotherapy and Radiation Therapy on Immune Responses of Animals and Man with Cancer.
- PHS-384 Metabolism of B-Naphthyl amine in Man
- PHS-385 Pathogenesis and Prevention of Radiation Reaction in Patients with Lung Cancer. 1958
- PHS-386 The Potentiation by Porphyrins and other Photo dynamic Compounds of Effects of Roentgen Rays on Human and Animal Tumors. 1957
- PHS-387 Investigation to Determine the Dependence of Differential Sensitivity of Normal and Malignant cells on Radiation Quality.
- PHS-388 The Effect of Carcinostatic Drugs on the Incorporation of Radio labeled Precursors of Nucleic Acid in Leukemia. 1957
- PHS-389 The Effects of X-Irradiation of the Lungs on Pulmonary Vascular Resistance and Blood-Gas Diffusion in the Lungs. 1958
- PHS-390 The study of the Effects of Roentgen Irradiation Upon Digestion and Absorption of Material in the Gastro-Intestinal Tract by means of Radioactive Tagged Compounds.
- PHS-391 Behavior of Cancer cell Populations following X-ray Therapy. C-2598 1957
- PHS-392 Behavior of Cancer cell Populations following X-Ray Therapy. C-2598(C) 1957
- PHS-393 Behavior of Cancer cell Populations following X-Ray Therapy. C-2598(CS)
- PHS-394 The Use of Radioactive Labeled Protein (Albumin) and Fat in the Evaluation of: (a) Pancreatic Disorders (b) Protein and Fat Utilization Following Operations on the Upper Intestinal Tract for Malignant Disease. 1959
- PHS-395 Radiation Carcinogenesis. 1955

- PHS-396 Effects of Estrogens on Thyroid Anatomy and Physiology. 1957
- PHS-397 The Experimental study of Chemical and Physical Factors which may alter the Radiation Sensitivity of Tumors. C-2537 1955
- PHS-398 The Experimental study of Chemical and Physical Factors which may alter the Radiation Sensitivity of Tumors. C-2537(C) 1956
- PHS-399 1) Exploration of the Ability of ACTH, Cortisone, and Allied Substances to Modify Reactions to Ionizing Radiations in Humans and 2) Evaluation of the Ability of Systemic Steroid Hormone Administration to Enhance the Response of Nursery Carcinoma Tissue to Ionizing Radiation. C-1551 1952
- PHS-400 1) Exploration of the Ability of ACTH, Cortisone, and Allied Substances to Modify Reactions to Ionizing Radiations in Humans and 2) Evaluation of the Ability of Systemic Steroid Hormone Administration to Enhance the Response of Nursery Carcinoma Tissue to Ionizing Radiation. C-1551(C1) 1953
- PHS-401 1) Exploration of the Ability of ACTH, Cortisone, and Allied Substances to Modify Reactions to Ionizing Radiations in Humans and 2) Evaluation of the Ability of Systemic Steroid Hormone Administration to Enhance the Response of Nursery Carcinoma Tissue to Ionizing Radiation. C-1551(C2) 1954
- PHS-402 Purchase of ACTH and Cortisone for Study of the Ability of Hormones to Modify Reactions to Ionizing Radiation in Humans. 1952
- PHS-403 Study of Ferritin and Hemin Synthesis with Labeled Iron and Amino Acids. C-2387 1955
- PHS-404 Study of Ferritin and Hemin Synthesis. C-2387(C) 1956
- PHS-405 Study of Ferritin and Hemin Synthesis C-2387(C2)
- PHS-406 Studies in Human Plasma Protein Formation. C-2366 1955
- PHS-407 Studies in Human Plasma Protein Formation. C-2366(C) 1956
- PHS-408 Studies in Human Plasma Protein Formation. C-2366(C2) 1957
- PHS-409 Physiology of White Blood Cells studied with Radiophosphorus C-2294(C) 1955

- PHS-410      *Physiology of White Blood Cells studied with Radiophosphorus.* C-2294(C) 1956
- PHS-411      *A Study of Possible Factors in Radiosensitivity.* C-2283 1955
- PHS-412      *Possible Factors in Radiosensitivity* C-2283(C) 1956
- PHS-413      *Possible Factors in Radiosensitivity* C-2283(C2) 1957
- PHS-414      *A Study of Post Radiation Changes in Cells and an Evaluation of their Biologic and Therapeutic Significance*
- PHS-415      *The Physiology of the Circulation Formed Elements of the Blood in Leukemic Dogs and Man.*
- PHS-416      *Metabolic Transformation of Radioactive Estrogens.* C-2271(C4) 1954
- PHS-417      *Metabolic Transformation of Radioactive Estrogens by Humans.* C-2271(C5) 1955
- PHS-418      *Metabolic Transformation of Radioactive Estrogens by Humans.* C-2271(C6) 1956
- PHS-419      *Metabolic Transformation of Radioactive Estrogens by Humans.* C-2271(C7) 1957
- PHS-420      *Investigation of Application of Scintillation Counters to Multiple Tracer Experiments.* C-2187 1954
- PHS-421      *Investigation of Application of Scintillation Counters to Multiple Tracer Experiments.* C-2187(C) 1955
- PHS-422      *Investigation of Application of Scintillation Counters to Multiple Tracer Experiments.* C-2187(C2) 1956
- PHS-423      *Studies on the Effects of Combined Radiations on Enzyme Systems.* C-2154 1954
- PHS-424      *Studies on the Effects of Combined Radiations on Enzyme Systems.* C-2154(C) 1955
- PHS-425      *Studies on the Effects of Combined Radiations on Enzyme Systems.* C-2154(C2) 1956
- PHS-426      *Effect of Hormones on Metabolism of Isolated Tissues.* 1954

