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[Handwritten signatures and initials]

Contract No. AT-(40-1)-1081
Duke University, School of Medicine
Modification No. 2

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 30th day of January, 1953, effective as of January 1, 1953, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and DUKE UNIVERSITY, SCHOOL OF MEDICINE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1081, dated December 14, 1950, for a study by the Contractor of the metabolism of the human bone marrow, which contract was subsequently extended by Modification No. 1 thereto, dated February 6, 1952; and

WHEREAS, the parties desire to further extend the term of the contract in order to continue the research work; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1946;

NOW, THEREFORE, the parties hereto do mutually agree that Contract No. AT-(40-1)-1081 is modified in the following respects, but in no others:

1. In ARTICLE II - TERM OF CONTRACT, add the following new section 3:

"3. The third period of performance for the project covered by this contract will commence on January 1, 1953, and will end on December 31, 1953."

2. In ARTICLE III, section 1, Consideration, add the following new subsection c:

"c: In consideration of the Contractor's performance of the research activities described in Title III to Appendix 'A', the Government shall pay to the Contractor the sum of Ten Thousand Dollars (\$10,000.00) for the third period of performance."

3. In ARTICLE V - REPORTS, RECORDS AND INSPECTION, add the following new section 4:

REPOSITORY Oak Ridge Operations
COLLECTION Records Holding area
Documents 1944-94
BOX No. Contracts AT-(40-1)-1040-1092
3 of 3 Bldg 2714-H
FOLDER Contract AT-(40-1)-1081
Duke Univ.

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"4. Examination of Records

"a. The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor involving transactions related to this contract.

"b. The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract with the Government, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor involving transactions related to the subcontract. The term 'subcontract' as used herein does not include (i) purchase orders not exceeding \$500, or (ii) contracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

"c. Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract."

4. In Appendix "A", add the following Title III:

"Title III

"January 1, 1953 - December 31, 1953

"1. PROJECT

"a. Scope and Plan of Approach

During this period studies will be continued on the metabolism of mature and immature stages of human leukocytes obtained from normal and diseased patients. Aspects of the biochemistry

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of the white blood corpuscles will be studied in relation to disease and the normal blood picture. Chemical substances which are used in clinical alleviation of abnormal bone marrow function will be studied with respect to their action upon leukocytes. Bone marrow tissue and isolated cells will be examined with respect to their metabolic picture. Studies will be continued on the metabolism of specific chemical compounds as energy sources.

"2. BUDGET - Third Period - January 1, 1953 - December 31, 1953

"a. The Contractor shall furnish as its contribution to the project:

- (1) Salaries of staff members, including the Project Leader, and other personnel engaged in the work in excess of the Government's payments under b. (1) below.
- (2) Use of laboratory work space, and equipment, materials and facilities needed for the project in excess of the Government's contribution under b. below.
- (3) All clerical, administrative and overhead costs in excess of the Government's payment under b. below.

"b. The Government's payment as provided in subsection 1 c. of ARTICLE III will cover the Contractor's other expenses, estimated as follows, in the performance of the contract during the third period:

(1) Salaries and Wages

Professional Assistant (Dr. T. Arends), January - March, 1953	\$ 825.00
Technical Assistant (Mrs. E. Sullenberger), Full-time	3400.00
Technical Assistance, Part-time	2759.00

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(2) Expendable Equipment and Supplies	\$2000.00
(3) Communications and Travel	275.00
(4) Overhead (8%)	<u>741.00</u>
TOTAL	\$10,000.00

"c. Items of property procured or manufactured by the Contractor during this period of the contract, title to which will vest in the Government (see ARTICLE VI):
None."

5. In Appendix "B", GENERAL PROVISIONS, section 3, Disclosure of Information, subsection a, delete the third sentence thereof, and substitute therefor the following:

"Except as the Commission may authorize, in accordance with the Atomic Energy Act of 1946, as amended, the Contractor shall not permit any individual to have access to restricted data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense or security. As used in this paragraph the term 'designated investigating agency' means the United States Civil Service Commission or the Federal Bureau of Investigation, or both, as determined pursuant to the provisions of the Atomic Energy Act of 1946, as amended by the Act of April 5, 1952, Public Law 298, 82nd Congress, 66 Stat. 43."

Contract No. AT-(40-1)-1081
Modification No. 2

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IN WITNESS WHEREOF, the parties hereto have executed this Supplemental Agreement the day and year first above written.

UNITED STATES OF AMERICA

BY: U. S. ATOMIC ENERGY COMMISSION

BY: *Kenneth Kasschau*

KENNETH KASSCHAU
DIRECTOR OF RESEARCH AND MEDICINE

TITLE: _____

DUKE UNIVERSITY, SCHOOL OF MEDICINE

BY: *A. Hollis Edens*

A. Hollis Edens

TITLE: President §

WITNESSES:

A. S. Brower

A. S. BROWER
Durham, North Carolina
(Address)

Patricia Silver

PATRICIA SILVER
Durham, North Carolina
(Address)

Acceptance By Project Leader

I have read the foregoing Supplemental Agreement and agree to be bound by its provisions.

Wayne Rundles, M.D.
Project Leader

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TYPED _____
PREPARED WEG
APPROVED [Signature]

Contract No. AT-(40-1)-1081
(Duke University, School of Medicine)
Modification No. 1

RETURN TO
CONTRACT SECTION
11/8/52

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 6th day of February, 1952, effective as of January 1, 1952, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and DUKE UNIVERSITY, SCHOOL OF MEDICINE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1081, dated December 14, 1950, for research by the Contractor into the metabolism of the human bone marrow; and

WHEREAS, the parties desire to extend the term of the Contract in order to continue the research project undertaken during the initial period, as described in TITLE II of Appendix "A"; and

WHEREAS, the Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1946;

NOW, THEREFORE, the parties hereto do mutually agree that Contract No. AT-(40-1)-1081 is modified in the following particulars, but in no others:

1. Insert the section number "1." before the first word of ARTICLE II - TERM OF CONTRACT, and add the following new Section 2 to ARTICLE II:

"2. The second period of performance for the project covered by this Contract will commence on January 1, 1952, and will end on December 31, 1952."

2. Insert the subsection letter "a." between the words "Consideration" and "In" in Section 1 of ARTICLE III, and add the following new Subsection b to Section 1 of ARTICLE III:

"b. In consideration of the performance of the work described in TITLE II of Appendix 'A', the Government will pay to the Contractor the sum of Eight Thousand Five Hundred Forty-Four Dollars (\$8,544.00) for the second period of performance. It is expressly agreed and understood that the sum of One Thousand Five Hundred Dollars (\$1,500.00) which has been previously paid to the Contractor by the Government but which remained unexpended at the end of the initial period of performance will be applied to the costs of the second period."

3. Insert the term "TITLE I" under the heading of Appendix "A" and add the following new TITLE II to Appendix "A":

"TITLE II

"January 1, 1952 - December 31, 1952

"1. PROGRAM

"A. PROJECT

"The general program will continue to be a study of the metabolism of the human bone marrow as described in TITLE I. Methods for measuring lactic acid production, aerobic and anaerobic glucose utilization will be standardized. Filter paper chromatography methods for amino acid analysis will be set up.

"2. BUDGET - Second Period: January 1, 1952 - December 31, 1952

"A. The Contractor will furnish as its contribution to the project:

- (1) Salaries of staff members, including the Project Leader, engaged in the work, except as provided in b (1) below.
- (2) Use of laboratory work space and equipment and facilities on hand.
- (3) Clerical and administrative expenses and other general and administrative type costs, including overhead, except as provided in b below.

