

UNITED STATES
ATOMIC ENERGY COMMISSION

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RESEARCH CONTRACT

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Contract No. AT-(40-1)-1964

THIS CONTRACT, entered into this 1st day of December, 1954, effective as of November 1, 1954, by the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission") and BAYLOR UNIVERSITY, COLLEGE 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 radio-isotope studies in Hodgkin's Disease. 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 Dr. Jack M. Rose as Senior Investigator.

ARTICLE II - TERM OF CONTRACT

1. The initial period of performance for the research project covered by this contract will commence on November 1, 1954, and will end on October 31, 1955. 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

- a. In consideration of the performance of the research activities described in Title I of Appendix "A", and the Contractor's agreement to support

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REPOSITORY Oak Ridge Operations
COLLECTION Records Holding Area
Documents 1944-94
BOX No. Contracts AT-(40-1)-1962-1965
1 of 1 Bldg 3714-H
FOLDER Baylor Univ. - College of Medicine - Dr. Jack M. Rose

CERTIFIED A TRUE COPY

John Nicholson

that work in the estimated amount of Ten Thousand, Five Hundred Sixty Dollars (\$10,560.00), the Government will pay to the Contractor for the first period of performance the sum of Twelve Thousand Dollars (\$12,000.00).

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, 45 per cent 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, 45 per cent of the agreed consideration.

c. Upon receipt and acceptance of a satisfactory progress report, in cases where the contract is to be renewed, or the final report if the contract is not to be renewed, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, the remaining 10 per cent of the agreed consideration. An extension of the contract term without additional funds shall not be considered a renewal of the contract and in such cases the retained 10 per cent of the agreed consideration will be paid upon submission and acceptance of a satisfactory final report.

d. In the event the contract is renewed, payments to the Contractor of any additional amount to be paid by the Government shall be made for the extended term in accordance with the schedule outlined in Paragraphs a., b. and c. above.

3. Program and Budget for Subsequent Periods

When renewal of the contract is desired, the Contractor shall submit to the Commission's Oak Ridge Operations Office a renewal proposal as outlined in Appendix "C", attached hereto. The Contractor and the Commission shall then negotiate as to the amounts each will contribute for the services to be performed during the ensuing period, taking into consideration the actual costs incurred during the current period in comparison with the cost estimates in the contract, and, upon agreement, shall execute a formal modification of the contract.

ARTICLE IV - 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 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.

3. The Contractor shall make progress and other reports in such manner and at such times as specified in Appendix "C" which is attached and hereby made a part of this contract.

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, unless the Commission authorizes their prior disposition.

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, unless the Commission authorizes their prior disposition. The term "subcontract" as used herein means any purchase order or agreement to perform all or any part of the

work or to make or furnish any materials required for the performance of this contract, but does not include (i) purchase orders not exceeding \$1,000, (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public, or (iii) subcontracts or purchase orders for general inventory items not specifically identifiable with the work under this contract.

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

ARTICLE V - 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. b. of Appendix "A" shall vest in the Government.

ARTICLE VI - 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 Isotopes Division, Post Office Box E, Oak Ridge, Tennessee.

ARTICLE VII - GENERAL PROVISIONS

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

ARTICLE VIII - ALTERATIONS

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

In Appendix "B", General Provisions, Paragraph 3, Disclosure of Information, the third sentence of subparagraph a. was 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/ Herman N. Roth

Director, Research & Medicine Division
(Contracting Officer)

WITNESSES:

(Address)

(Address)

BAYLOR UNIVERSITY COLLEGE OF MEDICINE

BY: s/ Stanley W. Glass

TITLE: Dean

ACCEPTANCE BY SENIOR INVESTIGATOR

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

s/ Jack H. Ross, M.D.
Senior Investigator

APPENDIX "A"

TITLE I

November 1, 1954 - October 31, 1955

This TITLE I describes the research program and cost estimates agreed upon between the Commission and the Contractor for the first period of performance.

1. PROGRAM

a. Scope and Plan of Approach

The Contractor will undertake during this period research along the following lines:

- (1) To determine whether a rabbit anti-serum against Hodgkin's diseased tissue will combine with tissue involved by this disease upon intravenous administration to the living Hodgkin's patient.
- (2) To determine the cellular localization of any combination that takes place in (1).
- (3) To tag with a radio-isotope rabbit antibodies against Hodgkin's diseased tissue.
- (4) To determine the effects of tagged antibodies on specific cells that may have exhibited localization of the radio-isotope.
- (5) To compare specificity and strength of anti-sera against various protein tiselius and ultra-centrifugal fractions of Hodgkin's diseased tissue with antibodies against the whole homogenate by means of localization of tagged antibodies "in vivo".
- (6) To evaluate anti-sera tagged with Iodine¹³¹, Sulfur³⁵, and Carbon¹⁴ in the diagnosis and treatment of Hodgkin's disease.
- (7) To determine cross reactivity of the rabbit anti-Hodgkin's serum with other abnormal cells such as carcinoma and lymphosarcoma cells.

2. BUDGET

a. Outline of cost estimates for the first period:

(1) Salaries and Wages:		\$12,800
Dr. J. M. Rose (50% of time)		
Research Associate	\$7,500 ^{0*}	
Technician, Laboratory Helper, Social Security	5,300	
(2) Animals and Supplies:		3,000
(3) Travel:		1,000
(h) Overhead (45% of Salaries)		5,760
		<hr/>
	TOTAL	\$22,560

*It is recognized that Dr. Rose receives no salary from the Contractor for work under this contract. It is further recognized that additional support for the general project may be received from other sources as reported in the Contractor's proposal.

b. Items of property to be procured or manufactured by the Contractor during this period, title to which will vest in the Government (see Article V): None.

APPENDIX "B"

GENERAL PROVISIONS

(FOR DIRECT AEC RESEARCH CONTRACTS)

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 judgement of the Commission.
- b. No claim for pecuniary award under the provisions of the Atomic Energy Act of 1946 or the Atomic Energy Act of 1954 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 1954 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.~~ Except as the Commission may authorize, in accordance with the Atomic Energy Act of 1954, 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 1954. 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 1954 and employed in this section shall mean "all data concerning (1) design, manufacture, or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to Section 142 of the Atomic Energy Act of 1954."

4. Disputes

Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. Within 30 days from the date of receipt of such copy,

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the Contractor may appeal by mailing or otherwise furnishing to the Contracting Officer a written appeal addressed to the Commission, and the decision of the Commission shall be final and conclusive, unless determined by a court of competent jurisdiction to have been fraudulent or arbitrary or capricious or so grossly erroneous as necessarily to imply bad faith or not to be supported by substantial evidence: Provided, That, if no such appeal to the Commission is taken, the decision of the Contracting Officer shall be final and conclusive. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

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 Commission 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. NONDISCRIMINATION IN EMPLOYMENT

In connection with the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, color, or national origin. The aforesaid provision shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of the nondiscrimination clause.

The Contractor further agrees to insert the foregoing provision in all subcontracts hereunder, except subcontracts for standard commercial supplies or raw materials.

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 shall submit a statement of costs incurred in performance of the work

under the contract prior to such termination, and the Government shall pay to the Contractor that portion of the costs incurred which bears the same relationship to the total as the agreed Government support for the full term bears to the total of cost estimates for the full term, 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

- a. 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 calenday 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 wroked 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.
- b. This provision does not apply to work performed by employees of the Contractor if this contract is with a state or a state institution.

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.

13. Foreign Travel

It is agreed that none of the funds supplied by the Commission under this contract shall be used to pay the expenses of foreign travel; except where such foreign travel is made with the prior approval of the Commission. "Foreign travel" as used herein means travel outside the continental United States, excepting, however, travel to Canada.

APPENDIX "C"

REPORTS AND PROPOSALS
(FOR DIRECT AEC RESEARCH CONTRACTS)

	Date Due	Copies
1. Progress Report	August 1	Six
2. Renewal Proposal	August 1	Six
3. 200-word summary of purpose and scope	Following completion of negotiation of contract and any renewal	Three
4. Complete Scientific Report	On contract termination	Six
5. Brief reports or manuscripts may be submitted as desired by investigator		

NOTES:

All of the above should be addressed to:

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

The progress report should briefly describe the scope of investigations undertaken and the significant results obtained. It should also explain any significant differences between the actual level of activity (expressed in the various categories of man-months, facilities procured, travel performed, etc.) and that contemplated in the contract. Technical reports and articles prepared for publication during the period covered should be listed with bibliographic references. Reprints or preprints of all such material should be appended and material contained therein need not be duplicated in the report.

Renewal proposals, if any, should accompany the progress report and should contain the type of information outlined below unless the information is already contained in earlier proposals or in the accompanying progress report. Any contemplated change in program or scope for the renewal period should be clearly explained and the cost estimated should be based upon past experience.

include the stipend of fellows. All salaries chargeable to the project should be in accord with the established policies of the institution, or if not, an explanation should be submitted.

11. Amount requested. A statement of the part of the total amount listed in the budget which the institution is prepared to bear, and the amount requested from the AEC, and a statement of any other sponsors of the project with the amounts contributed by each. The proposal should be signed by the Senior Investigator, endorsed by a responsible administrative officer of the institution.
12. Statement of current expenditures. A current statement of its expenditures for the project, and an estimate of expenses to be incurred during the remainder of the current period.
13. Residual funds. Any difference in the scope of the work during the current contract period from that contemplated in the contract, as brought out in the report, may be reflected in the amount requested for the ensuing year. If no new funds are required the contract may be renewed without funds. A proposal for such renewal should state the scope of the work proposed for use of residual funds.

1. Title of the project.
2. The institution and department in which the work will be done.
3. Scientific background including literature relevant to the proposal, the significance, and the motivation. If the proposal is for continuation of work already in progress the extent of present support should be stated identifying amounts received from federal agencies.
4. Scientific scope of the proposed research, its objectives, its relation to present knowledge and to comparable work in progress elsewhere, and a plan of accomplishments for the first year's work.
5. Scientific Personnel. Give the name, highest academic degree, position in the institution, scientific experience, publications and accomplishments of the senior investigator (the individual who will actively direct the research program) and of each regular staff scientist who it is proposed will engage in the work. Indicate the approximate fraction of the time of each to be devoted to the project during each period of the year. Scientific personnel to be newly employed for the project should be so designated, and professional records given if possible.
6. Other personnel. The number of persons of each sub-professional grade and the fraction of the time of each to be devoted to the project should be listed. Graduate student employees should be identified as such if their thesis is to be related to the project.
7. Other Financial Assistance. If assistance for this or other activities involving the same personnel or facilities is to be proposed to, or received from other federal or non-university sources the extent of that assistance should be clearly stated, and the interplay of the arrangements should be fully explained.
8. Materials, Equipment and Facilities. List those already available for the work and justify the need for major items to be procured.
9. Travel and other items. Explain the purpose of the proposed travel, and of any other major items in the budget. Travel rates and the use of contract funds for attendance at regular scientific meetings should conform with the policy of the institution in the use of its own funds for these purposes.
10. Budget. This should list in detail all items of cost necessary to carry the project for one year or for the duration of the project if less than a year. It should include: a list of the individual salaries attributable to the project, supplies and services, equipment (defined as things individually costing more than \$500 which will retain their utility for more than a year), travel, communication and publication, and the indirect costs allocable to the project. The basis for computing the indirect costs should be briefly explained. The budget should not

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U. S. ATOMIC ENERGY COMMISSION REPORT

Immunologic Studies in Hodgkin's Disease

udies have been conducted employing the globulin fraction of a rabbit
Hodgkin's serum tagged with I^{131} . This preparation has been followed
injection into patients with Hodgkin's disease and experiments to deter-
e course and ultimate fate of this antiserum have been carried out.
tion, studies are in progress at the present time to determine the
e specificity of the tagged antiserum in tissue slice experiments.