- PHS-427 Transport of Sodium Fluoride ( $F_{18}$ ) in Maternal-Fetal Circulation of the Human.
- PHS-428 A Study of the Head and Face of the American Negro Child.
- PHS-429 The Effect of Irradiation Upon the Uptake of P32 by the DNA Fraction of Human Cervical Carcinoma. C-1619 1952
- PHS-430 The Effect of Irradiation Upon the Uptake of P32 by the DNA Fraction of Human Cervical Carcinoma. C-1619(C) 1954
- PHS-431 The Effect of Gamma Radiation on the Central Nervous System. 1955
- PHS-432 A Program to Evaluate the Efficiency of Rotational Therapy at 250 KV in the Treatment of Neoplastic Disease. C-1579 1952
- PHS-433 A Program to Evaluate the Efficiency of Rotational Therapy at 250 KV in the Treatment of Neoplastic Disease. C-1579(C) 1953
- PHS-434 A Program to Evaluate the Efficiency of Rotational Therapy at 250 KV in the Treatment of Neoplastic Disease. C-1579(C2) 1954
- PHS-435 Further Studies on the Destruction of Normal and Abnormal Erythrocytes. C-1576(C) 1954
- PHS-436 Further Studies on the Destruction of Normal and Abnormal Erythrocytes. C-1576(C2) 1955
- PHS-437 Experimental Study of the Effect on the Brain of Local Application of Beta Ray Emitting Isotopes. 1952
- PHS-438 A Qualitative and Quantitative study of the Reactive Mechanisms in the Reticulo-Endothelium, with Special Reference to the Effects of Radioactive Colloids.
- PHS-439 Biologic Effects of Radiation and a test for Radiation Sensitivity. 1952
- PHS-440 Study of Bone and Soft Tissue Cross Sectional Shapes from X-Rays. 1954
- PHS-441 The Effects of Irradiation and Chemotherapeutic Agents on the Chemical and Morphologic Dynamics of Cell Division and Differentiation in Normal and Neoplastic Tissue. C-2490 1955
- PHS-442 The Effects of Irradiation and Chemotherapeutic Agents on the Chemical and Morphologic Dynamics of Cell Division and Differentiation in Normal and Neoplastic Tissue. C-2490(C) 1956

- PHS-443 Correlation of Clinical Steroid Chemotherapy with Studies in Steroid Chemistry and Morphologic Response; Excretion Patterns, Tissue Levels, and Tracer Studies. C-2489 1955
- PHS-444 Correlation of Clinical Steroid Chemotherapy with Studies in Steroid Chemistry and Morphologic Response; Excretion Patterns, Tissue Levels, and Tracer Studies. C-2489(C) 1956
- PHS-445 Clinical Evaluation of Super voltage (2 Mev and Co. 60) Therapy in Esophageal and Bronchogenic Carcinoma. C-2449 1955
- PHS-446 Clinical Evaluation of Super voltage (2 MeV and Co. 60) Therapy in Esophageal and Bronchogenic Carcinoma. C-2449(C1) 1956
- PHS-447 Clinical Evaluation of Super voltage (2 MeV and Co. 60) Therapy in Esophageal and Bronchogenic Carcinoma. C-2449(C2) 1957
- PHS-448 An Attempt to Modify Radiosensitivity of the Human Skin by the Use of Pharmacological Agents.
- PHS-449 Diagnosis and Location of Brain Tumors with Radioactive Potassium and Related Ions. C-2437 1955
- PHS-450 Diagnosis and Location of Brain Tumors with Radioactive Potassium and Related Ions. C-2437(C) 1956
- PHS-451 Diagnosis and Location of Brain Tumors with Radioactive Potassium and Related Ions. C-2437(C2) 1957
- PHS-452 Experimental and Clinical Studies on the Mechanism of Anemia in Cancer. 1956
- PHS-453 Mechanism of Anemia in Cancer. C-2429(C) 1956
- PHS-454 Mechanism of Anemia in Cancer. C-2429(C2) 1957
- PHS-455 Studies of the Differential Uptake of Radioactive Tyrosine by Human Pigment-Cell Neoplasms Using Radioautography. C-2408 1955
- PHS-456 Studies of the Differential Uptake of Radioactive Tyrosine by Human Pigment-Cell Neoplasms Using Radioautography. C-2408(C) 1956
- PHS-457 P-32 Uptake by Bladder Tumor. C-1867 1954
- PHS-458 P-32 Uptake by Bladder Tumor. C1867(C) 1955