"B. The Government will pay to the Contractor the sum of Eight Thousand Five Hundred Forty-Four Dollars (\$8,544.00) which, together with the amount of One Thousand Five Hundred Dollars (\$1,500.00) remaining unexpended from the Government's payments during the initial period of performance, will cover the Contractor's other expenses, estimated as follows, in the performance of the Contract during the second period:

(1) Salaries

Dr. Roy Shipke,	
Professional Assistant	\$ 5,600.00
Technicians	4,000.00

(2) Capital Equipment

Laboratory benches, cabinets, Warburg vessels and manometers, blood centrifuge equipment, etc.	500.00
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(3) Expendable Equipment and Supplies

Chemicals, reagents, glass-ware, etc.	1,000.00
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(4) Communication and Travel 200.00

(5) Overhead @ 8% \$ 9,300.00
744.00

	\$10,044.00
Less Unexpended Funds	1,500.00

TOTAL	\$ 8,544.00
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"C. Items of property procured or manufactured by the Contractor under this Contract, title to which will vest in the Government (See ARTICLE VI): None."

IN WITNESS WHEREOF, the parties hereto have executed this Supplemental Agreement on the day and year first above written.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: C. Vanden Bulck
C. Vanden Bulck
TITLE: Assistant Manager, ORO

WITNESSES:

[Signature]
Durham, N. C.
(Address)

[Signature]
Durham, N. C.
(Address)

DUKE UNIVERSITY, SCHOOL OF MEDICINE

BY: A. Hollis Edens
A. Hollis Edens
TITLE: President

ACCEPTANCE BY PROJECT LEADER:

I have read the foregoing Supplemental Agreement and I agree to be bound by the terms of this document.

Wayne Pinellas, M.D.
Project Leader

STATEMENT AND CERTIFICATE OF AWARD

No. AT-(40-1)-1081
(Contract)
Date December 14, 1950

U. S. Atomic Energy Commission
(Department or establishment)

(Bureau or office)

Oak Ridge, Tennessee
(Location)

METHOD OF OR ABSENCE OF ADVERTISING

(Section 3709 of the Revised Statutes)

FOR USE BY G. A. O. ONLY		
Indexed	Card	Reviewed

- After advertising in newspapers.
 - (a) After advertising by circular letters sent to _____ dealers.
(b) And by notices posted in public places.
(If notices were not posted in addition to advertising by circular letters sent to dealers, explanation of such omission must be made. The notation on the certificate below must be "2 (a) (b)" or "2 (a)," depending on whether or not notices were posted.)
 - Without advertising, under an exigency of the service which existed prior to the order and would not admit of the delay incident to advertising.
 - Without advertising in accordance with the Atomic Energy Act of 1946
 - Without advertising, it being impracticable to secure competition because of _____
- (Here state circumstances under which the securing of competition was impracticable)

AWARD OF CONTRACT

- To lowest bidder as to price (Expenditures).
- To other than the lowest bidder as to price (Expenditures).
- To highest bidder as to price (Receipts).
- To other than the highest bidder as to price (Receipts).

CERTIFICATE

I CERTIFY that the foregoing statement is true and correct; that the agreement was made in consequence of No. 4 of the method of or absence of advertising and in accordance with award of contract lettered _____, as shown above; that the total number of bids received is _____, and that where lower bids (expenditure contracts) or higher bids (receipt contracts) as to price were received a statement of reasons for their rejection, together with an abstract of bids received, including all lower than that accepted in case of expenditure contracts and all higher in case of receipt contracts, is given below or on the reverse hereof or on a separate sheet attached hereto; that the articles or services covered by the agreement (expenditure) are necessary for the public service, and that the prices charged are just and reasonable.

C. Vanden Bulck

(Signature of contracting officer) C. Vanden Bulck

Contracting Officer

(Title)

NOTE.—This statement and certificate will be used to support all agreements, both formal contracts and less formal agreements of whatever character, involving the expenditure or receipt of public funds. It must be executed and signed by the contracting officer (unless the award is made by or is subject to approval by an officer other than the contracting officer, when execution and signature may be made by such officer).

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UNITED STATES
ATOMIC ENERGY COMMISSION

FORM D
1-50
AT-40-1-1081
RHS
WCB
CONT'D

LUMP SUM
RESEARCH CONTRACT

Contract No. AT-(40-1)-1081

THIS CONTRACT, entered into this 14th day of November, 1950, by the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission") and Duke University, School of Medicine (hereinafter called the "Contractor"):

ARTICLE I - PURPOSE AND SCOPE

1. The Commission, in furtherance of its policy of assisting and fostering private research, desires to support the Contractor's fundamental research in the field of atomic energy.

2. The work shall consist of a study of the metabolism of the human bone marrow.

The plan of approach to the problem and the agreed upon program and budget for the project are described in Appendix "A", which is hereby made a part of this contract. The Contractor shall be guided by, but not bound to conform to the details of the budget described in Appendix "A".

3. The Contractor shall furnish all services, facilities, equipment, supplies and materials (except such services, equipment, supplies and materials as the Government has agreed to furnish herein) required for the performance of the research program described in Section 2 above.

4. The work will be carried out by the Contractor under the direction of R. W. Rundles as Project Leader

ARTICLE II - TERM OF CONTRACT

The initial period of performance for the research project covered by this contract will commence on January 1, 1951 and will end on December 31, 1951.

It is recognized that completion of the research work under this contract may involve a period of several years and that the term of this contract may be extended by mutual agreement.

ARTICLE III

1. Consideration. In consideration of the performance of the research activities described in Article I, the Government shall pay to the Contractor the sum of Twelve Thousand Forty-two Dollars (\$12,042.00) for the initial period of performance.

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2. Payment

- a. On or before the date of commencement of work on the project described in Appendix "A", the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, one-half the amount of the agreed consideration.
- b. On or before the expiration of six months from the date of commencement of the project, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, the remaining one-half of the agreed consideration.
- c. In the event that the term of the contract is extended, the Government shall pay to the Contractor, upon submission by the Contractor of properly certified vouchers, each six months in advance an amount equal to one-half the annual agreed consideration for the project as mutually agreed upon by the parties hereto.

3. Program and Budget for Subsequent Periods. At least three months before the end of the initial period of performance of the project, the Contractor will submit to the Commission a current statement of its expenditures for the project, an estimate of expenses to be incurred during the remainder of the period, and a proposed program and budget for the succeeding year, showing the proposed work to be financed by the Commission and the Contractor. The Contractor and the Commission shall then negotiate as to the amount to be paid by the Commission to the Contractor for the services to be performed during the ensuing period, taking into consideration any portion of payments theretofore made which will remain unexpended at the end of the initial period. The extended program, budget and the additional amount to be paid to the Contractor shall be incorporated into a formal modification to this contract.

ARTICLE IV - ADMINISTRATION OF CONTRACT BY COMMISSION

The Commission has assigned the responsibility for administering the technical and scientific aspects for the project to the Washington organizational unit set forth below, to be addressed as follows:

Medical Branch
Division of Biology and Medicine
U. S. Atomic Energy Commission
1901 Constitution Avenue, N. W.
Washington 25, D. C.

