

Standard Form No. 1088-*Revised*
Form approved by
Comptroller General, U. S.
November 12, 1937
Gen. Reg. No. 51, Sup. No. 6
Amended August 6, 1943

STATEMENT AND CERTIFICATE OF AWARD

No. AT-(40-1)-288
(Contract)

Date June 22, 1948

U. S. Atomic Energy Commission

Oak Ridge, Tennessee

(Department or establishment)

(Bureau or office)

(Location)

METHOD OF OR ABSENCE OF ADVERTISING

(Section 2709 of the Revised Statutes)

FOR USE BY G. A. O. ONLY

Indexed	Card	Reviewed

1. After advertising in newspapers.
2. (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.)

3. Without advertising, under an exigency of the service which existed prior to the order and would not admit of the delay incident to advertising.
4. Without advertising in accordance with the Atomic Energy Act of 1946
5. Without advertising, it being impracticable to secure competition because of

(Here state circumstances under which the securing of competition was impracticable)

AWARD OF CONTRACT

- A. To lowest bidder as to price (Expenditures).
- B. To other than the lowest bidder as to price (Expenditures).
- C. To highest bidder as to price (Receipts).
- D. 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 AT-(40-1)-288, as shown above; that the total number of bids received is 2, 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.

REPOSITORY Oak Ridge Operations Office

COLLECTION Contract Files
+ AT-(40-1)-288

BOX No. Drawing H-578-2

FOLDER Bowman Gray School of Medicine
& Wake Forest College

C. Vanden Bulck
(Signature of contracting officer) **C. Vanden Bulck**

Acting Deputy Manager
(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).

UNITED STATES ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS
POST OFFICE BOX E
OAK RIDGE, TENNESSEE

R E S E A R C H C O N T R A C T

TYPED _____
PREPARED [Signature]
APPROVED [Signature]
4.5.
[Signature]

CONTRACT NO.: AT-(40-1)-288
CONTRACTOR: THE BOWMAN GRAY SCHOOL OF MEDICINE
OF WAKE FOREST COLLEGE
ADDRESS: Winston-Salem 7, North Carolina

RETURN TO
CONTRACT SECTION

AMOUNT OF CONTRACT: \$25,000.00

CONTRACT ASSIGNED TO:

FOR TECHNICAL ADMINISTRATION
(ORGANIZATIONAL UNIT NAMED IN APPENDIX "A")

Atomic Energy Commission
1901 Constitution Avenue, N. W.
Washington 25, D. C.

FOR BUSINESS ADMINISTRATION

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

1090472

THIS CONTRACT, entered into this 22nd day of June, 1949, by the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission") and THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE (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 under this contract will involve one or more research problems. A description of the problem, plan of approach, agreed upon program and budget for each project is described in Appendix "A" which is hereby made a part of this contract.

3. The work will be carried out by the Contractor under the direction of the Project Leader(s) named in Appendix "A".

ARTICLE II - TERM OF CONTRACT

The period of performance for each research project covered by this contract is set forth in Appendix "A". It is recognized that completion of the research work under this contract may involve a period of several years and that the term or terms of this contract may be extended by mutual agreement.

ARTICLE III - FINANCING AND PROGRAM DEVELOPMENT

1. Payment

a. The combined total of the agreed upon budgets for the projects described in Appendix "A" is in the amount of \$25,000.00 and the Commission has obligated funds in this amount for this contract. However, payments to the Contractor by the Government under this contract with respect to each project described in Appendix "A" shall not exceed the amount of the agreed upon budget for each such project.

b. On or shortly after the effective date of this contract the Commission shall pay to the Contractor a sum which shall represent

the combined total of a mutually agreed upon estimate of the Contractor's cost of operations during the first two quarters under each project described in Appendix "A". As soon as practicable after the end of the first quarter, and after the end of each succeeding quarter during the term of this contract, the Contractor shall submit to the Commission a certified voucher supported by a certified schedule of the Contractor's expenditures under each project described in Appendix "A", and the Commission shall promptly pay all such vouchers. However, the initial payment relating to any one project together with all quarterly payments relating to the same project shall not exceed the agreed upon budget for such projects as set forth in Appendix "A", hereto.

2. Program and Budget for Subsequent Periods

At least three months before the end of the term established in Appendix "A" the Contractor will submit to the Commission 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 negotiate as to the amount to be paid by the Commission for the services to be rendered by the Contractor during the next period. Such additional programs and agreed upon budgets shall be incorporated in a formal modification to this contract. In negotiating the new budget for said period the unobligated balance of funds paid to the Contractor covering the budget(s) for the preceding period shall be applied in reduction of funds required to cover the new budget(s). Upon completion of the contract work or upon earlier termination of this contract, the Contractor shall return to the Commission the unobligated portion of all payments made by the Commission to the Contractor under this contract.