Tagging of Globulin Fraction of Rabbit Anti-Hodgkin's Serum with I^{131} .

Add 0.1 cc 40% hydrogen peroxide to radioactive I^{131} and heat
in a steam bath.

- For each milligram of amino nitrogen in the original protein
solution, add 0.5 cc of carbonate buffer pH 9.7.
 - For each microcurie of I^{131} in the stock solution add 0.05 cc
of 0.01N potassium iodide freshly prepared from a 1.0N solution.
Add to the resulting solution one drop of 0.5N HCl and one
drop of 0.1N sodium nitrate. The solution should turn yellow.
If not, add HCl dropwise until yellow color appears. Check
pH with applicator stick and nitroxine paper.
 - Add the I^{131} solution to the protein solution dropwise and
with stirring. Upon completion of addition, add 0.05 cc
0.1N KI.
 - Pour the solution from step 4 onto the top of a previously
prepared Amberlite IR-4B ion exchange column. Elute the
column dropwise under a hydrostatic head of distilled water.
Maximum rate of flow is 1 ml/min.
5. Collect 15 ml fractions.

A yield of approximately 20-30% is generally obtained.

Injection of The Globulin Fraction of Rabbit Anti-Hodgkin's Serum
Tagged With I^{131} (NRCG-131) Into Patients With Hodgkin's Disease.

1. Studies of uptake of tagged antiserum by tissues of patient
with Hodgkin's disease.

In five of the six patients injected with the globulin fraction
of rabbit anti-Hodgkin's serum tagged with radioactive I^{131}
uptake studies over the various areas of the body including
liver, spleen, involved and uninvolved lymph nodes, thyroid and
left knee were conducted. In the fifth patient of the series,
these studies were omitted since the patient was terminal.

- a. Injection of 3.5 mc NRCG-131.

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- b. Blood
- (1) Specimens drawn before injection and at 5, 15, 30 minutes 1, 2, 4, 12, 24, 48 and 72 hours and radioactivity measured on serum as well as on the chloride fraction (prepared by precipitation with silver nitrate), the protein fraction (prepared by precipitation with trichloroacetic acid), and the supernatant serum.
- c. Uptake studies over various areas of the body at 1, 4, 12, 24 and 72 hours.
- d. Collection of urine specimen before injection and as nearly as possible, at intervals when blood specimens are collected.
- e. Repetition of above four steps following injection of $\text{RANE}G-^{131}$.
- f. Whole body gammagrams at approximately 24 hours after each injection.
- g. Surgical removal of a normal and a Hodgkin's diseased lymph node 72 hours after each injection.
- h. Analysis of tissues removed from patient.
- i. Preparation of microscopic autoradiographs.
- (1) Tissues are washed in a 1:5 normal rabbit serum solution that is made up to 0.05 N potassium iodide.
 - (2) Fixed in formalin overnight.
 - (3) Cut and passed through the Technicon.
 - (4) Embedded in paraffin block.
 - (5) Cut 5-7 micra thick with microtome.
 - (6) Layed on lantern slide emulsion 1 x 3 slide in dark room.
 - (7) Placed in light-proof box; at serial intervals individual specimens are removed for development.
 - (8) The autoradiograph is deparaffinized in three changes of Xylene for 10 minutes each and then developed for 4 minutes at 65° with D_{19} . Next the autoradiograph is placed in stop water bath for 30 seconds, then in acid fix and allowed to clear. This followed by hardening solution for 5 minutes and washing for $\frac{1}{2}$ hour in running tap water. All solutions are kept at the same temperature. Slides were stained with Hematoxylin and Eosin or with Metanil yellow. Autoradiographs were prepared of each tissue employing not only the lantern slide emulsion, but also NTB plates and stripping film in order to determine the most effective method.

Technical problems have not been completely worked out as yet. Study of an extensive series of autoradiographs from the fifth and sixth patients for technical defects as well as for cellular localization is in progress. In the fifth patient, autoradiographs were prepared from all tissues of the body showing evidence of involvement with Hodgkin's disease. Control preparations were made from corresponding normal tissues.

Studies of histologic details to determine possible effects of the tagged antiserum will be made from present autoradiographs.

C. In Vitro Studies to Determine Specificity of Rabbit Anti-Hodgkin's
(In progress at present time.)

1. General purposes of experiments

- a. To determine whether tissue slices of Hodgkin's tissue will differentially take up RAHGG¹³¹.

2. Procedure employed.

- a. Preparation of globulin fraction of normal rabbit serum and of rabbit anti-Hodgkin's serum.
- b. Tagging NROG and RAHGG with I¹³¹ and removal of I¹³¹ not attached to protein.
- c. Purification of RAHGG¹³¹.
 - (1) Incubation with liver slices.
 - (2) Comparison of amount of radioactivity removed with amount removed from NROG¹³¹ by a similar weight of liver slice.
 - (3) Comparison of effect of carrier globulin in (1) and (2) above.
 - (4) Determination of absorption curve of liver for NROG¹³¹ and RAHGG¹³¹ employing varying quantities of globulin nitrogen.
 - (5) Determination of amount of NROG¹³¹ and of RAHGG¹³¹ that is non-specifically adsorbed to liver slice by determinations of radioactivity from serial washings of liver slice.
 - (6) Determination of varying degrees of absorption with liver slices obtained immediately post-mortem and incubated in the Dubroff apparatus to promote tissue metabolism as compared with liver finely minced to obtain a maximum surface area.
- d. Removal of antibodies against normal lymph node from RAHGG¹³¹.
 - (1) Supernate from experiments in c above are removed and incubated with normal lymph node slices.
 - (2) through (6) in c above are repeated employing normal lymph node slices.
 - (7) Supernates reincubated with normal lymph node slices.
- e. Supernates removed for incubation with Hodgkin's lymph node slices.
 - (1) through (6) as in c, employing Hodgkin's lymph node slices. Control comparisons of NROG¹³¹ and of rabbit anti-normal lymph node tagged with I¹³¹ (RAHGN¹³¹) incubated with Hodgkin's lymph node slices.
- f. Elution of RAHGG¹³¹.
 - (1) By exchange at neutral pH followed by acid elution with citric acid at pH 3.2.
- g. Studies with the purified eluted antigen will be conducted against various antigen fractions of Hodgkin's tissue as a method of determining choice of antigen fractions for future immunization.
- h. Preparation of autoradiographs on the tissue slices similar to those employed in f (1).

Results

Six patient studies have been conducted to date. In only four of these has it been possible to do comparative studies on the rate of disappearance of rabbit normal globulin tagged with I^{131} and rabbit anti-hypertensive gamma globulin, similarly tagged. The following observations were common to the four studies.

1. A higher blood peak of radioactivity was noted following the injection of the rabbit anti-hypertensive gamma globulin tagged with radioactive I^{131} (RAI^{131}) than following the injection of an identical amount of the control normal rabbit gamma globulin tagged with I^{131} (NRG^{131}).
2. The peak amount of radioactivity appearing in the blood following injection of NRG^{131} occurred later (15-72 hrs.) than the peak following injection of RAI^{131} (2-10 hrs.). Urinary peaks corresponded with blood peaks.
3. Treatment of data from blood and urine studies in these patients was as follows:
 - a. Curves of urinary excretion of radioactivity and blood levels have been prepared on four patients afflicted with hypertensive disease after injection of NRG^{131} and RAI^{131} .
 - b. Similar curves have been drawn of the partition of the activity in the blood between protein bound, inorganic iodide and the fraction of the serum remaining after removal of these fractions.
4. In each patient involved areas showed a greater uptake as compared with the corresponding areas on the contra-lateral side of the body varying from 6-25%. However, in each of two patients a single involved area failed to show any differential uptake when other involved areas did show this differential.
5. The differential uptake was usually not apparent at 1 hour, but usually appeared by 4 hours. However, the time of appearance and the duration of increased uptake of radioactivity did not show any consistent tendency in these studies. No correlation existed between peaks of appearance in the urine and blood and peaks of differential uptake by the tissues, as determined by studies over the body of the patient.
6. Uptake studies following injection of the control NRG^{131} did not reveal evidence of differential localization in the diseased lymph nodes. In the first patient studied, the injection of RAI^{131} was not preceded by injection of NRG^{131} . Thus, differential uptake of RAI^{131} was not subjected to the influence of a preceding injection of tagged rabbit globulin. This had no apparent effect on the localization of the RAI^{131} .
7. In the fifth patient study samples of all of the major tissues were obtained at post-mortem. While the counts of activity in the various tissues showed a positive correlation with the degree of pathologic involvement with hypertensive disease, the data was not statistically significant because of the proximity of the counts in the tissue to the background counts.

Shrinkage of peripheral lymph nodes to approximately one-fifth the original size occurred within thirty-six hours after administration of 60 cc of rabbit anti-Hodgkin's serum tagged with 8 mc. of radioactive I^{131} . This patient was terminal. Since the patient was comatose and the respirations were gasping in character, supportive therapy had been stopped. Within eight hours after administration of the antiserum, the patient began to respond and supportive therapy was started again. The patient regained consciousness, was able to take nourishment and became lucid. However, the trend reversed itself in six days. Additional radioactive antiserum was available only in minute quantities. The patient expired on the seventh day. At post-mortem the patient showed a diffuse Hodgkin's sarcoma with large tumor masses and extensive replacement of the various organs of the body by Hodgkin's involvement.

8. In the sixth patient studied, tissue removed after injection of I^{131} tagged normal rabbit globulin had an average of 6,027 counts per minute per gram of tissue, in the samples from two Hodgkin's diseased nodes. After injection of tagged rabbit anti-Hodgkin's globulin a normal lymph node contained 17,600 counts per minute per gram of tissue. Hodgkin's diseased nodes contained from 27,750 to 47,700 counts per minute per gram of tissue in the various lymph nodes examined. The average for all Hodgkin's diseased nodes was 36,000 counts per minute per gram of tissues. After absorption with normal rabbit globulin and potassium iodide, the ratios of the counts were maintained as before absorption.

Immunologic Studies in Hodgkin's Disease

Studies have been conducted employing the globulin fraction of a rabbit anti-Hodgkin's serum tagged with I^{131} . This preparation has been followed after injection into patients with Hodgkin's disease and experiments to determine the course and ultimate fate of this antiserum have been carried out. In addition, studies are in progress at the present time to determine the relative specificity of the tagged antiserum in tissue slice experiments.

Methods

A. Tagging of Globulin Fraction of Rabbit Anti-Hodgkin's Serum with I^{131} .

1. Add 0.1 cc 40% hydrogen peroxide to radioactive I^{131} and heat in a steam bath.
2. For each milligram of amino nitrogen in the original protein solution, add 0.5 cc of carbonate buffer pH 9.7.
3. For each millicurie of I^{131} in the stock solution add 0.05 cc of 0.02N potassium iodide freshly prepared from a 1.0N solution. Add to the resulting solution one drop of 0.5N HCl and one drop of 0.2N sodium nitrate. The solution should turn yellow. If not, add HCl dropwise until yellow color appears. Check pH with applicator stick and nitroxine paper.
4. Add the I^{131} solution to the protein solution dropwise and with stirring. Upon completion of addition, add 0.05 cc 0.2N PI.
5. Pour the solution from step 4 onto the top of a previously prepared Amberlite MB-3B ion exchange column. Elute the column dropwise under a hydrostatic head of distilled water. Maximum rate of flow is 1 ml/min.
6. Collect 15 ml fractions.