Responsibility for administering the business aspects of this contract, including contract negotiations, budget, payment, audit, etc., has been assigned by the Commission to:

Office of Research & Medicine
Oak Ridge Operations Office
U. S. Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee

The Contractor may, as necessary, communicate directly with the appropriate office, as indicated above. The Contractor shall furnish information copies of communications, memoranda of telephone conversations, or other contacts to Oak Ridge Operations Office on all direct dealings with the Washington Office.

ARTICLE V - REPORTS, RECORDS AND INSPECTION

1. The Commission shall have the right to inspect in such manner and at such times as it deems appropriate all activities of the Contractor arising in the course of the work under this contract.

2. The Contractor shall make progress and other reports in such manner and at such times as specified in Appendix "C" which is attached hereto and hereby made a part of this contract. Progress reports shall include a list of personnel working on the project. Names appearing for the first time should be accompanied by a brief statement of the individual's background, training, and experience.

3. The Commission shall at all times be afforded access to the premises and to all technical records, correspondence, instructions, drawings, and memoranda of record value of the Contractor pertaining to said work.

ARTICLE VI - TITLE TO PROPERTY PURCHASED BY CONTRACTOR

In consideration of the Contractor's contribution to the research project described in Appendix "A" of this contract, title to all materials, tools, machinery, equipment and supplies, acquired from any source including the Government, or manufactured by the Contractor under this contract shall vest in the Contractor, except that title to items of property described in Section 2.c. of Appendix "A" shall vest in the Government.

ARTICLE VII - PURCHASE OF RADIOISOTOPES

The Contractor shall purchase, to the extent available in appropriate form, all radioisotopes, irradiation services and cyclotron time required in the performance of the work hereunder, through the Commission's Isotope Division, Post Office Box E, Oak Ridge, Tennessee.

ARTICLE VIII - GENERAL PROVISIONS

The provisions of Appendix "B", attached hereto, are hereby made a part of this contract.

ARTICLE IX - AUTHORIZATION

This contract is authorized by and has been executed under the Atomic Energy Act of 1946.

ARTICLE X - ALTERATIONS

The following alterations to this contract were made by mutual agreement of the parties prior to its execution:

Sentence 3 of Section 3 of Appendix "B" providing for the security clearance of the Project Leader is hereby deleted.

IN WITNESS WHEREOF, the parties hereto have executed this contract the day and year first above written.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: C. Vanden Bulck
C. Vanden Bulck, Contracting Officer

WITNESSES:

As Brown
Durham, NC
(Address)

Jane Johnson
Durham, N.C.
(Address)

DUKE UNIVERSITY

(Contractor)

BY: A. Hester Easley

TITLE: President

ACCEPTANCE BY PROJECT LEADER

I have read the foregoing Contract and the Appendices attached hereto and made a part hereof, and I agree to be bound by the provisions of this document.

R. W. Rundle, M.D.
Project Leader

APPENDIX "A"

Contract No. AT-(40-1)-J081

(Duke University, School of Medicine)

1. PROJECT

a. Scope and Present Status

The bone marrow differs from most organs and tissues in the body in that its main product is blood cells. Comparatively few studies have been made of its metabolism (Warren, J. Biol. Chem. 167:543, 1947; Guzman Barron, et al, J. Biol. Chem. 171:801, 1947, J. Exp. Med. 87:489 and 503, 1948, J. Gen. Physiol. 32:537 and 595, 1949, Bird and Evans, J. Biol. Chem. 178:289, 1949). Most investigators have used rabbit bone marrow. The findings in general indicate that oxygen utilization is 5 times less than that of highly respiring tissues. Glucose, pyruvate, acetate, and amino acids are utilized vigorously. Some evidence suggests that fatty substances may be especially important nutrients.

No attempts appear to have been made to study the metabolism of the human bone marrow. Since cellular morphology varies from species to species it is possible that metabolic activity does also.

The hemopoietic tissues furthermore are among the most vulnerable to the action of some destructive agents that may be employed in warfare and are frequently involved in clinical diseases. The latter include nutritional deficiencies (megaloblastic cell development), chemical or drug damage (aplastic anemia, agranulocytosis, some types of thrombocytopenic purpura and hemolytic anemia), radiation depression or damage, and malignant diseases (leukemia, sub-leukemia, multiple myeloma, etc.)

b. Outline of Work and Plan of Approach

Preliminary studies indicate that bone marrow cells can be aspirated from human subjects in sufficient quantity for in vitro studies using the Warburg apparatus. Adequate methods are available for separating the primitive blood cells from the erythrocytes, and for determining the rate of many metabolic processes/mg. of fat free tissue.

An attempt will be made to determine first the conditions for optimal survival of the marrow cells, or better growth and proliferation, if possible in a chemically defined medium. Then a study will be made of the rate of O₂ consumption, the utilization of glucose, pyruvate, acetate, and amino acids, essential and otherwise in normal and abnormal marrow as influenced by roentgen irradiation, the presence of P 32, urethane and other agents which have a well defined influence on marrow function.

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Studies on amino acid uptake will require studies with synthetic radioactive amino acids, as well as amino acid analyses employing filter paper chromatography and microbiological assay.

The hematologic effects of urethane have been investigated in the Duke hematology laboratory for 3 years. The compound suppresses the growth of myeloid elements in myelogenous leukemia and plasma cells in multiple myeloma selectively and beneficially. An understanding of its metabolic effect in bone marrow is an important matter which may be studied advantageously in vitro and in vivo with the aid of the radioactive urethane.

c. Materials, Equipment and Facilities

The facilities of a small but well equipped hematology laboratory, organized and staffed as a consultation service for Duke Hospital patients, will be available for this investigation. An abundance of clinical material is available. An additional laboratory will be available in the Medical Research Building where electrophoretic and physico-chemical studies of proteins are being carried out. Expanded laboratory quarters in Duke Hospital will be available for use when current construction is completed.

Warburg equipment already purchased will be utilized on the project. Additional equipment and supplies as indicated in Section 2 of Appendix "A" purchased with Commission funds will be used in this investigation.

2. BUDGET

a. The Contractor will furnish the following:

- (1) Salary of the Project Leader
- (2) Laboratory Work Space
- (3) Supplies normally provided for and salaries of personnel normally employed in the Hematology and other laboratories and research projects under the supervision and direction of the Project Leader.
- (4) Salaries of R. W. Willett and Gordon R. McKinney from January 1, 1951 - June 30, 1951.

b. Cost to Commission

The sum of \$12,042 to be paid by the Commission under this contract shall be used by the Contractor in accordance with Article I and the following schedule for the period January 1, 1951 - December 31, 1951:

(1) <u>Salaries and Wages</u>	
R. W. Willett (July 1, 1951 - December 31, 1951)	1,750.00
G. R. McKinney (July 1, 1951 - December 31, 1951)	1,750.00
1 Technician	2,400.00
(2) <u>Capital Equipment</u>	
Chromatography cabinets (3)	750.00
Coleman Jr. Spectrophotometer	300.00
Dubnoff Metabolic Shaking Incubator	300.00
Warburg glassware	250.00
Analytic balance	600.00
Refrigerator-freezer	250.00
(3) <u>Expendable Equipment and Supplies, (Chemicals, reagents, glassware, experimental animals, etc.)</u>	2,500.00
(4) <u>Communication and Travel</u>	<u>300.00</u>
	11,150.00
(5) <u>Institutional Overhead @ 8%</u>	<u>892.00</u>
	TOTAL 12,042.00

c. Items of property procured or manufactured by the Contractor under this contract, title to which will vest in the Government. See Article VI.