3. New Problems

It is contemplated that the parties hereto may, from time to time, agree upon new research problems to be included in the work under this contract. The parties will thereupon prepare a description of the problem, plan of approach, agreed upon program and budget for the new project, which will be incorporated in Appendix "A" hereto, by means of a formal modification of this contract. All such new projects hereafter incorporated in Appendix "A" shall be subject to all the terms and conditions of this contract.

ARTICLE IV - ADMINISTRATION OF CONTRACT BY COMMISSION

The Commission has assigned the responsibility for administering the technical and scientific aspects for each project to the Washington organizational unit set forth in Appendix "A" hereto, to be addressed as follows:

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 reports quarterly (unless a different reporting period is specified in Appendix "A") to the Commission on all its activities under this contract, including 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. As soon as practicable after the end of the term of this contract and any renewal thereof the Contractor shall make a technical report to the Commission of all its activities under this contract. In the interest of reducing the effort required in preparing these reports the Contractor may include as a part of such reports copies of pertinent technical papers prepared for publication in customary scientific publication channels. At the time technical papers prepared by the Contractor relating to the work hereunder are submitted for publication in customary scientific publication channels the Contractor shall furnish the Commission with information copies of such papers.

3. If, during the course of the Contractor's activities under this contract, any technical findings are made which, in the opinion of the Contractor, would be of special interest to the Commission, the Contractor shall immediately make a report of such technical findings to the Commission.

4. The Commission will require five (5) copies of all reports and papers. Two (2) copies shall be sent to Washington and three (3) copies to Oak Ridge, addressed as shown in Article IV of this contract. The Commission shall have the right to reproduce and distribute at its discretion all such reports and technical papers. Appropriate credit lines will be included in all such reproductions.

5. The Contractor agrees to keep records and books of account showing the manner of expenditures of all funds received by it pursuant to this contract.

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

ARTICLE VI - PROPERTY FURNISHED TO CONTRACTOR - LIABILITY

1. RESERVATION BY GOVERNMENT

The Government reserves the right to furnish any materials, equipment or supplies which may be required in the performance of this contract. Except as provided in paragraph 3 of this Article, all property so furnished shall be and remain the property of the Government. The Contractor shall, to the extent practicable, cause all capital items of Government property so furnished to be suitably marked with an identifying symbol indicating Government ownership and the uses and disposition of such items shall be made a matter of record.

2. LIABILITY FOR GOVERNMENT-OWNED PROPERTY

Except as otherwise specifically provided, the Contractor shall not be liable for loss or destruction of or damage to property of the Government in the possession or control of the Contractor in connection with this contract (hereinafter called "Government property") unless such loss, destruction or damage results from wilful misconduct or failure to exercise good faith on the part of the Contractor's corporate officers, Executive Director, or Director of any program administered by the Contractor in the performance of this contract.

3. TITLE TO PROPERTY PURCHASED BY CONTRACTOR

Notwithstanding any other provisions of this Article VI and 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 sources other than the Government, or manufactured by the Contractor under this contract (including items manufactured in whole or in part from property furnished by the Government but only to the extent the Government has not designated such property as capital), shall vest in the Contractor, except that title to items of property described in Section 2.c. of each Title 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:

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, Acting Deputy Manager
THE BOWMAN GRAY SCHOOL OF MEDICINE OF
WAKE FOREST COLLEGE
(Contractor)

WITNESSES:

Harry C. Parker
Katherine Davis

BY: Albuquerque
TITLE: Dean

APPENDIX "A"

Contract No. AT-(40-1)-288
(The Bowman Gray School of Medicine
of Wake Forest College)

TITLE I

1. PROJECT

a. Project Leader

The work under this Title I of Appendix "A" will be carried out by the Contractor under the direction of Dr. George T. Harrell as Project Leader.

b. Term

The performance of work under this Title I of Appendix "A" shall commence on July 1, 1949 and continue until June 30, 1950. It is understood, however, that completion of the research project described herein may involve a period of several years. Accordingly, the work under this Title I may be extended by mutual agreement.

c. Program

(1) Outline of the proposed work and the plan of attack.