A yield of approximately 20-30% is generally obtained.

B. Injection of The Globulin Fraction of Rabbit Anti-Hodgkin's Serum Tagged with I^{131} (RABG-131) Into Patients With Hodgkin's Disease.

1. Studies of uptake of tagged antiserum by tissues of patient with Hodgkin's disease.

In five of the six patients injected with the globulin fraction of rabbit anti-Hodgkin's serum tagged with radioactive I^{131} uptake studies over the various areas of the body including liver, spleen, involved and uninvolved lymph nodes, thyroid and left knee were conducted. In the fifth patient of the series, three studies were omitted since the patient was terminal.

- a. Injection of 3.5 mc RABG-131.

b. Blood

- (1) Specimens drawn before injection and at 5, 15, 30 minutes, 1, 2, 4, 12, 24, 48 and 72 hours and radioactivity measured on serum as well as on the chloride fraction (prepared by precipitation with silver nitrate), the protein fraction (prepared by precipitation with trichloroacetic acid), and the supernatant serum.
- c. Uptake studies over various areas of the body at 1, 4, 12, 24 and 72 hours.
- d. Collection of urine specimen before injection and as nearly as possible, at intervals when blood specimens are collected.
- e. Repetition of above four steps following injection of ²²³RnCl₂.
- f. Whole body gamma-rays at approximately 24 hours after each injection.
- g. Surgical removal of a normal and a Hodgkin's diseased lymph node 72 hours after each injection.
- h. Analysis of tissues removed from patient.
- i. Preparation of microscopic autoradiographs.
 - (1) Tissues are washed in a 1% normal rabbit serum solution that is made up to 0.05 M potassium iodide.
 - (2) Fixed in formalin overnight.
 - (3) Cut and passed through the Technicon.
 - (4) Embedded in paraffin block.
 - (5) Cut 5-7 micra thick with microtome.
 - (6) Layed on lantern slide exaltion 1 x 3 slide in dark room.
 - (7) Placed in light-proof box; at serial intervals individual specimens are removed for development.
 - (8) The autoradiograph is deparaffinized in three changes of Xylene for 10 minutes each and then developed for 5 minutes at 65° with D₁₉. Next the autoradiograph is placed in stop water bath for 30 seconds, then in acid fix and allowed to clear. This followed by hardening solution for 5 minutes and washing for 1/2-1 hour in running tap water. All solutions are kept at the same temperature. Slides were stained with Menthoxylin and Eosin or with Mentoxyl yellow. Autoradiographs were prepared of each tissue employing not only the lantern slide exaltion, but also NTB plates and stripping film in order to determine the most effective method.

Technical problems have not been completely worked out as yet. Study of an extensive series of autoradiographs from the fifth and sixth patients for technical defects as well as for cellular localization is in progress. In the fifth patient, autoradiographs were prepared from all tissues of the body showing evidence of involvement with Hodgkin's disease. Control preparations were made from corresponding normal tissues.

Studies of histologic details to determine possible effects of the tagged antiserum will be made from present autoradiographs.

C. *In Vitro* Studies to Determine Specificity of Rabbit Anti-Edgkin's
(in progress at present time.)

1. General purposes of experiments

- a. To determine whether tissue slices of Edgkin's tissue will differentially take up ^{131}I .

2. Procedure employed.

- a. Preparation of globulin fraction of normal rabbit serum and of rabbit anti-Edgkin's serum.
- b. Tagging HNO_3 and RAHCO with ^{131}I and removal of ^{131}I not attached to protein.
- c. Purification of RAHCO^{131} .
 - (1) Incubation with liver slices.
 - (2) Comparison of amount of radioactivity removed with amount removed from HNO_3^{131} by a similar weight of liver slice.
 - (3) Comparison of effect of carrier globulin in (1) and (2) above.
 - (4) Determination of absorption curve of liver for HNO_3^{131} and RAHCO^{131} employing varying quantities of globulin nitrogen.
 - (5) Determination of amount of HNO_3^{131} and of RAHCO^{131} that is non-specifically adsorbed to liver slice by determination of radioactivity from serial washings of liver slice.
 - (6) Determination of varying degrees of absorption with liver slices obtained immediately post-mortem and incubated in the Dubroff apparatus to promote tissue metabolism as compared with liver finely minced to obtain a maximum surface area.
- d. Removal of antibodies against normal lymph node from RAHCO^{131} .
 - (1) Supernates from experiments in c above are removed and incubated with normal lymph node slices.
 - (2) Through (6) in c above are repeated employing normal lymph node slices.
 - (7) Supernates re-incubated with normal lymph node slices.
- e. Supernates removed for incubation with Edgkin's lymph node slices.
 - (1) through (6) as in c, employing Edgkin's lymph node slices. Control experiments of HNO_3^{131} and of rabbit anti-normal lymph node tagged with ^{131}I (RNLN^{131}) incubated with Edgkin's lymph node slices.
- f. Elution of RAHCO^{131} .
 - (1) By exchange at neutral pH followed by acid elution with citric acid at pH 3.2.
- g. Studies with the purified eluted antiserum will be conducted against various antigen fractions of Edgkin's tissue as a method of determining choice of antigen fractions for future immunization.
- h. Preparation of autoradiographs on the tissue slices similar to those employed in f (1).

Results

Six patient studies have been conducted to date. In only four of these has it been possible to do comparative studies on the rate of disappearance of rabbit normal globulin tagged with I^{131} and rabbit anti-Trigkin's gamma globulin, similarly tagged. The following observations were common to the four studies.

1. A higher blood peak of radioactivity was noted following the injection of the rabbit anti-Trigkin's gamma globulin tagged with radioactive I^{131} (RATG I^{131}) than following the injection of an identical amount of the control normal rabbit gamma globulin tagged with I^{131} (NRGG I^{131}).
2. The peak amount of radioactivity appearing in the blood following injection of NRGG I^{131} occurred later (13-72 hrs.) than the peak following injection of RATG I^{131} (2-10 hrs.). Urinary peaks corresponded with blood peaks.
3. Treatment of data from blood and urine studies in these patients was as follows:
 - a. Curves of urinary excretion of radioactivity and blood levels have been prepared in four patients afflicted with Trigkin's disease after injection of NRGG I^{131} and RATG I^{131} .
 - b. Similar curves have been drawn of the partition of the activity in the blood between protein bound, inorganic iodide and the fraction of the serum remaining after removal of these fractions.
4. In each patient involved areas showed a greater uptake as compared with the corresponding area on the contra-lateral side of the body varying from 6-25%. However, in each of two patients a single involved area failed to show any differential uptake when other involved areas did show this differential.
5. The differential uptake was usually not apparent at 1 hour, but usually appeared by 4 hours. However, the time of appearance and the duration of increased uptake of radioactivity did not show any consistent tendency in these studies. No correlation existed between peaks of appearance in the urine and blood and peaks of differential uptake by the tissues, as determined by studies over the body of the patient.
6. Uptake studies following injection of the control NRGG I^{131} did not reveal evidence of differential localization in the diseased lymph nodes. In the first patient studied, the injection of RATG I^{131} was not preceded by injection of NRGG I^{131} . Thus, differential uptake of RATG I^{131} was not subjected to the influence of a preceding injection of tagged rabbit globulin. This had no apparent effect on the localization of the RATG I^{131} .
7. In the fifth patient study samples of all of the major tissues were obtained at post-mortem. While the counts of activity in the various tissues showed a positive correlation with the degree of pathological involvement with Hodgkin's disease, the data was not statistically significant because of the proximity of the counts in the tissue to the background counts.

shrinkage of peripheral lymph nodes to approximately one-fifth the original size occurred within thirty-six hours after administration of 60 cc of rabbit anti-Hodgkin's serum tagged with 8 mc. of radioactive I^{131} . This patient was terminal. Since the patient was comatose and the respirations were gasping in character, supportive therapy had been stopped. Within eight hours after administration of the antiserum, the patient began to respond and supportive therapy was started again. The patient regained consciousness, was able to take nourishment and became lucid. However, the trend reversed itself in six days. Additional radioactive antiserum was available only in minute quantities. The patient expired on the seventh day. At post-mortem the patient showed a diffuse Hodgkin's carcinoma with large tumor masses and extensive replacement of the various organs of the body by Hodgkin's involvement.

3. In the sixth patient studied, tissues removed after injection of I^{131} tagged normal rabbit globulin had an average of 6,347 counts per minute per gram of tissue, in the samples from two Hodgkin's diseased nodes. After injection of tagged rabbit anti-Hodgkin's globulin a normal lymph node contained 17,600 counts per minute per gram of tissue. Hodgkin's diseased nodes contained from 27,750 to 47,700 counts per minute per gram of tissue in the various lymph nodes examined. The average for all Hodgkin's diseased nodes was 36,300 counts per minute per gram of tissue. After absorption with normal rabbit globulin and potassium iodide, the ratios of the counts were maintained as before absorption.

James Haggerty, Medical Branch, Division of
Biology and Medicine, Washington

February 10, 1956

G. S. Shoup, Chief, Biology Branch, Research
and Development Division, Oak Ridge Operations

DR. JACK ROSE, PROJECT LEADER, CONTRACT NO. AT-(40-1)-2026.

OSR:OSR

For your information and retention, as per our telephone conversation
of February 9, 1956, we enclose copies of correspondence from
William W. Olson, W.W. Olson, Baylor University College of Medicine,
relative to Dr. Jack Rose, formerly project leader on the Baylor
University retired contract No. AT-(40-1)-1944. A new contract No.
AT-(40-1)-2026 covers work under Dr. Rose's direction at the Wally
Bohannon Research Foundation, Houston, Texas.

Woff

G. S. Shoup

Enclosures:

1. Ltr SHO to OSR dtd 2/1/56.
2. Report.

CONTRACTS 1964
Baylor

~~CONTRACTS~~ 2026
Wally Bohannon

1097811

BAYLOR UNIVERSITY
COLLEGE OF MEDICINE
TEXAS MEDICAL CENTER
HOUSTON, TEXAS

February 1, 1958

OFFICE OF DEAN
Mr. C. S. Shoup
Chief, Biology Branch
Research and Development Division
United States Atomic Energy Commission
Oak Ridge, Tennessee

In re: ORS:ELM

Dear Mr. Shoup:

OK
I have your letter of January 17th, 1958 regarding the termination of Contract No. AT-(40-1)-1964 in which you indicate that a new contract has been signed with the Wally-Bohannon Research Foundation in which Dr. Jack Rose is the principal investigator.

I have no wish to modify in any way the arrangements which you have established with Dr. Rose, but I think I should call your attention to certain circumstances regarding Dr. Rose's association with Baylor University College of Medicine during the past year. Most of this is included in a report of a special faculty committee which I appointed to investigate this matter in April, 1955. At the time of Dr. Rose's leaving Baylor University College of Medicine, the following event occurred:

At the time Dr. Rose checked the inventory of his laboratory, he attempted to secure a receipt from our inventory control officer for a phase microscope valued at about \$1,000 by turning in an old microscope which was probably not worth more than \$150. He sat and watched while the serial numbers were being checked; and when they did not conform to those on the record, professed not to understand why they did not check. He later returned with the proper microscope.

We have dropped Dr. Rose from our faculty. Actually, Dr. Rose submitted his resignation at the time I had on my desk a letter to him requesting that he do so. Dr. Rose has not submitted to the school a copy of the progress report covered under the contract with the Atomic Energy Commission and he has not accounted for all of the inventory equipment charged to his laboratory.