<u>QUANTITY</u>	<u>DESCRIPTION</u>
None	- -

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APPENDIX "B"

GENERAL PROVISIONS

1. Patents

a. Whenever any patentable invention or discovery is made or conceived by the Contractor or its employees in the course of any of the work under this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights under any application or patent that may result. The judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

b. No claim for pecuniary award under the provisions of the Atomic Energy Act of 1946 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of any of the work under this contract.

c. Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs a. and b. of this Article from all persons who perform any part of the work under this contract, except clerical and manual labor personnel who will not have access to technical data.

d. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts provisions making paragraphs a., b., and c. of this Article applicable to the subcontractor and its employees.

2. Publications. The Contractor shall have full freedom of publication of the results of the research under this contract and the Contractor is urged to disseminate the results of the work through customary scientific publication channels, except that "restricted data" as defined in the Atomic Energy Act of 1946 shall be governed by the provisions of Paragraph 3 of this Appendix "B". All publications shall include a reference that the results were developed under a Commission sponsored project.

3. Disclosure of Information.

a. It is understood that the work under this contract will not involve restricted data and the Contractor will perform such work as unclassified work. However, if in the course of such work any discoveries are made or any data used or developed that constitute restricted data, the Contractor shall promptly inform the Commission and shall classify and safeguard all discoveries and data in accordance with the requirements of the Commission. ~~It is understood that the person directing research work under this contract shall have been cleared by the Commission for access to restricted data.~~ The Contractor agrees that it will not permit any individual to have access to restricted data until the Federal Bureau of Investigation shall have made an investigation and report to the Commission of the character, associations and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense or security. If doubt exists as to whether any discovery or data developed constitute restricted data, prior to the release of these data and before permitting any individual who has not received clearance from the Commission to have access to such data, the Contractor shall seek guidance from the Commission. Furthermore, the Commission reserves the right to require the classification of work whenever in its opinion restricted data are involved.

b. The continuation by the Contractor of work found to involve restricted data will be subject to mutual agreement of the Commission and the Contractor and shall be covered by a modification of this agreement. The phrase "restricted data" as defined in the Atomic Energy Act of 1946 and employed in this section shall mean "all data concerning the manufacture or utilization of atomic weapons, the production of fissionable material, or the use of fissionable material in the production of power, but shall not include any data which the Commission from time to time determines may be published without adversely affecting the common defense and security".

4. Disputes. Except as otherwise specifically provided in this contract, all disputes which may arise under this contract and which are not disposed of by mutual agreement shall be decided by a representative of the Commission duly authorized to supervise and administer performance under this contract, who shall reduce his decision to writing and cause a copy thereof to be mailed to the Contractor; said decision shall be final and conclusive, subject to the provisions of the sentence next following. Within thirty (30) days from the date of such mailing, the Contractor may appeal in writing to the Commission, whose written decision thereon, or that of its duly authorized representative, representatives, or board, not including the representative mentioned in the preceding sentence, shall be final and conclusive. Pending decision of a dispute hereunder, the Contractor shall proceed with the performance of its undertakings under this contract.

5. Safety and Accident Prevention - Inspections. The Contractor will comply with health and safety regulations of the Commission required for work of this nature, and permit the Commission and its designees to inspect the work conducted under this agreement.

6. Officials not to Benefit. No member of or Delegate to Congress, or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

7. Anti-discrimination. The Contractor, in performing the work required by this contract, shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin.

8. Convict Labor. The Contractor shall not, in the performance of this contract, employ any person undergoing sentence or imprisonment at hard labor.

9. Termination.

a. The Commission may at any time upon 120 days written notice terminate this contract in whole or in part.

b. In the event of termination pursuant to subsection a., the Contractor will be reimbursed for the cost of the contract work already performed, together with reasonable costs of termination less the amount of all payments theretofore made. If the total payments theretofore made to the Contractor exceed the amount to which it is entitled hereunder, the Contractor shall promptly remit the amount of any such excess to the Government.

10. Eight-Hour Law. No laborer or mechanic doing any part of the work contemplated by this contract in the employ of the Contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight (8) hours in any one calendar day upon such work at the site thereof, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this Article. The wages of every laborer and mechanic employed by the Contractor or any subcontractor engaged in the performance of this contract shall be computed on a basic day rate of eight (8) hours per day and work in excess of eight (8) hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for

all hours worked in excess of eight (8) hours per day at not less than one and one-half (1½) times the basic rate of pay. For each violation of the requirements of this Article a penalty of Five Dollars (\$5.00) shall be imposed upon the Contractor for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight (8) hours upon said work without receiving compensation computed in accordance with this Article, and all penalties thus imposed shall be withheld for the use and benefit of the Government; provided, that this stipulation shall be subject in all respects to the exceptions and provisions of U. S. Code, Title 40, Sections 321, 324, 325, and 326, relating to hours of labor, as modified by the provisions of Section 303 of Public Act No. 781, 76th Congress, approved September 9, 1940, relating to compensation for overtime.

11. Definitions. As used in this contract the terms "United States Atomic Energy Commission", "Atomic Energy Commission" and "Commission" shall mean the United States Atomic Energy Commission or its duly authorized representative or representatives.

12. Fellowships. It is understood by the Contractor that none of the funds supplied by the Commission under this contract shall be used in any way to pay the stipend of any appointment for which commensurate services are not rendered under this contract; nor shall any of the funds be used to confer a fellowship, or to pay any part of the stipend of a fellowship, of any kind.

APPENDIX "C"

DISTRIBUTION AND SCHEDULING OF REPORTS
FOR DIRECT AEC RESEARCH CONTRACTS

	Date	Copies and Distribution	Remarks
<u>CONTRACTOR REPORTS</u>			
1. Progress	On one of Following: March 15 June 15 Sept. 15 Dec. 15	(2) Appropriate Washington Division (See note) (2) Oak Ridge Operations Office (See note)	To be received on date listed which is nearest to end of nine month period from effective date of contract and annually thereafter on the same date. 1. Distribution by Oak Ridge Operations Office with Contract copies 2. Revised Summary to be included as part of Progress Report
2. Summary 200 words on scope and purpose	1. On completion of contract negotiation 2. With progress reports	Prepared as a part of contract negotiations (2) Same as Progress Reports	
3. Manuscripts	As available	(1) Patent Branch, Washington (1) Technical Library, Washington (1) Appropriate Washington Division (1) Oak Ridge Operations Office	
4. Reprints	As available	(2) Appropriate Washington Division (2) Technical Information Branch, Washington (1) Oak Ridge Operations Office	
5. Complete Scientific Report	On Contract Termination	(1) Same (1) as (1) for (1) manuscripts	Manuscripts prepared publication may in some cases take the place of this report
6. Brief Reports	As desired by investigator	(1) Appropriate Washington Office (1) Oak Ridge Operations Office	Covering significant results or developments.

NOTE: Full Addresses as follows:

Washington Offices:

Atomic Energy Commission
(Add name of Division or Branch)
1901 Constitution Avenue, N. W.
Washington, D. C.

Oak Ridge Operations Office

Atomic Energy Commission
Office of Research and Medicine
Post Office Box E
Oak Ridge, Tennessee

The appropriate Washington Divisions are:

Division of Biology and Medicine - for contracts in Biology and Medicine.