- PHS-459 P-32 Uptake by Bladder Tumor. C-1867(C2) 1956
- PHS-460 P-32 Uptake by Bladder Tumor C-1867(C3) 1957
- PHS-461 The Physical Determination of Isodose Curves Around Various Cobalt 60 and Cesium 137 Applicators for use in Cancer Treatment C-1866 1953
- PHS-462 The Physical Determination of Isodose Curves Around Various Cobalt 60 and Cesium 137 Applicators for use in Cancer Treatment. C-1866(S) 1954
- PHS-463 The Physical Determination of Isodose Curves Around Various Cobalt 60 and Cesium 137 Applicators for use in Cancer Treatment. C-1866(C) 1955
- PHS-464 A Study of Antibody-Isotope Complex in Advance Human Cancer. C-1835 1953
- PHS-465 A Study of Antibody-Isotope Complex in Advance Human Cancer. C-1835(C) 1954
- PHS-466 A Study of Antibody-Isotope Complex in Advance Human Cancer. C-1835(C2) 1956
- PHS-467 *Amino Acid Metabolism in Normal Man and in Patients with Growth Disturbances and Malignancy using Amino Acids Tagged with Isotopic Nitrogen N-15* C-1815 1953
- PHS-468 *Amino Acid Metabolism in Normal Man and in Patients with Growth Disturbances and Malignancy using Amino Acids Tagged with Isotopic Nitrogen N-15.* C-1815(C) 1954
- PHS-469 *Amino Acid Metabolism in Normal Man and in Patients with Growth Disturbances and Malignancy using Amino Acids Tagged with Isotopic Nitrogen N-15.* C-1815(C2) 1955
- PHS-470 Biological Effects of Radiation and the Sensitization Response-SR. C-1810 1953
- PHS-471 Biological Effects of Radiation and the Sensitization Response-SR. C-1810(S) 1954
- PHS-472 Biological Effects of Radiation and the Sensitization Response-SR. C-1810(C) 1954

- PHS-473 Biological Effects of Radiation and the Sensitization Response-SR. C-1810(C2) 1956
- PHS-474 Biological Effects of Radiation and the Sensitization Response-SR. C-1810(C3) 1957
- PHS-475 Biological Effects of Radiation and the Sensitization Response-SR. C-1810(C4) 1957
- PHS-476 Radiosensitivity of Cervical Cancer in Humans. C-1793 1953
- PHS-477 Radiosensitivity of Cervical Cancer in Humans. C-1793(C) 1954
- PHS-478 Radiosensitivity of Cervical Cancer in Humans. C-1793(C2) 1955
- PHS-479 Radiosensitivity of Cervical Cancer in Humans. C-1793(C3) 1956
- PHS-480 Multimillion Volt X-Ray and Electron Beam Cancer Therapy. 1956
- PHS-481 Effects of X-Radiation on DNA
- PHS-482 The Cellular Nucleic Acid Content of the Thymus as Related to Involution, Regeneration and Tumor Formation Induced by Roentgen Irradiation. 1953
- PHS-483 Studies on the Effect of Irradiation and Anticarcinogenic Drugs on the Oxygen Tension and Oxygen Consumption of Benign and Malignant Neoplasms in Vivo. C-1737 1953
- PHS-484 Studies on the Effect of Irradiation and Anticarcinogenic Drugs on the Oxygen Tension and Oxygen Consumption of Benign and Malignant Neoplasms in Vivo. C-1737(C1) 1954
- PHS-485 Preoperative Localization of Brain Tumors by Means of Radioactive Dyes. C-1714 1954
- PHS-486 Preoperative Localization of Brain Tumors by Means of Radioactive Dyes. C-1714(C) 1955
- PHS-487 Preoperative Localization of Brain Tumors by Means of Radioactive Dyes. C-1714(C2) 1955
- PHS-488 Metabolism of Phosphoprotein in Normal and Malignant Tissue. 1954

