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DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
D-280
Dental (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Three Dimensional Study (X-ray) of Cranio-facial Development

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

T.M. Graber, Associate Professor & Director of Research of the Northwestern University Cleft Lip and Palate Institute

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Northwestern University.

SUMMARY OF PROPOSED WORK — (200 words or less — Omit Confidential data.)
In the Bio Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is proposed to make a study of fifty normal and fifty cleft palate patients, from birth to four years of age. This will be done by stereo-roentgenography and plaster casts. Each patient will be seen every three months from birth on. After premedication, four sets of stereo-lateral and stereofrontal headplates will be made. Modelling compound impressions of upper and lower dental arches will be made at the same time. Headplates will be read in a stereo-viewer, traced and measured and observations recorded on tape film.

A comparision of nasal and oral structures in normal and cleft patients of the same age will be made.

Submitted for period beginning - April 1956

SIGNATURE OF PRINCIPAL INVESTIGATOR: T. M. Graber

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

SCHOOL: Northwestern U. Dental School

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amount Approved
D-280	4/56 - 3/57	$4,600
280 C1	4/57 - 3/58	4,600 *
280 C2	4/58 - 3/59	4,600 *
280 S1	4/56 - 3/57	4,600 *

* Commitment

PHS-166
REV. 5-54

Form Approved
Budget Bureau No. 92-R001.2

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DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
D-240(C)
Dental (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

PRELIMINARY

TITLE OF PROJECT:

"Cinefluorography of Temporomandibular Articulation"

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

Harrison M. Berry, Jr., D.D.S.,M.Sc., Assoc. Prof. of Roentgenology
Herbert K. Cooper, D.D.S., D.Sc., Director Lancaster Cleft Palate Clinic
H. Milton Rode, B.S., D.D.S., Assoc. Prof. Prosthetic Dentistry

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of Pennsylvania, Philadelphia 4, Pa.

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Cinefluorographic films will be made of the functioning temporomandibular articulations of a number of "normal" patients as well as a number who exhibit deviations from normal. A North American Phillips image intensifier will be used to intensify the brilliance (800-1000x) of the image received by the fluorescent screen. Hence, relatively low x-ray energy is required to produce an image of sufficient brightness to be recorded by motion picture film. The patient can therefore be exposed for a longer period of time than with an ordinary fluorescent screen, and a more adequate study of the function of the temporomandibular articulation can be made.

Strict radiologic safety measures will be employed for patients and operating personnel, utilizing the services of a radiologic safety physicist and a film badge service.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Harrison M. Berry

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

SCHOOL: Dental

INVESTIGATOR — DO NOT USE THIS SPACE

PRELIMINARY

PHS-166

Form Approved
Budget Bureau No. 68-R014

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DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
D-250 (C3)
PROJECT
DENTAL (3)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

PRELIMINARY

CINEFLUOGRAPHY OF TEMPOROMANDIBULAR ARTICULATION

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

Principal Investigator: Harrison M. Berry, Jr., D.D.S., M.Sc.
Associate Professor of Roentgenology, School of Dentistry, University of Pennsylvania.
Herbert K. Cooper, D.D.S., D.Sc., Director, Lancaster Cleft Palate Clinic.
H. Milton Rode, B.S., D.D.S., Associate Professor Prosthetic Dentistry, School of Dentistry, University of Pennsylvania.
F. Allan Hoffmann, Director of Technical Research, Lancaster Cleft Palate Clinic.

NAME AND ADDRESS OF APPLICANT INSTITUTION:
The Trustees of the University of Pennsylvania, Philadelphia 4, Pa.

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

By means of cinefluorographic films, the functioning of the temporomandibular articulation of many individuals will be observed and analysed; its role in the stomatognathic system will be evaluated.

The equipment to be used will be a North American Phillips X-Ray unit with image intensifier and Auricon optical sound 16 mm motion picture camera. The patient's head will be placed in a head positioner especially constructed for this equipment. The image received on the fluoroscopic screen will be intensified 800 to 1000 times in brilliance. Hence, relatively low x-ray energy will be required to produce an image of sufficient brilliance for recording on motion picture film; the patient can be studied for a longer time without danger from the radiation. Strict radiologic safety measures and accurate records will be maintained of all patients and operating personnel. "Normal" patients will be studied as well as patients exhibiting deviations from the normal limits of the stomatognathic system.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Harrison M. Berry, Jr.

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

SCHOOL: Dental

INVESTIGATOR — DO NOT USE THIS SPACE

DF:

PHS-1456

Form Approved
Budget Bureau No. 92-R001.2

Information Exchange.
Not for publication or publication reference.

PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

D-217
Dental (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

PRELIMINARY

TITLE OF PROJECT

Investigation of craniofacial growth based on serial roentgenographic data and measurements of biting strength.

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

Ernest E. Hixon, Professor and Head, Department of Orthodontics, College of Dentistry

Howard V. Meredith, Professor of Physical Growth and Consultant in Research Methods, Iowa Child Welfare Research Station and College of Dentistry

NAME AND ADDRESS OF APPLICANT INSTITUTION:

State University of Iowa, Iowa City, Iowa

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

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

One purpose of this investigation is to analyze changes in the size and form of the craniofacial skeleton from serial roentgenograms available on 100 white children at semiannual intervals from 4 to 9 years of age. In addition, the extent of these changes will be related to body growth, dietary history and illness episodes.

The second purpose is to double the sample size and extend interest to the growth of selected oropharyngeal structures and the development of biting strength. This enlarged sample will permit not only the grouping of children with normal occlusion but also the grouping of bimaxillary and unimaxillary cases of malocclusion, giving three groups for analysis with regard to the variables indicated above.

SIGNATURE OF PRINCIPAL INVESTIGATOR: E. E. Hixon

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

SCHOOL: Graduate

INVESTIGATOR — DO NOT USE THIS SPACE

PRELIMINARY

PHS-166
REV. 10-57

Form Approved

NOTICE OF RESEARCH PROJECT

NOTICE OF RESEARCH PROJECT
Medical Sciences Information Exchange
Not for Publication
C O P Y

D-147

Supporting Agency: Public Health Service

Project No. ~~RG-3696~~ & C1
Dental (1)

Title of Project: Studies of Radioactive Fluoride Uptake by the Enamel Surface.

Professional Personnel:

Principal Investigators:
Finn Brudevold, Director of Research, Eastman Dental Dispensary
John W. Hein, Senior Fellow in Dental Research, School of Med. & Dent., U.of R.
Others:
John F. Bonner, Jr., Instructor, Division of Pharmacology & Toxicology, U.of R.
Harold C. Hodge, Professor, " " " " "

Name of Institution: Eastman Dental Dispensary, Rochester, New York.

Summary of Proposed Work:

The uptake of fluoride by the intact enamel surface will be studied employing radioactive fluorine. Teeth will be exposed to radioactive fluoride solutions. Using methods which permit measurements of the radioactivity of the enamel surface, fluoride uptake will be correlated with tooth age and other tooth characteristics. The importance of cleaning procedures prior to the fluoride exposure, exposure time, concentration and pH of the fluoride solution, incorporation of wetting and other agents will be evaluated. Different fluorides will also be tested. Data will be obtained on clearance of fluorine from the enamel surfaces after washing fluoride exposed surfaces in water and saliva for varying periods of time.

[redacted]

	Grant No.	Period of Operation	Amt. App.
D-147	~~RG-3696~~	9/52 - 8/53	$3,200
	3696 C1	9/53 - ~~8/54~~ 8/56 12/56	4,700

Grant No.	Period of Operation	
D-[illegible]	[illegible] - 6/46	$1,213
23 C1	7/46 - 6/49	[illegible]

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HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

Dell:7 (c2)

DENTAL (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md. PRELIMINARY

TITLE OF PROJECT:

Studies of Radioactive Fluoride Uptake by the Enamel Surface

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

Finn Brudevold, Director of Research, Eastman Dental Dispensary.

Herbert Harrington, Assistant Prof. of Radiation Biology, University of Rochester.

Harold C. Hodge, Chief of Div. of Pharmacology and Toxicology,
Atomic Energy Project, University of Rochester.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The uptake, penetration and fixation of fluoride in intact enamel will be studied. The fact that there is an increased fluoride uptake with decrease in pH suggests that if demineralization can be minimized, clinical use of acidulated fluoride solutions may be advantageous. Therefore, combinations of fluoride with phosphate buffers will be studied and compared with solutions of different fluoride contents at different pH levels. The effect of exposure time on uptake by intact enamel will be investigated, and the loss of fluoride from teeth, exposed to high and low fluoride concentrations will be measured. In addition, the penetrability of the reaction product of fluoride with synthetic hydroxyapatites will be studied and compared with that of powdered enamel.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

PENDING-OCTOBER 1956 COUNCIL

PHS-166
REV. 5-56

Form Approved
Budget Bureau No. 68-R014.4

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PROJECT NO. (Do not use this space) D 23

SUPPORTING AGENCY: Public Health Service

Support from this source terminated 6/50

TITLE OF PROJECT:

"Cephalometric X-ray Study of the Growth of the Human Head from the 8th to the 15th year"

Give names, departments, and official titles of PRINCIPAL INVESTIGATOR(S) and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Allan G. Brodie, Head, Department of Orthodontia

NAME AND ADDRESS OF INSTITUTION:

University of Illinois, Urbana, Illinois

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

In the Medical Sciences Information Exchange summaries of work in progress are exchanged with government and private organizations engaged in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this grant is to permit the continuation of work begun fifteen years ago on the growth of the human head from the third month of life. The findings on the period up to the eighth year have already appeared in the American Journal of Anatomy in 1941. The periodic records have continued to be taken since that time but increasing demands upon my time have made it impossible for me to carry out all of the technical appraisals necessary. The money granted by the United States Public Health Service will be used to pay two graduate Fellows on a half time basis to collect these data. The final work-up will be carried on by me personally.

Submitted for period beginning - July 1947

Grant No.	Period of Operation	Amt. Appr.
D-23	7/47 - 6/48	$3,213
23 C1	7/48 - 6/49	3,780
23 C2	7/49 - 6/50	3,780

Support from this source terminated 6/50

NOTICE OF RESEARCH PROJECT

BIO-SCIENCES INFORMATION EXCHANGE

SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

PROJECT NO. (Do not use this space) C-9403

SUPPORTING AGENCY: Public Health Service

TITLE OF PROJECT:

"Diagnostic Properties of 1, 2, and 3 Megavolt X-Rays" CANCER CONTROL PROGRAM

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

John G. Trump, D. Sc.-Professor of Electrical Engineering

NAME AND ADDRESS OF INSTITUTION:

Massachusetts Institute of Technology, Cambridge, Massachusetts

SUMMARY OF PROPOSED WORK — (300 words or less — Omit Confidential data.)

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SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR—DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-9403	9/55 - 8/56	$12,960

NOTICE OF RESEARCH PROJECT

BIO-SCIENCES INFORMATION EXCHANGE

SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

PROJECT NO. (Do not use this space) C-9395

SUPPORTING AGENCY: Public Health Service

TITLE OF PROJECT:

"Evaluation of Titrated, Regularly Spaced Radioactive Phosphorus Therapy of Leukemia" CANCER CONTROL PROGRAM

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

Dr. Charles E. Rath-Assistant Professor of Medicine; Director of Hematology

NAME AND ADDRESS OF INSTITUTION:

Georgetown University Hospital, Washington, D. C.

SUMMARY OF PROPOSED WORK — (200 words or less — Do not indent first line)

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.

[redacted]

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR—DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-9395	9/55 - 8/56	$4,942

NOTICE OF RESEARCH PROJECT

BIO-SCIENCES INFORMATION EXCHANGE

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

PROJECT NO. (Do not use this space) C-9394

SUPPORTING AGENCY: Public Health Service

TITLE OF PROJECT: "Effect of Chronic X-Radiation on the Human Thyroid Gland" CANCER CONTROL PROGRAM

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

Dr. Benedict J. Duffy, Jr.-Director, Isotope Laboratory

NAME AND ADDRESS OF INSTITUTION:

Georgetown University Medical School, Washington, D. C.

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

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SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR—DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-9394	6/55 - 5/56	$2,500
9394 C1	6/56 - 5/57	497
9394 C2	6/57 - 5/58	500 *

* Commitment

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT

BIO-SCIENCES INFORMATION EXCHANGE

SMITHSONIAN INSTITUTION

PROJECT NO. (Do not use this space)
C-9387

SUPPORTING AGENCY Public Health Service

TITLE OF PROJECT:
"The Exploration of New Techniques for Extending the Usefullness of Radiography in the Detection of Chest Neoplasms" CANCER CONTROL PROGRAM

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

Dr. Eugene P. Pendergrass, M.D., Professor of Radiology, School of Medicine and Graduate School of Medicine
Dr. William J. Tuddenham -

NAME AND ADDRESS OF INSTITUTION:
University of Pennsylvania, Pittsburgh, Pennsylvania

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.

[redacted]

SIGNATURE OF PRINCIPAL INVESTIGATOR [redacted]

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

SCHOOL

INVESTIGATOR—DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amts Appr.
C-9387	6/10/54 ~~12/55~~ 6/56 12/56	$96,300

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT

BIO-SCIENCES INFORMATION EXCHANGE

SMITHSONIAN INSTITUTION

PROJECT NO. (Do not use this space)
C-9369

SUPPORTING AGENCY: Public Health Service

TITLE OF PROJECT:

"Cancer Therapy by Implantation with Radioisotopes" CANCER CONTROL PROGRAM

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

Ulrich K. Henschke, M.D., Ph.D.-Associate Professor of Radiology; Director of Radiation Therapy

NAME AND ADDRESS OF INSTITUTION:

Sloan-Kettering Institute for Cancer Research, New York 21, New York

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.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR—DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-9369	9/55 - 12/56	$30,000

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

C-1704 S1
NSS (4)

NOTICE OF RESEARCH PROJECT

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Support from this source terminated 11/53

Clinical Investigation of a 22 Mev Betatron in the Treatment of Cancers Infrequently Curable by Conventional Radiotherapy Techniques

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Principal Investigator: Gilbert H. Fletcher, M.D., Radiologist-in-Chief

Other Investigators: Jasper E. Richardson, Ph. D., Assistant Physicist, in charge of Supervoltage Section
Fernando G. Bloedorn, M.D., Assistant Radiotherapist
Peter Wootton, B. Sc., Clinical Physicist
Robert J. Shalek, M.A., Assistant Physicist

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Texas, M.D. Anderson Hospital for Cancer Research
2310 Baldwin Street, Houston 6, Texas

SUMMARY OF PROPOSED WORK (100 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

One of the causes of failure in the treatment of deeply located cancers which are radio-curable when situated at accessible sites, is the inability to deliver an adequate dose to the tumor without excessive damage to the intervening structures, i.e, skin, subcutaneous tissue, bone and muscle.

Proposed is the clinical investigation of the therapeutic possibilities of a 22 Mev betatron in types of cancer which are potentially curable when first seen because still localized to the primary site or with metastasis to the regional lymph nodes only. Clinical experience has shown that in a percentage of those cases death is due to the inability to control the primary disease, the regional metastasis being amenable to the conventional types of treatment.

It has been demonstrated that in such cases 1 - 2 Mev therapy increases the cure rate or produces longer arrest of the disease with lessened local and systemic reaction and late damage. The purpose of this investigation would be to determine if further increase in voltage would produce a further improvement. The study would be run by having series of similar cases treated with a 1000-Curie Cobalt-60 Irradiator (comparable to 1 - 2 Mev therapy).

SIGNATURE OF PRINCIPAL INVESTIGATOR Gilbert H. Fletcher

Gilbert H. Fletcher, M.D.

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

University of Texas, Postgraduate School of Medicine, Houston, Texas

Grant No.	Period of Operation	Amt. Appr.
C-1704	6/52 - 11/53	$81,724
1704 S1	8/52 - 11/53	39,276

Support from this source terminated 11/53

Bio Sciences Information Exchange
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Project No. C 9270
Supporting Agency: Public Health Service No.S.S. (5)

Title of Project: Clinical Investigation of a 22 Mev Betatron in the Treatment of Cancers Infrequently Curable by Conventional Radiotherapy Techniques - CANCER CONTROL PROGRAM

Professional Personnel: Principal Investigator, Gilbert H. Fletcher, M.D., Radiotherapist, Professor of Radiology, Department of Radiology
Other Investigators: Jasper E. Richardson, Ph.D., Assistant Physicist, Dept. of Physics
Peter Wootton, B. Sc., Clinical Physicist, Dept. of Physics
Robert J. Shalek, M.S., Associate in Physics, Dept. of Physics
Arthur Cole, B.A., Electronics Physicist, Dept. of Physics
Fernando G. Bloedorn, M.D., Assistant Ratiotherapist, Department of Radiology

Name of Institution: University of Texas, M.D. Anderson Hospital for Cancer Research
2310 Baldwin St., Houston, Texas

Summary of Proposed Work:

Proposed is the clinical investigation of the therapeutic possibilities of a 22 Mev Betatron in types of cancer which are potentially curable when first seen, because still localized to the primary site, or with metastasis to the regional lymph nodes only. Clinical experience has shown that in a percentage of these cases the cause of death is due to the inability to control the primary disease, the regional metastasis being amenable to the conventional types of treatment, either surgical or radiotherapeutical.

It has been demonstrated that in such cases 1-2 Mev therapy increases the cure rate or produces longer arrest of the disease with lessened local and systemic reactions and late damage. The purpose of this investigation would be to determine if further increase in voltage would produce a further improvement. The study would be run by having series of similar cases treated on a 1000-curie [redacted] Cobalt-60 irradiator (comparable to 1-2 Mev therapy)

Hopeless cases due to extensive primary disease, the presence of distant [redacted] metastasis, or histologic variety would be excluded. It is obvious that no form of local treatment, whether surgery, beam therapy, or interstitial radiation, could cure such cases, and their inclusion in a series of cases testing a new type radiation would only render inaccurate information as to its value and possible superiority.

Grant No.	Period of Operation	Amt. App.
C 9270	6/53 - 5/54	$16,848
9270 C1	6/54 - 5/55	17,928
9270 C2	6/55 - 5/56	19,926
9270 C3	6/56 - 5/57	19,926
9270 C4	6/57 - 5/58	21,217 *
9270 C5	6/58 - 5/59	21,217 *

* Commitment

Bio ~~MEDICAL~~ SCIENCES INFORMATION EXCHANGE
NATIONAL ACADEMY OF SCIENCES — NATIONAL RESEARCH COUNCIL
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PROJECT NO. (Do not use this space) C-9257

SUPPORT FROM THIS SOURCE TERMINATED

Public Health Service "CANCER CONTROL"

"Irradiation Measurement Studies with New Type Scintillation Counter for More Accurate Radiation Dose Standardization and Distribution of the Radium Intensities in Pelvic Malignancies"

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

Edwin C. Ernst, M.D., Director, Department of Radiology and Research

NAME AND ADDRESS OF AGENCY OR INSTITUTION:

De Paul Hospital, St. Louis, Missouri

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

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

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. App.
C-9257	4/53 - 3/54	36,696
9257 C1	4/54 - 9/55	6,752

SUPPORT FROM THIS SOURCE TERMINATED

NOTICE OF RESEARCH PROJECT

BIO-SCIENCES INFORMATION EXCHANGE

SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

PROJECT NO. (Do not use this space)
C-9255

SUPPORTING AGENCY: Public Health Service

TITLE OF PROJECT: "Exploration of New Techniques for Extending the Usefulness of Radiography in the Detection of Chest Neoplasms" - CANCER CONTROL PROGRAM

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

Dr. Eugene P. Pendergrass, M.D., Professor of Radiology, School of Medicine and Graduate School of Medicine

William Tuddenham (Begin C1 ---)

NAME AND ADDRESS OF INSTITUTION:

University of Pennsylvania, School of Medicine, Pittsburgh, Pennsylvania

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.

[redacted]

Grant No. [illegible]

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR—DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-9255	4/53 - 3/54	$10,000
9255 C1	4/54 - 3/55	10,000
9255 C2	4/55 - 3/56	10,000

NOTICE OF RESEARCH PROJECT
Bio-Sciences Information Exchange
Not for Publication
C O P Y

Project No. C-9223
Path. (1)

Supporting Agency: Public Health Service

SUPPORT FROM THIS SOURCE TERMINATED

Title of Project: "Isotopic Localization of Brain Tumors"

Professional Personnel: Robert E. Mack, B.S., M.D., Director, Radioisotopes Laboratory, (Principal Investigator)
Walter L. Moore, B.S., in Md., M.D., Senior Instructor in Neurology and Psychiatry, St. Louis University School of Medicine
Robert Dean Woolsey, A.B., M.D., Instructor in Surgery, St. Louis University School of Medicine

Name of Institution: St. Louis University School of Medicine, 1402 South Grand Boulevard, St. Louis, Missouri

Summary of proposed work:

The additional information which may be gained by use of isotopic localization of brain tumor has been well documented, but the reported percentage of accuracy varies considerably. In our study, we hope to build up a large series of cases using iodinated serum albumin as the isotope and a scintillation counter as the detecting instrument. The results, of course, will be compared with other diagnostic procedures and followup of patients for an evaluation of the test's accuracy. The increased efficiency of the scintillation counter, plus the stability of serum albumin, we believe, will both augment diagnostic accuracy. An attempt will be made to standardize the operational mechanics so that it may be done by a technician under professional supervision.

Grant No. C-9223 | Period of Operation 9/52 - 5/54 | Amt. App. $11,793

SUPPORT FROM THIS SOURCE TERMINATED

Prepared by Office of Exchange Information PUBLIC HEALTH SERVICE. Not for publication or publication reference without consent of the principal investigator(s).

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space) C-9181(C2)

M & B (2)

CONTRACTING AGENCY: FEDERAL SECURITY AGENCY, PUBLIC HEALTH SERVICE

TITLE OF PROJECT:

Studies on the Pathological Physiology of Thyroid Diseases Using Radioactive Iodine with Particular Emphasis on Carcinoma. CANCER TRAINING

Give names, departments, and official titles of PRINCIPAL INVESTIGATOR(S) and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dwight E. Clark, M.D., Associate Professor of Surgery (Principal Investigator)
James H. Rule, M.D., American Cancer Society Fellow
Otto H. Trippel, M.D., Assistant Resident in the Laboratory (half time)

NAME AND ADDRESS OF INSTITUTION:

The University of Chicago, 950 E. 59th Street, Chicago 37, Illinois

APPLICANT — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. App.
C-9181 C2	7/1/51 - 6/30/52	$5,508

SUPPORT FROM THIS SOURCE TERMINATED

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

In the Program of Exchange of Information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

We plan to continue to evaluate the giving of multiple moderate doses of radioactive iodine to carcinomas of the thyroid (35 millicuries every two weeks). We also plan to continue to attempt to find ways of enhancing the localization of radioiodide for carcinoma of the thyroid. We have treated or have under treatment about 100 cases of neoplasms of the thyroid. To date, about 30 per cent have shown [illegible] avidity for I^{131} and about 15 per cent have shown a [illegible] clinical [illegible]. Since we believe there is a phasic functioning of thyroid carcinoma similar to normal thyroid tissue we plan to treat a series [illegible] with five millicuries once or twice a week. Perhaps by this method more I^{131} will be localized in the tumors and the danger of side effects might be [illegible] over a much longer period of time. Peripheral blood, urine and bone marrow will be followed in these patients to determine if any ill side effects occur. Radioactive iodine is a valuable chemotherapeutic agent in certain carcinomas of the thyroid, but the best means of using it has not been established. Our series with multiple moderate doses has been very encouraging. One cannot say yet how it compares with the method of giving of large doses at irregular intervals which is used in other places. We hope to evaluate small frequent doses and see how it compares with other methods.