Division of Research - for contracts in physical research.

1110637

16-31-11

Contract No. AT-(40-1)-1081
Duke University, School of Medicine
Modification No. 2

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 30th day of January, 1953, effective as of January 1, 1953, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and DUKE UNIVERSITY, SCHOOL OF MEDICINE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1081, dated December 14, 1950, for a study by the Contractor of the metabolism of the human bone marrow, which contract was subsequently extended by Modification No. 1 thereto, dated February 6, 1952; and

WHEREAS, the parties desire to further extend the term of the contract in order to continue the research work; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1946;

NOW, THEREFORE, the parties hereto do mutually agree that Contract No. AT-(40-1)-1081 is modified in the following respects, but in no others:

1. In ARTICLE II - TERM OF CONTRACT, add the following new section 3:

"3. The third period of performance for the project covered by this contract will commence on January 1, 1953, and will end on December 31, 1953."

2. In ARTICLE III, section 1, Consideration, add the following new subsection c:

"c: In consideration of the Contractor's performance of the research activities described in Title III to Appendix 'A', the Government shall pay to the Contractor the sum of Ten Thousand Dollars (\$10,000.00) for the third period of performance."

3. In ARTICLE V - REPORTS, RECORDS AND INSPECTION, add the following new section 4:

[Handwritten Signature]

- 2 -

"4. Examination of Records

"a. The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor involving transactions related to this contract.

"b. The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract with the Government, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor involving transactions related to the subcontract. The term 'subcontract' as used herein does not include (i) purchase orders not exceeding \$500, or (ii) contracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

"c. Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract."

4. In Appendix "A", add the following Title III:

"Title III

"January 1, 1953 - December 31, 1953

"1. PROJECT

"a. Scope and Plan of Approach

During this period studies will be continued on the metabolism of mature and immature stages of human leukocytes obtained from normal and diseased patients. Aspects of the biochemistry

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- 3 -

of the white blood corpuscles will be studied in relation to disease and the normal blood picture. Chemical substances which are used in clinical alleviation of abnormal bone marrow function will be studied with respect to their action upon leukocytes. Bone marrow tissue and isolated cells will be examined with respect to their metabolic picture. Studies will be continued on the metabolism of specific chemical compounds as energy sources.

"2. BUDGET - Third Period - January 1, 1953 - December 31, 1953

"a. The Contractor shall furnish as its contribution to the project:

- (1) Salaries of staff members, including the Project Leader, and other personnel engaged in the work in excess of the Government's payments under b. (1) below.
- (2) Use of laboratory work space, and equipment, materials and facilities needed for the project in excess of the Government's contribution under b. below.
- (3) All clerical, administrative and overhead costs in excess of the Government's payment under b. below.

"b. The Government's payment as provided in subsection 1 c. of ARTICLE III will cover the Contractor's other expenses, estimated as follows, in the performance of the contract during the third period:

(1) Salaries and Wages

Professional Assistant (Dr. T. Arends), January - March, 1953	\$ 825.00
Technical Assistant (Mrs. E. Sullenberger), Full-time	3400.00
Technical Assistance, Part-time	2759.00

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- 4 -

(2) Expendable Equipment and Supplies	\$2000.00
(3) Communications and Travel	275.00
(4) Overhead (8%)	<u>741.00</u>
TOTAL	\$10,000.00

"c. Items of property procured or manufactured by the Contractor during this period of the contract, title to which will vest in the Government (see ARTICLE VI):
None."

5. In Appendix "B", GENERAL PROVISIONS, section 3, Disclosure of Information, subsection a, delete the third sentence thereof, and substitute therefor the following:

"Except as the Commission may authorize, in accordance with the Atomic Energy Act of 1946, as amended, the Contractor shall not permit any individual to have access to restricted data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense or security. As used in this paragraph the term 'designated investigating agency' means the United States Civil Service Commission or the Federal Bureau of Investigation, or both, as determined pursuant to the provisions of the Atomic Energy Act of 1946, as amended by the Act of April 5, 1952, Public Law 298, 82nd Congress, 66 Stat. 43."

Contract No. AT-(40-1)-1081
Modification No. 2

- 5 -

IN WITNESS WHEREOF, the parties hereto have executed this Supplemental Agreement the day and year first above written.

UNITED STATES OF AMERICA

BY: U. S. ATOMIC ENERGY COMMISSION

BY: s/ Kenneth Kasschau

TITLE: Director, Research & Med., Div.

DUKE UNIVERSITY, SCHOOL OF MEDICINE

BY: s/ A. Hollis Edens

TITLE: President

WITNESSES:

s/ A. S. Brower
Durham, North Carolina
(Address)

s/ Patricia Silver
Durham, North Carolina
(Address)

Acceptance By Project Leader

I have read the foregoing Supplemental Agreement and agree to be bound by its provisions.

s/ Wayne Rundles, M.D.
Project Leader

1110642

Contract No. AT-(40-1)-1081
(Duke University, School of Medicine)
Modification No. 1

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 6th day of February, 1952, effective as of January 1, 1952, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and DUKE UNIVERSITY, SCHOOL OF MEDICINE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1081, dated December 14, 1950, for research by the Contractor into the metabolism of the human bone marrow; and

WHEREAS, the parties desire to extend the term of the Contract in order to continue the research project undertaken during the initial period, as described in TITLE II of Appendix "A"; and

WHEREAS, the Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1946;

NOW, THEREFORE, the parties hereto do mutually agree that Contract No. AT-(40-1)-1081 is modified in the following particulars, but in no others:

1. Insert the section number "1." before the first word of ARTICLE II - TERM OF CONTRACT, and add the following new Section 2 to ARTICLE II:

"2. The second period of performance for the project covered by this Contract will commence on January 1, 1952, and will end on December 31, 1952."

2. Insert the subsection letter "a." between the words "Consideration" and "In" in Section 1 of ARTICLE III, and add the following new Subsection b to Section 1 of ARTICLE III:

P.D. Bm 52-96
2 60-00-01 (07) \$8,544.00
D.M.

CERTIFIED A TRUE COPY

BY Jenda Nicholson

1110643

"b. In consideration of the performance of the work described in TITLE II of Appendix 'A', the Government will pay to the Contractor the sum of Eight Thousand Five Hundred Forty-Four Dollars (\$8,544.00) for the second period of performance. It is expressly agreed and understood that the sum of One Thousand Five Hundred Dollars (\$1,500.00) which has been previously paid to the Contractor by the Government but which remained unexpended at the end of the initial period of performance will be applied to the costs of the second period."

3. Insert the term "TITLE I" under the heading of Appendix "A" and add the following new TITLE II to Appendix "A":

"TITLE II

"January 1, 1952 - December 31, 1952

"1. PROGRAM

"A. PROJECT

"The general program will continue to be a study of the metabolism of the human bone marrow as described in TITLE I. Methods for measuring lactic acid production, aerobic and anaerobic glucose utilization will be standardized. Filter paper chromatography methods for amino acid analysis will be set up.

"2. BUDGET - Second Period: January 1, 1952 - December 31, 1952

"A. The Contractor will furnish as its contribution to the project:

- (1) Salaries of staff members, including the Project Leader, engaged in the work, except as provided in b (1) below.
- (2) Use of laboratory work space and equipment and facilities on hand.
- (3) Clerical and administrative expenses and other general and administrative type costs, including overhead, except as provided in b below.