- PHS-489 Influence of Sheath Design on Energy Absorbed by Tissue Around Cobalt-60 and Cesium -137 Sources and its Clinical Significance. C-2078 1955
- PHS-490 Influence of Sheath Design on Energy Absorbed by Tissue Around Cobalt-60 and Cesium -137 Sources and its Clinical Significance. C-2078(C) 1956
- PHS-491 Amino Acid Metabolism in Neoplastic Disease. C-2076 1954
- PHS-492 Amino Acid Metabolism in Neoplastic Disease. C-2076(C) 1955
- PHS-493 Amino Acid Metabolism in Neoplastic Disease. C-2076(C2) 1956
- PHS-494 A Study of Intermediary Amino Acid Metabolism in Clinical Cancer. 1954
- PHS-495 Isotopic Tracer Studies of Tissue Synthesis and the Reactions of Metabolite Antagonists. C-2074 1954
- PHS-496 Isotopic Tracer Studies of Tissue Synthesis and the Reactions of Metabolite Antagonists. C-2074(C1&2) 1955 & 1956
- PHS-497 Metabolism of C-14 Labeled Estrone in Cancerous and Non-Cancerous Animals and Woman. C-2071 1954
- PHS-498 Metabolism of C-14 Labeled Estrone in Cancerous and Non-Cancerous Animals and Woman C-2071(C) 1955
- PHS-499 Metabolism of C-14 Labeled Estrone in Cancerous and Non-Cancerous Animals and Woman. C-2071(C2) 1956
- PHS-500 Metabolism of C-14 Labeled Estrone in Cancerous and Non-Cancerous Animals and Woman. C-2071(C3) 1957
- PHS-501 1. A Method of Concentration of Gonadotrophins by means of Ion Exchange Resins. 2. Endocrine Assays in Disturbed Pregnancy and Infertility using Simplified Techniques. 3. Endocrine Studies in Relation to Radiation Sensitivity of Gynecologic Cancer. C-2054 1954
- PHS-502 1. A Method of Concentration of Gonadotrophins by means of Ion Exchange Resins. 2. Endocrine Assays in Disturbed Pregnancy and Infertility using Simplified Techniques. 3. Endocrine Studies in Relation to Radiation Sensitivity of Gynecologic Cancer. C-2054(C) 1955

- PHS-503      *Micro dosimetry Determinations in Radiation Therapy. C-1984* 1954
- PHS-504      *Micro dosimetry Determinations in Radiation Therapy. C-1984(C & C2)*  
1955 & 1956
- PHS-505      *Micro dosimetry Determinations in Radiation Therapy. C-1984(C3)* 1957
- PHS-506      *Radiogold in the Study of Lymphatic Extension of Human Cancer and its*  
*use as a Guide for Treatment. C-1915* 1954
- PHS-507      *Radiogold in the Study of Lymphatic Extension of Human Cancer and its*  
*use as a Guide for Treatment. C-1915(C)* 1955
- PHS-508      *Radiogold in the Study of Lymphatic Extension of Human Cancer and its*  
*use as a Guide for Treatment C-1915(C2)* 1956
- PHS-509      *Radioisotopes in the Study of Dynamics of Lymphatic Dissemination of*  
*Cancer. 1957*
- PHS-510      *The Metabolism of C-14 Labeled (Radioactive) Diethylstilbestrol in* —  
*Cancerous and Non-Cancerous Animals and in Patients Suffering from* —  
*various forms of Cancer, Including Cancer of the Breast and Prostate.*  
1953
- PHS-511      *Pathologic Physiology of Polycythemia Vera and its Relation to Vascular*  
*and Neoplastic diseases. 1947-1952*
- PHS-512      *Development of an Irradiated Tuberculosis Vaccine. 1951-1953*
- PHS-513      *Influence of Tropical and Subtropical Climate on the Cardiovascular*  
*System, H-143 (C)*
- PHS-514      *Influence of Tropical and Subtropical Climate on the Cardiovascular*  
*System, H-143 (C2)*
- PHS-515      *Influence of Tropical and Subtropical Climate on the Cardiovascular*  
*System, H-143 (C3)*
- PHS-516      *Influence of Tropical and Subtropical Climate on the Cardiovascular*  
*System, H-143 (C5)*
- PHS-517      *Influence of Tropical and Subtropical Climate on the Cardiovascular*  
*System, H-143 (C6)*
- PHS-518      *Influence of Tropical and Subtropical Climate on the Cardiovascular*  
*System, H-143 (C7)*