In addition we plan to continue to use I^{131} in the treatment of hyperthyroidism and in the diagnosis of various thyroid states. We are making a concerted effort to follow all our cases (300 to date) of hyperthyroidism treated with I^{131} for many years to determine if there is any long range ill effects from the ionizing radiation.

PHS-166-1 (RG) REV. 6-49
FORM APPROVED
BUDGET BUREAU NO. 68-R403

SIGNATURE OF PRINCIPAL INVESTIGATOR _____

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NOTICE OF RESEARCH PROJECT

COPY

PHS Grant No. C-9161

SUPPORT FROM THIS SOURCE TERMINATED

CONTRACTING AGENCY: FEDERAL SECURITY AGENCY, PUBLIC HEALTH SERVICE

TITLE OF PROJECT:

Cancer hazards associated with mining and milling of uranium ore and other radioactive material. (Cancer Control Project)

Give names, departments, and official titles of PRINCIPAL INVESTIGATOR(S) and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

John Z. Bowers

NAME AND ADDRESS OF INSTITUTION:

University of Utah

[redacted]

Grant No.	Period of Operation	Amt. App.	
C-9161	4/51 - 3/52	$19,602	$20,450
9161 C1	4/52 - 3/53	16,907	17,775
9161 C2	4/53 - 3/54	20,850	2,295
9161 C3	4/54 - 6/55	11,819	

SUPPORT FROM THIS SOURCE TERMINATED

C-3305

NOTICE OF RESEARCH PROJECT

NOTICE OF RESEARCH PROJECT

Medical Sciences Information Exchange

Not for Publication

SUPPORT FROM THIS SOURCE TERMINATED 9/54

C O P Y

Supporting Agency: Public Health Service Project No. C-9118

Title of Project: "Study of workers and community inhabitants in the Colorado Plateau who are exposed to radioactive substances in the uranium mining and processing industry"

Professional Personnel: Dr. R. L. Cleere, Secretary and Executive Director

Name of Institution: Colorado State Department of Health
State Office Bldg.
Denver 2, Colorado

Summary of Proposed Work:

[redacted]

Grant No.	Period of Operation	Amt. Approved
C-9118	7/1/50 - 6/30/51	$24,450
9118 C1	7/1/51 - 6/30/52	17,775
9118 C2	7/1/52 - 8/31/53 2/54	19,205
125	3/53 - 2/54	9/54 2,275

SUPPORT FROM THIS SOURCE TERMINATED 9/54

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FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-3068
BIO (A)
PRELIMINARY

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Interaction of Serum Proteins in Multiple Myeloma

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

E. L. Simmons, M.D., Director, Blood Bank, Veterans Administration Hospital; Assistant Professor, Department of Internal Medicine, University of Minnesota Medical School

NAME AND ADDRESS OF APPLICANT INSTITUTION:

**Veterans Administration Hospital
Minneapolis 17, Minnesota**

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

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

Cl^{14}-glycine will be administered orally to patients with multiple myeloma and normal controls. The relative amounts of incorporation of the tagged amino acid into the normal and abnormal serum protein fractions will be determined by separation of the serum by means of Kunkel's starch block electrophoresis and the amount of radioactivity in the fractions. These determinations will be repeated at frequent intervals in order to determine whether normal protein fractions are catabolized in favor of the abnormal globulin fraction in multiple myeloma.

SIGNATURE OF PRINCIPAL INVESTIGATOR **E. L. Simmons, M.D.**

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

SCHOOL **University of Minnesota Medical School**

INVESTIGATOR — DO NOT USE THIS SPACE

PENDING - JUNE 1956 COUNCIL

PHS 166
REV. 10-52

Form Approved

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FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)
C-3046 PRELIMINARY

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md. (1)

TITLE OF PROJECT: Effect of therapeutic doses of irradiation delivered by a Cobalt 60 Teletherapy unit on blood cells, bone marrow, plasma 17-hydroxycorticosteroids and urinary steroid patterns of human cancer patients.

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

Jack W. Grossman, M. D., Head, Department of Radiology
Samuel L. Painter, M. D., Hematologist, The Lovelace Clinic
Bernard B. Longwell, Ph. D., Head, Department of Biochemistry
Arnold E. Reif, D. Sc., Research Associate, Department of Biochemistry
John Howarth, M. Sc., (London), Radiation Physicist, Department of Radiology.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

The Lovelace Foundation for Medical Education and Research, 4800 Gibson Blvd., S. E., Albuquerque, New Mexico

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

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

Human cancer patients with malignancies involving the thorax or abdomen will be treated with Co^{60} irradiation in doses of 6,000 to 8,000 r over a period of 6 to 9 weeks. Irradiation will be over an area approximately 15 x 15 cms., or to the true pelvis, or over the entire lobe of a lung in doses of 200-400 r at each treatment. Each patient will be sampled weekly, before and after the treatment, for determination of the responses of the white cells and platelets to the irradiation and for determination of the effect of the treatment on the levels of plasma 17-hydroxycorticosteroids. Urine will be collected before the course of treatment is begun, once at the half-way point and again at the end for examination of the urinary neutral steroid pattern. Bone marrow examination will be done before the irradiation is begun and at the end of the treatment. The results will be correlated with the response of the patient to each treatment and to the full course of therapy.

SIGNATURE OF PRINCIPAL INVESTIGATOR

Identify the Professional School (medical, dental, public health, graduate, or other) with which the investigator is connected:

SCHOOL: The Lovelace Foundation

INVESTIGATOR — DO NOT USE THIS SPACE

PENDING-NOVEMBER 1956 COUNCIL

PHS REV.

Form Approved
Budget Bureau No. 92-R011.2

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
0-2973
RAD (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

INCIDENCE OF NEOPLASIA IN IRRADIATED CHILDREN

PRELIMINARY

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

1. Eugene L. Saenger, M.D., Asst.Prof. of Radiology, Univ. of Cincinnati, College of Medicine, Cincinnati General Hospital.
2. Frederic N. Silverman, M.D., Assoc. Prof. of Radiology and Pediatrics, Univ. of Cin. College of Medicine, Children's Hospital.
3. Malcolm E. Turner, M.E.S. Asst. Prof. of Preventive Medicine, Univ. of Cin. College of Medicine, Kettering Lab. Applied Physiol.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

College of Medicine, University of Cincinnati, Cincinnati, Ohio.

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

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

Because of several reports of a relationship or association between irradiation of the thymus or other organs and the subsequent development of cancer, particularly of the thyroid, a study of this problem is proposed in the Cincinnati area. There are certain aspects of the sampling techniques and of the conclusions of the earlier studies which are open to question, and further studies in different areas are needed to clarify this problem. Such a study will provide further information as to the presence of a threshold dose for production of neoplasia and therefore will serve as a guide for indications of irradiation therapy and for limits of diagnostic exposure.

SIGNATURE OF PRINCIPAL INVESTIGATOR: E. L. Saenger

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

SCHOOL: Medical

INVESTIGATOR — DO NOT USE THIS SPACE

PRELIM.

PHS-166
REV. 5-64

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Budget Bureau No. 72-R001.2

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... for publication or publication reference.

HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
CY-2920
RAD (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

The Potentiation of Radiation Effects on Experimental Tumors with Chemical Agents.

PRELIMIN...

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

B.L. Freedlander, M.D. Director of Chemotherapy Research.

S. Reich, M.D. Adjunct in Radiology.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Mt. Zion Hospital, 1600 Divisadero St., San Francisco 15, Calif.

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The aim of this research program is to augment the radiation effect on experimental tumors with chemical agents. Three general methods of approach will be followed.

1. To potentiate the radiosensitivity of tumors selectively, as compared to normal non-cancerous tissues, by the use of chemical agents which concentrate selectively in the tumor, and render the tumor more radiosensitive.

2. To test in the therapy of experimental tumors those substances which increase the radiosensitivity of normal tissues. This includes those compounds which potentiate whole body radiosensitivity. The thought is that the tumor would share in this increased radiosensitivity. In the final application of these findings to tumor therapy, only the tumor would be exposed to the X-ray irradiation.

3. To test the possible synergistic action of irradiation when combined with the known cancer chemotherapeutic agents.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

PRELIMINARY

PHS-...
REV. 5-54

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HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

C-2911

NOTICE OF RESEARCH PROJECT

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

PRELIMINARY

TITLE OF PROJECT:

The Stimulating and Cancerogenic Effects of X-rays

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

Victor V. Brunst, Sc.D. Senior Cancer Research Scientist
Laboratory of Radiobiology and Experimental Oncology

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Health Research, Inc.
Roswell Park Memorial Institute, 666 Elm St., Buffalo 3, N.Y.

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this project is investigation of stimulating effects of X-ray irradiation, in connection with cancerogenic effects. The observation that malignant tumors may develop following irradiation by X-rays or radium has been made by many authors. In the cases of occupational cancer the large dosages which result from consistent exposures for many years may have, in some cases, definite cancerogenic effects. The nature of cancerogenic effect of X-rays is not clear. The possible relations between cancerogenic effect and stimulating effect of radiation is not investigated. Any investigations of this problem are important.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL: The Chicago Medical School

INVESTIGATOR — DO NOT USE THIS SPACE

PRELIMINARY

PHS-1MB

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Budget Bureau No. 72-R001.2

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FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
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PROJECT NO. (Do not use this space)
Y-2909

NOTICE OF RESEARCH PROJECT

(1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT (Do not exceed one line)

PRELIMINARY

Effect of chemotherapy and radiation therapy on immune responses of animals and men with cancer

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

I. Davidsohn, M.D.: Professor of Pathology & Chairman, Dept. of Pathology, Chicago Medical School; Director, Dept. of Pathology, Mount Sinai Hospital, Chicago; Director of Research, Mount Sinai Medical Research Foundation, Chicago.

K. Stern, M.D.: Associate Professor, Dept. of Pathology, Chicago Medical School; Associate Director, Mount Sinai Medical Research Foundation, Chicago.

M. Gleason, M.S.: Technical Assistant: Dept. of Pathology, Chicago Medical School.

M. Farquhar, B.S.: Technical Assistant: Dept. of Pathology, Chicago Medical School.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

The Chicago Medical School, 710 South Wolcott Avenue, Chicago 12, Illinois

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

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

Based on extensive background data from this laboratory on the immune responses of tumor-free, tumor-bearing and leukemic mice and rats to homo-antigens, we will investigate whether and in what manner chemotherapeutic agents, such as nitrogen mustard, TEM, 8-azaguanine, antifolics, or therapeutic local irradiation of tumors, affect the immune responses of tumor-bearing animals. In particular, we will attempt to find out whether the depression of immune responses, as observed by us in mice and rats with leukemia and tumors, will be influenced by chemotherapy or irradiation, and if there is any demonstrable relation between immune responses and therapy. Similar studies will be carried out in patients with advanced cancer and leukemia. The immune response to injections of small amounts of blood incompatible in the ABO system will serve as indicator of antibody response.

SIGNATURE OF PRINCIPAL INVESTIGATOR: I. Davidsohn M.D.

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

SCHOOL: **The Chicago Medical School**

INVESTIGATOR — DO NOT USE THIS SPACE

PHS 166

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FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C - 2868
P.H.S. (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:
Metabolism of β-Naphthylamine in Man

PRELIMINARY

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

Dr. Gray H. Twombly, Professor of Gynecology, Dept. of Obstetrics and Gynecology
Mortimer Levitz, Ph.D., Research Associate, Dept. of Obstetrics and Gynecology
Stan Rudoff, M.A., Instructor, Dept. of Obstetrics and Gynecology

NAME AND ADDRESS OF APPLICANT INSTITUTION:

New York University-Bellevue Medical Center
550 First Avenue, New York 16, N.Y.

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

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

Cancer patients who are not moribund will receive one injection of a saline solution containing 2 mg. of 2-naphthylamine-8-C^{14} (3 μc/mg). The urine will be collected for 48 hours. A method of separating the metabolites by paper chromatography has been worked out. For positive identifications and quantitative determinations, the isotope dilution technique will be applied. Some of the metabolites under consideration are 2-acetamidonaphthylene, 2-amino-1-hydroxynaphthylene, 2-amino-1-naphthylsulfuric acid, 2-amino-6-naphthylsulfuric acid and 2-acetamido-6-naphthylsulfuric acid. We will attempt to identify any unreported metabolites and synthesize them in sufficient amounts to permit tests for carcinogenicity in experimental animals. Ways of altering the metabolic pathways of β-naphthylamine are also under consideration.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

PRELIMINARY

PHS-166
REV. 10-57

Form Approved

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C - 2831

RAD. (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Pathogenesis and prevention of radiation reaction in patients with lung cancer.

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

Principal Investigator: Thomas C. Chalmers, M.D., Chief of Medicine, Lemuel Shattuck Hospital; Clinical Associate In Medicine, Harvard Medical School.

Collaborators: John M. Tyler, M.D., Senior Physician, Lemuel Shattuck Hospital; Martin B. Levene, M.D., Consultant in Radiation Therapy, Lemuel Shattuck Hospital.

NAME AND ADDRESS OF APPLICANT INSTITUTION:
Harvard University
Cambridge 38, Massachusetts

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In order to explore the feasibility of employing larger than the customary doses of x-ray in the treatment of pulmonary neoplasm, the following program of investigation will be undertaken.

Summary: We propose to study radiation reaction in the lung in three ways for the purpose of prediction and prevention. To document the pathogenesis of the reaction, a group of patients undergoing high voltage x-ray therapy to the lungs with a 2 mev machine will have their pulmonary function investigated with the routine methods plus the maximum carbon monoxide diffusion ability of the lungs. While these observations are proceeding the efficacy of cortisone in preventing and modifying the reaction will be investigated by means of carefully controlled studies in rats. If these studies appear promising, patients receiving radiation to the lungs will be treated with cortisone and will be studied with pulmonary function tests and the total tissue dose to the lungs will be pushed beyond the usual limit in the hope that the curability of pulmonary neoplasm can be increased.

Submitted for period beginning - April 1956
ending - September 1955

SIGNATURE OF PRINCIPAL INVESTIGATOR: Thomas C. Chalmers

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

SCHOOL: Harvard

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amount Approved
C-2831	4/56 - 3/57	$14,760
2831 C1	4/57 - 3/58	11,500 *

* Commitment

PHS-168
REV. 5-58

Form Approved
Budget Bureau No. 68-R00

Prepared for the Medical Sciences Information Exchange.
Hold for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2722

Rad (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

The Potentiation by Porphyrins and other Photodynamic Compounds of the Effects of Roentgen Rays on Human and Animal Tumors

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

Samuel Schwartz, M.D., Associate Professor, Experimental Medicine
Karel Absolon, M.D., American Cancer Fellow, Department of Surgery
Talvor Vermund, M.D., Assistant Professor, Department of Radiology
Merle Loken, Instructor, Biophysics
Kojun Ikeda, M.D., Research Fellow, Department of Medicine
Stenstrom, K. W., Ph.D, Professor and Head, Department of Radiology

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of Minnesota, Minneapolis 14, Minnesota

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

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

The proposed studies have three interrelated goals:

(1) Quantitative and qualitative studies on the localization of porphyrins and other fluorescing compounds in human and animal tumors.
(2) Studies of the potentiation of the effect of Roentgen radiation by the localized compounds in human and animal tumors.
(3) Studies of mechanisms which might be responsible for the potentiation effect.

Various types of human and animal tumors will be subjected to Roentgen irradiation both with and without prior administration of the test compounds. The histopathological and biochemical responses of the two groups will be compared.

SIGNATURE OF PRINCIPAL INVESTIGATOR

Samuel Schwartz
Karel Absolon
Talvor Vermund

Submitted for period beginning - September 1955

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

School of Medicine, University of Minnesota

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2722	9/55 - 8/56	$20,786
2722 C1	9/56 - 8/57	26,620 *

* Commitment

PHS-166
REV. 10-52

HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
0-2696(R)

RAD (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md. [illegible]

TITLE OF PROJECT:
Investigation to determine the dependence of differential sensitivity of normal and malignant cells on radiation quality

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

John S. Laughlin, Ph.D., Member, Chief, Division of Biophysics, Sloan-Kettering Institute; Head, Dept. of Physics, Memorial Center.
James J. Nickson, M.D., Member, Head, Radiobiology Section of above Division. Chief, Radiation Therapy Dept., Memorial Center
G. W. Woolley, Ph.D. (Consultant), Member, Chief, Steroid Biology Division
D. A. Karnofsky, M.D. (Consultant), Associate, Head, Embryology Section.

NAME AND ADDRESS OF APPLICANT INSTITUTION:
Sloan-Kettering Institute for Cancer Research
410 East 68th Street, New York 21, New York

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

From the standpoint of cancer control with ionizing radiations, two biological reactions of great interest are the differential response of normal and malignant cells following irradiation with the same quality and energy dose of radiation. It is the aim of this project to determine whether or not there is a differential sensitivity as a function of quality for normal and neoplastic systems.

Initially, these experimental animal tumors will be used: C3H BA tumor transplanted to the C3H/An strain of mouse, and mouse sarcoma 180 transplanted to the chick embryo. Human tumors transplanted to the egg will also be studied. Tumor-bearing but non-irradiated animals will serve as controls.

Radiation will be given with 180 kv. and 22.5 Mev electrons or photons. Criteria for evaluation will include percentage of [illegible], weekly [illegible] of tumor size, histologic study of tumor and of surrounding radiated normal tissue, and bioassay.

SIGNATURE OF PRINCIPAL INVESTIGATOR [illegible]

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

SCHOOL: Sloan-Kett. Div. of Cornell U. Med. Coll.

INVESTIGATOR — DO NOT USE THIS SPACE

PHS-166

Form Approved
Budget Bureau No. 92-R001.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the Principal Investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-2684
~~NSF~~ (1) Hess

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

"The effect of carcinostatic drugs on the incorporation of radio-labeled precursors of nucleic acid in leukemia"

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

[redacted]ly, Ph.D., [redacted]
[redacted]ion Center, Martinsburg, W. Va.

[redacted]alter Fin, M.D., Assistant Chief Pathologist, Veterans Administration [redacted], Martinsburg, W. Va. Clinical Instructor in Pathology, The George [redacted] University School of Medicine, Washington, D. C.

NAME AND ADDRESS OF APPLICANT INSTITUTION

The George Washington University, 720 21st Street, N. W., Washington 6, D. C.

SUMMARY OF PROPOSED WORK (300 words or less - unclassified data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

[redacted] cells with respect to [redacted]n consumption and incorporation of [redacted] norms and radioactive labeled nucleic acid precursors. It is [redacted] proposed to study the [redacted] of carcinostatic drugs on the pattern [redacted].

Specific aims include studies of the comparison of nucleic acid synthesis in normal and leukemic states and of the mechanism of action of carcinostatic drugs now in use and to attempt to find others with a more specific action.

Submitted for period
beginning - September 1955

SIGNATURE OF PRINCIPAL INVESTIGATOR: William H. Seifter

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC [redacted] OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

SIGNATURE

Grant No.	Period of Operation	Amt. Appr.
C-2684	9/55 - 8/56	$5,290
2684 01	9/56 - 8/57	5,324 *

LEAVE BLANK

* Commitment

PHS-166-1(RG)
Rev. 8-55

Form Approved
Budget Bureau No. 92-R001.1

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2656(R)
Rad (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

The Effects of X-Irradiation of the Lungs on Pulmonary Vascular Resistance and Blood-Gas Diffusion in the Lungs

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

William T. Moss, M. D., Assistant Professor, Department of Radiology, Northwestern University School of Medicine, and Chief, Therapeutic Radiology, V. A. Research Hospital.

Francis J. Haddy, M. D., Formerly Assistant Professor of Physiology, Northwestern University Medical School, and Clinical Physiologist, V. A. Research Hospital. Now, Captain, U. S. Army.

NAME AND ADDRESS OF APPLICANT INSTITUTION:
Northwestern University School of Medicine, 303 East Chicago Avenue, Chicago 11, Illinois

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

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

The pathological physiology of early and late radiation changes in the lung are being studied by measuring pulmonary vascular resistance and blood-gas diffusion gradients using standard techniques. This knowledge is expected to improve our understanding of the clinical changes seen in patients following pulmonary irradiation during the treatment of mediastinal and pulmonary malignancies.

Submitted for period beginning - April 1956

SIGNATURE OF PRINCIPAL INVESTIGATOR: William T. Moss

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

SCHOOL: Northwestern Univ. School of Medicine

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amount Approved
C-2656	4/56 - 3/57	$7,308
2655 C1	4/57 - 3/58	6,998 *

* Commitment

Form Approved
Budget Bu...

Prepared for the Medical Sciences Information Exchange. Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space) C-2602

Physio. (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT: The Study of the Effects of Roentgen Irradiation Upon Digestion and Absorption of Materials in the Gastro-Intestinal Tract by Means of Radioactive Tagged Compounds.

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

Robert J. Reeves, M. D., Chairman, Department of Radiology, Duke University Hospital, Durham, N. C.

Aaron P. Sanders, Instructor in Radiology and Biophysicist to Duke Hospital, Durham, N. C.

Joseph K. Isler, Jr., Resident in Radiology, Duke Hospital, Durham, N. C.

NAME AND ADDRESS OF APPLICANT INSTITUTION:
Duke University Hospital
Durham, N. C.

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

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

This project is proposed to furnish some additional insight into the physiological disturbance of radiation sickness, particularly as pertains to the gastro-intestinal tract. Intestinal absorption has always been under a certain amount of discussion, and preliminary studies have shown that by using tagged materials, one can draw conclusions concerning absorption from the intestinal tract. There is a certain amount of temporary damage following X-irradiation, and it is often desirous to know just how much temporary damage might be present. In this study, animals will be given varying amounts of X-irradiation, ranging from lethal to sub-lethal doses, and from total body to intestinal segmental distribution. These animals will be studied as to the intestinal digestion and absorption, with the use of radioactive isotopes.

Patients undergoing X-irradiation therapy over the gastro-intestinal tract, such as patients [illegible] uterus, will be studied as to the digestion and absorption of various phases of their course of therapy.