I may say that in all my experience in dealing with research contracts, I have never encountered a situation comparable to the one which I have just related. I know that Dr. Rose has communicated with you on a number of occasions but he has not had the courtesy to keep me informed as to the nature of these communications. I am submitting this information to you simply to give you as complete a picture of the situation as I can. I bear no resentment to Dr. Rose and would not wish you to alter your relationship with him, but I think it only fair that you know the nature of the difficulties we have experienced.

CONTRACTS 1964

Yours sincerely,

Stanley W. Olson, M.D.
Dean

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1958

REPORT OF THE FACULTY COMMITTEE APPOINTED TO INVESTIGATE
THE ROSE RESEARCH PROJECT

The committee appointed by Dean Olson to review the research activities of Doctor Rose met on April 31, 1955, and on several subsequent occasions. The committee reviewed the outline of Doctor Rose's research program as presented in his applications to the United States Public Health Service, and later reviewed a copy of the grant application to the Atomic Energy Commission.

The committee interviewed Doctor Rose and questioned him in detail about his research projects. Later each member of the committee discussed with Doctor Rubin technical aspects of the research projects.

The committee was appraised of the extensive discussion that had taken place between Doctor Rose and Dean Olson and between Doctor Rose and Doctor Greene in the summer of 1954 regarding the supervision of his research project. It was informed that a clear-cut administrative arrangement had been made for Doctor Hettig to review and supervise the clinical studies on Hodgkins Disease patients which were to be used in Doctor Rose's studies, with Doctor Rose having responsibility for keeping Doctor Hettig adequately informed about all of his research activities and clinical program. All purchases and all matters pertaining to the employment of personnel were to be supervised by the Chairman of the Department of Medicine.

The employment of Doctor Rubin was based upon recommendations made by Doctor Rose, together with substantiating data regarding his professional and personal qualifications. It was recognized at the time that a person with his scientific background was needed to carry on studies of the kind proposed in the two grant requests.

It appears that Doctor Rose has not been willing to accept Doctor Hettig or Doctor Rubin as co-workers, having valid opinions regarding the nature of the research data obtained. This has led to serious administrative difficulties.

The conclusions of the committee are as follows:

A. Scientific Aspects:

1. The objectives of the investigation are sound.
2. The validity of both the laboratory and clinical methods employed in the investigation are deemed questionable for the following reasons:
 - a. Doctor Rose has admitted a limited personal experience in the complicated field of immunological and immunochemical research procedures.
 - b. The original observations regarding the production and demonstration of specific antibodies against Hodgkins tissue in the serum of inoculated rabbits were made by a succession of technical assistants who were not well qualified to obtain accurate data.
 - c. Doctor Rose exhibited uncritical enthusiasm for the preliminary laboratory results indicating the presence of specific antibodies specific for Hodgkins tissue in rabbit sera. Clinical observations made by him on a small number of patients without adequate controls appear to have been accepted in a similarly uncritical manner.
 - d. When Doctor Rubin attempted to repeat the basic studies regarding the specificity of antibodies produced in rabbits by inoculation with Hodgkins tissue he was unable to confirm the data of Doctor Rose and his previous assistants. Doctor Rubin

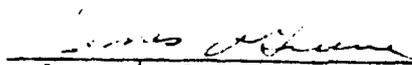
is a person well qualified to conduct studies in the field of immunology and immunochemistry. He is quite aware of the inherent difficulties involved in this general area of study.

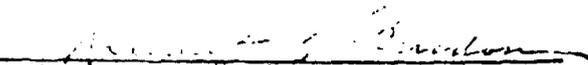
- e. Doctor Rose appears unwilling to recognize the inadequacy of his earlier studies and has manifested a personal resentment against Doctor Rubin.

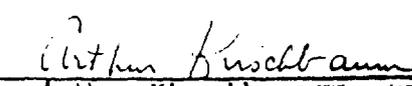
The committee recommends that: 1) Doctor Rose's investigations be more carefully supervised in the future; 2) the remainder of the grant funds be used to obtain additional information regarding the development of specific antibodies against malignant tissue to supplement that which has been developed in other laboratories; 3) since Hodgkins disease tissue appears to be an extremely difficult tissue to study because of its varied cellular architecture other malignancies should be studied with the use of adequate controls to orient the investigation properly; 4) when information is obtained substantiating the adequacy of the methods used, these methods should then be applied to the study of Hodgkins disease tissue.

B. Administrative Aspects:

It is recommended that Doctor Rose continue, under the direct supervision of Doctor Greene, certain aspects of his research for which he qualified, and that Doctor Rubin, likewise, continue under the supervision of Doctor Greene, other aspects of the research project for which he is qualified.


James A. Greene


Kenneth L. Burdon


Arthur Kirschbaum

1097815

In Reply
Refer To: ORS:EMH

Oak Ridge, Tennessee
January 17, 1956

Dr. A. Johnson, Business Manager
University College of Medicine

Contract No. AF-(40-1)-1944

Dear Dr. Johnson:

Contract No. AF-(40-1)-1944 with Baylor University, covering work on "Radio-Isotope Studies in Hodgkin's Disease", with Dr. J. M. Ross as the Principal Investigator, has expired and the work is now covered under a new contract with the Kelly-Schaygen Research Foundation. Inasmuch as the annual progress report covering the work performed during the period of the contract has been submitted and since the work is still being conducted under a new contract, we are willing to accept the annual progress report as the complete scientific report required in Appendix 40 of the contract. Therefore, the obligations of the University have been concluded, allowing us to close out the contract.

In view of the above, it is now possible for us to make the final ten percent payment of the agreed consideration as stated in Article III, 10 of the contract. Therefore, if you will submit a voucher, we will process it for payment and close out the contract.

Your cooperation in this matter will be appreciated.

Very truly yours,

C. S. Shoop
Chief, Biology Branch
Research and Development Division

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Shoop

1097816

L. B. McKay, Director
Finance Division

February 6, 1956

Herman M. Roth, Director
Research and Development Division

CONTRACT NO. AT-(40-1)-1964 - BAYLOR UNIVERSITY

This is to advise you that Contract No. AT-(40-1)-1964 with Baylor University has expired and the work is now covered under a new contract with the Wally-Balaban Research Foundation. Enclosed as the annual progress report covering the work performed during the period of the contract has been submitted, and since the work is still being conducted under a new contract, we have accepted the annual progress report as the complete scientific report as required in Appendix "C" of the contract. Therefore the obligations of the University have been concluded, and the contract should be closed out.

ORIGINAL SIGNED BY
HERMAN M. ROTH

Herman M. Roth

J. E. Moore
F. E. McPherson

CONTRACTS 1964
Baylor U.

1097817

NOTICE OF RESEARCH PROJECT

BIO-SCIENCES INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

PROJECT NO. (Do not fill)
GM-397
AT(40-1)1964

DO NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

ARRANGING AGENCY
TITLE OF PROJECT

RADIOIODINE STUDIES IN HODGKIN'S DISEASE

Contract No. AT-(40-1)-1964

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

Jack M. Rose, M. D., Department of Medicine, Assistant professor of Medicine
Dr. Benjamin A. Rubin, Department of Medicine, Research associate

NAME AND ADDRESS OF INSTITUTION:

Baylor University College of Medicine, Houston, Texas

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

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

Methods of tagging the globulin fraction of a rabbit anti-Hodgkin's serum with radio-active compounds will be investigated. Use of radio-iodine has been studied in pilot experiments. Employment of other tags such as S³⁵ will be investigated. In-vitro studies of localization of the tagged antiserum are planned. Tissue slices incubated in vitro will be studied for uptake of radioactivity by autoradiographic methods and by measurement of emitted radiations under the Scintillation type counter. Appropriate controls on related, as well as normal, tissues will be carried out in parallel.

Correlative studies are planned by isotope techniques on fractions showing evidence of specificity by ultra-centrifugation, complement fixation, ultra-violet absorption, and tissue-culture studies.

SIGNATURE OF
PRINCIPAL
INVESTIGATOR

Jack M. Rose

Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified:
SCHOOL Medical

Submitted 3/55

Grant No.
GM-397

INVESTIGATOR—DO NOT USE THIS SPACE

Period of Operation

11/54 - 10/55

CONTRACTS

Amt. app.
\$12,000

1964

Baylor Col. of Med.

1097818

February 4, 1955

Dr. M. Ross, M. D.
Department of Internal Medicine
Coker University
School of Medicine
Canton 25, Texas

Dear Dr. Ross:

This letter is in response to your telephone inquiry to Mr. Samuel Brown regarding the procurement of surplus scientific equipment.

Since I do not know just what your specific needs are at this time, and under what conditions you desire to procure surplus equipment, I suggest you write directly to the Oak Ridge Operations Office, inasmuch as they are in a better position, functionally and geographically, to evaluate your needs and to aid you accordingly.

However, when contacting Oak Ridge you might consider the following points: To acquire Government surplus equipment as a Government long-term research contractor, two conditions must be met. First, the equipment must be utilized in conjunction with the research contract, and secondly, the surplus equipment must be procured with funds appropriated under the terms of the research contract. With respect to these conditions, I might point out that, under the existing contract, no AEC monies are allotted for equipment. In the other event, were you contemplating procuring the equipment with University funds, you shall act as an agent of the Government, it is to be understood that your position would not be a Government one with respect to the procurement of surplus equipment, even though you were working under a Government contract. In addition, you are probably aware that the General Services Administration, when requested by an educational institution and upon the receipt of proper endorsement from the United States Department of Health, Education and Welfare, will

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Jack N. Rose, M. D.

- 2 -

February 4, 1955

under certain conditions and at no cost to the institution transfer ownership of surplus equipment to that educational institution.

If I can be of any further assistance, please don't hesitate to contact me.

Sincerely yours,

Paul G. LaFevre
Assistant to Chief (Research)
Medical Branch
Division of Biology and Medicine

✓cc: Oak Ridge Operations Office
Attn: Dr. Herman M. Roth, Director
Research & Medicine Division

1097820

ADC:JN

Baylor University
College of Medicine
Texas Medical Center
Houston, Texas

January 15, 1955

Mr. R. G. Humphries, Acting Director
Contract Division, Oak Ridge Operations
United States Atomic Energy Commission
Oak Ridge, Tennessee

Dear Mr. Humphries:

Enclosed is the Notice of Research Project form, containing a summary of proposed work in our RADIOISOTOPE STUDIES IN HODGKIN'S DISEASE (Contract No. AT-(40-1)-1964).

The signed contracts were mailed under separate cover some time ago.

Very truly yours,

Jack H. Rose
Jack H. Rose, M. D.

JR:ds
Enc.

Baylor
CONTRACTS 1964

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JAN 17 1955
E-224

In Reply
Refer to: OR:J&S

Oak Ridge, Tennessee
January 14, 1955

Dr. Jack N. Rose
Baylor University
College of Medicine
Department of Medicine
Houston, Texas

Subject: CONTRACT NO. AT-(102)-1964

Dear Dr. Rose:

Reference is made to your letter of January 3, 1955, submitting the signed copies of Contract No. AT-(102)-1964.

In regard to your question regarding the deduction by the College of eight per cent of the \$12,000 for overhead, we should like to point out that under the Commission's policy as outlined in the "Revised Guide for the Submission of Research Proposals," the contribution of the Commission is for partial support of the total research project on a cost-sharing basis. You will note that the contract does not identify the Commission's funds as being for any specific item or items; therefore, in spending the funds, you should be guided generally by the provisions of the budget in the contract. If the research is carried out as planned and the expenditures are made in accordance with the budget in the contract, the identification of whose contributions are spent for which items becomes immaterial.

If you have any further questions, do not hesitate to call upon us.