Studies in human beings with Rocky Mountain spotted fever have shown a drop in the blood volume and a rise in the thiocyanate extravascular space during the second week of the disease. Rabbits with serum sickness and trichinosis have shown similar responses. Clinical edema develops with the rise in thiocyanate space; apparently the permeability of membranes is altered. It is not known whether capillary and cellular walls are both altered or whether the edema is within or between cells. It is known that water is retained during acute infections and that diuresis occurs during recovery. It is also known that chloride and water are retained during the acute phase of serum sickness. Water is held in tissue by ions; chloride ions are not held without corresponding anions - usually sodium and potassium. It is of immediate practical importance in therapy to know which ions traverse the membranes and whether they go into cells or remain in interstitial spaces. The turnover of radio sodium in the blood and interstitial edema fluid has been followed in heart failure. This technique could be applied to our problem in the following fashion:

- (a) Serum sickness could be induced in animals; when edema developed, radio sodium and thiocyanate would be given. The levels in plasma, urine and interstitial fluid for total sodium - as determined by the

flame photometer - would be compared with the radio sodium - as determined by a Geiger-Muller tube - and correlated with the thiocyanate space. A similar experiment would be done administering radioactive potassium.

(b) The experiments in animals would be repeated using an interstitial infection - trichinosis - and an intercellular infection - a rickettsia.

(c) After facility in the methods has been attained, the experiments would be repeated in human beings with infections and with serum sickness. It would be highly desirable to take radioautographs of tissue for comparison with stained histologic sections. The technique for determining deposition of insoluble radio phosphorus in bone might be modified for use on frozen sections.

PRIVACY ACT MATERIAL REMOVED

2. BUDGET - PERIOD JULY 1, 1949 - JUNE 30, 1950

a. The Bowman Gray School of Medicine of Wake Forest College will furnish as its contribution to the project described in this Title I, the following:

- (1) Salary of Project Leader.
- (2) Overhead costs allocable to the contract work.

b. The Commission will furnish a sum not to exceed \$11,000.00 to be spent roughly as follows:

(1) Personnel

Part-time salary of Dr. Yount.....	\$ [REDACTED]
Technician.....	[REDACTED]
Electronic engineer, part-time.....	500.00

(2) Permanent Equipment

Shielded sample changer.....	200.00
Scaling circuit.....	450.00
Flame Photometer.....	725.00
Timer.....	60.00
Geiger tubes.....	100.00
Time recorder.....	150.00
Centrifuge.....	250.00
Balance.....	230.00

Deep Freeze Unit.....	160.00	
Metabolism cages.....	350.00	
Vacuum pump.....	75.00	
		<u>\$2,750.00</u>
(3) <u>Expendable Supplies</u>		
Glassware.....	750.00	
Purchase of radioisotopes.....	400.00	
Chemicals.....	500.00	
Animals.....	1500.00	
		<u>\$3,150.00</u>
(4) Travel.....		200.00
(5) Miscellaneous.....		200.00
		<u>\$11,000.00</u>

It is understood and agreed by and between the parties hereto, that the Contractor in expending the funds provided by the Government shall be guided by, but not bound to conform to, the details of the program and budget set forth above.

- c. Items of property procured or manufactured by the Contractor under this contract, title to which will vest in the Government. See Article VI, Section 3.

QUANTITYDESCRIPTION

None

3. PROGRESS REPORTS

The Contractor shall make progress reports at 6 months intervals in the manner described in Article V of this contract.

4. TECHNICAL ADMINISTRATION BY COMMISSION

The Commission has assigned the responsibility for administering the technical and scientific aspects of this Title I of Appendix "A" to:

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

1090480

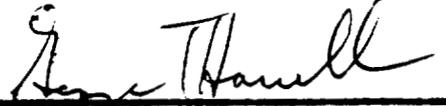
Appendix "A" (Cont'd)

TITLE I

Contract No. AT-(40-1)-288

5. ACCEPTANCE BY PROJECT LEADER

I have read the foregoing Title I of Appendix "A" and the basic contract to which it relates and I agree to be bound by the provisions of said documents.

SIGNED 
Project Leader

DATE: 7/6/49

APPENDIX "A"

Contract No. AT-(40-1)-288
(The Bowman Gray School of Medicine
of Wake Forest College)

TITLE II

1. PROJECT

a. Project Leader

The work under this Title II of Appendix "A" will be carried out by the Contractor under the direction of Dr. Camillo Artom as Project Leader.

b. Term

The performance of work under this Title I of Appendix "A" shall commence on July 1, 1949, and continue until June 30, 1950. It is understood, however, that completion of the research project described herein may involve a period of several years. Accordingly, the work under this Title II may be extended by mutual agreement.