We are now in the process of establishing the normal values and the normal variants. Definite curves have been worked out for the normal range, and in this project we do hope to be able to work out a pattern concerning the absorption of fat and acids.

SIGNATURE OF PRINCIPAL INVESTIGATOR Robert J. Reeves M.D.

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

SCHOOL Duke University Medical School

INVESTIGATOR — DO NOT USE THIS SPACE

PHS 166

Form Approved

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2598
Rad. (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

BEHAVIOR OF CANCER CELL POPULATIONS FOLLOWING X-RAY THERAPY

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

F.S. Hoffmeister, M.D. — Assoc. Chief, Dept. of Reconstr. Surg; Service B, Head and Neck Dept., Roswell Park Memorial Institute

L. Simpson, B.M., B.Ch. — Senior Research Cancer Pathologist, Roswell Park Memorial Institute

George E. Moore, M.D., Ph.D. — Director, Roswell Park Memorial Institute; Assoc. Professor of Surgery, Univ. of Buffalo

W.T. Murphy, M.D. — Director, Dept. of Therap. Radiol. Roswell Park Mem. Inst.

F. Urbach, M.D. — Assoc. Chief, Dept. of Dermatol., Roswell Park Mem. Inst.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Health Research, Inc.
Roswell Park Memorial Institute, North Oak Street, Buffalo 3, New York

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

In the Medical Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is the aim of the proposed investigation to study the long-term histopathology of selected cancers following x-ray therapy with the objective of (1) investigating the behavior of cancer cell populations in general and (2) establishing histopathological x-ray cure-rates for groups of tumors under study in particular. The study will concern itself with cancer of skin and selected organs of head and Neck. The investigation will be carried out on humans. Groups will be established according to the site and histological characteristics of the tumor. The following sites will be studied: 1. Skin, 2. Lip, 3. Floor of the mouth, 4. Tongue, 5. Parotid, 6. Neck metastasis, 7. Primary tumors of the neck. Radiation therapy, using generally accepted curative doses, will be carried out. A modified Glucksmann routine for biopsies will be followed; biopsies will be taken before radiation and 14 days, one month, six months, etc., after radiation. Specimens will be prepared in the routine manner. Cell counts will be taken for quantitative [illegible] cells will be classified under four categories: 1. dividing, 2. resting, 3. differentiating, 4. degenerating. Percentages will be [illegible] against the time giving a quantitative graphic picture of the behavior of cell populations from the time before the x-ray therapy, during and after. A statistically significant number of tumors will be investigated and histopathological cure-rates calculated. Conclusions will be drawn as for (1) behavior of cancer cell populations subjected to x-ray therapy in general, and (2) as for the histopathological x-ray-curability of the tumors under study in particular.

SIGNATURE OF PRINCIPAL INVESTIGATOR: [signature] M. D.

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

SCHOOL

Submitted for period beginning - April 1955

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2598	4/55 - 3/56	$6,804
2598 C1	4/56 - 3/57	6,804 *

* Commitment

PHS-166
REV. 10-52

Form Approved
Budget Bureau No. 72-R081.2

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

Research No. (Do not fill this space)
C-2598(C)
Ref. (5)

NOTICE OF RESEARCH PROJECT

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

BEHAVIOR OF CANCER CELL POPULATIONS FOLLOWING X-RAY THERAPY

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

F. S. Hoffmeister, M.D.	Associate Chief, Head & Neck (3)
L. Simpson, B.M., B. Ch., Senior Cancer Research Pathologist	
George E. Moore, M.D., Ph.D.	Director, Roswell Park Memorial Institute
W.P. Murphy, M.D.	Director, Dept. of Therapeutic Radiology
F. Urbach, M.D.	Associate Chief, Dept. of Dermatology
S.H. Chu, Ph.D.	Senior Cancer Research Pathologist

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Roswell Park Memorial Institute, Buffalo 3, New York

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is the aim of the proposed investigation to study the long-term histopathology of selected cancers following x-ray therapy with the objective of (1) investigating the behavior of radiated cancer cell populations in general and (2) establishing histopathological x-ray cure-rates for groups of tumors under study in particular. The study will concern itself with cancer of skin and selected organs of head and neck. The investigation will be carried out on humans. Groups will be established according to the site and histological characteristics of the tumor. The following sites will be studied: 1. Skin, 2. Lip, 3. Floor of the mouth, 4. Tongue, 5. Parotid, 6. Neck metastasis, 7. Primary tumors of the neck. Radiation therapy being generally accepted curative doses will be carried out. A uniform fractionation regime for biopsies will be followed; biopsies will be taken before radiation and 14 days, one month, six months, etc., after radiation. Specimens will be processed in one laboratory [illegible] quantitative analysis. The cells will be classified under four categories [illegible] calculated and plotted against the time giving a quantitative graphic picture of the behavior of cell populations from the time before the x-ray therapy, during and after. A statistically significant number of tumors will be investigated and histopathological cure-rates calculated. Conclusions will be drawn as for (1) behavior of cancer cell populations subjected to x-ray therapy in general, and, (2) as for the histopathological x-ray curability of the tumors under study in particular. No variables in respect to the radiation dose and other radiation factors will be introduced into the experiment at this time and only standard generally accepted doses and factors will be applied.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL [illegible] University School of Medicine

Submitted for period beginning-April 1956

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2598	4/55 - 3/56	$6,804
2598 C1	4/56 - 3/57	7,245

PHS-6
REV. 1954

Form Approved
Budget Bureau No. 92-R001.2

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

C-2598(CS)

Rad. (3)

NOTICE OF RESEARCH PROJECT

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT: PRELIMINARY

BEHAVIOR OF CANCER CELL POPULATIONS FOLLOWING X-RAY THERAPY

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

F. S. Hoffmeister, M.D.	Associate Chief, Head and Neck Service
Lenore Simpson, B.N.,B.Ch.	Senior Cancer Research Pathologist
George E. Moore, M.D.,Ph.D.	Director, Roswell Park Memorial Institute
F. Urbach, M.D.	Associate Chief, Dept. of Dermatology
W.T. Murphy, M.D.	Director, Dept. of Therapeutic Radiology
C.H. Chu, Ph.D.	Senior Pathologist

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Roswell Park Memorial Institute, Buffalo 3, New York

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is the aim of the proposed investigation to study the long-term histopathology of selected cancers following x-ray therapy with the objective of (1) investigating the behavior of radiated cancer cell populations in general and (2) establishing histopathological x-ray cure-rates for groups of tumors under study in particular. The study will concern itself with cancer of skin and selected organs of head and neck. The investigation will be carried out on humans. Groups will be established according to the site and histological characteristics of the tumor. The following sites will be studied: 1. Skin, 2. Lip, 3. Floor of the mouth, 4. Tongue, 5. Parotid, 6. Neck metastasis, 7. Primary tumors of the neck. Radiation therapy using generally accepted curative doses will be carried out. A modified Glucksman* routine for biopsies will be followed; biopsies will be taken before radiation and 14 days, one month, six months, etc., after radiation. Specimens will be prepared in the routine manner, followed by [redacted] quantitative analysis. The cells will be classified under four categories: 1. Dividing, 2. resting, 3. differentiating, 4. degenerating [redacted] calculated and plotted against the time giving a quantitative graphic picture of the behavior of cell populations from the time before the x-ray therapy, during and after. A statistically significant number of tumors will be investigated and histopathological cure-rates calculated. Conclusions will be drawn as for (1) behavior of cancer cell populations subjected to x-ray therapy in general, and, (2) as for the histopathological x-ray curability of the tumors under study in particular. No variables in respect to the radiation dose and other radiation factors will be introduced into the experiment at this time, and only standard generally accepted doses and factors will be applied. The appara-

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

PRELIMINARY

Form Approved

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space) C-3007 Surg (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT: The Use of Radioactive Labeled Protein (Albumin) and Fat in the Evaluation of: (a) Pancreatic Disorders (b) Protein and Fat Utilization Following Operations on the Upper Intestinal Tract for Malignant Disease

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

William W. Shingleton, M. D., Assistant Professor of Surgery (Principal invest.)
George J. Baylin, M. D., Professor of Radiology, Associate in Anatomy (Professional Associate)
Aaron P. Sanders, M. S., Instructor in Radiology (Professional Associate)

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Duke University, Durham, North Carolina

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

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

A technique for evaluation of digestion and/or absorption of radioactive labeled protein (iodinated albumin) and fat (iodinated glyceryl trioleate) has been developed whereby the material is given orally to humans and the radioactivity of blood for several hours following administration is measured. A 48-hour collection of feces following the test meal is also measured for radioactivity. This technique is being used to study patients with suspected pancreatic disease (chronic pancreatitis or carcinoma) and patients following various operative procedures on the stomach for benign and malignant disease.

Submitted for period beginning May 1956

SIGNATURE OF PRINCIPAL INVESTIGATOR: William W. Shingleton

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

SCHOOL: Duke University School of Medicine

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-3007	5/56 - 4/57	$6,394
3007 C1	5/57 - 4/58	6,394 *
3007 C2	5/58 - 4/59	6,394 *

* Commitment

PHS 416

Form Approved

NOTICE OF RESEARCH PROJECT

BIO-SCIENCES INFORMATION EXCHANGE

SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

PROJECT NO. (Do not use this space) C-3003

Rad 1 (PRELIM)

SUPPORTING AGENCY: Public Health Service

TITLE OF PROJECT:

"Radiation Carcinogenesis"

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

Dr. Shields Warren - Scientific Director, Cancer Research Institute, New England Deaconess Hospital

NAME AND ADDRESS OF INSTITUTION:
New England Deaconess Hospital, Boston, Massachusetts

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.

Summary for period ending 1 April 1952

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR—DO NOT USE THIS SPACE

(PRELIMINARY)

Prepared for the Medical Science Information Exchange. Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2579(C1) & C1S1
Endo (3)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

EFFECT OF ESTROGENS ON THYROID ANATOMY AND PHYSIOLOGY

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

Joseph D. Feldman, M. D.
Associate Professor
Department of Pathology
University of Pittsburgh School of Medicine

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of Pittsburgh School of Medicine, Pittsburgh 13, Pennsylvania

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

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

The proposed investigation aims to elucidate the effect of ovarian hormones on thyroid physiology and anatomy. The project consists of three lines of investigation: (1). The effect of estrogen, the estrus cycle and pregnancy on iodine metabolism. This involves a study of thyroid uptake of iodine, thyroid secretion of hormone, thyroidal clearance of iodine, renal clearance of iodine, thyroidal iodine space, serum level of thyroid hormone, as influenced by the ovarian hormones. (2). The effect of estrogens on pituitary thyrotrophin production and release. (3). The production of thyroid pathology under the long term influence of ovarian hormones.

Re-Submitted for period beginning - April 1956

SIGNATURE OF PRINCIPAL INVESTIGATOR: Joseph D. Feldman, M. D.

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

SCHOOL: University of Pittsburgh School of Medicine

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amount Approved
C 2579	4/55 - 3/56	$4,969
2579 C1	4/56 - 3/57	5,291
2579 C1S1	4/56 - 3/57	4,140

PHS REV

Form Approved
Budget Bureau No. 92-R001.2

Prepared for the Medical Sciences Information Exchange. Not for publication or publication reference without consent of the [illegible] Investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK) C-2537

No S.S. (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

The experimental study of chemical and physical factors which may alter the radiation sensitivity of tumors.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

John McLean Morris, M.D. , Associate Professor of Gynecology, Department of Obstetrics and Gynecology, Yale University School of Medicine

NAME AND ADDRESS OF APPLICANT INSTITUTION

Yale University School of Medicine 333 Cedar St. New Haven, Connecticut

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project is directed toward the study of various factors which may alter the radiation sensitivity of tumors in mice. The chemical agents to be evaluated will be chiefly those related to the oxidation-reduction mechanism, notably sulfhydryl - containing compounds. Because of the evidence of protection from substances such as glutathione and cysteine, the effect of certain SH inhibitors may prove of interest. Other substances will include steroid hormones, and vitamins K and E.

The principal physical factor to be evaluated will be the combined effect of heat and radiation, using a small diathermy unit. The effects of previous radiation by retransplanting resistant tumors, and the relationship of tumor size and rate of growth to radiation response will be observed.

SIGNATURE OF PRINCIPAL INVESTIGATOR John McL. Morris

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Yale University School of Medicine

Grant No.	Period of Operation	Amt. Appr.
C-2537	12/54 - 11/55	$4,428
2537 C1	12/55 - 11/56	4,400 *

LEAVE BLANK

* Commitment

PHS [illegible] (RG)
Rev. [illegible]

Form Approved
Budget Bureau No. 92-R001.1

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2537(C)

No S.S. (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:
The experimental study of chemical and physical factors which may alter the radiation sensitivity of tumors.

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

John McLean Morris, M.D., Associate Professor of Gynecology, Yale University School of Medicine

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Yale University School of Medicine, 333 Cedar Street, New Haven, Connecticut

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

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

A study is being made of physical and chemical factors which may alter the radiation sensitivity of mouse tumors. The principal chemical agents being studied are reduced glutathione, testosterone, combinations of testosterone and glutathione, and heavy metals. Other hormones, vitamins, and SH-inhibitors will be studied as time permits. Physical factors include heat and cold, and in addition, the effect of tourniquets, infections, and surgical incisions into the tumor prior to radiation.

[redacted]

Submitted for period beginning December 1955

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL: Yale University School of Medicine

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Approved
C-2537	12/54 - 11/55	$4,428
2537 C1	12/55 - 11/56	4,400

PHS 166

Form Approved

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-1551

NOTICE OF RESEARCH PROJECT

Medical Sciences Information Exchange

Not for Publication

Copy

Project No. C-1551 C1
Rad. (5)

Supporting Agency: Public Health Service

Title of Project: 1) Exploration of the Ability of ACTH, Cortisone, and Allied Substances to Modify Reactions to Ionizing Radiations in Humans, and 2) Evaluation of the Ability of Systemic Steroid Administration to Enhance the Response of Mammary Carcinoma Tissue to Ionizing Radiation.

Professional Personnel: James J. Nickson, M.D., Member, Director, Radiation Therapy, George C. Escher, M.D., Assistant; Head, Hormone Chemotherapy Subsection.

Name of Institution: Sloan-Kettering Institute for Cancer Research, Memorial Center for Cancer and Allied Diseases, New York, N.Y.

Summary of Proposed Work:

The efficacy of combined hormone and radiation therapy in cases of inoperable breast cancer will be further studied and will be evaluated in comparison to the usefulness of hormone therapy alone and radiation therapy alone.

Evaluation of the effects of various steroid compounds on the post-radiation state will be continued. In this connection, it is planned to observe the effect of steroid compounds on post-radiation inflammation in the lungs. Preliminary data accumulated both here and elsewhere indicate that these agents may be therapeutically useful in the prevention of suppression of acute or subacute pneumonitis following exposure of pulmonary tissue to ionizing radiation. Although these data are preliminary, it seems desirable to set up a definite program of clinical evaluation. Investigation of the influences of cortisone and ACTH on radiation necrosis has been difficult inasmuch as the areas of necrosis are also chronically infected with a wide variety of bacteria. It is well known that administration of these compounds is the suppression of antibody formation with consequent enhanced ability of these bacteria to invade the host as a whole. Up to the present time this has, we felt, effectively barred the proposed exploration of the role of these agents in the management of chronic radiation necrosis. This problem has been discussed with the Bacteriology Department of Memorial Center and it is hoped the coming year will provide a solution.

Grant No.	Period of Operation	Amt. Approved
C-1551	7/1/51 - 6/30/52	$33,821
1551 S1	10/23/51 - 9/30/52	7,688
1551 C1	10/1/52 - 9/30/53	~~43,150~~ 37,070

Prepared for the Medical Sciences Information Exchange. Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1551(C2)
Rad (2)

COPY

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md. SUPPORT FROM THIS SOURCE TERMINATED 9/54

TITLE OF PROJECT 1) Exploration of the ability of ACTH, cortisone, and allied substances to modify reactions to ionizing radiation in humans, and 2) evaluation of the ability of systemic steroid hormone administration to enhance to response of mammary carcinoma tissue to ionizing radiation.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

James J. Nickson, M.D., Member, Sloan-Kettering Institute; Director, Radiation Therapy Department, Memorial Center, Attending Radiation Therapist.
George C. Escher, M.D., Assistant, Sloan-Kettering Institute; Head, Hormone Chemotherapy Sub-section; Clinical Assistant in Medicine, Memorial Center.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Sloan-Kettering Institute for Cancer Research,
Memorial Center for Cancer & Allied Diseases, 444 East 68 St., New York 21, N.Y.

SUMMARY OF PROPOSED WORK (200 words or less — non-confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In the coming year it is proposed to continue studies of the objective response results to be obtained with simultaneous hormone and radiation therapy in female patients with advanced inoperable mammary carcinoma, as compared to the response when these two modalities are used singly. To increase the significance of the data, where possible, the patient is her own control, i.e., in a case of bilateral pulmonary parenchymal metastases, one lung will receive hormone and radiation therapy, the other lung will receive hormone therapy only. All three groups will receive an identical pre-treatment workup and follow-up. The studies will include chemistries for bone and liver response, hemograms, serial radiographs and renal function studies. The studies to date suggest a better response rate in the areas exposed to simultaneous combined therapy.

Since cortisone has favorably modified the usual pneumonitis following radiation of the lung, these studies will continue more intensively. In addition, cortisone will be administered over a 6-month period, in an attempt to modify the radiation fibrosis which has not responded to short courses of this hormone.

The program of modification of skin radiation injury by local and systemic cortisone or ACTH therapy is being reinstated.

SIGNATURE OF PRINCIPAL INVESTIGATOR James J. Nickson, M.D.
George C. Escher, M.D.

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Sloan-Kettering Division of Cornell University Medical College

Grant No.	Period of Operation	Amt. App.	Grant No.	Period of Operation	Amt. App.
C-1551	7/51 - 9/52	$33,821	C-1551 C1	10/52 - 9/53	$37,078
1551S1	10/23/51 - 9/52	7,688	1551 C2	10/53 - 9/54	17,500

LEAVE BLANK

SUPPORT FROM THIS SOURCE TERMINATES 9/54

PHS-144-1 (RG)
Rev. 8-51

Form Approved
Budget Bureau No. 72-R001.1

NOTICE OF RESEARCH PROJECT
Medical Sciences Information Exchange
Not for Publication

Supporting Agency: Public Health Service Project No. C 1551 (S)

Title of Project: Purchase of ACTH and Cortisone for Study of the Ability of Hormones to Modify Reactions to Ionizing Radiations in Humans

Professional Personnel: James J. Nickson, M.D., Attending Radiation Therapist; Head, Section of Radiobiology
George C. Escher, M.D., Clinical Asst. in Med., Head, Hormone Chemotherapy Sub-Section
Florence Chu., M.D., Clinical Asst. Radiation Therapist
C. P. Rhoads, M.S., Director, Memorial Center; Chief, Exper. Pathology Division

Name of Institution: Sloan-Kettering Institute for Cancer Research, Memorial Center for Cancer and Allied Diseases, New York, 21, N. Y.

Summary of Proposed Work:

The purpose of the project is to evaluate procedures potentially capable of modifying the reaction of human tissue to ionizing radiation. It is proposed to administer physiologically active amounts of cortisone and ACTH on acute, sub-acute, and chronic states of radiation damage in humans as follows:

1. It is proposed to study the effects of ACTH and cortisone administered before and after acute radiation injury.

2. In cases of sub-acute, systemic radiation injury, it is proposed to study the influence of steroid compounds on the injury to the hematopoietic organs.

3. It is planned to evaluate the ability of ACTH and cortisone to increase hematopoietic activity in cases of chronic systemic radiation injury.

4. A study will be made to evaluate the role of ACTH and cortisone in the treatment of fibrosis and necrosis due to ionizing radiation.

Grant No.	Period of Operation	Amt. App.
C 1551	7/1/51 - 6/30/52	$33,821
1551 S1	10/23/51 - ~~6/30/52~~ 9/30/52	7,688

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

DEPT. EDUCATION, AND WELFA...
FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C 2387
Bio...-(1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Study of Ferritin and Hemin Synthesis with Labeled Iron and Amino Acids.

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

Robert B. Loftfield, Ph.D. - Research Associate in Medicine, Harvard University; Research Fellow in Medicine, Mass. General Hospital
Paul C. Zamecnik, M.D. - Associate Professor of Medicine at the Mass. General Hospital, Harvard University; and Assistant Physician, Mass. General Hospital

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Massachusetts General Hospital, Boston 14, Massachusetts

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

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

It is proposed to follow the rate of appearance of C-14 amino acids and iron-55 into microsomal ferritin, soluble ferritin, catalase, cytochrome b, and cytochrome c of the liver following intravenous administration of the labeled compound *in vivo* or after various periods of incubation of liver homogenates or liver slices *in vitro*. Appropriate controls will be carried out to determine whether one fraction can be isolated from another and whether the amino acids administered appear in true peptide bond linkage in protein.

We expect to learn something of the adaptive synthesis of ferritin because, in young animals, ferritin can be increased from essentially zero to 1 mg. per gram of liver within a few days after injection of saccharated iron oxide.

Robert B Loftfield
SIGNATURE OF PRINCIPAL INVESTIGATOR: Paul C Zamecnik

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

SCHOOL: Harvard Medical School

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2387	9/54 - 8/55	$10,016
2387 C1	9/55 - 8/56	10,026 *

* Commitment

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2387(C)
Bio. (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Study of Ferritin and Hemin Synthesis

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

Paul C. Zamecnik, M.D. - Associate Professor of Medicine at the Massachusetts General Hospital, Harvard University; Associate Physician, Massachusetts General Hospital

Robert B. Loftfield, Ph.D. - Research Associate in Medicine, Harvard University; Associate Biochemist (Medicine), Massachusetts General Hospital

NAME AND ADDRESS OF APPLICANT INSTITUTION

Massachusetts General Hospital, Boston 14, Massachusetts

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

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

We have developed techniques for the accurate determination of the intracellular specific radioactivity of injected amino acids following intravenous injection of C-14 amino acids. With this technique we have established that the synthesis of ferritin comes entirely from free amino acids.

We are now in a position to try to determine how long a time is required for the synthesis of a ferritin molecule. If, at the beginning of an experiment, incomplete ferritin molecules are to be found in all degrees of completion, the first completed molecules will be largely unlabeled. If the intracellular specific activity of the amino acid is held constant for some time, the new ferritin molecules will gradually become more and more tagged until they have the same specific activity as the C-14 amino acid. Such ferritin as is being made at that time will have been made entirely since the infusion of C-14 amino acid began.