Very truly yours,

C. S. Shoup, Chief
Biology Branch
Research and Medicine Division

OK CC: S. N. Olson
Rouseville, Jr

Baylor
CONTRACTS 1964

OFFICE ▶	<i>OK</i>	<i>OK</i>	<i>OKB</i>			
SURNAME ▶	<i>Reynolds</i>	<i>Corley</i>	<i>Shoup</i>			
DATE ▶	<i>1-17-55</i>	<i>1-17-55</i>	<i>1-17-55</i>			

1097822

Baylor University
College of Medicine
Texas Medical Center
Houston, Texas

January 3, 1955

Mr. C. S. Shoup
Chief, Biology Branch
Research and Medicine Division
United States Atomic Energy Commission
Oak Ridge, Tennessee

Dear Mr. Shoup:

In checking over the budget, I gathered that the eight per cent overhead charged to public grants by the school can be deducted from the \$12,000 award.

I should appreciate it if you could confirm this point or clarify it if I am in error.

The signed contracts are enclosed.

Sincerely yours,

Jack M. Rose
Jack M. Rose, M. D.

JMR:ds
Enc. ③
cc: Dr. Olson

1097823

Baylor
1097823
JAN 10 1955
✓ 10-22

(REV. 10/53)

U. S. ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS OFFICE
STATEMENT OF AUTHORITY

1. DELEGATED TO (Name, title, unit, location) Chief, Biology Branch Research and Medicine Division Oak Ridge Operations Office	2. DELEGATED BY (Name, title, unit, location) Director, Research and Medicine Division Oak Ridge Operations Office
NUMBER ASSIGNED TO THIS STATEMENT OF AUTHORITY 1751	5. THIS STATEMENT OF AUTHORITY IS REDELEGATION NUMBER 18
EFFECTIVE DATE OF THIS STATEMENT OF AUTHORITY November 1, 1954	OF STATEMENT OF AUTHORITY NO. 1452

(The issuance and use of this Statement is subject to the provisions of Bulletin OR-O & M-38 (Serial No. 264), "Delegations of Authority.")

1. Pursuant to the authority vested in me you are hereby designated as a representative of the Commission and of the Contracting Officer, in connection with the performance of:

Contract Number : AT-(40-1)-1964

Name of Contractor: Baylor University College of Medicine

with authority to take such action and make such decisions in connection therewith as are required of the Atomic Energy Commission with the exception that you are not authorized to (a) execute modifications of the contract, (b) make final decisions relative to disputes, claims and appeals arising under the contract, or (c) approve any purchase or sub-contract requiring approval of the Atomic Energy Commission.

2. You shall establish such controls as may be necessary to maintain that portion of the program represented by the contract within budgetary limitations. You shall also develop and maintain liaison and coordination with others concerned to assure continuity of existing budgetary and administrative policies and agreement on new policies.

3. The authority granted above may not be redelegated to others; it will remain in effect until revoked.

Herman M. Roth

Herman M. Roth
Director
Research and Medicine Division
Oak Ridge Operations Office

U. S. ATOMIC ENERGY COMMISSION
Oak Ridge Operations Office

*Cont-
File*

STATEMENT OF AUTHORITY
(Assignment of Contract for Administration)

Contract No. AT-(40-1)-1964 Baylor University, College of Medicine

is assigned to Director, Res. & Med. Div. (Contractor)
effective November 1, 1954
(Name and Title of Official) (Date)

for administration in accordance with Statement of Authority No. 1152. Authority for adminis-
tering this contract may be redelegated to a designated AEC representative in accordance with the
Statement of Authority cited above.

(Name)
ORIGINAL SIGNED BY
HERMAN M. ROTH
DIRECTOR
RESEARCH AND MEDICINE DIVISION

(Title)

Distribution:

Original and one to official designated
in line 2, above.

Copies to:

Contract Division
Assistant General Counsel
Organization and Personnel Division
Finance Division

In Reply Refer To:
ADC:JW

Oak Ridge, Tennessee
December 8, 1954

Baylor University College of Medicine
Department of Medicine
Houston, Texas

Attention: Dr. Jack M. Rose

Subject: CONTRACT NO. AT-(40-1)-1964

Gentlemen:

Your research project which was submitted to the Commission's Division of Biology and Medicine, Washington, D. C., has been approved by that office in the amount of \$12,000.00 and has been forwarded to this office for preparation of an appropriate contract covering the Commission's support of your project.

Enclosed, in triplicate, is a contract numbered as shown in the subject line above which incorporates in Appendix "A" a description of your project and the budget for the first period which you are to follow as a general guide. Also enclosed is a Notice of Research Project form which is to be used in submitting your summary statement.

It is requested that you sign each copy of the contract in the space provided for the Senior Investigator and have the copies signed by the proper official of the University, returning two copies to this office. The summary statement should be filled in and returned along with the signed copies of the contract. After signature on behalf of the Commission, one duly signed copy of the contract will be returned for your retention.

It will be noted that the contract provides for payment in Article III of a lump sum in consideration of your performance of the research activities described in Appendix "A". The first payment, representing 45 per cent of the amount of the agreed compensation, will be paid to you upon your submission of a properly certified voucher on or before the first date established in Article II of the contract. Another 45 per cent of the agreed compensation will be paid to you within six months from the date of the first payment. The remaining 10 per cent of the agreed compensation will be paid to you upon receipt and acceptance of a satisfactory progress report or the final report as the case may be.

DEC 8 1954

1097825
M. Shaver
CONTRACT 1964 Dec 129
Baylor

Baylor University

- 2 -

December 8, 1954

In order to assist you in preparing an appropriate voucher there is enclosed an instruction sheet containing numbered instructions corresponding with numbers appearing on a specimen copy of the voucher form. Vouchers should be submitted to the Research and Medicine Division, Oak Ridge Operations Office, U. S. Atomic Energy Commission, Post Office Box E, Oak Ridge, Tennessee in one original (white) and four copies (yellow). It is assumed that you will give your business office the benefit of these instructions.

Your attention is called to the reporting requirements outlined in Appendix "C" to the contract, especially to Item No. 3 requiring the immediate submission of a 200 word summary statement describing the purpose and scope of your project.

For your information and guidance in purchasing isotopes through the Commission, in accordance with the provisions of Article VI, there is enclosed a copy of the latest Procurement Procedures for Radioisotopes together with a set of application forms, which you will use in making purchases of isotopes.

Your particular attention is invited to Appendix "B", Section 12 - Fellowships.

It is believed that the remaining portions of the contract are self-explanatory, however, if you have any questions concerning the application or interpretation of any of the contract provisions, I will be glad to furnish you with additional information.

Very truly yours,

R. G. Humphries
Acting Director
Contract Division
Oak Ridge Operations

Enclosures:
Contract (in trip.)
Notice of Research Project
Vouchers & Instr. Sheets
Procurement Procedures
for Radioisotopes

Nicholson:ja

1097826

KVA33 PD

HOUSTON TEX 9 853AMC

DR MCALDUS

ATOMIC ENERGY COMM OAKRIDGE TENN

TELEGRAM CONFIRMING GRANT NOT RECEIVED BY J L JOHNSON

BUSINESS OFFICE BAYLOR NECESSARY BEFORE DISBURSEMENT

J M ROSE..

DEC 2 1954
LD-6046

2-1
R...

1097827

NOVEMBER 30, 1954

HERMAN M. ROTH, DIRECTOR
RESEARCH AND MEDICINE DIVISION
OAK RIDGE OPERATIONS OFFICE
OAK RIDGE, TENNESSEE

ORIGINAL DESTROYED
HERMAN M. ROTH, HK

ROUTINE

MR. J. L. JOHNSON
BUSINESS MANAGER
BAYLOR UNIVERSITY
SCHOOL OF MEDICINE
HOUSTON, TEXAS

CONTRACT COVERING WORK OF DR PD J PD M PD ROSE BEING PREPARED PD EFFECTIVE DATE
WILL BE NOVEMBER 1, 1954 WITH AEC CONTRIBUTING \$12 000 PD CONTRACT WILL BE SENT
TO THE UNIVERSITY FOR SIGNATURE UPON COMPLETION END REF OR JER - 29

1097828

1385 -
15972
1530 -
AEC

and

12/1
12/1

11-29	11-29	12-12	12-1	12-1		
Carley	Carley	Haythorn	Roth			

J. C. Bugher, Director, Division of Biology and
Medicine, Washington

November 18, 1954

Herman M. Roth, Director, Research and Medicine Division, Oak Ridge
Operations

RESEARCH CONTRACT - BAYLOR UNIVERSITY, COLLEGE OF MEDICINE

SYMBOL: OR:JR

Reference is made to your memorandum of October 1, 1954, to S. R.
Sapirie, symbol: BMH:PGL, regarding a research contract with the
Baylor University, College of Medicine, covering the work on
"Radio-Isotope Studies in Hodgkin's Disease."

In accordance with your request, we are enclosing two copies of the
total cost budget utilized in the negotiation of the contract.

ORIGINAL SIGNED BY
HERMAN M. ROTH

Herman M. Roth

Enclosure:
Budget (2)

CFK

Rounsaville/mac

1097829

Pay for cost
CONTRACTS-1

<i>OR</i>	<i>OR</i>	<i>OR</i>	<i>OR</i>	<i>OR</i>
<i>Carley</i>	<i>Carley</i>	<i>CSB</i>	<i>Haythorn</i>	<i>Carley</i>
<i>11/19/54</i>	<i>11/19/54</i>	<i>11/19/54</i>	<i>11/19/54</i>	<i>11/19/54</i>

J. W. Ould, Jr., Assistant General Counsel

November 15, 1954

R. G. Humphries, Acting Director, Contract Division

REQUEST FOR PREPARATION OF A RESEARCH CONTRACT WITH BAYLOR UNIVERSITY
COLLEGE OF MEDICINE, DR. JACK M. ROSE, PROJECT LEADER

SYMBOL: ADA:ARB

Enclosed is an approved proposal from Baylor University College of
Medicine for a research project entitled "Radio-Isotope Studies in
Hodgkin's Disease", with Dr. Jack M. Rose as Project Leader. This
action is covered by Activity No. 6210, Allotment No. 06-51-91(24)
(F.Y. 1955 Funds), Contract Authorization No. EM-55-53, dated
October 1, 1954.

Please prepare an appropriate research contract to cover this program
for a period of one year, beginning November 1, 1954, with Commission
Funds in the amount of \$12,000.00.

Signed by R. G. Humphries

R. G. Humphries

Enclosures:

1. Request for Contract Action
2. Budget for New Contract
3. Objectives of Proposed Research
4. Cy Memo fm Geckler dtd 11/3/54
5. Ltr fm Rose dtd 10/26/54
6. Contract Authorization EM-55-53
7. Application for Research Grant

CC: C. S. Shoup ✓
L. D. Mackay
J. Nicholson, w/Encls. 1-3

From:arb

CONTRACTS 2-1

Re: Jack Rose

NOV 16 1954

4D-5752

1097830

BAYLOR UNIVERSITY
 COLLEGE OF MEDICINE
 TEXAS MEDICAL CENTER
 HOUSTON, TEXAS

TOTAL COST BUDGET FOR RESEARCH PROPOSAL COVERING WORK ON
 "RADIO-ISOTOPE STUDIES IN HODGKIN'S DISEASE"
 FOR PERIOD 11-1-54 THROUGH 10-31-55

	<u>TOTAL</u>	<u>BAYLOR</u>	<u>AEC</u>	<u>USPHS</u>	<u>OTHER</u>
Salaries & Wages:					
Immuno-chemist & Radio-biologist	\$ 7,500	\$ 5,000	\$ 2,550	\$ 0	\$ 0
Immunologic Technician	3,500	0	0	3,500	
Radio-biological Technician	3,500	0	3,500	0	
Chemical Technician	3,500	0	0	0	
Photographic Technician	1,800	0	0	1,800	
Laboratory Helper	1,800	0	1,800	0	
Animals & Supplies	4,800	600	2,400	1,800	
Equipment	450	0	0	450	
Travel	1,350	0	1,000	350	
Overhead	<u>6,392</u>	<u>4,960</u>	<u>800</u>	<u>632</u>	<u>0</u>
	\$34,592	\$10,560	\$12,000	\$8,532	\$3,500

*Funds from one of several sources pending

Dr. Rose is ~~████████████████████~~; he has an appointment at the University as Assistant Professor of Medicine at no salary. No contribution on part of the University.