- PHS-519      Studies of Pulmonary Heart Disease and Pulmonary Hypertension, 1949
- PHS-520      *Relative Importance of Elevated Venous Pressure in the Production of the Edema of Congestive Failure*, 1951
- PHS-521      Studies in Hemodynamics in Man  
PHS-521      Studies in Hemodynamics in Man (H242 C1)
- PHS-522      Dynamics of Circulation, Atherosclerosis, (H-275), 1948
- PHS-522      Dynamics of Circulation, Atherosclerosis, (H-275 C1), 1948
- PHS-523      The Relationship of the Thyroid Hormone to the Metabolism of Cholesterol and the Development of Atherosclerosis, (H-369 C2) 1952
- PHS-524      Circulatory adequacy of Surgical Patients Prior to and During Anesthesia and Operation, 1954
- PHS-525      *Studies in Renal Pathologic Physiology*
- PHS-526      Study of Regional Circulation in Health and Disease by the Clearance of Radioactive Sodium (H-421)
- PHS-527      Study of Regional Circulation in Health and Disease by the Clearance of Radioactive Sodium (H-421 C1)
- PHS-528      Study of Regional Circulation in Health and Disease by the Clearance of Radioactive Sodium (H-421 C2)
- PHS-529      Study of Regional Circulation in Health and Disease by the Clearance of Radioactive Sodium (H-421 C3)
- PHS-530      *Circulation: Blood Flow in Vessels and Tissues*, 1948
- PHS-531      *Endothelial Permeability in Ascites and Edema as Modified by Therapy*, 1955
- PHS-532      Estimation of Circulatory Adequacy of Surgical Patients Prior to and During Anesthesia and Operation, 1948

Atomic Energy Commission( AEC)

- AEC-1      The metabolism of radioactive colloids, 1954.

- AEC-2        Studies on the induction of thyroid cancer following administration of radioactive iodine. 1956
- AEC-3        The effects of various forms of irradiation of the brain on learned and unlearned behavior of monkeys and chimpanzees, 1953.
- AEC-4        Toxic effects of radiation, (GPM-309-C3) 1953-1956.
- AEC-5        Investigations of the biological effects of internally deposited radioisotopes and related radio-biology studies, 1956.
- AEC-6        Effects of radiation on learned skill and judgment, 1953.
- AEC-7        Biomedical research in atomic energy, 1951-1956.
- AEC-8        The origin and fate of thiocyanate in metabolism, 1956.
- AEC-9        The origin and fate of thiocyanate ion in metabolism, (GPM 291-C2) 1956.
- AEC-10       Effects of external radiation therapy during infancy and childhood on the growth of the spine, 1951.
- AEC-11       Metabolism of trace elements in animals and man with special reference to their role in erythropoiesis, 1955.
- AEC-12       The estimation of the rate of mutation of certain human genes, 1955.
- AEC-13       Biological nitrogen fixation with isotope tracers, 1951.
- AEC-14       Radioactive drug compounds research, (GPB-3-C5) 1956.
- AEC-15       Radioactive drug research, (GPB 3 C6) 1956.
- AEC-16       Radioactive drug compounds research, (GPB-3 C3) 1955.
- AEC-17       Effects of Thorium-x in selected vehicles applied to the skin of man, 1953.
- AEC-18       Scanning of In-Vivo concentrations of Radioactivity in an attempt to locate metastatic tumors and internal malignancies in the human body, 1951.
- AEC-19       Biological effects of heavy ionizing particles, (GPP-177-C2) 1953.
- AEC-20       The Biological effects of heavy ionizing particles, (GPP-177-C3) 1956.

- AEC-21 Biological effects of radiations from radioactive substances deposited in bone, 1956.
- AEC-22 Radium and mesothorium poisoning and dosimetry and instrumentation techniques in applied radioactivity, 1956
- AEC-23 Biological effects of Ionizing Radiation, (GPP-177) 1952.
- AEC-24 Research in Applied Radioactivity, 1953.
- AEC-25 Kinetic and Mass Spectrometric studies of Biophysical systems with radioactive and stable isotopes, 1956.
- AEC-26 Laboratory and clinical investigation of the Action of Radioactive Materials, 1954.
- AEC-27 Physiological effects of irradiation in patients receiving large doses of I131, 1950.
- AEC-28 Use of Phosphorous-32 for localization of brain tumors, 1951.
- AEC-29 Effects of Radioactive Iodine on Biology of the Thyroid Gland, (GPM 28 C6) 1955.
- AEC-30 The biological effects of radiation on thyroid tissue, (GPM-28-C5) 1955.
- AEC-31 The biological effects of radioactive iodine irradiation on thyroid tissue, (GPM 28 C4) 1954.
- AEC-32 Studies on Metabolism, (GPM 20) 1952.
- AEC-33 Erythropoiesis and Iron Metabolism, 1956.
- AEC-34 Isotope study of Hematopoiesis in man, (GPM 18 C4) 1956.
- AEC-35 Hematopoiesis in Man, (GPM 18 C3) 1954.
- AEC-36 Isotope studies in Iron Metabolism, (GPM 18) 1952.
- AEC-37 Radiation studies of Fetal and other Thyroids, 1957.
- AEC-38 Localization of Radioactive Material in the Body, (GPM 9) 1952.
- AEC-39 Radioisotope Studies in Hodgkin's Disease, 1956.