For this purpose, we anticipate that immunochemical as well as straight chemical isolation of the ferritin will be advantageous and to this end we are trying to prepare rabbit antibody to rat ferritin.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Robert B Loftfield
P. Zamecnik

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

INVESTIGATOR'S SCHOOL: Harvard Medical School

Submitted for period beginning - September 1955

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2387	9/54 - 8/55	$10,016
2387 C1	9/55 - 8/56	10,665

PHS 166
REV. 10-52

Form Approved
Budget Bureau No. 72-R091.2

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2387(C2)
Bio (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md. PRELIMINARY

TITLE OF PROJECT:

Study of Ferritin and Hemin Synthesis

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

**Robert B. Loftfield, Ph.D. - Research Associate in Medicine, Harvard University
Associate Biochemist (Medicine), Massachusetts
General Hospital**

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Massachusetts General Hospital, Boston 14, Massachusetts

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

By comparing the observed rate of incorporation of C^{14}-leucine into ferritin which is being synthesized at a known rate with a calculated rate, we hope to find the time required for the total synthesis of a ferritin molecule in vivo. We also expect to study the stimulating effect of iron on ferritin synthesis and the factors involved in transport of iron through the cell wall, into ferritin (and hemosiderin) and thence into the hemins.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Robert B. Loftfield

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

SCHOOL: Harvard Medical School

INVESTIGATOR — DO NOT USE THIS SPACE

PRELIMINARY

PHS-166
REV. 5-61

Form Approved
Budget Bureau No. 93-R001.3

Prepared for the Medical Sciences Information Exchange. Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space) 0-2366

M & N (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

STUDIES IN HUMAN PLASMA PROTEIN FORMATION

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

Harold Tarver, Associate professor of Physiological Chemistry,
Sheldon Margen, Associate Research Biochemist.

NAME AND ADDRESS OF ASSISTANCE INSTITUTION:

University of California School of Medicine
Berkeley 4, California

SUMMARY OF PROPOSED WORK — [200 words or less — Omit Confidential data.]

In the Medical Sciences Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are furnished to investigators who request such information. Your summary is to be used for these purposes.

The aim of the proposed research problem is to study the dynamic aspects of plasma protein metabolism in human subjects. Initially, studies are to be carried out to determine which of three methods "actually" measures plasma protein turnover. The methods are to be compared by simultaneous or sequential studies in the same persons.

The methods will consist of: 1) measurements of incorporation of radioactivity into fractions of plasma protein after the administration of S^{35} labeled methionine or cystine. 2) Measurements of activity after administration of I^{131} labeled plasma protein fractions (I^{131} and S^{35}). 3) Measurements of activity of plasma protein fractions after administration of in vivo labeled proteins. These will be prepared by administration of highly S^{35} labeled amino acids to a donor, and the injection of donor plasma or plasma fractions into suitable recipients [illegible].

After the best method has been selected, several fractions analyzed and standardized on normal subjects, individuals suffering various disease states, especially cancer, are to be studied.

SIGNATURE OF PRINCIPAL INVESTIGATOR: H. Tarver, Sheldon Margen, M.D.
(Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified)

Submitted for period

SCHOOL: University of California Medical School

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2366	9/54 - 8/55	$9,663
2366 C1	9/55 - 8/56	9,663 *
2366 C2	9/56 - 8/57	9,663 *

PHS 166
REV. 10-52

* Commitment

Form Approved
Budget Bureau No. 92-R001.2

Prepared for the Medical Sciences Information Exchange. Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space) C-2366(C) C-2366

M & N (6)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Studies in Human Plasma Protein Formation

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

Harold Tarver, Dept. Physiological Chemistry, Associate Professor

Sheldon Margen, Dept. Physiological Chemistry, Associate Research Biochemist

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of California, Berkeley 4, California

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

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

It is proposed to compare the rates of turnover of human plasma protein fractions, particularly of albumin, internally labeled with S^{35} amino acids, with that of albumin labeled with I^{131} and with albumin labeled *in vitro* with methionine-S^{35}. These studies will be carried out with normal human subjects and with subjects with various pathological conditions, including cancer.

SIGNATURE OF PRINCIPAL INVESTIGATOR: N. Tarver

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

SCHOOL: School of Medicine

Submitted for period beginning — September 1955

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2366	9/54 - 8/55	$9,663
2366 C1	9/55 - 8/56	10,289
2366 C2	9/56 - 8/57	~~9,663~~ * 10,289

* Commitment

PHS 166
REV. 10-52

Form Approved
Budget Bureau No. 72-R001.2

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
G-2366(C2)
HBW (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Studies on Human Plasma Protein Formation. PRELIMINARY

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

Harold Tarver, Department of Physiological Chemistry, Associate Professor

Sheldon Margen, Department of Physiological Chemistry, Associate Research Biochemist.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of California, Berkeley 4, California

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is the intention to continue studies on plasma protein turnover in an endeavour to find a suitable substitute for internally labeled plasma proteins which can be used to replace the iodinated (I^{131}) proteins which are extensively applied at the present time. It is also proposed to study the turnover of insulin employing similar methods.

SIGNATURE OF PRINCIPAL INVESTIGATOR:

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

SCHOOL **School of Medicine**

INVESTIGATOR — DO NOT USE THIS SPACE SCHOOL

PRELIMINARY

PHS-1

Form Approved
Budget Bureau No. 72-R20.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-2294(0)
Reba (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Physiology of white blood cells studied with radiophosphorus

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Daniel L. Kline, Dep't of Physiology, Ass't Professor, Yale University

NAME AND ADDRESS OF APPLICANT INSTITUTION

Yale University School of Medicine, New Haven, Conn.

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

After the administration of radiophosphorus to rabbits (as inorganic P), lymph nodes, lymphatic duct fluid and blood will be collected at intervals. The lymphocytes will be separated from the blood by the method of Ottesen. The specific activity of desoxyribosenucleic acid phosphorus will be determined from each of these sources from which the following information can be obtained; 1. Are the lymph nodes a source of new lymphocytes? 2. Are the lymphocytes delivered to the blood stream retained intravascularly? 3. What is the lifespan of lymphocytes and 4. Do lymphocytes recirculate via the lymphatic ducts?

After this information has been gained, it will be used to study the factors which influence the release of leucocytes from the site of their formation and factors which affect their lifespan [illegible] by provoking a leucocytosis, to study the dynamic equilibrium between intra- and extravascular leucocytes.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Daniel L Kline

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Submitted for period

Yale University School of Medicine

Grant No.	Period of Operation	Amt. Appr.
C-2294	12/53 - 11/54	$3,780
2294 C1	12/54 - 11/55	4,320

LEAVE BLANK

PHS-166-1(RG)
Rev. 8-57

Form Approved
Budget Bureau No. 72-R001.1

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not fill this space)
B-2294 (02)
Hema. (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Physiology of White Blood Cells studied with Radiophosphorus

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

Daniel L. Kline, Department of Physiology, Assistant Professor

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Yale Medical School, New Haven, Conn.

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The uptake of inorganic radiophosphorus into the desoxyribonucleic acid (DNA) of cells occurs only during mitosis and has been shown to be a reliable method of tagging cells. In this study, an attempt will be made to ascertain the total leucocyte picture, both intra- and extravascular, including the number of cells outside the circulation and the state of equilibrium between intra and extravascular white cells. It is hoped that this information will clarify the meaning of the leucocyte lifespan measurements which we have been making and may throw considerable light on the mechanisms for maintaining the blood level of leucocytes. A modification of Ottesen's technique for the partition of lymphocytes and granulocytes will be used.

Studies now in progress of the blood survival times of lymphocytes and granulocytes in the normal, polycythemic and leukemic human will be continued.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Daniel L. Kline

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

SCHOOL: Yale School of Medicine

Submitted for period beginning-December 1955

BE IDENTIFIED WITH WHICH THIS PROJECT SHOULD

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
B-2294	12/53 - 11/54	$3,780
2294 C1	12/54 - 11/55	4,320
2294 C2	12/55 - 11/56	6,008
2294 C3	12/56 - 11/57	6,008*
2294 C4	12/57 - 11/58	6,008*

*Commitment

PHS-398 REV. 5-54

Form Approved Budget Bureau No. 72-R001.2

Prepared for the Medical Sciences Information Exchange. Not for publication or publication reference.

NOV 30 1953

MSIE

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space) C-2283

Rad. (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT: COPY

A STUDY OF POSSIBLE FACTORS IN RADIOSENSITIVITY

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

Titus C. Evans, Prof., Radiology and Radiobiology
Head, Radiation Research Laboratory
E.A. Riley , Research Associate, Radiation Research Laboratory
Frances Ritchey, Research Associate, Radiation Research Laboratory
H.B. Elkins , Associate Professor Radiology
H.D. Kerr , Professor and Head, Radiology

NAME AND ADDRESS OF APPLICANT INSTITUTION:

College of Medicine, State University of Iowa, Iowa City, Iowa

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

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

The general problem of radiosensitivity, especially in mammals, will be studied over a period of years and will cover such experiments as modification of radiation reactions, by physiological changes, by protraction, by fractionation and by use of radiations that differ in "liniar energy transfer". Particular attention will be directed to the study of possible mechanisms involved in the variations in radiosensitivity of individuals, strains and species.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Titus C. Evans Dir. of Correl

Identify the professional school (medical, dental, public health, graduate, or other) with which this project should be identified:

SCHOOL: College of Medicine

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. App.
C-2283	4/54 - 3/55	$20,628
2283 C1	4/55 - 3/56	8,748 *
2283 C2	4/56 - 3/57	5,940 *

* Commitment

PHS 1M REV

Form Approved

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2283(0)
RAD (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Possible Factors in Radiosensitivity

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

T.C. Evans, Radiation Research Laboratory, Professor and Head
E.F. Riley, Radiation Research Laboratory, Research Associate
R.B. Rhody, Radiation Research Laboratory, Assistant Professor
H.B. Elkins, Radiology, Associate Professor
H.D. Kerr, Radiology, Professor and Head

NAME AND ADDRESS OF APPLICANT INSTITUTION:

College of Medicine, State University of Iowa, Iowa City, Iowa

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

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

Attempts to learn more about possible factors in Radiosensitivity will be made along two lines. The first will be to separate individuals (experimental animals and patients undergoing radiation therapy) into various groups according to their metabolic activity, vigor etc. It will then be determined whether these preselected groups will vary from each other in response to irradiation.

The second approach to elucidating possible factors in radiosensitivity will be to study action of various agents known to modify response of organisms to irradiation. This will be done by using different dose levels and dose rates, which appear to affect the typical degree of radiation reaction, with and without "protecting agents".

SIGNATURE OF PRINCIPAL INVESTIGATOR: Titus C. Evans

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

SCHOOL: College of Medicine

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2283	4/54 - 3/55	$20,628
2283 C1	4/55 - 3/56	8,748
2283 C2	4/56 - 3/57	6,325 *

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

PROJECT NO. (Do not use this space)
C-2283(03)
C-2283(C)

NOTICE OF RESEARCH PROJECT

Rad (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Possible Factors in Radiosensitivity.

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

Titus C. Evans, Prof. & Head, Radiation Research Laboratory
James W. Osborne, Asst. Professor, Radiation Research Laboratory
Harry Frankel, Res. Asst., Radiation Research Laboratory
H. B. Elkins, Assoc. Professor, Radiology Dept.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

College of Medicine, State University of Iowa, Iowa City, Iowa

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Attempts will be continued to associate individual radiosensitivity with variations in the individuals metabolic condition. Beginning with mice, determinations of relative metabolic activity will be made for each animal. These animals will be grouped into low, medium, or high classes and the LD_{50} or median survival time after irradiation will be determined for each group. Cycles in metobilic conditions will also be studied as a possible factor.

Investigations will be made regarding metabolic changes instituted by "protective" agents. Possible correlations between early post irradiation changes and subsequent survival or death in LD_{50} experiments will be studied.

SIGNATURE OF PRINCIPAL INVESTIGATOR Titus C. Evans

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

SCHOOL College of Medicine

Submitted for period beginning April 1956

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2283	4/54 - 3/55	$20,628
2283 C1	4/55 - 3/56	8,748
2283 C2	4/56 - 3/57	6,325

PHS-466
REV. 5-54

Form Approved
Budget Bureau No. 92-R001.2

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space) C-2448(C2)
RAD (X)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

PRELIMINARY

TITLE OF PROJECT:

A Study of Post-Radiation Changes in Cells and an Evaluation of their Biologic and Therapeutic Significance

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

*James J. Nickson, M.D., Member, Sloan-Kettering Institute; Head, Experimental Radiation Section; Attending Radiation Therapist, Memorial Center
Emerson Day, M.D., Member, S.K.I.; Chief, Div. of Preventive Med., S.K.I.; Head, Dept. of Preventive Medicine, Memorial Hospital
Thomas R. Simon, M.D., Assistant, S.K.I.; Director, Lab. of Cytology, Strang Clinic
*Thomas S. Zimmer, M.D., Ass't., S.K.I.; Research Assoc., Lab. of Cytology, Strang Clin.

*Principal Investigators

NAME AND ADDRESS OF APPLICANT INSTITUTION:
Sloan-Kettering Institute for Cancer Research
410 East 68th Street, New York 21, New York

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is proposed to extend the studies of the changes produced by radiation in exfoliated cells, and to characterize them systematically. If the existence of a meaningful pattern is confirmed, the usefulness of that pattern in selecting methods of treatment will be assessed in an orderly way. While patients with carcinoma of the cervix will be studied, major emphasis will be on study of tumors of other sites. Finally, attempts will be made to modify response to radiation as shown by cytologic alterations.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL **Sloan-Kettering Div. of Cornell Univ. Med. Coll.**

INVESTIGATOR — DO NOT USE THIS SPACE

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2272 (C2)
Form (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md. PRELIMINARY

TITLE OF PROJECT: **The Physiology of the Circulating Formed Elements of the Blood in Leukemic and Non-leukemic Dogs and Man**

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

Howard E. Bierman, M.D., Scientific Director
Keith H. Kelly, M.D., Assistant to the Director
Ralph L. Byron, Jr., M.D., Chief of Surgery, Hosp. for Tumors & Allied Dis
Fred S. Preuss, M.D., Pathologist
H. E. Morton, Ph.D., M.D., Associate Clinical Physician
Pilar Contreno, M.D., Research Fellow Pediatric Hematology
Bohdan Jelinek, D.Sc., M.D., Research Biochemist
Irene Levis, Ph.D., Research Biochemist

NAME AND ADDRESS OF APPLICANT INSTITUTION:
City of Hope Medical Center, Duarte, California

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

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

It is planned to extend observations on the rates of leukocyte production and delivery into the peripheral circulation in leukemic and non-leukemic individuals, and to delineate further the changes which may be produced in the marrow by the application of leukopheresis employing the Cohn Blood Fractionator. Further studies will be made on the possibility of obtaining clinically beneficial results by leukopheresis in patients with high count leukemias. These studies will be performed with and without concurrent chemotherapy in order to determine the most favorable combination of effects. Studies will be continued on the effects of the administration of buffy coat on controlling hemorrhage in patients and any reactions that occur. An attempt will be made to develop suitable animal test procedures which will allow rapid and reliable assays of these effects. It is proposed to test well-defined cell types isolated from the buffy coat and fractions thereof with regard to their effectiveness. Studies of the distribution and removal of labeled granulocytes and erythrocytes will be extended with a view to delineating differences between leukemic and non-leukemic individuals which might give important clues as to the mechanism of defects of disposition and utilization in leukemia.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Howard E. Bierman

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

SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

PRELIMINARY

PHS-398

Form Approved

C-2271 (C4)
Bio. (5)

Prepared for the Medical Sciences Information Exchange. Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

COPY

Metabolic Transformation of Radioactive Estrogens

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Thomas F. Gallagher, Ph.D., Member, Sloan-Kettering Institute
Chief, Divisions of Steroid Biochemistry & Steroid Metabolism, Sloan-Kettering Institute
Charles T. Beer, Ph.D., Research Fellow, Sloan-Kettering Institute

NAME AND ADDRESS OF APPLICANT INSTITUTION

Sloan-Kettering Institute for Cancer Research
410 East 68th Street, New York 21, New York

SUMMARY OF PROPOSED WORK *(300 words or less — omit confidential data)*

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

With the developments made in these laboratories this past year, it should now be practical to isolate and identify the principal metabolites of estradiol excreted in the urine by humans. This project has been initiated and it is planned to push it to a successful conclusion as rapidly and as precisely as possible. In the course of this work attempts will be made to obtain whatever information is deemed essential to this end. For example, it must be established whether small doses and large doses of estradiol are metabolized in the same way, whether sex, age, cycle and the like [illegible] and to what significance. The major effort however will be to define the metabolites of estradiol and perhaps estrone.

SIGNATURE OF PRINCIPAL INVESTIGATOR

SIGNATURE OF [illegible]

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Sloan-Kettering Division of Cornell University Medical College.

Grant No.	Period of Operation	Amt. App.
C-2271	6/10/49 - 6/50	$22,775
2271 C1	7/50 - 6/51	22,775
2271 C2	7/51 - 6/52	22,775
2271 C3	7/52 - 6/53	$22,775
2271 C4	7/53 - 6/54	22,775
2271 C5	7/54 - 6/55	25,160 *

* Commitment

Reserved for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2271(C5)
Biochem. (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Metabolic Transformation of Radioactive Estrogens by Humans

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

Thomas F. Gallagher, Ph.D., Member, Sloan-Kettering Institute
Chief, Divisions of Steroid Metabolism and Steroid Biochemistry
Charles T. Beer, Ph.D., Research Fellow, Sloan-Kettering Institute

NAME AND ADDRESS OF APPLICANT INSTITUTION

Sloan-Kettering Institute for Cancer Research, Research Unit of Memorial Center for Cancer and Allied Diseases
410 East 68th Street, New York 21, New York

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

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

It is planned to isolate, identify and characterize the metabolites of estradiol-17β other than the three well known end products, estrone, estradiol, and estriol, which account for less than 50 percent of the total metabolites excreted.

Estradiol-17β labeled with carbon-14, and possible in certain experiments with either deuterium or tritium, will be administered to human subjects either by vein, intramuscularly, or subcutaneously. Complete collections of urine and feces will be made and the total amount of carbon-14 present in the excreta will be determined by combustion and analysis of carbon dioxide in internal gas counters. The urine will be hydrolysed with β-glucuronidase obtained from beef liver and by the enzyme from bacterial sources. The metabolites of the estrogens will be fractionated into neutral, phenolic and acidic fractions by the best established procedures. Appropriate counting [illegible] fractions including the "spent" urine. The phenolic fractions will be [illegible] divided into ketonic and non-ketonic fractions and the distribution of [illegible] activity in each of these fractions will be investigated. Where appropriate, carrier amounts of the known estrogens, estrone, estradiol and estriol will be added and an accurate estimate of the amount of these metabolites obtained by means of isotopic dilution. Where radioactivity is encountered elsewhere than in these known compounds, isolation will be attempted by conventional methods. If and when an unknown metabolite is isolated, it will be characterized by the conventional means and studies of its chemical structure will be undertaken. Finally when these are successful, the synthesis of the compound will be undertaken in order to provide carrier material for further radiochemical and biological investigations. Submitted for period beginning - July 1954

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

IDENTIFY SCHOOL

Grant No.	Period of Operation	Amt. Appr.	Grant No.	Period of Operation	Amt. Appr.
C-2271	6/10/49 - 6/50	$22,775	C-2271 C5	7/54 - 12/55	$37,740 *
2271 C1	7/50 - 6/51	22,775	2271 C6	1/56 - 12/56	35,160 *
2271 C2	7/51 - 6/52	22,775	2271 C7	1/57 - 12/57	25,160 *
2271 C3	7/52 - 6/53	22,775	2271 C8	1/58 - 12/58	25,160 *
2271 C4	7/53 - 6/54	22,775			

* Commitment

Prepared for the Medical Sciences Information Exchange. Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT No. (Do not use this space) C-2271(C6)

B16 (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Metabolic Transformation of Radioactive Estrogens by Humans

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

Thomas F. Gallagher, Ph.D., Member, Sloan-Kettering Institute; Chief, Division of Steroid Metabolism and Steroid Biochemistry

Stephen Kraychy, Ph.D., Res. Associate, Sloan-Kettering Institute

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Sloan-Kettering Institute for Cancer Research
410 East 68th Street, New York 21, New York

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

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

It is planned to isolate, identify and characterize the metabolites of estradiol-17β other than the three well known end products, estrone, estradiol, and estriol, which account for less than 50 percent of the total metabolites excreted.

Estradiol-17β labelled with carbon 14, and possibly in certain experiments with either deuterium or tritium, will be administered to human subjects either by vein, intramuscularly, or subcutaneously. Complete collections of urine and feces will be made and the total amount of carbon-14 present in the excreta will be determined by combustion and analysis of carbon dioxide in internal gas counters. The urine will be hydrolyzed with β-glucuronidase obtained from beef liver and by the enzyme from bacterial sources. The metabolites of the estrogens will be [illegible] fractionated into neutral, phenolic and acidic fractions by the best established procedures. Appropriate counting will be made of all fractions including the "spent" urine. The phenolic fraction will be subdivided into [illegible] fractions and the distribution of radioactivity in each of these fractions will be investigated. [illegible] appropriate [illegible] amounts of [illegible] estradiol and estriol will be added and an accurate estimate of the amount of these metabolites obtained by means of isotopic dilution. Where radioactivity is encountered elsewhere than in these known compounds, isolation will be attempted by conventional methods. If and when an unknown metabolite is isolated, it will be characterized by the conventional means and studies of its chemical structure will be undertaken. Finally when these are successful, the synthesis of the compound will be undertaken in order to provide carrier material for further radiochemical and biological investigations. Submitted for period beginning-January 1956 Investigations. Submitted for

SIGNATURE OF PRINCIPAL INVESTIGATOR: T. F. Gallagher

Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified: School: Sloan-Kettering Div. of Cornell Univ. Med. Coll.

Grant No.	Period of Operation	Amt. Appr.	Grant No.	Period of Operation	Amt. Appr.
C-2271	6/10/49 - 6/50	$22,775	C-2271 C5	7/54 - 12/55	$37,740
2271 C1	7/50 - 6/51	22,775	2271 C6	1/56 - 12/56	26,790
2271 C2	7/51 - 6/52	22,775	2271 C7	1/57 - 12/57	25,160* 26,790
2271 C3	7/52 - 6/53	22,775	2271 C8	1/58 - 12/58	25,160* 26,790
2271 C4	7/53 - 6/54	22,775			

* Commitment

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2271(07) 2
Bio (6)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md. PRELIMINARY

TITLE OF PROJECT:

Metabolic Transformation of Radioactive Estrogens by Humans

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

T. F. Gallagher, Ph.D., Member, Chief, Division of Steroid Metabolism and Steroid Biochemistry
Stephen Kraychy, Ph.D., Research Associate, S.K.I.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Sloan-Kettering Institute for Cancer Research
410 East 68th Street, New York 21, New York

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is proposed to continue the investigations along very much the same lines that have been pursued during the past year. Specifically, further synthetic attempts have been made to identify various of the as yet unknown metabolites of estradiol-17β. These synthetic compounds have been studied biochemically as well, both for their estrogenic properties as well as other physiological and pharmacological effects. Further fractionation of the urinary metabolites of estradiol-17β will be continued in an attempt to isolate and identify new compounds. The methodological investigations which are fundamental to an accurate study of estrogen metabolism will be continued in an attempt to devise more suitable and less laborious fractionation procedures. Finally, insofar as possible, attempts will be made to study the production of certain specified metabolites under various normal and pathological situations where sufficient accuracy is implied from the preceding [illegible] to afford a suitable measure of confidence in the results.