1097831

Ry M. [unclear]
11/12/54

Form OR-569 (2/53)

REQUEST FOR CONTRACT ACTION (submit in duplicate)

1. Chairman
TO: **J. R. Moore** Contract Board. From: **Research & Medicine Div.**

It is requested that the Contract Board take the necessary action to process the following described contract action in accordance with the provisions of Bulletin OR-O&M-19:

2. Nature of Action Requested

Selection of New Contractor and Negotiation of Contract.

Modification of Contract No. _____

Baylor University College of Medicine
Waco, Texas

Contractor: _____

Review and approval of Contract, Sub-contract or Purchase Order.

Other (Explain) _____

Number: _____

Name: _____

3. Nature of Services to be Covered by Contract

Construction

Architect-Engineer

Other

(Explain)

Research

4. Funding

Amount to be Obligated by this Contract Action \$ **12,000.00**

Source of Funds

Approved ORO Financial Plan, _____ Quarter, Fiscal Year 19__

Project No. _____ or, Activity No. _____

Funds to be Obligated: Allotment No. _____ (F.Y. 19__ Funds)

Procurement Directive No. _____ Dated _____

Issuing Office _____

Concurrence in Funding Statement: (signed) _____

Chief, Budget Branch

5. Project or Activity to be Covered by Contract Action:

Location of Work: _____ Construction Directive No. _____

Estimated Cost of Work to be Covered by this Contract Action \$ _____

Schedule: Date Work to Start _____ Estimated Completion Date _____

Description of Project or Activity:

(If more space is required use separate sheets and attach hereto:)

W-3399

OR
Bennie 5-58
OR
Carley 11/9/54
OR
S. Swyp 11/10/54
OR
Haythorn 11/10/54
OR
Roth 11/10/54
CONTRACTS
Rogers

1097832

6. Contract Board Docket
No. _____
(To be assigned by
Board Secretary)

7. Request Submitted By: (signed) _____
Date: _____ Title: _____

8. Complete Description of Services to be Furnished by Contractor:

**Washington designated research contract
Title: Radio-Isotope Studies in Hodgkin's Disease**

(If more space is required use separate sheets and attach hereto:)

9. Description of other changes to be covered by Modification:

**New contract for a period of one year beginning November 1, 1964, with
Commission funds in the amount of \$12,000.00.**

(If more space is required use separate sheets and attach hereto:)

10. Negotiated Contracts. (Show why it appears desirable to negotiate new contract or to negotiate modification to existing contract)

Memo J. C. Bugher to S. R. Sapirie dated October 1, 1964

(If more space is required use separate sheets and attach hereto:)

11. Contracts, Subcontracts, or Purchase Orders Submitted for Review and Approval: (Furnish brief description of action in this space and attach pertinent documents)

None

12. Disputes:

Attach a statement summarizing the dispute together with pertinent documents and Background Material.

None

1097833

BUDGET FOR NEW CONTRACT - DR. J. M. ROSE
FOR PERIOD 11-1-54 - 10-31-55

Salaries & Wages:		\$12,800
Dr. J. M. Rose (50% of time)	0*	
Research Associate	7,500	
Technician, Laboratory Helper, Social Security	5,300	
Animals & Supplies		3,000
Travel		1,000
Overhead (45% of Salaries)		<u>5,760</u>
		\$22,560

The Commission's contribution to the above budget will be \$12,000.

Recognize support from other agencies as outlined in the contractor's proposal.

Dr. Rose is [REDACTED]; he has an appointment at the University as Assistant Professor of Medicine at no salary. No contribution on part of the University.

1097834

The objectives of the proposed research are as follows:

1. To determine whether a rabbit anti-serum against Hodgkin's diseased tissue will combine with tissue involved by this disease upon intravenous administration to the living Hodgkin's patient.
2. To determine the cellular localization of any combination that takes place in (1).
3. To tag with a radio-isotope rabbit antibodies against Hodgkin's diseased tissue.
4. To determine the effects of tagged antibodies on specific cells that may have exhibited localization of the radio-isotope.
5. To compare specificity and strength of anti-sera against various protein tiselius and ultra-centrifugal fractions of Hodgkin's diseased tissue with antibodies against the whole homogenate by means of localization of tagged antibodies "in vivo".
6. To evaluate anti-sera tagged with Iodine¹³¹, Sulfur³⁵, and Carbon¹⁴ in the diagnosis and treatment of Hodgkin's disease.
7. To determine cross reactivity of the rabbit anti-Hodgkin's serum with other abnormal cells such as carcinoma and lymphosarcoma cells.

1097835

Office Memorandum • UNITED STATES GOVERNMENT

TO : James Rounsaville

DATE: November 3, 1954

FROM : Robert G. Geckler

SUBJECT: BAYLOR UNIVERSITY CONTRACT AUTHORIZATION NO. BM-55-53

I talked with Dr. J. M. Rose regarding the budget for his research contract and also had a conversation with the Business Office regarding overhead.

Dr. Rose has a University appointment as Assistant Professor of Medicine at no salary. He is in private practice in Houston. Half of his time will be spent on this research and he places a value of \$5000 for half of his time. He was not familiar with the University's regulations regarding overhead and referred me to the Business Office. The Business Manager is Mr. J. L. Johnson. My conversation was with an unidentified subordinate. At the present time the Army is determining the overhead rate for the Institution but this figure will not be available for sometime. The business office, however, made an unofficial determination of overhead and found it to be approximately 30% of the total funds of the grant or 45% of salaries. In view of the Government reluctance to provide full cost of overhead a minimum acceptable to the University has been decided to be 8%. In the unofficial determination maintenance was prorated among the various department. Usage on equipment was taken to be 6 2/3%. Buildings and grounds were allowed 2% and 20% of the department chairman's salary was included in overhead. Other details on the determination were not available.

The University has recently instigated social security payments and would like to have these included in the budget.

The contract should be dated Nov. 1, 1954.

The business office would like any literature available on regulations, etc., regarding contract funds. If none is available, we should write them to this effect.

MG
Robert P. Geckler

Geckler:ef

1097836

BAYLOR UNIVERSITY
COLLEGE OF MEDICINE
TEXAS MEDICAL CENTER
HOUSTON, TEXAS

TOTAL COST BUDGET FOR RESEARCH PROPOSAL COVERING WORK ON
"RADIO-ISOTOPE STUDIES IN HODGKIN'S DISEASE"
FOR PERIOD 11-1-54 through 10-31-55

	<u>TOTAL</u>	<u>BAYLOR</u>	<u>AEC</u>	<u>USPHS</u>	<u>OTHER</u>
Salaries & Wages:					
Immuno-chemist & Radio-biologist	\$ 7,500	\$5,000	\$2,500	0	0
Immunologic Technician	3,500	0	0	\$3,500	0
Radio-biological Technician	3,500	0	3,500	0	0
Chemical Technician	3,500	0	0	0	*
Photographic Technician	1,800	0	0	1,800	0
Laboratory Helper	1,800	0	1,800	0	0
Animals & Supplies	4,300	600	2,400	1,800	0
Equipment	450	0	0	450	0
Travel	1,350	0	1,000	350	0
Overhead (3% of the total grant)	<u>1,432</u>	<u>0</u>	<u>300</u>	<u>632</u>	<u>0</u>
	<u>\$29,632</u>	<u>\$5,600</u>	<u>\$12,000</u>	<u>\$8,532</u>	<u>\$3,500</u>

*Funds from one of several sources pending

C
O
P
Y

1097837

In Reply
Refer to: OR:JER

Oak Ridge, Tennessee
October 11, 1954

Dr. Jack M. Ross
Baylor University College of Medicine
Department of Medicine
Waco, Texas

Subject: RESEARCH CONTRACT

Dear Dr. Ross:

We have received approval for the preparation of a lump-sum cost-sharing contract covering your work in "Radio-Isotope Studies in Hodgkin's Disease." The project was approved as presented in your proposal, with the Commission contributing \$12,000.

Prior to our taking any action on the contract, it will be necessary that we have a total cost budget. Under the Commission's policy, as outlined in the "Revised Guide For the Submission of Research Proposals", the budget for a research project is to include all items of cost necessary to carry the project for the proposed period. This is to include all direct costs as well as all indirect and overhead costs. We are enclosing a copy of the Guide for your use in preparing the budget.

Based on the information presented in your proposal, we have prepared the enclosed "sample" budget. This budget is not intended as our interpretation of your costs; however, it will give you a guide for presenting the required information.

Upon receipt of the revised budget, approved by the proper officials of the University, we shall initiate action for the preparation of a contract covering the project. Please indicate the date you desire to have the contract become effective.

Your cooperation in this matter is appreciated.

Very truly yours,

C. S. Shoup
Chief, Biology Branch
Research and Medicine Division

Enclosures: *OK* Paul LeFevre, Washington

CONTRACTS 2-1

Sample Budget	<i>OR</i>	<i>OR</i>	<i>OR 83</i>	<i>Pay for Contract</i>
	<i>LeFevre</i>	<i>Cooley</i>	<i>C. S. Shoup</i>	<i>OK</i>
	<i>10/11/54</i>	<i>10/11/54</i>	<i>10/11/54</i>	

1097838

UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON, D. C.

Contract Authorization No. BM-55-53

OCT 1 1954

TO : S. R. Sepiris, Manager
Oak Ridge Operations Office

FROM : Dr. John C. Bagher, Director, Division
of Biology and Medicine, Washington, D. C.

SUBJECT : FUND AUTHORIZATION AND TRANSMITTAL OF RESEARCH PROPOSAL FOR
CONTRACT NEGOTIATION

REFERENCE : AEC 102/16 APPROVED OCTOBER 7, 1953, AS IMPLEMENTED BY MEMO
TO MANAGERS, OPERATIONS OFFICES, DATED 10/23/53, JOINTLY
SIGNED BY THE DIRECTORS OF THE DIVISIONS OF RESEARCH AND
BIOLOGY AND MEDICINE.

SYMBOL : **BM: FOL**
The research proposal described below has been approved by
the Division of Biology and Medicine, funds are available, and
you are authorized and requested to negotiate a contract in
accordance with the following terms and conditions:

1. Institution: **Baylor University College of Medicine**
2. Investigator (s): **Dr. Jack M. Rose**
3. Title: **"Radio-Isotope Studies in Hodgkin's Disease"**

4. () New Contract or () Renewal of Contract No. _____

5. Duration - From: **One year** To:

6. AEC Technical Representative: **Paul G. LeFevre**

7. Contract Fund Authorization:

Funds are authorized for the obligation of this contract
as follows:

<u>Allotment No.</u>	<u>Budget Category</u>	<u>Previous</u>	<u>Amount This Action</u>	<u>Total</u>
06-51-91 (2h)	6210		\$12,000	\$12,000

1097839

- 8. It is suggested that in the best interests of the government the following type contract be negotiated: Lump-sum
- 9. It is requested that the title to any capital equipment procured under this contract shall be vested with: () the contractor
() the government
- 10. Other Comments:

Support beyond the initial year of exploratory work cannot be assured.