c. Program

Phospholipides are universal constituents of living cells and while their exact roles are not yet well defined, a basic knowledge of the mechanism of formation of phospholipides in tissues and of the various intrinsic and extrinsic factors involved seems to be essential for an adequate understanding of many physiological and pathological processes. This knowledge is still very incomplete. Results obtained recently in this laboratory showed changes in the rate of synthesis of phospholipides under the action of drugs, some of which, such as phlorizin, are believed to poison certain enzyme systems in tissues, while others, such as thiourea and thiouracil, may act more or less as specific hormone inhibitors. These results suggest several possibilities for further investigation, such as the following: (1) that the formation of phospholipides, at least in the liver, may be controlled directly or indirectly by hormones; (2) that the effects observed may instead be due to a close relationship between the metabolism of phospholipides and that of carbohydrates or fats; (3) that by the use of inhibitors of specific enzyme systems, compounds, which are intermediates in the synthesis of phospholipides, may accumulate in tissue, so that their identification will become easier.

Two types of experiments are planned (a) in intact animals and, (b) in isolated tissue slices. In both conditions the synthesis of phospholipides will be followed with the aid of radioactive

phosphorus as a tracer for the phosphate part of the molecule. By labeling the methyl group of choline with C^{14} , the formation of lecithins after administration of choline could also be studied. The concentration of either isotope will be determined in the phospholipides as well as in other phosphorus containing fractions which might presumably include intermediate products for the synthesis of phospholipides.

In the experiments on intact animals, rats will be maintained on a choline deficient diet, then radioactive phosphorus (with or without isotopic choline) will be administered. Various pharmacological and hormonal agents will then be given and their effect on the rate of lipide phosphorylation will be investigated in the liver, probably also in other tissues. We are tentatively contemplating the use of phlorizin, thiourea, alloxan, urethan, B.A.L., insulin, thyroxine and anterior pituitary extracts. On the basis of the results obtained, other substances and different experimental conditions will be tested, such as the surgical removal of the thyroid, diets containing various amounts of fats and carbohydrates, etc. Parallel experiments will be made on the isolated tissues in the presence of isotopic phosphate and choline, with or without direct addition of drugs and hormones to the medium.

While it is anticipated that only part of the above program can be carried out in one year's work, it is hoped that interesting results will be obtained early, and give an indication along what lines it will be most profitable to concentrate the investigative effort. The possibility that as soon as definite results have been obtained on normal tissues, the investigation might be extended to neoplastic tissues is also contemplated.

2. BUDGET - PERIOD JULY 1, 1949 - JUNE 30, 1950

a. The Bowman Gray School of Medicine of Wake Forest College will furnish as its contribution to the project described in this Title II the following:

- (1) Salaries of following personnel:
Dr. Camillo Artom as Project Leader
~~Dr. W. E. Swanson~~
Dr. M. A. Swanson
Marietta Crowder, Graduate Student

- (2) Overhead allocable to the contract work.

Appendix "A" (Cont'd)

TITLE II

Contract No. AT-(40-1)-288
(The Bowman Gray School of Medicine
of Wake Forest College)

b. The Commission will furnish a sum not to exceed \$11,000.00 to be spent roughly as follows:

(1) Personnel

Full time technician (M. L. Haigler)..... [REDACTED]
2 Part time technicians..... [REDACTED]

(2) Permanent Equipment

High speed centrifuge.....	650.00
Two carbon Combustion apparatus.....	600.00
Direct reading balance for animals.....	250.00
Geiger-Muller counter.....	450.00
Shielded manual sample changer with amplifier.....	200.00
Accessories for Warburg apparatus.....	350.00
	<hr/>
	\$2,500.00

(3) Consumable Supplies

Radioactive phosphorus.....	250.00
Radioactive compounds (C ¹⁴ labelled)...	1250.00
Animals.....	500.00
Glassware.....	600.00
Chemicals.....	500.00
Organic Solvents.....	300.00
	<hr/>
	\$3,400.00

(4) Travel..... 200.00

(5) Miscellaneous (Maintenance, repairs and
replacements of radioactivity apparatus)... 350.00
Incidentals..... 230.00

580.00

TOTAL.....

\$11,000.00

It is understood and agreed by and between the parties hereto, that the Contractor in expending the funds provided by the Government shall be guided by, but not bound to conform to, the details of the program and budget set forth above.

c. Items of property procured or manufactured by the Contractor under this contract, title to which will vest in the Government. See Article VI, Section 3.

PRIVACY ACT MATERIAL REMOVED

Appendix "A" (Cont'd)

TITLE II

Contract No. AT-(40-1)-288
(The Bowman Gray School of Medicine
of Wake Forest College)

QUANTITY

DESCRIPTION

None

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3. PROGRESS REPORTS

The Contractor shall make progress reports at 6 months intervals in the manner described in Article V of this contract.