"B. The Government will pay to the Contractor the sum of Eight Thousand Five Hundred Forty-Four Dollars (\$8,544.00) which, together with the amount of One Thousand Five Hundred Dollars (\$1,500.00) remaining unexpended from the Government's payments during the initial period of performance, will cover the Contractor's other expenses, estimated as follows, in the performance of the Contract during the second period:

(1) Salaries

Dr. Roy Shipke,	
Professional Assistant	\$ 3,600.00
Technicians	4,000.00

(2) Capital Equipment

Laboratory benches, cabinets, Warburg vessels and manometers, blood centrifuge equipment, etc.	500.00
--	--------

(3) Expendable Equipment and Supplies

Chemicals, reagents, glassware, etc.	1,000.00
--------------------------------------	----------

(4) Communication and Travel 200.00

(5) Overhead @ 8% \$ 9,300.00
744.00

	\$10,044.00
Less Unexpended Funds	1,500.00

TOTAL	\$ 8,544.00
-------	-------------

"C. Items of property procured or manufactured by the Contractor under this Contract, title to which will vest in the Government (See ARTICLE VI): None."

IN WITNESS WHEREOF, the parties hereto have executed this Supplemental Agreement on the day and year first above written.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSIO

BY: s/ C. Vanden Bulck

TITLE: Assistant Manager, ORO

WITNESSES:

s/ L. W. Moore
Durham, N. C.
(Address)

DUKE UNIVERSITY, SCHOOL OF MEDICINE

BY: s/ A. Hollis Edens

TITLE: President

s/ A. S. Brower
Durham, N. C.
(Address)

ACCEPTANCE BY PROJECT LEADER:

I have read the foregoing Supplemental Agreement and I agree to be bound by the terms of this document.

s/ Wayne Rundles, M.D.
Project Leader

UNITED STATES
ATOMIC ENERGY COMMISSION

LUMP SUM
RESEARCH CONTRACT

Contract No. AT-(40-1)- 1081

THIS CONTRACT, entered into this 14th day of December, 1950, by the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission") and Duke University, School of Medicine (hereinafter called the "Contractor"):

ARTICLE I - PURPOSE AND SCOPE

1. The Commission, in furtherance of its policy of assisting and fostering private research, desires to support the Contractor's fundamental research in the field of atomic energy.

2. The work shall consist of a study of the metabolism of the human bone marrow

The plan of approach to the problem and the agreed upon program and budget for the project are described in Appendix "A", which is hereby made a part of this contract. The Contractor shall be guided by, but not bound to conform to the details of the budget described in Appendix "A".

3. The Contractor shall furnish all services, facilities, equipment, supplies and materials (except such services, equipment, supplies and materials as the Government has agreed to furnish herein) required for the performance of the research program described in Section 2 above.

4. The work will be carried out by the Contractor under the direction of R. W. Rundles as project leader

ARTICLE II - TERM OF CONTRACT

The initial period of performance for the research project covered by this contract will commence on January 1, 1951 and will end on December 31, 1951.

It is recognized that completion of the research work under this contract may involve a period of several years and that the term of this contract may be extended by mutual agreement.

ARTICLE III

1. Consideration. In consideration of the performance of the research activities described in Article I, the Government shall pay to the Contractor the sum of Twelve Thousand Forty-two Dollars (\$ 12,042.00) for the initial period of performance.

B: Gertrude Nichols

1110647

2. Payment

- a. On or before the date of commencement of work on the project described in Appendix "A", the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, one-half the amount of the agreed consideration.
- b. On or before the expiration of six months from the date of commencement of the project, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, the remaining one-half of the agreed consideration.
- c. In the event that the term of the contract is extended, the Government shall pay to the Contractor, upon submission by the Contractor of properly certified vouchers, each six months in advance an amount equal to one-half the annual agreed consideration for the project as mutually agreed upon by the parties hereto.

3. Program and Budget for Subsequent Periods. At least three months before the end of the initial period of performance of the project, the Contractor will submit to the Commission a current statement of its expenditures for the project, an estimate of expenses to be incurred during the remainder of the period, and a proposed program and budget for the succeeding year, showing the proposed work to be financed by the Commission and the Contractor. The Contractor and the Commission shall then negotiate as to the amount to be paid by the Commission to the Contractor for the services to be performed during the ensuing period, taking into consideration any portion of payments theretofore made which will remain unexpended at the end of the initial period. The extended program, budget and the additional amount to be paid to the Contractor shall be incorporated into a formal modification to this contract.

ARTICLE IV - ADMINISTRATION OF CONTRACT BY COMMISSION

The Commission has assigned the responsibility for administering the technical and scientific aspects for the project to the Washington organizational unit set forth below, to be addressed as follows:

Medical Branch
Division of Biology and Medicine
U. S. Atomic Energy Commission
1901 Constitution Avenue, N. W.
Washington 25, D. C.

Responsibility for administering the business aspects of this contract, including contract negotiations, budget, payment, audit, etc., has been assigned by the Commission to:

Office of Research & Medicine
Oak Ridge Operations Office
U. S. Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee

The Contractor may, as necessary, communicate directly with the appropriate office, as indicated above. The Contractor shall furnish information copies of communications, memoranda of telephone conversations, or other contacts to Oak Ridge Operations Office on all direct dealings with the Washington Office.

ARTICLE V - REPORTS, RECORDS AND INSPECTION

1. The Commission shall have the right to inspect in such manner and at such times as it deems appropriate all activities of the Contractor arising in the course of the work under this contract.

2. The Contractor shall make progress and other reports in such manner and at such times as specified in Appendix "C" which is attached hereto and hereby made a part of this contract. Progress reports shall include a list of personnel working on the project. Names appearing for the first time should be accompanied by a brief statement of the individual's background, training, and experience.

3. The Commission shall at all times be afforded access to the premises and to all technical records, correspondence, instructions, drawings, and memoranda of record value of the Contractor pertaining to said work.

ARTICLE VI - TITLE TO PROPERTY PURCHASED BY CONTRACTOR

In consideration of the Contractor's contribution to the research project described in Appendix "A" of this contract, title to all materials, tools, machinery, equipment and supplies, acquired from any source including the Government, or manufactured by the Contractor under this contract shall vest in the Contractor, except that title to items of property described in Section 2.c. of Appendix "A" shall vest in the Government.

ARTICLE VII - PURCHASE OF RADIOISOTOPES

The Contractor shall purchase, to the extent available in appropriate form, all radioisotopes, irradiation services and cyclotron time required in the performance of the work hereunder, through the Commission's Isotope Division, Post Office Box E, Oak Ridge, Tennessee.

ARTICLE VIII - GENERAL PROVISIONS

The provisions of Appendix "B", attached hereto, are hereby made a part of this contract.

ARTICLE IX - AUTHORIZATION

This contract is authorized by and has been executed under the Atomic Energy Act of 1946.

ARTICLE X - ALTERATIONS

The following alterations to this contract were made by mutual agreement of the parties prior to its execution:

Sentence 3 of Section 3 of Appendix "B" providing for the security clearance of the Project Leader is hereby deleted.