Please send the Division of Biology and Medicine two copies of the revised total-budget itemization, indicating total contributions of AEC, NEM, Baylor University, and any other contributors.

11. Security Requirements:

In accordance with the provisions of GM-CLA-2 (Revised Sept. 29, 1953), and the requirements of the Declassification Guide, it has been determined that the following security precautions should be taken in connection with the proposed research contract:

Since there is essentially no chance for the development of restricted data, this project has been placed in Category I as defined in GM-CLA-2.

- 12. Reports: () Reports are to be required as provided for by
 "Revised Guide for the Submission of Research Proposals" dated February 8, 1954.
- () Special Reports Instructions are as follows:

- Enclosures: () "A" - Proposal, dated _____
- () "B" - Notification letter, dated OCT 1 1954
- () "C" - Other correspondence, _____ letters

Distribution:

Addressee: Original (w encl.) Division File: Yellow Copy (w encl.)
 1st Copy (w encl.) Pink Copy (w/o encl.)
 2nd Copy (w encl.)

Program Analysis Branch File: White Copy (w encl.)
 Branch: White Copy (w/o encl.)

90-678782

1097840

APPLICATION FOR RESEARCH GRANT

From

ATOMIC ENERGY COMMISSION

- I. Title of the project--Radio-Isotope Studies in Hodgkin's Disease.
- II. The institution and department in which the work will be done--
Baylor University College of Medicine, Department of Medicine.
- III. Scientific background-- Immunologic studies in Hodgkin's Disease have been in progress in our laboratory for the past two years. The basic studies are supported by the United States Public Health Service (Grant No. S 10707--\$8900/annum). As a result of this work an anti-serum has been developed which shows evidence of specificity against an antigen or antigens contained in Hodgkin's diseased tissues.

Pilot studies have been conducted employing the absorbed globulin fraction of the rabbit anti-Hodgkin's serum tagged with ^{131}I . No support is available for these studies at the present time.

A. Literature relevant to the proposal:

1. Rose, J. N., Immunologic Studies in Hodgkin's Disease. A preliminary Report presented at the American Academy of Allergists in February of 1954, now in press, American Journal of Allergy.
2. Pressman, David, The zone of localization of anti-tissue antibodies as determined by the use of radioactive tracers. J. Allergy, 22 (5) 387-96. 1951.
3. Pressman, David, The zone of localization of antibodies. III. The specific localization of antibodies to rat kidney. Cancer, 2 (4). 1949.
4. Talmadge, D. W., Dixon, F. J., et al, Antigen elimination from the blood as an early manifestation of the immune response. J. Immunol. 67, 243. 1951
5. Kidd, John G., Suppression of growth of Brown-Pearce tumor cells by a specific antibody with a consideration of the nature of the reacting cell constituent. J. Exp. Med., 83, 227-50. 1946
6. Marshal, A. H. E. and White, R. G., Reaction of reticular tissue to antigen. Brit. J., of Exp. Path., 31 (2), 157-74, 1950.

- B. Significance of this work--If tumor antibodies or antibodies against any abnormal cell can be shown to be specific for such cells without having damaging effects on normal cells in the body, such antibodies may be of value in diagnosis and treatment of an important group of diseases in man. This research is directed toward demonstration of the specificity of any antibody against Hodgkin's diseased cells in the living patient and "in vitro". Results of this line of investigation do not have the objections of the inability to human disease as in experiments performed entirely on animals.

1097841

IV. Scientific scope of the proposed research

A. Objectives

1. To determine whether a rabbit anti-serum against Hodgkin's diseased tissue will combine with tissue involved by this disease upon intravenous administration to the living Hodgkin's patient.
2. To determine the cellular localization of any combination that takes place in (1).
3. To tag with a radio-isotope rabbit antibodies against Hodgkin's diseased tissue.
4. To determine the effects of tagged antibodies on specific cells that may have exhibited localization of the radio-isotope.
5. To compare specificity and strength of anti-sera against various protein γ -globulin and ultra-centrifugal fractions of Hodgkin's diseased tissue with antibodies against the whole homogenate by means of localization of tagged antibodies "in vivo". Preparations prepared by physical methods such as use of a fine mesh screen, approximately 37 micra diameter, for differential cellular separation will be employed.
6. To evaluate anti-sera tagged with Iodine¹³¹, Sulfur³⁵, and Carbon¹⁴ in the diagnosis and treatment of Hodgkin's disease.
7. To determine cross reactivity of the rabbit anti-Hodgkin's serum with other abnormal cells such as carcinoma and lymphosarcoma cells.

B. Its relation to present knowledge and comparable work in progress elsewhere--Tagged antibodies have not been reported to have been used in human subjects. Numerous studies have been done with anti-tissue antibodies tagged with radio-iodine and injected into animals. Work is in progress at the present time on anti-tumor antibodies in transplantable animal tumors. The globulin fraction of anti-sera have been successfully tagged by several experimenters.

C. Plan of accomplishments for the first Year's work:

1. General methods

a. Preparation of Rabbit Anti-Hodgkin's Serum

The same method will be used that is being employed in the Immunologic Studies in Hodgkin's Disease.* In these experiments tissue homogenates were prepared from material removed from Hodgkin's patients at autopsy within four hours of death and made up immediately for injection, or else stored at approximately -63°C . in an atmosphere of carbon dioxide ice. Homogenization of tissue was performed in an ice bath using an ordinary glass tissue homogenizer. An anti-serum was produced by the injection of the Hodgkin's homogenate (0.4 ml.) with falba (0.2 ml), paraffin oil (0.4 ml), and Myco-bacterium phlei (0.16 mg). Injections with this material were made in three to four sites subcutaneously, at monthly intervals, using 1 ml.

in each of the depots. Preceding each immunization, tests were made on the rabbit serum for determination of antibody titers. In addition to this preparation various ultra-centrifugal and protein fractions will be employed for immunization.

b. Absorption of Non-Specific Antibodies.

The procedure followed in the earlier study will also be followed here. Experiments conducted in previous studies indicated that the arbitrary use of a final dilution of 1:5 suspension of normal lymph node antigen was effective in absorbing out antibodies against normal lymph node components. Generally two to three such absorptions carried out in the cold overnight with continuous gentle rotation, satisfactorily removed non-specific antibodies while permitting to remain intact antibodies against the Hodgkin's disease components. Removal of other non-specific antibody components was accomplished by absorption. Absorption with heterophile antigen was also performed. Antigen antibody testing procedures were carried out with a normal lymph node antigen and a Hodgkin's antigen prepared by homogenization of the respective tissues followed by suspension in normal saline.

c. Antibody Testing Procedures.

Routine complement fixation reactions have been used. Use of trypan-treated red cells and colloidal coated antigen particles will also be employed as a method of antibody determination. Testing anti-sera against Hodgkin's antigen and normal lymph node antigen and using a serum and antigen control have consistently shown the presence of an antibody specific for Hodgkin's tissue after a sufficiently long period of immunization.* In addition to testing anti-sera against the anti-serum against the whole homogenate with the comparable homogenate, tieluis, ultra-centrifugal and physical fractions will also be employed as test antigens.

d. Preparation of Globulin Fraction

The globulin fraction of the absorbed rabbit anti-serum will be removed by dialysis against 1.4 volumes of 3 M ammonium sulfate in the cold (1). At present modifications of ethanol fractionation techniques are being investigated to arrive at a method suitable for this laboratory. Comparisons of the globulin fractions recovered by this method will be made with the one previously referred to. The precipitated globulin fraction will then be washed several times with 1.75 M ammonium sulfate and redissolved in one-third to one-half

* As part of a continuation study, under a U.S. Public Health Grant, for basic studies in Hodgkin's disease, other methods of determining the extent of complete absorption are in progress. These include skin and serum anaphylaxis in the passively sensitized guinea pig.

of the original volume. An additional dialysis will be used to remove the ammonium sulfate remaining behind until negative reaction to Nessler's solution is obtained.

- e. Tagging of Antibody Globulin with Radio-Isotopes. Various isotopes will be considered for use in tagging the rabbit anti-Hodgkin's serum, including Iodine¹³¹, Sulfur³⁵, and Carbon¹⁴. "In vitro" labeling of the antibody will be attempted using I¹³¹ after the method of Fressman and Sternberger (2).

Antibody globulin will be labeled with carrier-free radio-active I¹³¹ by the addition of free radio-active iodine to 6.25 mg of globulin at a pH of 9.7. Uncombined radio-active iodine will be removed by ion exchange using Amberlite MB3 anion exchange resin. Yields as high as 20% have been obtained without undue denaturation of the antibody fraction, confirmed in this lab by tagging an antibody globulin fraction of known titer and detecting any change in titer after labeling procedure.

In addition to the "in vitro" labeling of Hodgkin's antibody globulin, an attempt to biologically label the Hodgkin's antibody will be made. Rabbits will be injected with S³⁵ Methionine available commercially and after an indefinite period of time the animals will be bled and the rate of formation of normal globulin and Hodgkin's antibody globulin will be determined in addition to determining the yield and specific activity of the labeled globulin. Procedures outlined by Tarber and Reinhardt (3) will be followed in which 0.023% of the injected S³⁵ appeared in the globulin fraction. Should the purchase of S³⁵ Methionine, commercially available, not be found economical, the biological synthesis of S³⁵ Methionine will be done, utilizing cultures of Escherichia coli after the method of Dean Cowie (4). Cultures of E. coli will be incubated with S³⁵ Sulfate. S³⁵ Sulfate is reduced and utilized by the bacteria for synthesis of protein and by this method 20% of the sulfur is incorporated in methionine and 80% cysteine. The protein is then hydrolyzed and with either paper chromatography, electrophoresis or by ion exchange the two amino acids will be separated. By this method 0.7 mgm. of methionine per cc. of E. coli can be obtained. Should this method of biological synthesis of antibody prove successful, as well as economical, it is planned to attempt the biological synthesis of methionine with Carbon 14.

- f. Autoradiographic Techniques. These will be performed on tissue removed from the Hodgkin's patient following injection of a tagged anti-serum. Gross autoradiographs will be made from the excised node. Tissues removed from other patients who have not been injected with an anti-serum will also be studied using this technique. Microscopic autoradiographs will be prepared on tissues as follows: ~~of the excised node will be examined for~~ state in an atmosphere of liquid nitrogen ~~and~~ sections will then be

the microtome and mounted on specially prepared emulsion on glass microscope slides (NTB plates). Hodgkin's tissue slices will also be incubated with tagged anti-serum in small beakers. These beakers will then be placed in a Dubnoff metabolic apparatus and allowed to remain for several hours. Paraffin blocks will then be prepared from this tissue in the same manner as in the "in vivo" studies.

By microscopic examination of the histologic sections and superimposed autoradiographs, attempts will be made to determine exact cellular localization of the antibodies. Particular note will be made of any localization that might indicate differential pick-up by either the cell membrane, the cytoplasm, or the nucleus of involved cells, as well as to determine whether normal components of the node show evidence of localization of the tagged antibody or whether it is confined to abnormal components such as the Sternberg-Reed type cell.

2. Specific Experiments

a. "In vitro" Studies

Frozen Hodgkin's tissue will be incubated in the Dubnoff metabolic apparatus with the tagged globulin fraction of rabbit anti-Hodgkin's serum and followed by autoradiographic studies to determine uptake and localization.