SIGNATURE OF PRINCIPAL INVESTIGATOR: T. F. Gallagher

Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified: Sloan-Kettering Div. of Cornell Univ. Med. Coll.

SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

PENDING - JUNE 1956 COUNCIL

PHS-166
REV. 5-54

Form Approved
Budget Bureau No. 92-R001.2

NOTICE OF RESEARCH PROJECT

BIO MEDICAL SCIENCES INFORMATION EXCHANGE

NATIONAL ACADEMY OF SCIENCES — NATIONAL RESEARCH COUNCIL

PROJECT NO. (Do not use this space)
C-2187
Rad. (1)

SUPPORTING AGENCY: Public Health Service

TITLE OF PROJECT:

Investigation of Application of Scintillation Counters to Multiple Tracer Experiments

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

PRINCIPAL INVESTIGATORS:

G. L. Brownell, Ph.D. Associate in Physics
Physics Research Laboratory
Department of Medicine

NAME AND ADDRESS OF AGENCY OR INSTITUTION:

Massachusetts General Hospital, Boston 14, Mass.

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

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

It is proposed to study the pulse spectra of various isotopes placed within the well scintillation crystal and other scintillation detectors.

The spectra will be recored with a differential discriminator and graphical recording mechanism. Commonly used isotopes, such as I^{131}, As^{74}, Fe^{59}, Cr^{51}, K^{42}, Na^{24} and the bremstrahlung from P^{32} will be studied. The results will be [illegible] establish useful criteria in the use of pulse height [illegible] differential determination of multiple tracers. The results of this investigation should be particularly important in the use of tracer studies following therapeutic doses of radioiodine.

Submitted for period

SIGNATURE OF PRINCIPAL INVESTIGATOR Gordon L. Brownell

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

SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. App.
C-2187	1/54 - 12/54	$4,255

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space) C-2187(C)
RAD (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

INVESTIGATION OF APPLICATION OF SCINTILLATION COUNTERS TO MULTIPLE TRACER EXPERIMENTS

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

Gordon L. Brownell, Ph.D., Assoc. in Physics
Head, Physics Research Laboratory; Dept. of Medicine

S. Aronow, Ph.D., Research Assoc.
Physics Research Laboratory; Dept. of Medicine

NAME AND ADDRESS OF APPLICANT INSTITUTION: Massachusetts General Hospital
Boston 14, Massachusetts

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

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

Numerous physiological experiments involve the measurement of more than one isotope in the same sample. Scintillation counters offer considerable promise for this differential measurement because of linear response of pulses with energy absorption in the crystal. Studies will be made on the pulse height spectra observed with various scintillation crystals and with samples placed within and without the crystal. Analysis of these spectra will be made to determine the optimum technique of simultaneous measurement of such isotopes as I^{131}, As^{76}, K^{42}, Fe^{59}, $I^{...}$, Na^{24} and the bremsstrahlung from P^{32}.

Liquid and plastic scintillators will be used in the study of beta ray spectra of various isotopes to determine the feasibility of this method for differential [illegible], the problem of measuring radiation subsequent to neutron activation analysis will be investigated with the aim of developing sensitive methods for measuring trace quantities of chemical material.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Gordon L. Brownell

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

SCHOOL: Harvard Medical School

Submitted for period beginning - January 1955

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2187	1/54 - 12/54	$4,255
2187 C1	1/55 - 12/55	6,007
2187 C2	1/56 - 12/56	6,000 *
2187 C3	1/57 - 12/57	6,000 *

* Commitment

PHS REV

Form Approved
Budget Bureau No. 92-R001.2

NOTICE OF RESEARCH PROJECT

BIO-SCIENCES INFORMATION EXCHANGE

SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

PROJECT NO (Do not use this space)
C-2187 (C2)
Rad. (5)

SUPPORTING AGENCY: Public Health Service

TITLE OF PROJECT: "Investigation of Application of Scintillation Counters to Multiple Tracer Experiments"

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

G.L. Brownell, Ph.D. Assoc. in Physics -Physics Research Lab.-MGH

W.S. Michel, Ph.D. Res. Assistant - Physics Research Lab. - MGH

NAME AND ADDRESS OF INSTITUTION:

Massachusetts General Hospital, Boston 14, Massachusetts

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.

Pulse height spectrometer studies have shown that NaI well counters and scintillating plastic well counters are useful in the differential measurement of two or more isotopes. For instance Na^{24} can be counted with high efficiency in the NaI well but low efficiency in a plastic well of suitable design whereas K^{42} has high efficiency in a plastic well and low efficiency in the NaI well. The two measurements allow the separation of two isotopes in the same biological sample.

Studies on separation of isotope pairs by various physical techniques are being continued. The requirements in sample preparation are also being studied and practical technics evolved.

The application of isotope separation to activation analysis is to be investigated.

Submitted for period beginning-January 1955

SIGNATURE OF PRINCIPAL INVESTIGATOR: Gordon L. Brownell

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

SCHOOL

Submitted for period beginning-January 1956

INVESTIGATOR—DO NOT USE THIS SPACE

Grant No,	Period of Operation	Amt. Appr.
C-2187	1/54 - 12/54	$4,255
2187 C1	1/55 - 12/55	6,007
2187 C2	1/56 - 12/56	6,389
2187 C3	1/57 - 12/57	~~6,000~~ * 6,389

* Commitment

Prepared for the Medical Sciences Information Exchange. Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2154
Biochem. (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Studies on the effects of combined radiations on enzyme systems.

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

Henry T. Yost, Jr., Principal Investigator, Instructor, Department of Biology

Research Assistant--to be hired

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Amherst College, Amherst, Mass.

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

To the Medical Sciences Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The projected research is to deal with the effects of various radiations and combinations of radiations on certain enzymes which utilize several different substrates, and on the multi-enzyme systems of the mitochondria. It is hoped that information will be obtained concerning the number of active sites involved in "two-headed" enzyme action [illegible] that more can be learned regarding the nature of specific substrate protection of enzymes against radiation. It is also hoped to extend [illegible] studies of radiation effects to the mitochondria with the view that such studies will further the knowledge of radiation damage to cells and prove a basis for understanding the differential sensitivity of various tissue types.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Henry T. Yost, Jr.

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

SCHOOL: Amherst College

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. App.
C-2154	1/54 - 12/54	$5,508
2154 C1	1/55 - 12/55	4,508 *

* Commitment

PHS 156
REV

Form Approved
Budget Bureau No. 82-R201.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2154(C)
Bio. (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Studies of the effects of combined radiations on enzyme systems.

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

Henry T. Yost, Jr., Asst. Prof. of Biology, Principal Investigator

Hope Robson, Research Associate

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Amherst College, Amherst, Mass.

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

To the Medical Sciences Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The results of past research indicate that cytochrome oxidase is extremely sensitive to ultraviolet radiation of wavelength 2600 Å. (Yost and Robson, in manuscript) These results are of interest as 2600 is one of the major "killing" wavelengths; and in the past most of the effect has been attributed to changes in the nucleic acids. The present approach will continue these findings and attempt to determine whether cells which are radiated with ultraviolet have inactivated cytochrome oxidase.

In addition, work is projected on the effects of ionizing radiations on the cytochrome oxidase system. In view of the differential in sensitivity between rapidly dividing cells and non-dividing [illegible] important to elucidate the action of radiations on [illegible] system from different systems.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL Graduate

Submitted for period beginning - January 1955

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2154	1/54 - 12/54	$5,508
2154 C1	1/55 - 12/55	4,508
2154 C1S1	4/55 - 12/55	1,620

PHS 166
REV. 12-52

Form Approved
Budget Bureau No. 92-R001.2

Prepared for the Medical Sciences Information Exchange. Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space) C-B154(C2)

B10 (c)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Studies on the effects of combined radiations on enzyme systems.

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

Henry T. Yost, Jr., Asst. Prof. of Biology, Principal Investigator

Hope H. Robson, Research Associate

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Amherst College, Amherst, Massachusetts

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

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

The proposed research will deal with the effects of various radiations on the enzymes of the particulate systems of cells. Four lines of interest are being followed. First, an investigation of the mode of action of ultraviolet radiation in the inactivation of cytochrome oxidase is in progress. This project involves a determination of the exact action spectrum and an attempt to delimit those compounds (or the compound) which are initially altered by the radiation. Secondly, an attempt is being made to determine the effects of ionising radiations on several of the particulate enzymes concerned with oxidative metabolism. It is hoped to determine the effect of radiations on the system under conditions of high cytochrome oxidase activity and under conditions of cytochrome oxidase inhibition. Thirdly, attempts are being made to isolate cytochrome oxidase from the particulate complex [redacted] determine how [redacted] of the oxidase molecule, and how much is the result of disorganization of the particulate structure. Lastly, studies are being carried out on two types of plant tissue (normal and crown gall) to determine whether there is a difference in the response of the particulate enzymes (particularly cytochrome oxidase) to radiation.

It is hoped that these studies will lead to a better understanding of the problem of differential sensitivity of various cells to radiations, and will provide some basis for the explanation of the increased sensitivity under cytochrome inhibition.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Henry T. Yost, Jr.

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

Submitted for period beginning-January 1956

Grant No.	Period of Operation	Amt. Appr.	Grant No.	Period of Operation	Amt. Appr.
C-2154	1/54 - 12/54	$5,508	C-2154 C2S	4/56 - 12/56	$3,220
2154 C1	1/55 - 12/55	4,508	2154 C3	1/57 - 12/57	7,006 *
2154 C1S	4/55 - 12/55	1,620	2154 C4	1/58 - 12/58	7,006 *
2154 C2	1/56 - 12/56	6,128			

* Commitment

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FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-2091
Endo (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

COPY

Effect of Hormones on Metabolism of Isolated Tissues

Support from this source terminated 12/54

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Olof H. Pearson, M.D., Associate, Sloan-Kettering Institute, Head, Metabolism Laboratory, Division of Clinical Investigation

Milton S. Grossman, Ph.D. Research Fellow, Sloan-Kettering Institute

NAME AND ADDRESS OF APPLICANT INSTITUTION

Sloan-Kettering Institute for Cancer Research, Memorial Center for Cancer and Allied Diseases, 444 East 68th Street, New York City 21, New York

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes

The aim of these studies is to determine the effect of alterations of hormone balance and of in vitro addition of hormones on the intermediary metabolism of isolated rat muscle and liver tissues in order to elucidate mechanisms by which hormones exert their effect on metabolic processes.

It is proposed to alter the endocrine balance of the whole animal and then to determine the ability of the isolated tissue of the experimental animal to utilize various substrates in comparison with the tissues of normal animals. In hormone deficient animals, when an alteration of substrate utilization is encountered, the specific hormone will be added to the tissue in vitro to determine whether substrate utilization will thereby be restored to normal. In vitro addition of hormones to isolated normal tissues will be studied for their effects on metabolism. By using isotopically labelled substrates it will be possible to determine the metabolic rate of each substrate utilized, i.e. the amount of the substrate which is oxidized to $C^{14}O_2$, or is incorporated in glycogen, fat, protein and various intermediary metabolites.

SIGNATURE OF PRINCIPAL INVESTIGATOR Olof H. Pearson

Sloan-Kettering Institute Division of Cornell Medical College

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Grant No.	Period of Operation	Amt. App.
C-2091	1/54 - 12/54	$6,414

Support from this source terminated 12/54

LEAVE BLANK

Prepared for the Medical Sciences Information Exchange. Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
D-3[illegible]
DRD (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md. PRELIMINARY

TITLE OF PROJECT:

Transport of Sodium Fluoride (F^{18}) in Maternal-Fetal Circulation of the Human

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

M. Michael Cohen, D.M.D. — Dept. Pediatrics, Lecturer Pediatric Stomatology, Tufts Univ. School of Medicine; Stomatologist, Boston Floating H
Prof. R. D. Evans — Prof. Physics and Dir. Radioactivity Center, M.I.T.
S. Charles Kosdon, M.D. — Assoc. Clinical Prof. Gyn and Obs., Tufts Univ. School Med; Chief of Staff Booth Memorial Hospital.
C. J. Holstakos — Research Physicist, Dept. Physics, Radioactivity Center; Radiological Safety Officer for Nuclear Reactor, Medical Dept. M.I.T.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Tufts University, Medford, Massachusetts

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

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

Radioactive NaFl (F^{18}) will be given intravenously to one group of normal healthy pregnant women at the beginning of labor. Another group will take 2 mg. of radioactive NaFl by mouth at the beginning of labor. Radioactive NaFl will in addition be given intravenously to pregnant women who show signs of complete and incomplete abortion. From the above experimental procedures accurate knowledge may become available on the transfer of Fl salts from the maternal to fetal circulation. Since placental tissue will be available it will be possible to measure the radioactive Fl in placental tissue as well as determine the amount of radioactive Fl in the fetal cord blood. In cases of complete and incomplete abortion it may be possible to measure radioactive Fl in dental and extra dental tissues at post mortem examination of the fetus.

Those subjects receiving oral radioactive fluorides will have determinations of F^{18} on body fluids such as saliva, blood and urine of the mother as well as fetal cord blood, amniotic fluid and placental tissues.

SIGNATURE OF PRINCIPAL INVESTIGATOR —

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

SCHOOL: Tufts University School of Medicine

— INVESTIGATOR — DO NOT USE THIS SPACE

PENDING - OCTOBER 1956 COUNCIL

PHS [illegible]
REV. [illegible]

Form Approved

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

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PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO (Do not use this space)
D-331

Dental (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

A Study of the Head and Face of the American Negro Child.

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

Leonard A. Altemus - Orthodontics - Assistant Professor and Acting Head of the Department.

Coleman E. Tuckson - Oral Roentgenology - Assistant Professor and Director of the Division.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Howard University
2441 Sixth Street, N.W.
Washington 1, D.C.

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

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

The purpose of this study is to collect data on the head and face of the American Negro child. The study will be divided into two phases: (1) an initial mass survey, (2) a long range study.

The initial study will consist of:

Dental examinations of approximately 3000 Negro children ages 12-16 years will be made in the public schools of the District of Columbia. The data to be collected will include dental age, incidence of malocclusion and personal history. From this group a sample of 100 children with normal occlusion will be selected. Additional data to be collected on the smaller group will include: hand x-rays, cephalometric x-rays, dental models, and height and weight to be recorded using Wetzel's grids.

The Long Range Study will consist of:

Dentofacial examinations of all child patients seen in the Howard University Dental Clinics up to 16 years. The length of the study will be five years and approximately 600 children per year will be examined. The techniques to be used in the collection of data on these children are as follows: hand x-rays, cephalometric x-rays, height and weight recorded using Wetzel's grids, dental ages and dental models. These data will be collected both serially and cross-sectionally. The data will be analyzed and norms established. An atlas of skeletal maturation will be compiled using the hand x-rays. The norms established will be compared with similar studies on American Caucasian children.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL Dental

INVESTIGATOR — DO NOT USE THIS SPACE

NIH

PHS-166
REV. 10-52

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-1619
MG (1)

CONTRACTING AGENCY: FEDERAL SECURITY AGENCY, PUBLIC HEALTH SERVICE

TITLE OF PROJECT:

The Effect of Irradiation Upon the Uptake of P32 by the DNA Fraction of Human Cervical Carcinoma

Names, departments, and official titles of PRINCIPAL INVESTIGATOR(S) and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Melvin L. Taymor, M.D.
Gynecology, Instructor

NAME AND ADDRESS OF INSTITUTION:

Boston University School of Medicine
80 E. Concord St., Boston, Mass.

APPLICANT — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. App.
C 1619	1/1/52 - 12/31/52	$4,000

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

In the Program of Exchange of Information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It has been previously shown that irradiation causes a decrease in the uptake of radioactive phosphorus by the desoxyribosenucleic acid fraction of animal tumors, and more recently, by this investigator, by the DNA fraction of human cervical carcinoma tissue. It is hoped to apply this phenomenon as a test for radiosensitivity or radioresistance in cervical carcinoma after a trial dose of irradiation has been given, in order that radioresistant cases may get the benefit of early surgery.

A dose of P32 will be given, two points on the DNA equilibrium curve will be obtained by cervical biopsies taken one and five days after the injection, and 800r tumor dose x-ray will be administered between the two biopsies. Patients who are to be treated primarily with surgery will serve as controls, and will receive the same amount of P32 with similar biopsies.

It is expected that a good radiation reaction will depress the DNA specific activity at the time of the second biopsy so that when plotted on a graph a line drawn between the first and second biopsy specific activity levels will have a flatter slope than that of radioresistant or control cases. In this way it is hoped to be able to determine what cases will have a poorer chance of responding to full irradiation therapy.

Submitted for period
... - November 1951

SIGNATURE OF ...
INVESTIGATOR ...
Identify the Professional School (medical, dental, public health, etc.) with which ... connected.
SCHOOL Harvard Medical School

SIGNATURE OF PRINCIPAL INVESTIGATOR

PHS-166-1 (RG) REV. 6-49
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NOTICE OF RESEARCH PROJECT

BIO SCIENCES INFORMATION EXCHANGE

NATIONAL ACADEMY OF SCIENCES — NATIONAL RESEARCH COUNCIL

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NOT FOR PUBLICATION OR PUBLICATION REFERENCE

SEP 10 1952

PROJECT NO. (Do not use this space)

C-1619 (0)

SUPPORTING AGENCY: Public Health Service SUPPORT FROM THIS SOURCE TERMINATES 4/54

TITLE OF PROJECT: The Effect of Irradiation Upon the Uptake of P32 by the DNA Fraction of Human Cervical Carcinoma.

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

Melvin L. Taymor, M.D., Instructor in Gynecology

Leroy Klein, Dept. of Biochemistry, Consultant in Biochemistry

NAME AND ADDRESS OF AGENCY OR INSTITUTION:

Boston University School of Medicine, Boston, Massachusetts.

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

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

The purpose of this study is to delineate the effect of irradiation upon the uptake of P32 by the desoxyribosenucleic acid fraction of human cervical carcinoma tissue. A series of patients under x-ray treatment for carcinoma of the cervix, after having recieved a tissue tumor dose of about 1000r, will receive an injection of P32. Biopsies will be obtained 2 and 48 hours after injection, the tissue fractionated, and the specific activities of the DNA fraction at these times determined. The uptake in these cases will be compared with a group of cervical cancers who have not received any irradiation. It is the hope that with follow up of these patients, a comparison of the uptakes in these two groups will throw some light upon the problem of radioresistance and radiosensitivity.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Melvin L. Taymor

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

SCHOOL: Boston University School of Medicine

Grant No.	Period of Operation	Amt. Appr.
C-1619	1/52 - 12/52	$4,000
1619 C1	1/53 - 4/54	4,000

Support from this source terminated 4/54.

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FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-1608(C3)
Rad (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

The Effects of Gamma Radiation on the Central Nervous System

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

Franc D. Ingraham, M.D., Neurosurgeon-in-Chief
Edgar A. Bering, Jr., M.D., Assistant Neurosurgeon
Assistant Investigator (not chosen)

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Children's Medical Center, 300 Longwood Avenue, Boston 15, Massachusetts

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

In the Medical Sciences Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are furnished to investigators who request such information. Your summary is to be used for these purposes.

The investigation of the effect of gamma radiation on the central nervous system has been carried out using Ta^{182} as a gamma radiation source and x-radiation for some guide experiments. Two series of experiments have been carried out to study the effects of Ta^{182} implanted in the cerebral hemispheres. In one experiment to study acute effects, the animals were sacrificed as soon as they had received their prescribed dose of radiation which ranged from a few r (at 3 cm. from the source) to about 5,000 r (at 3 cm. from the source). In the other experiment designed to show late changes, doses of radiation which did not produce detectable acute effects were given, and the animals allowed to survive for protracted periods of a year and longer. The histopathological changes of all these animals will be studied and related to the clinical neurological changes and electroencephalographic changes. Studies of the acute effects of radiation on the spinal cord have been investigated with Ta^{182} and x-radiation. Experiments similar to those used for cerebral radiation have been carried out. Spino-electrographic studies indicate that there is complete destruction of all nervous tissue over a region greater than appears grossly affected. Histological studies suggest that the acute effects of the reflex arcs of the spinal cord have been investigated to determine if there has been any primary neuronal damage in regions where the radiation has not apparently caused conduction damage. Studies of peripheral nerves are being made, but these have proven difficult because of exposure to personnel.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Franc D. Ingraham

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

SCHOOL: Harvard Medical School

Submitted for period beginning - November 1954

INVESTIGATOR — Grant No.	Period of Operation	Amt. Appr.	DO NOT USE THIS SPACE Grant No.	Period of Operation	Amt. Appr.
C-1608	11/51 - 10/52	$7,339	C-1608 C3	11/54 - 10/55	$7,674
1608 C1	11/52 - 10/53	8,970	1608 C4	11/55 - 10/56	7,674 *
1608 C2	11/53 - 10/54	8,970			

* Commitment

PHS 166
REV. 10-52

Form Approved
Budget Bureau No. 72-R001.2

NOTICE OF RESEARCH PROJECT
Medical Sciences Information Exchange
Not for Publication

Project No. C 1579

Supporting Agency: Public Health Service

Title of Project: "A Program to Evaluate the Efficiency of Rotational Therapy at 250 KV in the Treatment of Neoplastic Disease."

Professional Personnel:
James J. Nickson, M.D., Chairman of Department of Radiation Therapy, Member of Sloan-Kettering Institute
Samuel M. Seal, M.D., Clinical Assistant, Dept. of Radiation Therapy

Name of Institution: Memorial Center for Cancer and Allied Diseases
444 East 68th Street, New York 21, N. Y.

Summary of proposed work:

The purpose of the proposed project is to provide clinical and physical measurements by which the results of 250 KV X-ray rotational therapy in deep-seated neoplastic disease may be compared with: a) MEV X-ray rotational therapy, and b) standard multiple port beam directed techniques using 250 KV and 1 MEV X-ray machines. Information obtained will also be used to complete the development of a universal rotational unit suitable for smaller institutions.