IN WITNESS WHEREOF, the parties hereto have executed this contract the day and year first above written.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: s/ C. Vanden Bulck
Contracting Officer

DUKE UNIVERSITY
(Contractor)

WITNESSES:

s/ A. S. Brower
Durham, N.C.
(Address)

BY: s/ A. Hollis Edens
TITLE: President

s/ June Johnson
Durham, North Carolina
(Address)

ACCEPTANCE BY PROJECT LEADER

I have read the foregoing Contract and the Appendices attached hereto and made a part hereof, and I agree to be bound by the provisions of this document.

s/ R. W. Rundles, M.D.
Project Leader

APPENDIX "B"

GENERAL PROVISIONS

1. Patents

a. Whenever any patentable invention or discovery is made or conceived by the Contractor or its employees in the course of any of the work under this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights under any application or patent that may result. The judgement of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

b. No claim for pecuniary award under the provisions of the Atomic Energy Act of 1946 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of any of the work under this contract.

c. Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs a. and b. of this Article from all persons who perform any part of the work under this contract, except clerical and manual labor personnel who will not have access to technical data.

d. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts provisions making paragraphs a., b., and c. of this Article applicable to the subcontractor and its employees.

2. Publications. The Contractor shall have full freedom of publication of the results of the research under this contract and the Contractor is urged to disseminate the results of the work through customary scientific publication channels, except that "restricted data" as defined in the Atomic Energy Act of 1946 shall be governed by the provisions of Paragraph 3 of this Appendix "B". All publications shall include a reference that the results were developed under a Commission sponsored project.

3. Disclosure of Information.

a. It is understood that the work under this contract will not involve restricted data and the Contractor will perform such work as unclassified work. However, if in the course of such work any discoveries are made or any data used or developed that constitute restricted data, the Contractor shall promptly inform the Commission and shall classify and safeguard all discoveries and data in accordance with the requirements of the Commission. ~~It is understood that the person directing research work under this contract shall have been cleared by the Commission for access to restricted data.~~ The Contractor agrees that it will not permit any individual to have access to restricted data until the Federal Bureau of Investigation shall have made an investigation and report to the Commission of the character, associations and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense or security. If doubt exists as to whether any discovery or data developed constitute restricted data, prior to the release of these data and before permitting any individual who has not received clearance from the Commission to have access to such data, the Contractor shall seek guidance from the Commission. Furthermore, the Commission reserves the right to require the classification of work whenever in its opinion restricted data are involved.

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b. The continuation by the Contractor of work found to involve restricted data will be subject to mutual agreement of the Commission and the Contractor and shall be covered by a modification of this agreement. The phrase "restricted data" as defined in the Atomic Energy Act of 1946 and employed in this section shall mean "all data concerning the manufacture or utilization of atomic weapons, the production of fissionable material, or the use of fissionable material in the production of power, but shall not include any data which the Commission from time to time determines may be published without adversely affecting the common defense and security".

4. Disputes. Except as otherwise specifically provided in this contract, all disputes which may arise under this contract and which are not disposed of by mutual agreement shall be decided by a representative of the Commission duly authorized to supervise and administer performance under this contract, who shall reduce his decision to writing and cause a copy thereof to be mailed to the Contractor; said decision shall be final and conclusive, subject to the provisions of the sentence next following. Within thirty (30) days from the date of such mailing, the Contractor may appeal in writing to the Commission, whose written decision thereon, or that of its duly authorized representative, representatives, or board, not including the representative mentioned in the preceding sentence, shall be final and conclusive. Pending decision of a dispute hereunder, the Contractor shall proceed with the performance of its undertakings under this contract.

5. Safety and Accident Prevention - Inspections. The Contractor will comply with health and safety regulations of the Commission required for work of this nature, and permit the Commission and its designees to inspect the work conducted under this agreement.

6. Officials not to Benefit. No member of or Delegate to Congress, or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

7. Anti-Discrimination. The Contractor, in performing the work required by this contract, shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin.

8. Convict Labor. The Contractor shall not, in the performance of this contract, employ any person undergoing sentence or imprisonment at hard labor.

9. Termination.

a. The Commission may at any time upon 120 days written notice terminate this contract in whole or in part.

b. In the event of termination pursuant to subsection a., the Contractor will be reimbursed for the cost of the contract work already performed, together with reasonable costs of termination less the amount of all payments theretofore made. If the total payments theretofore made to the Contractor exceed the amount to which it is entitled hereunder, the Contractor shall promptly remit the amount of any such excess to the Government.

10. Eight-Hour Law. No laborer or mechanic doing any part of the work contemplated by this contract in the employ of the Contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight (8) hours in any one calendar day upon such work at the site thereof, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this Article. The wages of every laborer and mechanic employed by the Contractor or any subcontractor engaged in the performance of this contract shall be computed on a basic day rate of eight (8) hours per day and work in excess of eight (8) hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for

all hours worked in excess of eight (8) hours per day at not less than one and one-half (1½) times the basic rate of pay. For each violation of the requirements of this Article a penalty of Five Dollars (\$5.00) shall be imposed upon the Contractor for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight (8) hours upon said work without receiving compensation computed in accordance with this Article, and all penalties thus imposed shall be withheld for the use and benefit of the Government; provided, that this stipulation shall be subject in all respects to the exceptions and provisions of U. S. Code, Title 40, Sections 321, 324, 325, and 326, relating to hours of labor, as modified by the provisions of Section 303 of Public Act No. 781, 76th Congress, approved September 9, 1940, relating to compensation for overtime.

11. Definitions. As used in this contract the terms "United States Atomic Energy Commission", "Atomic Energy Commission" and "Commission" shall mean the United States Atomic Energy Commission or its duly authorized representative or representatives.

12. Fellowships. It is understood by the Contractor that none of the funds supplied by the Commission under this contract shall be used in any way to pay the stipend of any appointment for which commensurate services are not rendered under this contract; nor shall any of the funds be used to confer a fellowship, or to pay any part of the stipend of a fellowship, of any kind.

APPENDIX "C"

DISTRIBUTION AND SCHEDULING OF REPORTS
FOR DIRECT AEC RESEARCH CONTRACTS

	Date	Copies and Distribution	Remarks
CONTRACTOR REPORTS			
1. Progress	On one of Following: March 15 June 15 Sept. 15 Dec. 15	(2) Appropriate Washington Division (See note) (2) Oak Ridge Operations Office (See note)	To be received on date listed which is nearest to end of nine month period from effective date of contract
2. Summary 200 words on scope and purpose	1. On completion of contract negotiation 2. With progress reports	Prepared as a part of contract negotiations (2) Same as Progress Reports	1. Distribution by Oak Ridge Operations Office with Contract copies 2. Revised Summary to be included as part of Progress Report
3. Manuscripts	As available	(1) Patent Branch, Washington (1) Technical Library, Washington (1) Appropriate Washington Division (1) Oak Ridge Operations Office	
4. Reprints	As available	(2) Appropriate Washington Division (2) Technical Information Branch, Washington (1) Oak Ridge Operations Office	
5. Complete Scientific Report	On Contract Termination	(1) Same (1) as (1) for (1) manuscripts	Manuscripts prepared for publication may in some cases take the place of this report
6. Brief Reports	As desired by investigator	(1) Appropriate Washington Office (1) Oak Ridge Operations Office	Covering significant results or developments.

1110654

NOTE: Full Addresses as follows:

Washington Offices:

Atomic Energy Commission
(Add name of Division or Branch)
1901 Constitution Avenue, N. W.
Washington, D. C.

Oak Ridge Operations Office

Atomic Energy Commission
Office of Research and Medicine
Post Office Box E
Oak Ridge, Tennessee

The appropriate Washington Divisions are:

Division of Biology and Medicine - for contracts in Biology and Medicine.