- AEC-40 Investigation of Enzymic Biochemical and other Cytological Activities of Human Leukocytes, 1956.
- AEC-41 The Role of Plasma Erythropoietic Factor in the Anemia of Malignancy, 1956.
- AEC-42 Continuous blood volume recording procedure in patients under anesthesia and during surgery, with special regard to specific physiological conditions, 1956.
- AEC-43 Isotopes in cardiac disease, 1956
- AEC-44 The Uptake of Radioactive Rubidium (Rb 86) by Tumors of the Breast in Humans, 1956.
- AEC-45 Characterization of Changes in the Growth Rate of Human Neoplasms Using Radioactive Isotopes, (GPM 411) 1956.
- AEC-46 Investigation of distribution, localization and excretion of tagged triethylene thiophosphoramidate following injection by various routes, 1956.
- AEC-47 The Long-Term Effects of I 131 Radiation in Man, (GPM 115 C5) 1956.
- AEC-48 The Long-Term Biologic Effect of Radiation in Man, (GPM 115 C2) 1953.
- AEC-49 Long Term Radiation Effects of I 131 in Man, (GPM 115) 1953.
- AEC-50 A study of the physiological function and histological changes of thyroids irradiated with radioactive iodine, 1956.
- AEC-51 A Study of the Physiological function and histological changes of thyroids irradiated with radioactive iodine, 1955.
- AEC-52 Metabolism of steroids Utilizing Radiocarbon Labeled Compounds, 1952.
- AEC-53 Metabolism of Steroids, (GPM 109-C1), 1953.
- AEC-54 External Localization of Brain Tumors Employing Positron Emitting Isotopes, (GPM 108 C4) 1956.
- AEC-55 External Localization of Brain Tumors Employing Positron Emitting Isotopes, (GPM 108-C3) 1955.

- AEC-56 External Localization of Brain Tumors Employing Positron-emitting Isotopes, (GPM 108 C2) 1955
- AEC-57 External Localization of Brain Tumors Employing Positron Emitting Isotopes, (GPM 108) 1953.
- AEC-58 The use of radioactive ruthenium in the treatment of superficial lesions, 1951.
- AEC-59 Collection and correlation of data on the toxicological effects of fissionable and radioactive material, 1951.
- AEC-60 The Influence of Radiation Injury upon Physiology of Serum Lipids with Particular Reference to the Function of the Liver, 1956.
- AEC-61 The Use of Rays as a Therapeutic Agent in Carcinoma, 1954.
- AEC-62 The Use of Gamma Ray (Radio-Active Gold) as a Therapeutic Agent in Carcinoma, (GPM 100 C2) 1954.
- AEC-63 Studies on Nucleic Acids and Mineral Metabolism in Cancer, using lanthanum, calcium, and phosphorus, 1953.
- AEC-64 Microbiological Assays for Vitamin B 12, Folic Acid, and Nucleic Acid Components in Blood, 1953.
- AEC-65 Turnover Rates and Rubidium under controlled dietary and conditions in patients with chronic congestive heart failure and in control subjects, 1954.
- AEC-66 Biochemical changes of the eye accompanying formation of cataract induced by irradiation, 1955.
- AEC-67 Studies on Radiation Induced Cataracts, (GPM 85 C3) 1954.
- AEC-68 Studies on Radiation Induced Cataracts, (GPM 85 C2) 1953.
- AEC-69 The effect of total body x-irradiation upon water and electrolyte metabolism in laboratory animals and man, (GPM 84 C3) 1955.
- AEC-70 Effects of Ionizing Radiation on Electrolyte and Water Metabolism, (GPM-84 C2) 1953
- AEC-71 Effect of ionizing radiation on electrolyte and water metabolism, (GPM 84) 1952.

- AEC-72      Synthesis of Hemoglobin in Bone Marrow and Maturation and Multiplication of Blood cells, 1956.
- AEC-73      University of Michigan Project for the Study of the Hematological and Biochemical Effects of irradiation. (GPM 80 C2) 1952.
- AEC-74      Study of Biological effects of irradiation (GPM 80) 1953.
- AEC-75      Study of Metabolic Activities of Living Organisms by Means of Suitable Isotopes, 1956.
- AEC-76      Use of Isotopes as Therapeutic and Diagnostic Agents, (GPM 76) 1956.
- AEC-77      Antibiotic therapy in the x-ray irradiation syndrome, (GPM 74) 1 Undated
- AEC-78      Committee on Radiation Cataracts, (GPM 73) 1953.
- AEC-79      Physiologic and Pathologic Effects of Radioactive Cobalt, 1951.
- AEC-80      Effects of Beta Radiation on the Distribution of Phosphates in Red Blood Cells and in Cardiac Muscle, (GPM 61) 1955.
- AEC-81      Study of the Effect of Beta Radiation on the Distribution of Phosphate in Red Blood Cells and in Cardiac Muscle, (GPM 61 C5) 1955
- AEC-82      Clinical Cancer research in field of radiology, (GPM 59) 1950.
- AEC-83      Metabolic and Enzymatic Studies with Radioisotopes, (GPM 50 C6) 1956.
- AEC-84      Localization of Brain Tumors Using Positron - Emitting Isotopes, (GPM 50 C5) 1955.
- AEC-85      Turnover of Organic Phosphates in the Kidney, 1953.
- AEC-86      Physiological and Therapeutic Investigations and Fundamental Blood Studies Using Radioactive Isotopes, (GPM 47) 1956.
- AEC-87      The Use of Radioactive Gold in the Treatment of Tumors, (GPM 48 C6) 1956.
- AEC-88      Study of vascular factors in radiation hemorrhage and other hemorrhagic diatheses in patients and experimental animals, (GPM 46) 1952.