Three methods of rotation will be used: 1) vertical rotation with the x-ray beam describing an arc whose center of radius is located within the patient's tumor; 2) horizontal rotation performed similarly to method 1; and 3) cone rotation with the x-ray beam angled toward the tumor so that the central ray passes through the axis of

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NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1579(C)

Rad. (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

COPY

A Program to Evaluate the Efficiency of Rotational Therapy at 250 KV in the Treatment of Neoplastic Disease.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

J. S. Hickson, M.D., Attending Radiation Therapist, Memorial Hospital
S. H. Seal, M.D., Clinical Assistant, Department of Radiation Therapy, Memorial Hosp.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Memorial Center for Cancer and Allied Diseases, 444 E. 68 St., New York 21, New York

SUMMARY OF PROPOSED WORK (300 words or less – omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Work will consist mainly of plotting isodose curves for the various parts of the body. It has been found that it is not necessarily the best procedure to place the tumor over the axis of rotation. Some tumors, such as those in the pelvis, are best treated with the tumor just off the axis of rotation by 1 or 2 cm. It is found that the greatest depth dose is to be had in this area due to the absorption of the heavy muscular tissue and bone. Hence a set of Selsyn motors has been attached to the shafts of the drive motors on the cross-feed and these Selsyns in turn activate a pair of Selsyn motors under the rotating disc on the control panel. The Selsyns under the control panel carry a pin-point light, which shows the position of the axis of rotation at all times. This arrangement therefore will permit us to move the tumor slightly off the axis of rotation and keep it thus for treatment.

A second problem is the trial of a method of using a very thin, slit-like beam of x-ray, the purpose of which is to treat only the chest wall, via rotation therapy. The patient will sit in a special chair and an outline of his chest will be made on a sheet of transparent paper. By means of the Selsyn motor control, it will be possible to place this transparent outline of the patient's chest on the rotating disc of the control panel and by adjusting the electric cross feed motors keep the beam applying only on the surface of the chest so that little if any of the radiation will get into the lung tissue. We hope that this procedure may eliminate the condition of pulmonary fibrosis that so frequently happens after radiation therapy to the breast.

SIGNATURE OF PRINCIPAL INVESTIGATOR S. H. Seal M.D.

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Grant No.	Period of Operation	Amt. Appr.
C 1579	1/1/52 - 12/31/52	$20,000
1579 C1	1/1/53 - 12/31/53	13,000
1579 C2	1/1/54 - 12/31/54	13,000*

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*Commitment

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PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1579(C2)
N.S.S. (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

A Program to Evaluate the Efficiency of Rotational Therapy at 250 KV in the Treatment of Neoplastic Disease

Support from this source terminated 12/54

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

James J. Nickson, M.D., Member, Sloan-Kettering Institute; Attending Radiation Therapist, Memorial Center
Samuel M. Seal, M.D., Clinical Assistant Radiation Therapist, Memorial Center

NAME AND ADDRESS OF APPLICANT INSTITUTION

Sloan-Kettering Institute for Cancer Research
Memorial Center for Cancer and Allied Diseases, 410 East 68th Street, New York 21

SUMMARY OF PROPOSED WORK (300 words or less—omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The rotation therapy unit, which until now has been used for treating centralized tumors in the vertical or horizontal positions only, is being modified to include tumors of large mass, decentralized tumors, and sheath type of tumors. The following procedures are outlined for the coming year which will permit us to include these types of tumors:

(1) Conical rotation: This type of therapy, by means of a wax cone and wedge filter, permits one to build a homogenous sphere of radiation and is primarily utilized in pelvic cancers. Emphasis will be placed upon cancer of the cervix and uterus but bladder and rectal cancers also may be found to be suitable for treatment.

(2) Breast therapy: For recurrent cancer of the breast, confined to the chest wall, selsyen control of the platform will be installed permitting a knife-type x-ray beam to be used, thereby keeping the beam out of the lung fields. The primary object will be to avoid pulmonary fibrosis which frequently follows conventional therapy.

(3) Automatic dose calculator: This is now under construction. It will be calibrated against fixed fields so that those smaller institutions which have no physicists can undertake rotation therapy with confidence as to the dosage levels.

SIGNATURE OF PRINCIPAL INVESTIGATOR S. H. Seal M.D.

Sloan-Kettering Div. of Cornell Univ. Med. School

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Grant No.	Period of Operation	Amt. App.
C-1579	1/52 - 12/52	$20,000
1579 C1	1/53 - 12/53	13,900
1579-C2	1/54 - 12/54	13,000

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Support from this source terminated 12/54

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NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1576(C)
Radiation (2)-3

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Further studies on the destruction of normal and abnormal erythrocytes.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Claude-Starr Wright, M. D., Associate Professor of Medicine

Matthew C. Dodd, Ph. D., Associate Professor of Bacteriology

Charles A. Doan, M. D., Dean of the College of Medicine and Director of Medical Research

NAME AND ADDRESS OF APPLICANT INSTITUTION

Department of Medicine, Kinsman Hall, Ohio State University, Columbus, Ohio

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A multiphasic study of red blood cell destruction was set up for investigating the hemolytic component of post-irradiation anemia in rabbits and humans. Certain promising leads along immunologic, physical and phagocytic lines have developed from this program. Specific studies scheduled are as follows:

1.-Immunologic.- It has been shown that virus and trypsin treatment may cause changes in the antigenic character of the normal RBC, and thus render the normal cell a potentially foreign body. In vivo and in vitro irradiated RBC are to be studied for detecting possible antigenic changes.

2.-Physical.- Effect of physical trauma on the RBC as observed with micromanipulative methods.

3.-Phagocytic.- The erythrophagocytic test as developed and standardized in this laboratory has proved a most sensitive means of detecting slight alterations of the RBC surface. The mechanisms involved in this phenomenon are to be examined.

In addition to continued interest in in vivo and in vitro irradiated RBC, investigations of other types of RBC modification have been initiated. These are the sensitized, trypsinized, incubated, stored and virus-treated cells and RBC in the clinical hemolytic syndromes, malignancies and infectious diseases.

SIGNATURE OF PRINCIPAL INVESTIGATOR Claude-Starr Wright M.D.

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Grant No.	Period of Operation	Amt. App.
C-1576	11/51 - 12/53	$19,902
1576 S1	12/53 - 12/53	1,495
1576 C1	1/54 - 12/54	15,382
	LEAVE BLANK	
1576 C2	1/55 - 12/55	~~13,000~~* 12,917

*Commitment

PHS-166-1(RG)
Rev. 9-51

Form Approved
Budget Bureau No 92-2001.1

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-1576(C2)
Rad (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

SUPPORT FROM THIS SOURCE TERMINATED 6/55

Further studies on the destruction of normal and abnormal erythrocytes.

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

Claude-Starr Wright, M.D., Associate Professor of Medicine

Matthew C. Dodd, Ph.D., Associate Professor of Medicine

Charles A. Doan, M.D., Dean and Director of Medical Research, College of Medicine

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Department of Medicine, Kinsman Hall, Ohio State University, Columbus

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

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

A multiphasic study of red blood cell destruction was set up for investigating the hemolytic component of post-irradiation anemia in rabbits and humans. Certain promising leads along immunologic, physical and phagocytic lines have developed from this program. Specific studies scheduled, or under way, are:

1.- Immunologic - It has been shown that virus and trypsin treatment may cause changes in the antigenic character of the normal erythrocyte, and thus render the normal cell a potentially foreign body. In vivo and in vitro irradiated erythrocytes are also to be studied for detecting possible antigenic changes.

2.- Physical - Effect of physical trauma on the erythrocyte as observed with micromanipulative methods.

3.- Phagocytic - The erythrophagocytic test as developed and standardized in this laboratory has proved a most sensitive means of detecting slight alterations of the red blood cell surface. The mechanism in this phenomenon is being examined.

In addition to a continued study of the in vivo and in vitro irradiated erythrocyte, investigations of other types of RBC modification have been initiated. These are the sensitized, trypsinized, incubated, stored and virus-treated cells and RBC in the clinical hemolytic syndromes, malignancies and infectious diseases.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Claude-Starr Wright M.D.

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

SCHOOL: College of Medicine

Submitted for period beginning - January 1955

Grant No.	Period of Operation	Amt. Appr.
C-1576	11/51 - 12/53	$19,902
1576 S1	12/1/53 - 12/31/53	1,495
C-1576 C1	1/54 - 12/54	$15,382
1576 C2	1/55 - ~~12/55~~ 6/55	12,917

SUPPORT FROM THIS SOURCE TERMINATED 6/55

NOTICE OF RESEARCH PROJECT
Medical Sciences Information Exchange
Not for Publication

C O P Y

Supporting Agency: Public Health Service — Project No. C-1565 RAD (1)

Title of Project: Experimental Study of the Effect on the Brain of Local Application of Beta Ray Emitting Isotopes.

Professional Personnel:
Theodore Rasmussen, M.D., Professor of Neurosurgery
Burton Hoffman, M.D., Instructor of Neurosurgery
Alfred Kessler, M.D., Resident in Neurosurgery
Paul Northrop, M.D., Assist. Resident in Neurosurgery

Name of Institution: University of Chicago Clinics and Medical School

Summary of Proposed Work:

We plan to study the effect of local implantation of beta emitting isotopes in normal brain tissue with particular reference to the electroencephalographic and histological changes produced. A process has been devised in which silver^{111} and yttrium^{90} can be precipitated onto gelfoam. This gelfoam carrying various intensities of radiation will be placed in the brain and the tolerance of the neurones, glial cells and vascular framework to the beta rays emanation determined. If a sufficiently high intensity of beta radiation can be safely applied to the brain in this way it might add to the effectiveness of our present treatment of those brain tumors which can not be completely removed surgically.

Grant No.	Period of Operation	Amt. Approved
C 1565	11/1/51 - 10/31/52	$9,828

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

C-1563 (C58)
PART I (3)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT: A qualitative and quantitative study of the reactive mechanisms in the reticulo-endothelium, with special reference to the effects of radioactive colloids.

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

Baillif, Ralph N., Department of Anatomy, Associate Professor.
Hale, A. R., Medical Student
Pitot, Henry, Departments of Pathology and biochemistry, Instructor.
Watson, Ben E. N., Department of Anatomy, Graduate Fellow.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Tulane University, Sta. 20, New Orleans 18, Louisiana

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

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

This investigation deals with the physical defense mechanisms. There is some evidence that inhibition of tumor growth rate is at least in part, dependent on any increase of reticulo-endothelial activity. The activity level of this system can be altered experimentally by differential loading with foreign colloids, alteration in diet, administration of drugs or alteration in environmental temperature. The degree of this alteration in reticulo-endothelial activity level is determined by use of the Ehrlich ascites tumor. When injections are to be made, the test material is administered either intramuscularly or intravenously while the tumor is growing intraperitoneally. In no case does the test agent act directly on the tumor.

Conditions of stress such as that engendered by growth of the ascites tumor or injections of a foreign colloidal material, produce characteristic structural alterations in the adrenal gland. The type of response seen alters as death approaches. Again, stressful conditions alter the phagocytic ability of the various reticulo-endothelial organs; these differences are determined after intravenous injections of thorotrast, by spectrophotometric analysis for thorium content of the various organs.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Ralph N Baillif

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

SCHOOL: Medicine

INVESTIGATOR — DO NOT USE THIS SPACE

PHS 186 Form Approved

Prepared by the author. U.S. Not for publication or quotation reference without permission of the author (investigator).

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this spc
C-1561
RAD (1)

CONTRACTING AGENCY: FEDERAL SECURITY AGENCY, PUBLIC HEALTH SERVICE. SUPPORT FROM THIS SOURCE TERMINATED 10/52

TITLE OF PROJECT:

Biologic effects of radiation and a test for radiation sensitivity

Give name, degree, official title and address of PRINCIPAL INVESTIGATOR(S) and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

John B. Graham, M. D. Gyn.
Ruth M. Graham — Gyn., Head Cytology Laboratory, Mass. Gen. Hospital
J. V. Meigs M. D. — Chief, Vincent Memorial Hospital (Gyn.)
M. Fremont-Smith M. D. — Gyn., Physician
M. Schultz M. D. — Radiologist
Don Fawcett M. D. — Dept. of Anatomy, Harvard Medical School

NAME AND ADDRESS OF INSTITUTION: Vincent Research Laboratory, Vincent Memorial Hospital, Massachusetts General Hospital, 32 Fruit Street, Boston 14, Massachusetts

APPLICANT — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. App.
C 1561	11/1/51 - 10/31/52	$11,593

SUPPORT FROM THIS SOURCE TERMINATES 10/52

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

In the Program of Exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your abstract is to be used for these purposes.

Radiation produces characteristic changes in the desquamated cells of the vaginal, oral and anal epithelium. In cancer of the cervix patients the proportion of cells showing these changes is an index of radio sensitivity. The patient showing few cellular changes dies of her disease; the patient showing marked cellular reaction usually survives. In mice given total body radiation the animals with little cellular reaction survive, those with marked reaction succumb. This response to radiation in animals can be changed by injection of certain steroids, i.e., stilbestrol increases the sensitivity and androgen decreases the sensitivity in males. Testosterone increases the sensitivity in females. The compounds which increase sensitivity produce a cellular reaction in desquamated cells similar to radiation. This cellular response is called S.R., since when it is present sensitivity to radiation is increased. This cellular reaction may occur spontaneously in humans.

Our purpose is to define the similarities or the differences between the radiation response and the sensitization response, and the effect one has upon the other. We will attempt to develop a practical method of applying these cytologic methods as a test of radio sensitivity in humans.

SIGNATURE OF PRINCIPAL John B. Graham

NOTICE OF RESEARCH PROJECT
Bio Sciences Information Exchange
Not for Publication
COPY

SUPPORT FROM THIS SOURCE TERMINATED 3/54

Project No. C-1555
Physic.

Supporting Agency: Public Health Service

Title of Project: Study of Bone and Soft Tissue Cross Sectional Shapes from X-rays

Professional Personnel: Walter N. Brown, Ph. D.,
Research Associate

Name of Institution: Ellen H. Richards Institute, School of Chemistry and Physics, The Pennsylvania State College, State College, Pennsylvania

Summary of Proposed Work:

In the technique developed by Mack for the quantitative determination of the mineral density of the bones of living subjects from roentgenograms, a correction is made for the absorption of x-rays by soft tissue. This correction requires numerical values for the physical area of bone and for the physical area of soft tissue present in the thin cross sectional slice of material for which the average density of bone is to be evaluated. At present, there is a source of error in the bone density technique in the uncertainty in estimation of the area values from linear measurements made on the x-ray film.

The proposed study is intended to yield data on the shape of the bone and soft tissue boundaries on the cross-sectional slice. This shape data then will be analyzed statistically and used in the preparation of suitable tables or nomographs expressing the cross-sectional areas in terms of linear measurements on the x-ray film. The availability of these tables will increase the accuracy of the Mack technique in the hands of others, substantially. The area data used in preparation of the tables also will yield numerical values for the probable deviation of the shape of the bone and soft tissue boundaries of one individual from the shape of the normal or average subject. Availability of numerical values of this deviation for various tracing paths will permit computation of the probable error introduced in the bone density determination for each of these tracing paths by the soft tissue correction procedure. The latter information will be of great value in determination of the optimum tracing positions for routine bone density determinations.

[illegible] Cornell University Medical College

Grant No.	Period of Operation	Amt. App.
C-1555	4/51 - ~~9/53~~ 3/54	$5,056

SUPPORT FROM THIS SOURCE TERMINATED 3/54

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-2490
F.H.C. (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

The Effects of Irradiation and Chemotherapeutic Agents on the Chemical and Morphologic Dynamics of Cell Division and Differentiation in Normal and Neoplastic Tissue

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Nathan B. Friedman, M.D., Director Division of Laboratories, Cedars of Lebanon Hospital, Associate Professor of Pathology, University of Southern California

James A. Sargent, M. D., Trainee, National Cancer Institute, Division of Laboratories, Cedars of Lebanon Hospital

NAME AND ADDRESS OF APPLICANT INSTITUTION

Cedars of Lebanon Hospital, 4833 Fountain Avenue, Los Angeles 29, California

SUMMARY OF PROPOSED WORK (100 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Correlation of chemical changes in certain nitrogenous constituents of tissue and body fluids with alterations produced by radiation and chemotherapeutic agents in mitotic activity.

SIGNATURE OF PRINCIPAL INVESTIGATOR Nathan B Friedman MD

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

University of Southern California

Grant No.	Period of Operation	Amt. Appr.
C-2490	12/54 - 11/55	$7,462
2490 C1	12/55 - 11/56	7,462 *

LEAVE BLANK

* Commitment

PHS-146-1(RG)
Rev. 8-53

Form Approved
Budget Bureau No. 72-R001.1

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2490(C)
PET (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT: The Effects of Irradiation and Chemotherapeutic Agents on the Chemical and Morphologic Dynamics of Cell Division and Differentiation in Normal and Neoplastic Tissue.

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

Nathan B. Friedman, M.D., Director Division of Laboratories, Cedars of Lebanon Hospital, Associate Professor of Pathology, University of Southern California.

Francis Masin, M.D., Histochemist, Division of Laboratories, Cedars of Lebanon Hospital.

Nancy Warner, M.D., Research Pathologist, Division of Laboratories, Cedars of Lebanon Hospital.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Cedars of Lebanon Hospital, 4833 Fountain Avenue, Los Angeles 29, California

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Correlation of chemical changes in tissue and body fluids with alterations produced by radiation and chemotherapeutic agents in mitotic activity and differentiation of normal and neoplastic cells.

Submitted for period beginning December 1955

SIGNATURE OF PRINCIPAL INVESTIGATOR: Nathan B. Friedman M.D.

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

SCHOOL: University of Southern California

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Approved
C-2490	12/54 - 11/55	$7,462
2490 C1	12/55 - 11/56	7,935

PHS-166
REV. 5-54

Form Approved
Budget Bureau No. 92-R001.2

C-2489 (1)

Prepared by Office of Technical Information PUBLIC HEALTH SERVICE. Not for publication or publication reference without consent of the principal investigator.

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space) C-2489 S

P.E.T. (1)

CONTRACTING AGENCY: FEDERAL SECURITY AGENCY, PUBLIC HEALTH SERVICE

TITLE OF PROJECT:
Correlation of clinical steroid chemotherapy with studies in steroid chemistry and morphologic response; excretion patterns, tissue levels, and tracer studies.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.
Ian Macdonald, M.D., Associate Clinical Professor of Surgery
Paul Kotin, M.D., Assistant Professor of Pathology
Arnold G. Ware, Ph.D., Associate Professor of Biochemistry
Rex E. Sterling, Ph.D., Instructor of Biochemistry

NAME AND ADDRESS OF INSTITUTION:
University of Southern California
3518 University Avenue, Los Angeles 7, California

SUMMARY OF PROPOSED WORK — (200 words or less — Can't be changed later)

In the Program of Exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The planned investigation is directed toward the control of steroid dependent neoplasms by induced alteration of the steroidal chemistry of the host. At the level of clinical investigation, facilities for steroid chemistry will be employed to amplify current projects in the palliative steroid therapy of steroid dependent neoplasms including breast and prostatic carcinoma. On the basic science level, our objectives are to study patients under steroid therapy with and without combined irradiation in respect to differences in steroid excretion spectra, neoplastic tissue steroid levels, and comparative isotope uptake patterns. The above studies will be correlated with serial morphologic changes, particularly in relation to stromal alterations.

In a current study of carcinoma of the uterine cervix, partition studies of urinary excretion of estrogenic steroids have shown an altered ratio in an unidentified estrogen (E^0) in post-menopausal patients, as compared with a matching group of control women. Identification of this unidentified steroid, and study of the estrogenic metabolism in such patients including tracer studies with C^{14} tagged estrogens is contemplated. Investigation of the effect of androgenic steroids in such patients, alone and in combination with irradiation, correlating possible alteration in excretion patterns with the cytologic and histologic evidence available from serial smears and sections.

SIGNATURE OF

Submitted for period
beginning - January 1955

PHS-398-1 (RG) REV. 6-49
FORM APPROVED

SIGNATURE OF PRINCIPAL INVESTIGATOR

Grant No.	Period of Operation	Amt. Appr.
C-2489	1/55 - 12/55	$38,756
2489 C1	1/56 - 12/56	30,000 *

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2489(C)
P.E.T. (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT: Correlation of clinical steroid chemotherapy with studies in steroid chemistry and morphologic response; excretion patterns, tissue levels, and tracer studies.

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

Ian Macdonald, M.D., Assoc. Clin. Prof. of Surgery
Paul Kotin, M.D., Assoc. Prof. of Pathology
Stanley Kushinsky, Ph.D., Steroid Chemist
James Demetriou, Ph.D., Biochemist
Arnold C. Ware, Ph.D., Assoc. Prof of Biochemistry
Rex E. Sterling, Ph.D., Instructor of Biochemistry

NAME AND ADDRESS OF APPLICANT INSTITUTION: University of Southern California
3518 University Avenue
Los Angeles 7, California

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The biological mechanisms responsible for steroid dependency and steroid autonomy in clinical breast cancer are being investigated along three avenues: first, biological differences in the neoplasms per se in terms of steroid uptake, utilization, and destruction and elimination; second, abnormalities in metabolic pathways of steroids in the intact host as measured by steroid excretory patterns, and; third, differences in levels of hormonal balance and enzymatic activity with associated reflections in palliative response of breast cancer to administered steroids.

Qualitative and quantitative tissue analyses for steroids, using paper chromatographic and infrared absorption spectra analysis and tissue incubation techniques are being used to study differences between neoplastic breast tissue and normal breast tissue as well as to differentiate biologically individual neoplasms. Isotopically labelled steroids (C^{14}) are being administered to patients prior to surgery for breast cancer with the view of determining differences in host metabolism and specific tumor site utilization of steroids.

Submitted for period beginning January 1956

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL Medicine

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amount Approved
C-2489	1/55 - 12/55	$38,756
2489 C1	1/56 - 12/56	31,941

PHS-146
REV. 5-56

Form Approved
Budget Bureau No. 82-R091.1

NOTICE OF RESEARCH PROJECT

BIO-SCIENCES INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

PROJECT NO. (Do not use Blank) C-2449

No. S.S. (1)

SUPPORTING AGENCY: Public Health Service

TITLE OF PROJECT: "Clinical Evaluation of Supervoltage (2 MeV and Co. 60) Therapy in Esophageal and Bronchogenic Carcinoma"

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

Dr. Maurice Lenz, Professor, Clinical Radiology
Mr. Carl B. Braestrup, Associate in Radiology

NAME AND ADDRESS OF INSTITUTION:

College of Physicians and Surgeons, Columbia University, New York, New York

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

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

The great rise in the frequency of cancer of the lung has increased the importance of treatment of this disease, yet, the five year clinical cure rate after surgery is only 5%, and it is even less after radiotherapy. Many of the failures are due to late diagnosis and extension or metastases beyond the treated area. In some cases, however, the cancer is limited to the treated area and failure must be due to inadequate local treatment.