4. TECHNICAL ADMINISTRATION BY COMMISSION

The Commission has assigned the responsibility for administering the technical and scientific aspects of this Title II of Appendix "A" to:

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

5. ACCEPTANCE BY PROJECT LEADER

I have read the foregoing Title II of Appendix "A" and the basic contract to which it relates and I agree to be bound by the provisions of said documents.

SIGNED:

S. Corvillo Arsen
Project Leader

DATE:

7/6/49

APPENDIX "A"

Contract No. AT-(40-1)-288
(The Bowman Gray School of Medicine
of Wake Forest College)

TITLE III

1. PROJECT

a. Project Leader

The work under this Title III of Appendix "A" will be carried out by the Contractor under the Direction of Dr. George T. Harrell as Project Leader associated with Drs. C. Artom and D. Cayer.

b. Term

The performance of work under this Title III of Appendix "A" shall commence on July 1, 1949 and continue until June 30, 1950. It is understood, however, that completion of the research project described herein may involve a period of several years. Accordingly, the work under this Title III may be extended by mutual agreement.

c. Program

(1) Description of Project

Toxicity of P^{32} as related to the functional capacity of the liver.

(2) Plan of approach

Radio isotopes can enter the cell and be incorporated into protoplasmic constituents, exerting a radiation effect in immediate proximity to the enzyme systems in the cells. Accordingly, the results of internal radiation may not necessarily duplicate those of external radiations such as X-rays. While cells altered by malignant changes are known to be more susceptible to radiation than normal cells, the possibility may also exist of increased effects of radiation on cells previously damaged by factors other than malignancies such as infectious diseases, dietary inadequacies or exposure to toxic substances. The additive effect of radiation from isotopes introduced in the body (perhaps even only in tracer amounts) may possibly harm cells already partially damaged, this reducing their functional capacity below the level required for life. Since the liver is especially susceptible to damage even from mild agents and since P^{32} is synthesized very actively into various organic compounds in the liver, this tissue seems to offer considerable interest for

such a study. Of special importance would be the role of lipotropic substances since these have been shown to exert beneficial effects in several conditions with liver damage such as in cirrhosis. A possible approach to preventive or corrective therapy can thus be visualized. Preliminary experiments have already been made on the toxicity of P³² in mice. It is planned to extend further this study by varying the proportion and the nature of the protein, fat and carbohydrate components of the diet. The possible effects of various vitamins will also be investigated. Additional experiments will be done on animals in which anatomical and functional changes of the liver have been induced either by partial hepatectomy or by exposure to toxic agents.

2. BUDGET - PERIOD JULY 1, 1949 - JUNE 30, 1950

a. The Bowman Gray School of Medicine of Wake Forest College will furnish as its contribution to the project described in this Title III the following:

- (1) Salaries of three principal investigators, Drs. C. Artom, C. T. Harrell and D. Cayer.
- (2) Overhead costs allocable to the contract work.

b. The Commission will furnish a sum not to exceed \$3,000.00 to be spent roughly as follows:

(1) Salaries

Technical help.....	\$1500.00	
		\$1,500.00

(2) Permanent Equipment

Metabolism cages for animals.....	250.00	
One hemogenizer for the preparation of diets.....	35.00	
		285.00

(3) Expendible Supplies

Radioactive phosphorus.....	300.00	
Dietary components and animals.....	500.00	
Glassware and containers.....	150.00	
		950.00

(4) Miscellaneous.....	265.00	
		265.00

TOTAL.....	\$3,000.00
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It is understood and agreed by and between the parties hereto, that the Contractor in expending the funds provided by the Government shall be guided by, but not bound to conform to, the details of the program and budget set forth above.

- c. Items of property procured or manufactured by the Contractor under this contract, title to which will vest in the Government. See Article VI, Section 3.

QUANTITY

DESCRIPTION

None

3. PROGRESS REPORTS

The Contractor shall make progress reports at 6 months intervals in the manner described in Article V of this contract.

4. TECHNICAL ADMINISTRATION BY COMMISSION

The Commission has assigned the responsibility for administering the technical and scientific aspects of this Title III of Appendix "A" to:

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

5. ACCEPTANCE BY PROJECT LEADER AND ASSOCIATE PROJECT LEADERS

I have read the foregoing Title III of Appendix "A" and the basic contract to which it relates and I agree to be bound by the provisions of said documents.

SIGNED: *Rye Howell*
 Project Leader

H. Camille Arzon
 Associate Project Leader

David Cayer
 Associate Project Leader

DATE: 7/6/49

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 special 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.

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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 of 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 paid for the portion of the contract work already performed, together with reasonable costs of termination.

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 ($1\frac{1}{2}$) 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.