- AEC-89 A Study of the Redistribution of Bivalent Metallic Ions in Bone Metabolism and in Bone Diseases and Neoplasms Through the Use of Radioisotopes and Novel Chelating Compounds, 1953.
- AEC-90 Production of Cataracts by Neutrons and other radiations, (GPM 44) 1953.
- AEC-91 Isotope Technique Training; Use of Isotopes on Medical Problems, 1956
- AEC-92 Biological Effects of Radiation, and Related Biochemical and Physical Studies, 1956.
- AEC-93 Metabolism of trace elements in animals and men with special reference to their role in erythropoiesis. 1950-1951
- AEC-94 Studies on endocrine and other factors governing the incorporation of labeled amino acids into tissue proteins in vivo. 1950-1954
- AEC-95 Fundamental and clinical aspects of porphyrin and bile pigment metabolism with special reference to hemoglobin metabolism and the anemias. 1950-1955
- AEC-96 Research on porphyrin metabolism in man under normal and diseased conditions. 1950-1953
- AEC-97 Studies of porphyrin and bile pigment in man under normal and diseased conditions and in experimental animals. 1950-1954 GPM-275 C3, GPM-275 C4 1950-1956
- AEC-98 The use of thermal and epithermal neutrons in the treatment of neoplasms. 1951-1956 GPM-260 C4, GPM-260 C3 1951-1956, GPM-260 1951-1955
- AEC-99 Skin changes produced by low voltage roentgen ray irradiation. 1950-1951
- AEC-100 Distribution of sodium and potassium in man. 1950-1951
- AEC-101 Study of the carcinogenic effect of irradiation therapy in peptic ulcer. 1950 1953 GPM-224, GPM-224 C1 1950-1953, GPM-224 C3 1950-1955, GPM-224 C4 1950-1956
- AEC-102 Studies on the effects of adrenocortical hormones on cultivation and transplantation of human blood cellular elements; Efforts at improving the survival of marrow elements by other pharmacological means; Follow-up studies of patients receiving whole body irradiation through internally

- administered isotopes or spray irradiation. 1951-1952 GPM-222 C1, GPM-222 1951-1953
- AEC-103 Influence of particle size on the retention of mist particles in the human respiratory system. 1950-1954
- AEC-104 Use of radioisotopes in the treatment of cancer. 1950-1954 GPM-213 C3, GPM-213 C2 1950-1953, GPM-213 C1 1950-1953, GPM-213 1950-1952
- AEC-105 Effects of exposure to radioactive material and X-ray irradiation on nerve tissue. 1950-1952
- AEC-106 Effects of radiation on the structure and function of the digestive system, particularly the gastro-intestinal tract in man. 1950 1954
- AEC-107 The turnover of specific proteins, protein fractions and nucleic acids in normal and malignant human testis and kidney. 1951-1957
- AEC-108 Investigation of the effects of radiation on the Bio-synthesis and metabolism of adrenocortical steroids. 1950-1953 GPM-176, 1950-1956 GPM-176 C4, 1950-1956 GPM-176 C5
- AEC-109 Toxicity of radiation as related to previous damage and the functional capacity of an organ; The effect of P-232 and X-rays on liver and marrow. 1949-1953
- AEC-110 Study of the effect of radioactive iodine on patients with carcinoma of the thyroid and with hyperplastic thyroid. 1950-1953
- AEC-111 The study of the effects of radiation on the immune response and the application of radioactive isotope techniques to the investigation of the fundamentals of immunity. 1951-1955 GPM-144 C3, 1951-1955 GPM-144 C2
- AEC-112 Further development and utilization of radioactive dyes in the diagnosis and treatment of brain tumors. 1951-1953 GPM-139 C4, 1951-1954 GPM-139 C3 1951-1953 GPM-139 C1, 1951-1952 GPM-139
- AEC-113 A. Studies on the absorption, utilization and excretion of vitamin B12 B Studies on blood coagulation, hemorrhagic diseases. 1951-1956 GPM-135 C4, 1951-1955 GPM-135 C3, 1951-1955 GPM-135 C2, 1951-1952 GPM-135