Division of Research - for contracts in physical research.

1110655

Atomic Energy Commission, P.O. Box 2
Department of Energy, Oak Ridge, Tennessee

GENERAL ACCOUNTING OFFICE PREAUDIT
Certified for payment in the sum of \$ _____
Comptroller General of the United States
By _____

U. S. _____
Voucher prepared at Durham, N.C., May 17, 1951
(Give place and date)
THE UNITED STATES, Dr.,
Duke University, School of Medicine
To _____
Address Durham, North Carolina
Payee's Account No. 5025

PAID BY
5/29/51
(For use of Paying Office)

No. and Date of Order	Date of Delivery or Service	Articles or Services (Enter description, item number of contract or general supply schedule, and other information deemed necessary) Terms _____ % Discount Cash _____ days	Quantity	UNIT PRICE		AMOUNT	
				Cost	Per	Dollars	Cts.
		Brought forward from continuation sheet (s).					
	<u>7-1-51 thru 12-31-51</u>	Second and final reimbursement on fixed-cost basis in accordance with Article III, Paragraph 2a of Contract AT(40-1)1081					6,021.00

PAYMENT NO. 2
OFFICE OF RESEARCH AND MEDICINE
BIOCHEMISTRY

Shipped from _____ to Weightman Government B/L No. _____ Total **6,021.00**

Duke University, School of Medicine
C. B. Markham, Treasurer

(Payee must NOT use this space)
Differences _____
Account verified; correct for 1081 **6,021.00**
(Signature or initials)

Contract No. AT(40-1)1081 Date 1/20/50 Req. No. _____ Date _____ Invoice Rec'd _____

MEMORANDUM

6,021.00

FRANCIS A. HOGAN
Authorized Certifying Officer

ACCOUNTING CLASSIFICATION (for completion by Administrative Office)

Appropriation, limitation, or project symbol	Appropriation title	Lim'n or Prof't Amount	Appropriation Amount	COST ACCOUNT		OBJECTIVE CLASSIFICATION	
				Symbol	Amount	Symbol	Amount
<u>8920100.102</u>	Salaries and Expenses, Atomic Energy Commission, 1951						6,021.00
<u>16070.00-07</u> <u>PD 51-44</u>			6,021.00				

Paid by { Check No. _____ dated _____, 19____, for \$ **6,021.00** } on Treasurer of the United States
{ Cash, \$ _____, on _____, 19____, Payee _____ } in favor of payee named above.
(Give original only)

*When a voucher is signed or received in the name of the Comptroller General, the signature of the Comptroller General, Secretary, or Treasurer, as the case may be, is required. If the signature of the Comptroller General, Secretary, or Treasurer is not available, the approving officer will sign in the blank space below "Approved or \$ _____", and over his official title.

ACCOUNTS PAYABLE COPY

1110656

1-90

ACCOUNTS PAYABLE SECTION

Page 2

ANALYTICAL CHECK SHEET

P. O. No.

BT (1081)

Fu. Vou. No.

Voucher Prepared By

Rjm

Date *5-25-51*

Voucher Review Performed By

1513

Date *5-25-51*

ELEMENTS	Invoice										Identification									
ORIGINAL BILLING	/																			
CERTIFICATION	/																			
ORIGINAL RECEIVING DOCUMENT																				
ORIGINAL QUOTATION OR 1036																				
EVIDENCE OF RECEIPT	/																			
UNIT PRICES																				
DISCOUNT TERMS																				
FOB POINT																				
TRANSPORTATION CHARGES																				
EXTENSIONS & FOOTINGS																				
VOUCHER FORM: PAYEE	/																			
AMOUNT	/																			
APPROPRIATION	/																			
SUPPORT																				

REMARKS:

1110657

1-90

Page 1

ACCOUNTS PAYABLE SECTION

AUDIT CHECK SHEET

P. O. No. FT 1081

Bu. Vou. No. _____

Voucher Prepared By Bju

Date 2-9-51

Voucher Review Performed By JNS

Date 2-9-51

ELEMENTS	Invoice Identification									
ORIGINAL BILLING	/									
CERTIFICATION	/									
ORIGINAL RECEIVING DOCUMENT										
ORIGINAL QUOTATION OR 1036										
EVIDENCE OF RECEIPT	/									
UNIT PRICES										
DISCOUNT TERMS										
FOB POINT										
TRANSPORTATION CHARGES										
EXTENSIONS & FOOTINGS										
VOUCHER FORM: PAYEE	/									
AMOUNT	/									
APPROPRIATION	/									
SUPPORT										

REMARKS:

Office Memorandum : UNITED STATES GOVERNMENT

TO : L. D. MacKay, Director
Finance Division

DATE: November 22, 1954

FROM : Herman M. Roth, Director
Research and Medicine Division

SUBJECT: CONTRACT NO. AT-(40-1)-1081 - DUKE UNIVERSITY SCHOOL OF MEDICINE

SYMBOL: CR:JER

This is to advise you that the work under Contract No. AT-(40-1)-1081 with the Duke University School of Medicine has been completed and the final report has been submitted.

The contract should therefore be closed out.

Herman M. Roth
Herman M. Roth

cc: G. E. Moore
F. B. McPherson

Rounsaville:lr

*No outstanding equipment
per General Ledger
12/8/56 JH3*

1110660

L. D. MacKay, Director
Finance Division

November 22, 1954

Herman M. Roth, Director
Research and Medicine Division

CONTRACT NO. AT-(40-1)-1081 - DUKE UNIVERSITY SCHOOL OF MEDICINE

SYMBOL: OR:JER

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The contract should therefore be closed out.

ORIGINAL SIGNED BY
HERMAN M. ROTH

Herman M. Roth

CC: J. R. Moore
F. E. McPherson

Rounsaville:lr

1110661

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

GCP:RAA

January 14, 1955

To: Manager, Oak Ridge Operations Office

From: Chief, Patent Branch

Subject: PATENT CLEARANCE CERTIFICATION in
DUKE UNIVERSITY CONTRACT NO.
AT-(40-1)-1081

This is to advise that this Office has no objection, so far as patent matters are concerned, to your releasing the final voucher under the above contract to the appropriate Fiscal Office for payment.


Roland A. Anderson
Chief, Patent Branch

cc. S. W. Scott, Chief, ORPG

1110662

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

OCP:RAA

January 14, 1955

To: **Manager, Oak Ridge Operations Office**

From: **Chief, Patent Branch**

Subject: **PATENT CLEARANCE CERTIFICATION in
DUKE UNIVERSITY CONTRACT NO.
AT-(40-1)-1061**

This is to advise that this Office has no objection, so far as patent matters are concerned, to your releasing the final voucher under the above contract to the appropriate Fiscal Office for payment.

Roland A. Anderson
Chief, Patent Branch

cc. **S. V. Scott, Chief, OCPG**



1110663

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

GCP:RAA

January 14, 1955

To: **Manager, Oak Ridge Operations Office**

From: **Chief, Patent Branch**

Subject: **PATENT CLEARANCE CERTIFICATION in
DUKE UNIVERSITY CONTRACT NO.
AT-(40-1)-1061**

This is to advise that this Office has no objection, so far as patent matters are concerned, to your releasing the final voucher under the above contract to the appropriate Fiscal Office for payment.

Roland A. Anderson
Chief, Patent Branch

cc. S. H. Scott, Chief, OCPG

1110664