It is proposed to investigate possible causes of failure of radiotherapy of lung cancer from the standpoint of available clinical, x-ray, microscopic, and physical tumor dosage data. The results of radiotherapy will be evaluated from information of clinical follow-up of treated patients, and radiation tissue changes in biopsy and post-mortem examination. These results will be correlated with the extent of the primary disease, extensions to other portions of the lung, to lymph nodes and to distant organs, as well as with the level of tumor dosage. A great deal of information is available on the results of 250 KV x-ray therapy from other clinics. The present study will be confined to patients treated with the 2 Million Volt and Cobalt 60 teletherapy. The Department of Physics is collaborating with us on this problem.

SIGNATURE OF PRINCIPAL INVESTIGATOR — DO NOT USE THIS SPACE: Maurice Lenz (M. Lenz)

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

SCHOOL: College of P. & S. Columbia Univ.

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2449	8/54 - 7/55	$10,362
2449 C1	8/55 - 7/56	10,362 *
2449 C2	8/56 - 8/57	10,362 *

* Commitment

NOTICE OF RESEARCH PROJECT

BIO-SCIENCES INFORMATION EXCHANGE

SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

PROJECT NO. (Do not use this space) C-2449 C1

No. S. S. (5)

SUPPORTING AGENCY: Public Health Service

TITLE OF PROJECT:

"Clinical Evaluation of Supervoltage (2 MeV and Co. 60) Therapy in Esophageal and Bronchogenic Carcinoma"

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

Dr. Ruth Guttman

Assistant Professor Radiology, Dep't of Radiotherapy, Francis Delafield Hospital

Mr. Carl Braestrup

Associated in Radiology, Dep't. of Physics, Francis Delafield Hospital

Dr. Juan Reusche, Assistant in Dep't. of Radiotherapy, and Mr. Frederick Sellmer, Machinist Francis Delafield Hospital, Part-Time, Dep't. of Physics, F.D.Hospital

NAME AND ADDRESS OF INSTITUTION:

Columbia University, New York, New York

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.

All patients included in this series will have the clinical diagnosis corroborated by microscopic tissue examination.

The radiotherapy procedures will be standardized in order to make correct evaluation possible. The 2MV xray generator will be operated mainly with stationary fields in the treatment of pulmonary cancer, while the rotational 1200 Curie teletherapy cobalt equipment will be used with moving fields. The tumor dose in pulmonary cancer will be determined mainly from phantom measurements, while the tumor dose in esophageal cancer will be measured by means of small ionization chambers, placed in contour phantoms. Some of the aims of this study will be to determine the effect of supervoltage therapy on the survival of patients with bronchogenic and esophageal cancer and to establish the relationship between tumor dose and clinical and microscopic control of the tumor growth of pulmonary and esophageal cancer. Quantitative determination of rates of erythropoiesis will be made by study of the incorporation of radioiron into hemoglobin. The erythrocyte survival in irradiated patients will be determined by autotransfusions of radioactive chromium tagged red cells and by study of survival of transfused homologous red cells using the Ashby technique of differential agglutination.

SIGNATURE OF PRINCIPAL INVESTIGATOR: [signature]

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

SCHOOL

Submitted for period beginning - September 1955

INVESTIGATOR—DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2449	8/54 - 8/55	$10,362
2449 C1	9/55 - 8/56	11,033
2449 C2	9/56 - 8/57	~~10,362~~ * 11033

* Commitment

Received for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2449(C2)
B.S.S. (3)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Clinical Evaluation of Supervoltage (2 MeV and CO 60) Therapy in Nasopharyngeal and Bronchogenic Carcinoma.

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

Doctor Ruth Satterson, Associate Professor of Radiology, Radiotherapist, Francis Del. Hosp. Columbia University
Mr. Carl Braestrup, Associate in Radiology, Columbia University, Director of Physics, Francis Delafield Hospital
Doctor Juan, Assistant in Radiotherapy Department, Francis Delafield Hospital
Mr. Frederick Bellmyr, Machinist Part-Time, Department of Physics, Francis Delafield Hospital

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Francis Delafield Hospital, 99 Fort Washington Avenue, New York 32, New York.

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

During the past year a series of 100 patients with inoperable Carcinoma of the lung, who received intensive irradiation with the Two Million Volt unit, were carefully evaluated. The effect of this type of treatment on the tumor itself, on healthy surrounding tissues and its relation to the survival of the patient, was studied. The effect on the tumor has been one of the most significant. We proved that in 3 out of 10 patients who came to autopsy, the disease had been completely destroyed by Two Million Volt irradiation.

It is the aim of the project to continue this research in the coming year. We plan to extend our investigations to the possibility of sterilising proven disease in lymph nodes, and we will study the effects of supervoltage irradiation on the internal mammary chain.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL College of Physicians & Surgeons

INVESTIGATOR — DO NOT USE THIS SPACE

PENDING - JUNE 1956 COUNCIL

PHS-1[illegible]
REV. 5-54

Form Approved
Budget Bureau No. 92-R001.2

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2453(C)
RAD (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

PRELIMINARY

TITLE OF PROJECT:

An Attempt to Modify Radiosensitivity of the Human Skin by the Use of Pharmacological Agents

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

James J. Nickson, M. D., Member, Sloan-Kettering Institute; Head, Experimental Radiation Section; Attending Radiation Therapist, Memorial Center

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Sloan-Kettering Institute for Cancer Research
410 East 68th Street, New York 21, New York

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Reflectance spectrophotometric techniques developed in this laboratory to observe oxyhemoglobin, reduced hemoglobin, and melanin content of human skin will be used to measure the alteration in x-ray induced skin changes with various chemical compounds. Techniques will be developed to apply such compounds with iontophoresis to obtain penetration to biologically significant depths. It is hoped that these techniques will permit the variation of fundamental biological parameters of importance to radiation response such as vascularity, O_2 supply, and O_2 tension in the tissue.

Experiments designed to measure the minimal detectable dose difference by this method will be continued.

Since changes in the melanin absorption spectrum are reflected in both hemoglobin readings, it is proposed to produce increased melanization with ultra-violet light before and during the x-ray reaction. By this technique, it should be possible to distinguish changes in hemoglobin reflection during the skin reaction from the general alteration in the absorption spectrum of the skin which is produced by changes in the melanin content.

Experiments utilizing the skin reaction as a biological end point will be continued in an effort to evaluate the Relative Biological Effectiveness of different qualities of radiation including the 22 Mev. electron beam from the betatron.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL **Sloan-Kettering Div. of Cornell Univ. Med. Coll.**

INVESTIGATOR — DO NOT USE THIS SPACE

PRELIMINARY

PHS-166
REV. 5-54

Form Approved
Budget Bureau No. 92-R001.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2437
Neuro(1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

DIAGNOSIS AND LOCATION OF BRAIN TUMORS WITH RADIOACTIVE POTASSIUM AND RELATED IONS

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

Bertram Selverstone, M.D.
Professor of Neurosurgery, Tufts College Medical School
Neurosurgeon-in-Chief, New England Center Hospital

Charles V. Robinson, Ph.D.
Assistant Professor of Biophysics, Tufts College Medical School
Senior Biophysicist, New England Center Hospital

NAME AND ADDRESS OF APPLICANT INSTITUTION:
New England Center Hospital
171 Harrison Avenue
Boston 11, Massachusetts

SUMMARY OF PROPOSED WORK — (200 words or less — Unclassified data)

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

Radioactive potassium administered intravenously has been shown by the investigators to exhibit high relative concentrations in brain tumors as compared with normal cerebral tissue. A pilot study has indicated that the energetic gamma emission of K^{42} can be effectively used for the preoperative diagnosis and location of certain brain tumors. They propose to make improvements in technique and instrumentation in order to develop the method as a practical means of tumor localization. A controlled study will be made of the relations among potassium exchange in tumor and brain, external counting rates, other methods of tumor localization, and findings at operation or autopsy.

SIGNATURE OF PRINCIPAL INVESTIGATOR: B. Selverstone

Submitted for period
[illegible] - 1955

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

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2437	9/54 - 8/55	$10,270
2437 C1	9/55 - 8/56	9,500 *
2437 C2	9/56 - 8/57	9,500 *

* Commitment

PHS 168
REV. 10-52

Form Approved
Budget Bureau No. 72-R001.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2437(C)
Neuro. (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

DIAGNOSIS AND LOCATION OF BRAIN TUMORS WITH RADIOACTIVE POTASSIUM AND RELATED IONS

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

Bertram Selverstone, M.D., Department of Neurology, Neurosurgery and Psychiatry, Neurosurgeon-in-Chief (Professor of Neurosurgery, Tufts University Medical School)
Charles V. Robinson, Ph.D., Physics Department, Senior Biophysicist (Assistant Professor of Biophysics, Tufts University Medical School)

NAME AND ADDRESS OF APPLICANT INSTITUTION:

New England Center Hospital
171 Harrison Avenue, Boston 11, Massachusetts

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

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

The use of radioactive potassium and of related substances is being studied for the preoperative localization of intracranial tumors. Manual scanning is now being replaced by a matched 2-channel scintillation counter permitting simultaneous counting and recording of collimated gamma beams from the two sides of the head. Patients are subsequently studied by means of electroencephalography, pneumography, and/or angiography as indicated by the clinical problem. Localizations are checked by these methods and by observations at craniotomy, as indicated. Precise localization at operation is undertaken by means of the probing Geiger Mueller counter after a second injection of an appropriate isotope.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Bertram Selverstone

Submitted for period beginning - September 1955

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

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2437	9/54 - 8/55	$10,270
2437 C1	9/55 - 8/56	10,115
2437 C2	9/56 - 8/57	~~9,500~~ * 10,115

* Commitment

PHS 166
REV. 10-52

Form Approved
Budget Bureau No. 68-R001.2

...rd for the Bio Sciences ...tion Exchange.
...ar publication or publication ...erence.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2437 (C2)

Neuro (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md. PRELIMINARY

TITLE OF PROJECT:

DIAGNOSIS AND LOCATION OF BRAIN TUMORS WITH RADIOACTIVE POTASSIUM AND RELATED IONS

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

Dr. Bertram Selverstone
Professor of Neurosurgery, Tufts University School of Medicine
Neurosurgeon-in-Chief, New England Center Hospital
Dr. Charles V. Robinson
Senior Biophysicist, New England Center Hospital

NAME AND ADDRESS OF APPLICANT INSTITUTION:

New England Center Hospital
171 Harrison Avenue, Boston 11, Massachusetts

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The preoperative localization of brain tumors by means of the isotopes of potassium is being studied, using an automatically scanning two-channel scintillation counter which has been constructed for this purpose. Since K^{42} has an extremely powerful gamma ray, problems both of shielding and of excessive bilateral penetration of the radiation have arisen. Another isotope with similar biological properties but more satisfactory radiation characteristics is being produced in the cyclotron and will be used, with gamma ray spectrometry, for brain tumor localization.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL: **Tufts University School of Medicine**

INVESTIGATOR — DO NOT USE THIS SPACE

PENDING - JUNE 1956 COUNCIL

PHS-166
REV. 1-57

Form Approved

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space) C-2429 (Formerly)
Hema. (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Experimental and Clinical Studies on the Mechanism of Anemia in Cancer

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

Shu Chu Shen - Principal Investigator; Assistant Research Professor of Medicine, Tufts College Medical School; Research Associate, Thorndike Memorial Laboratory, Boston City Hospital; Assistant Visiting Physician, Holy Ghost Hospital.
Eleanor Juranies - Technical Assistant, Cancer Research and Control Unit
Barbara Obremski - Technical Assistant, Cancer Research and Control Unit of Tufts College Medical School.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Holy Ghost Hospital, 1575 Cambridge St., Cambridge, Mass.

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

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

The mechanism of anemia in many cancer patients is not understood. Previous studies on the anemia of cancer patients have shown that mechanical interference of the bone marrow by tumor cells is not necessarily the principle cause in producing anemia. The red cell survival studies on these cancer patients observed in this laboratory also indicate that increased blood destruction is not an important factor in these cases. On the other hand, some of these anemic cancer cases, as shown in our studies, did respond to cobalt therapy. The study of the effects of cobalt on methemoglobin formation in human blood in vitro suggests that this agent, through its interference with enzymatic reduction systems, induces relative anoxia of tissues and thus stimulates some hypothetical regulatory center of erythropoiesis. With these observations, the study of the interference of hemoglobin synthesis as a result of metabolic disturbance, or possibly by histotoxic effect of tumor cells, is worthwhile undertaking.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Shu Chu Shen

Submitted for period beginning- June 1955 C-2429

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

SCHOOL: TUFTS COLLEGE MEDICAL SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2429	6/55 - 5/56	$8,802

PHS 166
REV. 10-52

Form Approved
Budget Bureau No. 72-R081.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-2429(C)
Noma (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Mechanism of Anemia in Cancer

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Shu Chu Shen, M.D., Assistant Research Professor of Medicine, Tufts University School of Medicine; Research Associate, Thorndike Memorial Laboratory, Boston City Hospital.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tufts University, Medford 55, Massachusetts

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In 1951 we treated 16 anemic cancer patients with cobaltous chloride 120 mg. to 240 mg. daily by mouth. 12 of them had hematopoietic response and 9 of them developed gastric intestinal disorder characterized by nausea and vomiting.

Because the toxic effects handicapped any further therapeutic measurement of cobaltous chloride we decided to determine first whether the toxic effect of nausea and vomiting was due to local gastric irritation or the effect on the central nervous system. Therefore, we gave cobaltous chloride 1 mg. per kilogram intravenously to three dogs. All of them in a short period developed severe nausea and vomiting. It is apparent therefore, that the toxic symptoms of gastric intestinal irritation produced by cobaltous chloride is not due to a local effect. The present study is to determine whether the small dose of cobaltous chloride given by mouth will eliminate gastric intestinal irritation but maintain the hematopoietic effect.

SIGNATURE OF PRINCIPAL INVESTIGATOR S. C. Shen

Submitted for period beginning - June 1956

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Grant No.	Period of Operation	Amount Approved
C-2429	6/55 - 5/56	$8,802
2429 C1	6/56 - 5/57	9,583

LEAVE BLANK

PHS-166-1(RG)
Rev. 8-51

Form Approved
Budget Bureau No. 52-R211

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2029 (C2)
NEW (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md. PRELIMINARY

TITLE OF PROJECT:
Mechanism of Anemia in Cancer

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

Shu Chu Shen, M.D. Assistant Research Professor of Medicine, Tufts University Medical School; Research Associate, Thorndike Memorial Laboratory, Boston City Hospital

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Trustees of Tufts College (Tufts University) Ballou Hall, Medford, Mass.

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The studies carried under this grant are briefly summarized as below:

1. Erythropoietic Effect of Cobalt Administered in Small Doses to Anemic Patients. (a) Four healthy dogs were given 250 mg. of cobaltous gluconate which contained 30 mg. of cobalt intravenously, every morning. All developed toxic symptoms of nausea and weakness shortly after administration of the drug. These results indicate that the toxic effect of G.I. disturbance was not due to local gastric irritation but rather through central or systemic means.

(b) Study of erythropoietic and toxic effect of small doses of cobalt 20-60 mg. by the oral route in ten anemic patients with epithelial cell carcinoma and nine patients with other disease with anemia for a period of 38-198 days. No toxic effect of any sort was observed. Erythropoietic effect of varying degree was observed in the majority of cases.

2. Erythropoietic Effect of Testosterone in Anemic Patients.

Testosterone (aqueous solution) was administered in doses of 25 to 50 mg., 3-4 times weekly to three anemic patients with carcinoma of breast and one patient with osteo-arthritis and urinary tract infection and one with chronic monocytosis. All three cases with carcinoma of breast failed to demonstrate any erythropoietic effect but two other patients showed a definite improvement in the hemoglobin level.

Shu Chu Shen

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

PENDING - NOVEMBER 1956 COUNCIL

PHS-'66
REV. 6-64

Form Approved
Budget Bureau No. 72-R012.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C 2408

M & G (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Studies of the Differential Uptake of Radioactive Tyrosine by Human Pigment-Cell Neoplasms Using Radioautography.

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

Thomas B. Fitzpatrick, M.D., Ph.D., Professor of Dermatology
Aaron Bunsen Lerner, M.D., Ph.D., Associate Professor of Dermatology
Howard S. Mason, Ph.D., Associate Professor of Biochemistry and Research Associate in Dermatology
Atsushi Kukita, M. D., Research Associate in Dermatology

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of Oregon Medical School, Portland, Oregon

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

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

The present project is aimed to correlate the clinical, histologic and radioactive tyrosine uptake of benign and malignant pigment-cell neoplasms. Biochemical, histochemical and radioactive tyrosine uptake studies over the past two years have led us to the conclusion that tyrosinase activity is associated with the malignant character of human pigment cells. In this, the final phase of the problem, we propose to define this difference between the benign (junctional nevus) and malignant (melanoma) pigment cell utilizing radioautographic techniques. Preliminary work on six different pigment-cell neoplasms indicates that the radioautographic technique is well-suited for this problem. Melanoma cells show an intense concentration of silver grains, while there is little or no deposition of silver grains in actively growing junctional nevus cells. To firmly establish this important observation it will be necessary to carry out a correlation of the clinical, histologic and radioautographic findings of a large number of benign and malignant pigment-cell neoplasms.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Howard B. Fitzpatrick

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

SCHOOL: University of Oregon Medical School

Grant No.

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2408	9/54 - 8/55	$7,117
2408 C1	9/55 - 8/56	5,325 *
2408 C2	9/56 - 8/57	5,325 *

* Commitment

PHS 166
REV. 10-52

Form Approved
Budget Bureau No. 72-R001.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-2408(C)
M & G (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Studies of the Differential Uptake of Radioactive Tyrosine by Human Pigment-Cell Neoplasms Using Radioautography

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Thomas B. Fitzpatrick, Professor and Head of Division of Dermatology
Howard S. Mason, Associate Professor of Biochemistry
Atsushi Kukita, Research Associate, Division of Dermatology
Masamitsu Miyamoto, Research Assistant, Division of Dermatology

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Oregon Medical School, Portland, Oregon

SUMMARY OF PROPOSED WORK (300 words or less - omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A survey of normal human pigmented tissues and benign and malignant pigment cell neoplasms is being made for tyrosinase activity with the aid of autoradiography utilising C-14 labeled tyrosine.

SIGNATURE OF PRINCIPAL INVESTIGATOR Thomas B. Fitzpatrick

Submitted for period beginning - September 1955

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Grant No.	Period of Operation	Amt. Appr.
C-2408	9/54 - 8/55	$7,112
2408 C1	9/55 - 8/56	5,633
2408 C2	9/56 - 8/57	~~5,325~~ *5670

SPACE BELOW THIS LINE FOR ADMINISTRATOR — DO NOT WRITE IN SPACE

LEAVE BLANK

* Commitment

PHS-166-1(RG)
Rev. 8-51

Form Approved
Budget Bureau No. 72-R001.1

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1867

Surg. (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

COPY

P-32 Uptake by Bladder Tumors

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Principal Investigator: Paul L. Bunce, M.D.
Assistant Professor of Surgery (Urology)
School of Medicine - Department of Surgery
University of North Carolina

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of North Carolina
Chapel Hill, North Carolina

SUMMARY OF PROPOSED WORK (200 words or less—omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

There is no way to predict behavior of bladder papillomata from histologic section. This project is intended to investigate the possibilities of early differentiation by tracer studies with P-32. Each patient would serve as his own control by comparing the activity of bladder tumor with that of a normal portion of bladder mucosa. The later behavior of the tumor would then be correlated with the initial studies.

SIGNATURE OF PRINCIPAL INVESTIGATOR

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Department of Surgery - School of Medicine
University of North Carolina

Grant No.	Period of Operation	Amt. Apr.
C 1867	1/1/53 - 5/31/54	$2,700
1867 C1	6/1/54 - 5/31/55	3,000*
1867 C2	6/1/55 - 5/31/56	3,000*

LEAVE BLANK

*Commitments

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

C-1867(C)
Surg. (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

F-32 Uptake by Bladder Tumors

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

Paul L. Bunce, M. D., Assistant Professor of Surgery (Urology), Dept. of Surgery

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Department of Surgery, School of Medicine, University of North Carolina
Chapel Hill, North Carolina

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

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

SPECIFIC AIMS: The specific aim is to investigate the metabolism of urinary bladder papillomata in the human by means of the differential radio-phosphorus uptake of the tumor compared with that of normal bladder mucosa in the same patient.

[illegible]

SIGNATURE OF PRINCIPAL INVESTIGATOR Paul L. Bunce, M. D.

Department of Identify the Professional School (medical, dental, public health, graduate or other) with which this project should be identified: School of Medicine
University of North Carolina
SCHOOL Univ. of North Carolina, Chapel Hill

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. App.
C-1867	1/53 - 5/54	$2,700
1867 C1	6/54 - 5/55	3,000
1867 C2	6/55 - 5/56	~~3,000~~ 2,997

Commitment

PHS
REV.

Form Approved
Budget Bureau

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space) 0-1867(02)

Surg (S)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

P-32 Uptake by Bladder Tumors

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL [illegible]

Paul L. Bunce, M. D.
Assistant Professor of Surgery (Urology)
Department of Surgery
University of North Carolina
Chapel Hill, North Carolina

NAME AND ADDRESS OF APPLICANT INSTITUTION:

School of Medicine, Department of Surgery, University of North Carolina
Chapel Hill, North Carolina

SUMMARY OF PROPOSED WORK — [illegible] words or less — Omit Confidential data.

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

Our specific aim has been the investigation of metabolic activity of human urinary bladder papillomata by means of the differential radiophosphorus uptake of the tumor compared with that of normal bladder mucosa in the same patient. On tissues removed by transurethral electro resection, carcinomas appear to take up more than twice as much P^{32} as the normal bladder whereas non-infiltrating tumors take up somewhat less. An attempt will be made to correlate the clinical course of the patient with the uptake of phosphorus and with the histologic sections.

Submitted for period beginning - June 1955

SIGNATURE OF PRINCIPAL INVESTIGATOR Paul L Bunce

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

SCHOOL Univ. of No. Car., Medical School

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-1867	1/53 - 5/54	$2,700
1867 C1	6/54 - 5/55	3,000
1867 C2	6/55 - 5/56	2,997

PHS 168
REV. 10-52

Form Approved
Budget Bureau No. 52-R011.3

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-1867 (03)
Surg (3)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

P-32 Uptake of Bladder Tumors

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

Paul L. Bunce, M. D.
Department of Surgery
Assistant Professor of Surgery (Urology)
School of Medicine
University of North Carolina
Chapel Hill, North Carolina

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of North Carolina, School of Medicine
Chapel Hill, North Carolina

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The uptake of radio phosphorus (p-32) by bladder tumors and by apparently normal bladder mucosa in the same patient is roughly proportional to the clinical activity and invasiveness of these tumors. We had previously believed it might be possible to differentiate benign from malignant papillomas by measuring the activity of tumor biopsied transurethrally. An unexpected finding was the high uptake of apparently normal bladder mucosa in the patients who had invasive carcinoma in another part of the bladder. This suggests, of course, that bladder carcinoma represents a fundamental alteration of the entire bladder mucosa. To prove this hypothesis we plan to measure the P-32 uptake of bladder mucosa in cases of inflammatory disease, prostatic obstruction, and all stages of bladder tumors.