Chromatographic studies have been initiated on Hodgkin's tissue and controls on suitable normal human tissue. Chromatograms will be prepared of the minced tissue slice following incubation and of tissue removed from the patient following injection of the tagged anti-serum. Counts will then be made on the various separated fractions to determine areas of localization of radio-activity. Comparisons will be made with Tiselius and ultra-centrifugal fractions of the antigen containing localized radio-activity. Subsequently comparisons of complement fixation studies will be performed using all types of fractions described above.

b. Intravenous injection of a patient with Hodgkin's disease with the globulin fraction of a rabbit anti-Hodgkin's serum tagged with radio-isotopes.

(1). Use of Antibody Tagged with Iodine¹³¹

One milligram of antibody tagged with 5 millicuries of Iodine¹³¹ will be injected intravenously in the early studies. The thyroid gland will have been previously blocked with an anti-thyroid compound such as Tapazole. Determination of uptake over various parts of the body will be conducted by use of a directional scintillation counter using calcium tungstate as the phosphor. Counts will be made over involved lymph nodes and compared with counts over corresponding and contralateral areas on the contralateral side of the body by lymph node groups such as the neck, axillae, as well as counts over the liver, spleen and knee will be

of disappearance of radio-iodine from the blood stream will be checked by determinations on the blood and urine with collection periods corresponding to the times at which counts are made over the body. Persistent differences of 10% or more between involved lymph nodes and counts in a symmetrical area on the contralateral side of the body will be considered significant. If sufficient activity is found, the involved areas will be scanned with an automatic scintillation scanning detector similar to that described in the literature for scanning the thyroid, liver, prostate, etc.

General studies on the patient will be made at the same time that the radio-isotopic study is being carried out, i.e., blood counts, sedimentation rates, etc.

As more patients are studied the amount of tagged globulin injected will be increased to a maximum of 20-30 mc. of radio-iodine attached to 4 - 6 mgm. of antibody nitrogen unless specific uptakes can be demonstrated with smaller quantities. A sufficient number of patients will be studied to determine such levels. If positive evidence is obtained in pursuing this line of approach, at least fifteen patients will be injected with the amount of tagged antibody protein determined to be adequate for demonstrating specific uptake.

- (2) Similar studies to that in (1) using antibodies tagged biologically with Sulfur³⁵ and Carbon¹⁴.
- (3) Similar studies to that in (1) using doubly tagged antibodies (I¹³¹ and S³⁵ or I¹³¹ and C¹⁴).
- c. Autoradiographic Studies. Diseased lymph nodes will be removed from patients in whom "in vivo" uptake studies following injection of the anti-serum have been conducted. Half of the node will be used for autoradiographic studies. These will be made according to the technique described under General Methods.
- d. A portion of the node removed in the previous study will be minced and placed in the Texas Well Geiger counter to determine the specific activity from the total number of counts and thus the amount of radioactivity per gram of tissue.
- e. Controls on Studies in (b), (c), and (d) will include the following:
 - (1) Uptake of the radio-active antibody on one side of the body will be compared with measurements over symmetrical areas on the contralateral side of the body. Where superficial nodes are involved, the lack of involvement on one side of the body or the other can be determined without difficulty.
 - (2) Determination of the amount of radioactivity in excised tissue involved by the Hodgkin's disease will be compared with similar studies of the same tissue from the same patient and also with nodes of normal portions from the same patient. Areas of involvement, muscle tissue

patients who have node involvement in that area with patients who do not have involvement in that area.

- (4) Uptake studies with tagged normal rabbit globulin in patients who are later to be studied following injection of the tagged anti-serum.
- (5) Uptake studies in normal patients.
- (6) Comparison of autoradiographs of normal lymph nodes treated "in vitro" with tagged anti-serum as compared with Hodgkin's lymph nodes similarly treated "in vitro".

- f. Studies similar to those described in (a) will be made with anti-sera prepared against the albumin, globulin, ribonucleic acid and desoxy-ribonucleic acid fractions of the Hodgkin's tissue proteins (5).
- g. Comparison of areas of development in autoradiographs with the corresponding microscopic sections will be made to determine localization in cellular structures with particular note as to whether localization takes place in all cells or only those which appear to be abnormal such as Sternberg-Reed cells, atypical reticular cells, or multi-nucleated giant cell. Examination will also be made to determine whether localization in any particular cell is confined to certain portions of that cell such as the cell membrane, the cytoplasm, or the nucleus. Anti-sera against various protein fractions of Hodgkin's tissue such as the globulin fraction, the albumin fraction, the desoxy-ribonucleic acid fraction and the ribonucleic acid fraction will be tagged in a fashion similar to that with the anti-serum against whole homogenate. Studies will then be conducted to determine whether there is any quantitative or qualitative difference between the various anti-sera against the protein fractions and the anti-serum against the whole homogenate insofar as localization in Hodgkin's diseased tissue in the living patient or in Hodgkin's tissue treated "in vitro" with the tagged antibody. Experiments similar to those used with the anti-serum against the whole homogenate will be employed here.
- h. If studies on specificity in localization indicate that the tagged anti-serum is specifically carried to Hodgkin's diseased cells, this anti-serum will be evaluated in attempting to detect areas of involvement in patients with Hodgkin's disease. Larger amounts of serum will then be employed to determine the effects of ionizing radiation on a focus of Hodgkin's disease in order to determine whether such a procedure is of possible therapeutic worth. The clinical course of the disease, ESR, studies, sedimentation rates, and other general laboratory tests, will be used as criteria to determine the efficacy of therapy. These studies

3. Rose, Jack M., Feinberg, Allen R., Friedlander, Sidney and Feinberg, Sam M.: Histamine Antagonists. VII Comparative Anti-anaphylactic activity of Some New Antihistamine Drugs. J. Allergy 18 (3) 149-55, 1947.

4. Immunologic Studies in Hodgkin's Disease. In press, Journal of Allergy.

(2) Donald A. Kappaport, Ph.D.

██████████ - 4 years

██████████ Metabolism of Carbohydrates Employing C^{14}

██████████ year

██████████ Nucleic Acid Metabolism Employing P^{32} and C^{14}

██████████ of Medicine - 1 1/2 years

██████████ Use of Fe^{59} and I^{131} for Tagging Red Cells

██████████ Metabolic Studies in the Warburg Apparatus with C^{14}

(3) Scientific personnel to be newly employed

B.A. Rubin, Ph.D., Immuno-chemist and radio-biologist

VI. Other Personnel

- A. Graduate Students (Graduate studies are planned starting in September, 1954).
- B. Micro-Biologist--Full-time at present.
- C. Chemist--Full time at present
- D. Two additional individuals of technician grade will be required for this project.

VII. Other Financial Assistance--Support of the two graduate students and of the program of immunization of animals is committed by the U.S. Public Health Service until March 31, 1956. A supplementary grant for the study of immuno-genetic relationships of the Hodgkin's antigen has been submitted to the U.S. Public Health Service. If awarded, these funds will be used for enlarging the animal immunization program and for technical help necessary in collecting post-mortem specimens and preparation of tissue sections for pathologic examination. In addition, technical help will be required for the large additional amount of serologic studies required.

Technical help proposed in the present application will be employed in the preparation of isotopic compounds and the uptake studies on tissue slices, preparation of autoradiographs from "in vivo" studies, "in vitro" tissue slices, and tissue cultures treated with radio-active anti-serum.

VIII. Facilities Available

- A. General laboratory equipment
- B. Completely equipped tissue culture laboratory
- C. "Hot" laboratory
- D. Animal quarters
- E. Temporary use of Spinco ultra-centrifuge
- F. Radio-Isotope Equipment

1. Major items of equipment include wide angle counter, utilizing Naalcoium Tungstate as the

2. Directional scintillation counter with

3. as the detecting phosphor with

- 3. Scintiscaler, Ser. No. C 240, Model No CX14WC.
- Scintiscaler, Ser. No. C 241, Model No CX14WC.
- 4. Esterline Angus Recording Milliammeter, Style No. 90H, Ser. No. 86817.
- 5. Texas We.. Geiger Mueller Counter.
- 6. Scintiscanner Model RZXB, Ser. No. -242.
- 7. Tracer Lab-Monitor, Ser. No. 835, Model No. SU3B.
- 8. Victoreen Minomster, Model 287, Ser. No. 2872527.
- 9. Cutiepie, Model No. SU7F, Serial No. 549.
- 10. 6 - Dosimeters, Model 362
- G. Minor Items: Refrigerator, Centrifuge, Water Bath, Lab Glassware, Lead Bricks, Animal Room, Animals, Phase Contrast Microscope.

IX. Travel and Other Items-Travel to and from appropriate meetings including transportation to and from attendance at courses at Oak Ridge for some of the personnel to be employed.

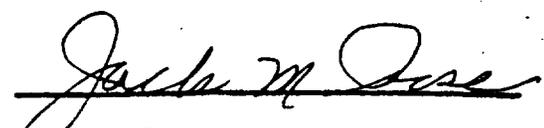
X. Budget- Listed below is a composite of finances required for the support of the three divisions of this program:

- 1. Basic immunologic and tissue culture studies.
- 2. Immuno-genetic studies and extended immunization program (Application for support of this portion has been made to the U.S. Public Health Service)
- 3. Radio-isotope studies (Application for support of this portion of the program is herewith submitted in #XI

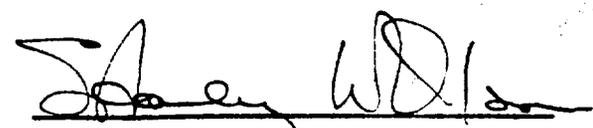
(1.)	Present support from the U.S. Public Health Service		
	Photographic technician	\$1800	
	Immunologic technician	3500	
	Animals and consumable supplies	1800	
	Travel	350	
	Permanent equipment	450	
	Overhead	632	(Sub-totals)
			\$8532.00
(2.)	Pending support from the U.S. Public Health Service		
	Chemical Research Assistant	3500	
	Contribution toward immuno-chemist's and radio-biologist's salary for immuno-chemical portion of his work,	5000	
	(In the event that U.S. Public Health funds are not made available, this amount can be obtained by means of local support)		
	Animals and consumable supplies	1260	
	Travel	300	
	Overhead	804.80	\$10,864.60
(3.)	Radio-biologist	2500	
	Radio-isotope technician	3500	
	Chemistry technician	2400	
	Laboratory helper	1800	
	Consumable supplies (including radio-isotopes plus minor equipment)	2900	
	Travel	1000	
	Overhead	1100	
	Total Budget		

* The salaries for the efforts of Assistant pathologist, Dr. Harvey Rosen...

XI. Amount Requested: \$15,228.00 This corresponds to #X(3), the portion of the program submitted for possible support by The United States Atomic Energy Commission. The laboratory, animal rooms, service of the principal investigator and of Dr. Rappaport and Dr. Rosenberg are furnished by the institution.



Jack M. Rose
Principal Investigator



Stanley W. Olson
Dean, Baylor University College of Medicine

OCT 1 1954

RM: PCL

Dr. Jack H. Rose
Baylor University
College of Medicine
Department of Medicine
Waco, Texas

Dear Doctor Rose:

As was explained in our telephone conversation, the Contracts Review Committee approved Atoms Energy Commission contribution of \$12,000 toward support of your radioisotope studies in Hodgkin's disease, for a one-year period of pilot study. Further commitment of intent cannot be given at this time, but must await the favorable development of the new procedures.

The Oak Ridge Operations Office will handle the contractual details, and you may expect to hear shortly from that office regarding the negotiations. A revised total-budget statement will be needed in view of the alterations in the original plan for distribution of the support.

Sincerely yours,

Paul G. LaFevre
Assistant to Chief (Research)
Medical Branch
Division of Biology and Medicine

G. S. Shoup

1097852

22/52