- AEC-114 Study of the possible factors in regeneration of hematopoietic tissue in aplastic anemias, both idiopathic and secondary to radiation injury, in human subjects. 1952-1954
- AEC-115 Blood volume and blood turnover in cases of head injury as determined by P-32 labeled red blood cells. 1952-1955 GPM119 C2, 1952-1955 GPM-119 C1, 1952-1954 GPM-119
- AEC-116 A study of intermediary metabolism with isotopically labeled compounds in perfused organs, whole animals and humans 1952-1956 GPM-118 C4, 1952-1955 GPM-118 C3
- AEC-117 Individual response to ionizing radiation in animals and patients. 1952-1957 GPM 116 C3, 1952-1956 GPM 116 C2, 1952-1955 GPM 116
- AEC-118 Use of radioactive gold in treatment of tumors. 1955-1955
- AEC-119 Strontium metabolism in humans 1954-1955
- AEC-120 Dynamics of strontium distribution in the body. 1954-1956 GPM396 C1, 1954-1955 GPM-396
- AEC-121 To investigate, develop and evaluate radioisotopes for teletherapy. 1954-1955 GPM-390
- AEC-122 Isotopic labeling of blood platelets. 1954-1956
- AEC-123 Biological and medical investigations with the 70 MeV linear electron accelerator. 1954-1956
- AEC-124 Evaluation of radioactive isotope gamma ray sources for medical teletherapy. 1954-1956 GPM-380 C1, 1954-1955 GPM-380
- AEC-125 Committee on radiation cataracts. 1949-1956
- AEC-126 The metabolism of calcium and strontium as disclosed by tracer studies on patients with thyroid and related diseases. 1955-1956
- AEC-127 Palliation of respiratory distress in cases of pulmonary insufficiency by the use of I-131. 1955-1956
- AEC-128 Hemodynamics: Blood dynamics as measured by simultaneous multiple port scintillation detection of I-131 human serum albumin. 1955-1956

- AEC-129 Iodinated components associated with toxic nodular goiter in human beings 1954-1956 GPM-278 C1, 1954-1955 GPM-378
- AEC-130 To investigate, develop and evaluate radioisotopes for teletherapy. GPM-375
- AEC-131 Radio-Iodine studies of fetal and other thyroids. 1954-1956
- AEC-132 Study of mechanisms of radioactive isotopic localization in tissues of the CNS. 1954-1957 GPM-364 C2, 1954-1957 GPM-364 C1
- AEC-133 An investigation of the use of Na-24 in cerebral edema, brain tumors and focal epileptic lesions. 1954-1957 GPM-361 C1, 1954-1956 GPM-361
- AEC-134 A re-evaluation of radiation injury (B-Rays) of the skin by a direct method approach. 1953-1954
- AEC-135 A study of intermediary metabolism by means of labeled compounds. 1954-1956 GPM-358 C1, 1954-1955 GPM-358
- AEC-136 The mechanism of the activities of latent epidemic typhus infections in the laboratory animals and in humans by cortisone and x-ray. 1954-1957
- AEC-137 Neoplasia and the disposal of exogenous thyroxin. 1954-1956
- AEC-138 Studies on the hemorrhagic state following exposure to radiation. 1953-1955
- AEC-139 The study of the biologic effects of ionizing radiation (Alpha & Beta) on human skin. 1953-1956 GPM-336 C2, 1953-1956 GPM-336 C1
- AEC-140 The effects of betatron 23 MeV X-rays upon tumors of the central nervous system of man and upon the normal nervous system of man and monkey. 1953-1955 GPM-330 C2, 1953-1954 GPM-330
- AEC-141 Effect of exposure to radioactive material and to x-ray irradiation on nerve tissue. 1953-1956
- AEC-142 Immunological study of tumors 1953-1957
- AEC-143 Investigation of pick up of radioactive phosphorus in primary and metastatic tumors of the lung, including the study of methods to enhance a greater pick-up of this radioactive isotope by pulmonary neoplasms. 1953-1955

- AEC-144      Studies of hemic effects of radioisotopes, X-rays and adrenocortical hormones 1952-1956 GPM-324 C3, 1952-1956 GPM 324-C2, 1952-1955 GPM-324 C1
- AEC-145      Effects of radiation and chemical agents on differentiation of normal and neoplastic tissue. 1952-1953
- AEC-146      Evaluation of body fluid distribution of sodium and potassium in normals, hypertensives and renal disease with collateral physiological studies. Comparison of C-14 sucrose space and insulin space. Comparison of S-35 sulfate space with insulin space. Fate of insulin and sucrose in oliguria. 1952-1956 GPM-321 C1, 1952-1954 GPM-321
- AEC-147      Clinical evaluation of Cesium-137 teletherapy. 1952-1955 GPM-320 C2, 1952-1954 GPM-320 C1
- AEC-148      The metabolism of radioactive colloids 1952-1954