Submitted for period beginning - June 1956

SIGNATURE OF PRINCIPAL INVESTIGATOR: Paul L Bunce

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

SCHOOL: Medicine

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amount Approved
C-1867	1/53 - 5/54	$2,700
1867 C1	6/54 - 5/55	3,000
1867 C2	6/55 - 5/56	2,997
1867 C3	6/56 - 5/57	2,357

PHS-144
REV. 5-54

Form Approved
Budget Bureau No. 72-R001.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C 1866
RAD (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

The Physical Determination of Isodose Curves Around Various Cobalt 60 and Cesium 137 Applicators for use in Cancer Treatment

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

I. Meschan, M.D., Prof. and Head, Department of Radiology, Principal Investigator
Dr. T. H. Oddie, Physicist

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Arkansas School of Medicine, Little Rock, Arkansas

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In preceding investigations in which the skin effects on rabbits and humans of identical dosage of cobalt 60 and radium were studied, a slightly greater skin effect was observed from cobalt 60 in slightly over one-third of well controlled experiments. Every variable has been controlled. It is now our purpose to test the accuracy of our tables which have been calculated from available physical data by actual physical measurement and determination of isodose curves around the cobalt 60 and radium sources. This problem should lend itself to presently available scintillation counter techniques.

It will also be our purpose to study certain cesium 137 applicators for use in treatment of carcinoma of the cervix in similar fashion.

SIGNATURE OF PRINCIPAL INVESTIGATOR: I. Meschan, M.D.

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

University of Arkansas School of Medicine

Grant No.	Period of Operation	Amt. App.
C 1866	12/1/52 - 11/30/53 2/54	$ 9,277

(INSTRUCTIONS - DO NOT USE THIS SPACE)

LEAVE BLANK

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

COPY

(LEAVE BLANK)
C-1866(S)
(1)

SUBMITTED TO: Public Health Service, National Institutes of Health Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

The Physical Determination of Isodose Curves Around Various Cobalt 60 and Cesium 137 Applicators for use in cancer Treatment

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

T. Peschan, M.D., Professor and Head, Department of Radiology
Dr. T.H. Oddie, D.Sc., visiting assistant professor, Radiology

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Arkansas School of Medicine, Little Rock, Arkansas

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information-summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Tables have been calculated for utilization with Cobalt 60 needle and capsular sources which permit the determination of the roentgens delivered per millicurie-hour at any point around these sources for distances of eight centimeters perpendicular to the sourde and six centimeters along the axis of the source from the center of the emitting source. We have already constructed a scintillation probe device, wired in with a photoelectric cell and micro-ammeter which records directly the ionic discharge from an anthracene crystal. This ionic discharge is initiated by fluorescence induced by the gamma rays, arising from the gamma ray source. The registration on this micro-ammeter is directly proportional to the number of roentgens delivered. This apparatus therefore makes it possible to check the accuracy of calculated tables, by means of physical determination. It is our purpose in the proposed project to physically determine the roentgen delivery around various Cobalt 60 and Cesium 137 sources to check the accuracy of these calcu lted tables. It is also our purpose to construct special applicators employing Cobalt 60 and Cesium 137 for use in clinical applications and to determine the isodose curves around these applicators with the above instrument.

Preliminary in air investigations have already been carried out with Cobalt 60 and radium plaques which show an unusually close agreement between the calculated values and the physically determined values.

PRINCIPAL INVESTIGATOR

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

INVESTIGATOR

Grant No.	Period of Operation	Ant. Amo.
C-1866	12/52 - 2/54	39,277
1866 S1	12/53 - 2/54	2,318
1866 C1	3/54 - 2/55	12,072

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7 1953

Prepared for the Medical Sciences Information Exchange for publication

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

Project no. (Do not use this space) C-1666(C)

RAD (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

SUPPORT FROM THIS SOURCE TERMINATED 8/55

The Physical Determination of Isodose Curves Around Various Cobalt 60 and Cesium 137 Applicators in cancer treatment (continued)

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

I. Meschan, M.D., Professor and Head, Department of Radiology
T.H. Oddie, D. Sc., Visiting Assistant Professor, Department of Radiology
(or other physicist)

NAME AND ADDRESS OF APPLICANT INSTITUTION:
University of Arkansas School of Medicine, Little Rock, Arkansas

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

— In the Medical Sciences Information Exchange summaries of work in progress are exchanged with governmental and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Tables have been calculated and presented for use with Cobalt 60 in its interstitial and intracavitary applications.

It is proposed that physical determinations be made around linear, plaque-like, and other Cobalt 60 (and Cesium 137) applicators to check the accuracy of the calculated data.

This physical method may in itself find useful application clinically in various intracavitary applications.

It is ultimately proposed after it has been ascertained that the methods of calculation and dosimetry have been checked, that these methods be used to determine the histologic effects of known amounts of [illegible] upon human pelvic tissues and cancer.

University of Arkansas School of Medicine

SIGNATURE OF PRINCIPAL INVESTIGATOR: I. Meschan M.D.

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

SCHOOL

Submitted for period beginning March 1954

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. App.
C-1866	12/52 - 2/54	$9,277
1866 S1	12/53 - 2/54	2,318
1866 C1	3/54 - 8/55	12,072

SUPPORT FROM THIS SOURCE TERMINATED 8/55

PHS 166
REV. 10-52

Form Approved
Budget Bureau No. 72-R01.2

NOTICE OF RESEARCH PROJECT
Medical Sciences Information Exchange
Not for Publication

Project No. C-1835
M&I (1)

Supporting Agency: Public Health Service

Title of Project: A Study of Antibody-Isotope Complex in Advanced Human Cancer.

Professional Personnel: A. Burgess Vial, M.D., Sr., Clinical Instructor in Surgery and Fellow of American Cancer Society
Frederick A. Coller, M.D., Chairman, Department of Surgery
Walter J. Nungester, M.D., Chairman, Department of Bacteriology

Name of Institution: University of Michigan, Ann Arbor, Michigan

Summary of proposed work:

It is proposed that patients with advanced cancer will be studied, tumors biopsied, tumors and fractions thereof used as antigens for production of antibodies, the antibodies tagged with radioactive isotopes and injected into patients, localization of the material being accomplished by external monitoring of the patients, biopsies being taken and microscopic radioautographs of pathological slides made.

Grant No.	Period of Operation	Amt. App.
C 1835	12/1/52 - 11/30/53	$14,110

Information Exchange.
Not for publication or publication reference.

PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

C-1835(0) 1
Mar (5) Red

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

A study of Antibody - Isotope Complex in Advanced Human Cancer

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

A. Burgess Vial, M.D., Instructor, Department of Surgery

Walter J. Hungerter, M.D., Chairman, Department of Bacteriology

Frederick A. Coller, M.D., Chairman, Department of Surgery

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of Michigan, Ann Arbor, Michigan

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

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

It is proposed that antibodies will be developed in animals against human tumor and normal tissues, and against fractions of these; that the gamma globulin of these animals will be obtained and tagged with radioactive iodine; that these will be given to patients with advanced cancer, and localization detected by external monitoring, biopsy-assay, and radioautographs.

SIGNATURE OF PRINCIPAL INVESTIGATOR: A Burgess Vial

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

SCHOOL: **Medical**

INVESTIGATOR — DO NOT USE THIS SPACE 12/20/52

Grant No.	Period of Operation	Amt. App.
C 1835	12/52 - 11/53	$14,110
1835 C1	12/53 - 11/54	13,992
1835 C2	12/54 - 11/55	14,000*

*Commitment

PHS 166

Form Approved

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

Project no. (Do not use this space)
C-1835(C2)
~~Final~~ (6) M & I

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

A Study of Antibody-Isotope Complex in Advanced Human Cancer.

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

1. A. Burgess Vial, M. D., Dept. Surgery. Instructor; Consultant in Bacteriology.
2. Frederick A. Coller, M.D., Dept. Surgery. Professor and Chairman
3. Walter J. Nungester, M.D., Dept. Bacteriology. Professor and Chairman.
4. Walter Callahan (Ph. D. requirements completed) Dept. Surgery, Research Assoc.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

The Regents
University of Michigan
Ann Arbor, Michigan

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

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

Work will be pursued in attempting to localize antibody-radioisotope complex in tumor tissue of patients with advanced cancer, particularly melanoblastomas and mammary carcinomas. Attention will be directed particularly toward absorption and elution of antibodies, concentration of pertinent antibodies, assaying of them, and further improvements in tagging procedures.

The use of such techniques are contemplated as agglutination tests with tagged antibodies, autoradiography, the use of columns in absorption and elution of antibodies, scintoscanner techniques, external counting, biopsy-assays of tissue activity, improved methods of tagging antibodies, possibly tagging with other substances than I^{131}.

Attention will be directed toward the antigenicity of melanin and its possible usefulness.

SIGNATURE OF PRINCIPAL INVESTIGATOR: A. Burgess Vial

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

School: University of Michigan Medical School

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-1835	12/52 - 11/53	$14,110
1835 C1	12/53 - 11/54	13,992
1835 C2	12/54 - ~~11/55~~ 8/56	13,994

PHS 166
[illegible]

Form Approved
Budget Bureau No. 52-R001.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1815
MAR (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Amino Acid Metabolism In Normal Man and In Patients With Malignancy Using Amino Acids Tagged With Isotopic Nitrogen N^{15}

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

William Parson, M.D., Chairman and Professor of Medicine, Dept. of Internal Medicine, University of Virginia Medical School, Charlottesville, Va.

K. R. Crispell, M.D., Assistant Professor of Medicine, Dept. of Internal Medicine, University of Virginia Medical School, Charlottesville, Va.

Dr. Jesse Beams, Consultant to the project, Professor and Chairman of the Dept. of Physics, University of Virginia, Charlottesville, Va.

NAME AND ADDRESS OF APPLICANT INSTITUTION

School of Medicine, University of Virginia, Charlottesville, Virginia.

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this project is to determine if there is an abnormality in amino acid metabolism in the patient with malignant disease. In our laboratory N^{15} labeled amino acids have been administered to normal and diseased patients and a technique is being developed for the study of the size of the "amino acid pool" and the rate of protein synthesis. The technique necessitates the measurement of the "urea space" by N^{15} tagged urea and the excretion rate of N^{15} tagged urea following amino acid administration. These studies are done on subjects determined to be in nitrogen equilibrium on a metabolic regime. It is planned to compare a group of normal patients to patients with malignant disease by these techniques. It may be possible to show that patients with malignant disease have an abnormality in handling of specific amino acids.

SIGNATURE OF PRINCIPAL INVESTIGATOR

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Grant No.	Period of Operation	Amt. Appd.
C 1815	12/1/52 - 11/30/53	$16,048

LEAVE BLANK

NOTICE OF RESEARCH PROJECT
Bio Sciences Information Exchange
Not for Publication

Project No. C-1815 (C)
M&N (5)

Supporting Agency: Public Health Service

Title of Project: Amino Acid Metabolism in Normal Man and In Patients with Malignancy Using Amino Acids Tagged With Isotopic Nitrogen N-15.

Professional Personnel: William Parson, M.D., Prof. and Head, Dept. Internal Med.,
Jesse Beams, Ph.D., Prof. and Chairman, Dept. Physics,
Kenneth R. Crispell, M.D., Assist. Prof. of Internal Med.

Name of Institution: School of Med., University of Virginia, Charlottesville, Va.

Summary of proposed work:

We are continuing the study of amino acid metabolism using amino acids tagged with isotopic nitrogen N-15. The purpose of this study is an attempt to determine the size of the "metabolic pool" and the rate of protein synthesis. The technique which is used is the one originally described by Sprinson and Rittenberg. This technique includes the determination of the urea space using urea tagged with isotopic nitrogen N-15.

At the present time we are engaged in obtaining studies in normal subjects using this technique. The main purpose of the project is to investigate patients with malignant disease using this technique. We will also investigate patients with malignant disease after various forms of therapy.

Grant No.	Period of Operation	Amt. App.
C 1815	12/52 - 11/53	$16,048
1815 C1	12/53 - 11/54	10,800

NOTICE OF RESEARCH PROJECT

BIO-SCIENCES INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

PROJECT NO. (Do not use this space)
C-1815 C2
M & N (2)

SUPPORTING AGENCY: Public Health Service

SUPPORT FROM THIS SOURCE TERMINATED 5/55

TITLE OF PROJECT:
"Amino Acid Metabolism in Normal Man and in Patients with Growth Disturbances and Malignancy using Amino Acids Tagged with Isotopic Nitrogen N-15"

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

William Parson, M. D., Professor and Chairman, Department of Internal Medicine, University of Virginia School of Medicine.

NAME AND ADDRESS OF INSTITUTION:
University of Virginia, Charlottesville, Virginia

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.

We have used the technique of San Pietro and Rittenberg utilizing the amino acid glycine labeled with isotopic nitrogen N-15 to determine the size of the metabolic pool and the rate of protein synthesis in man.

We first established the ranges for the size of the metabolic pool and the protein synthesis rate in healthy volunteers. To validate the method we next studied patients with obvious growth defects: myxedema and pituitary dwarfism. The patients with myxedema were found to have a decreased rate of protein synthesis which was corrected toward normal by the administration of l-triiodothyronine. The pituitary dwarf was found to have a marked decrease in protein synthesis rate and a small metabolic pool which was corrected to normal by the administration of growth hormone (Raben-Westermyer).

A technique has now been devised to study the effect of the omission of a single essential amino acid and the effect of the time interval for supplying essential amino acids on the size of the metabolic pool and the rate of protein synthesis.

SIGNATURE OF PRINCIPAL INVESTIGATOR: William Parson

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

INVESTIGATOR—DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-1815	12/52 - 11/53	$16,048
1815 C1	12/53 - 11/54	10,800
1815 C2	12/54 - 5/55	5,400

SUPPORT FROM THIS SOURCE TERMINATED 5/55

NOTICE OF RESEARCH PROJECT
Medical Sciences Information Exchange
Not for Publication
C O P Y

Project No. C-1810
RAD 1

Supporting Agency: Public Health Service

Title of Project: Biological Effects of Radiation and the Sensitization Response-SR

Professional Personnel: John B. Graham, M.D., Director of Vincent Research Laboratory, Vincent Mem. Hosp.
Ruth M. Graham, B.S., Director of Vincent Cytology Laboratory, Vincent Mem. Hosp.
Joe V. Meigs, M.D., Chief of Staff, Vincent Mem. Hosp.

Name of Institution: Vincent Memorial Hospital at Massachusetts General Hosp.
32 Fruit Street, Boston 14, Mass.

Summary of proposed work:

We plan to continue our investigation of the sensitization response (SR), which is characterized by vacuolization and increased density of cytoplasm in the vaginal cells. This phenomenon is of some prognostic value in patients with cancer of the uterine cervix treated radiologically. Its prognostic value in patients with the same disease treated surgically will be evaluated. More effective ways of producing SR will be investigated. The sensitization response is associated with enhanced sensitivity to radiation in both humans and animals. This aspect will be defined more accurately. The nature of SR will be investigated histochemically and on the ultra-violet microscope.

Grant No.	Period of Operation	Amt. App.
C 1810	12/52 - 11/53	$11,053

NOTICE OF RESEARCH PROJECT
Bio-Sciences Information Exchange
Not for Publication

Project No. C-1810 (S)
Radiation (4)

Supporting Agency: Public Health Service

Title of Project: "Biological Effects of Radiation and the Sensitization Response - SR"

Professional Personnel: John B. Graham, M.D., Director Vincent Research Laboratory, Vincent Memorial Hospital
Ruth M. Graham, Director Vincent Cytology Laboratory, Vincent Memorial Hospital
Joe V. Meigs, M.D., Chief Vincent Memorial Hospital

Name of Institution: Vincent Memorial Hospital at Massachusetts General Hospital, 32 Fruit Street, Boston 14, Mass.

Summary of proposed work:

It is proposed to continue our studies of the sensitization response (SR) which is characterized by a dark staining, finely vacuolated cytoplasm of the non-malignant deep epithelial cells of the vaginal smear. SR will be studied in patients with cancer of the cervix, in order to evaluate the impression that patients with good SR are poor candidates for radical surgery; that they are much more likely to have positive nodes; and that they are better treated radiologically. The relation of SR to non-genital cancers will be investigated. A study of the nature of SR is planned including cytochemical analysis of the cytoplasmic material, distribution in other tissues, and metabolic studies on the Warburg.

A correlation of SR and sensitivity to ionising radiation on both cancer patients and animals is planned.

	C-1810	12/52 - 11/53	$11,053

Grant No.	Period of Operation	Amt. App.
C-1810	12/52 - 2/54	$11,053
1810 S1	12/53 - 2/54	2,762

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1810(C)
USS Rad. (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Biological Effects of Radiation and the Sensitization Response - SR

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

John B. Graham, M.D., Director, Vincent Research Laboratory, Vincent Memorial Hospital, The Gynecologic Service, Massachusetts General Hospital

Ruth M. Graham, B.S., Director, Vincent Cytology Laboratory, Vincent Memorial Hospital, The Gynecologic Service, Massachusetts General Hospital

Joe V. Meigs, M.D., Chief, Vincent Memorial Hospital, The Gynecologic Service, Massachusetts General Hospital

NAME AND ADDRESS OF APPLICANT INSTITUTION

Vincent Memorial Hospital, 32 Fruit Street, Boston 14, Massachusetts

SUMMARY OF PROPOSED WORK (300 words or less—omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is proposed to continue our studies of the sensitization response (SR) which is characterized by a dark-staining, finely vacuolated cytoplasm of the non-malignant deep epithelial cells of the vaginal smear. SR will be studied in patients with cancer of the cervix in order to evaluate the impression that patients with good SR are poor candidates for radical surgery, that they are much more likely to have positive nodes, and that they are better treated radiologically. The relation of SR to non-genital tumors will be investigated. A study of the nature of SR is planned, including cytochemical analysis of the cytoplasmic material, distribution in other tissues and metabolic studies in the Warburg.

A correlation of SR and sensitivity to ionizing radiation in both cancer patients and animals is planned.

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication references.

HEALTH, EDUCATION, AND WELFARE
FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-1810 (C2)
No S.S. (3)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Biological Effects of Radiation and the Sensitization Response - SR

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

John B. Graham, M.D., Director, Vincent Research Laboratory

Ruth M. Graham, B.S., Director, Vincent Cytology Laboratory

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Vincent Memorial Hospital at Massachusetts General Hospital
32 Fruit Street, Boston 14, Massachusetts

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

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

The sensitization response (SR) is characterized by a dense, basophilic, finely vacuolated cytoplasm in the basal cells of squamous epithelium. When marked, radiotherapy is effective, when absent, surgery may be better in patients with cancer of the uterine cervix. The present project proposes to explore the significance of SR in cancer of other sites in the hope it may be of similar prognostic value. The significance of SR following treatment in patients with cancer of the cervix is also to be explored.

SIGNATURE OF PRINCIPAL INVESTIGATOR: John B Graham

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

SCHOOL: Harvard Medical School

Submitted for period beginning-March 1955

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.	Grant No.	Period of Operation	Amt. Appr.
C-1810	12/52 - 2/54	$11,053	C-1810 C1	3/54 - 2/55	$6,800
1810 S1	12/53 - 2/54	2,762	1810 C2	3/55 - 2/56	8,058

PHS 166
REV. 10-52

Form Approved
Budget Bureau No. 72-R001.2

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

PROJECT No. (Do not use this space)
C-1810(03)

NOTICE OF RESEARCH PROJECT

No S.S. (E)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Biological Effects of Radiation and the Sensitization Response - SR

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

John B. Graham, M.D., Director, Vincent Research Laboratory

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Vincent Memorial Hospital at Massachusetts General Hospital
32 Fruit Street, Boston 14, Massachusetts

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The sensitization response (SR) is found in normalignant epithelial cells near a cancer. It is of prognostic significance in patients with cancer of the cervix. SR is regarded as a local immune response to the cancer. The proposed study involves the collection of cytologic material from patients with cancers of other sites (esophagus, lung, stomach, larynx, pharynx) and the correlation of the patient's subsequent course with the level of SR. It is hoped that useful prognosis and selection of the method of treatment in patients with lesions of these sites will result.

A correlation of the hysticcytic response with SR in cancer patients is also planned.

Submitted for period beginning-March 1956

SIGNATURE OF PRINCIPAL INVESTIGATOR: John B Graham

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

SCHOOL: Harvard Medical School

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.	Grant No.	Period of Operation	Amt. Appr.
C-1810	12/52 - 2/54	$11,053	C-1810 C2	3/55 - 2/56	$8,058
1810 C1	12/53 - 2/54	2,762	1810 C3	3/56 - 2/57	8,580
1810 C1	3/54 - 2/55	6,800			

PHS-166
REV. 5-54

Form Approved
Budget Bureau No. 92-R001.2

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-1010 (C6)
M & X (R)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md. PRELIMINARY

TITLE OF PROJECT:

Biological Effects of Radiation and the Sensitization Response - SR.

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

John B. Graham, M.D., Director, Vincent Research Laboratory, Vincent Memorial Hospital
Ruth M. Graham, Sc.D., Director, Vincent Cytology Laboratory, Vincent Memorial Hospital

Sidney Leskowitz, Ph.D., Assistant Immunologist, Massachusetts General Hospital

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Vincent Memorial Hospital, 32 Fruit Street, Boston, Massachusetts

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The proposed study will collect cytologic material on cancer of various sites and investigate the nature of SR.

Exfoliated cytologic material from cancers of the mouth, pharynx, larynx, esophagus, stomach, and bladder will be collected and evaluated for prognosis and for possible use in the selection of treatment as in cancer of the uterine cervix.

SR can be elicited in animals using antigens. Circumstantial evidence suggests that SR is an immune phenomenon. A series of experiments in animals, using standard antigens, is planned in the hope of relating SR to established immune mechanisms.

Signature for period

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL **Harvard Medical School** Medical School

INVESTIGATOR — DO NOT USE THIS SPACE

PENDING-OCTOBER 1956 COUNCIL

PHS-466
REV 6-54

Form Approved
Budget Bureau No. 92-R001.2

NOTICE OF RESEARCH PROJECT
Medical Sciences Information Exchange
Not for Publication

Project No. C-1793

Supporting Agency: Public Health Service

Title of Project: Radiosensitivity of Cervical Cancer in Humans

Professional Personnel: Dr. Saul B. Gusberg, Asst.Prof.Gynecology,Columbia Univ, Department of Obstetrics and Gynecology, and Asst. Attending Obstetrician and Gynecologist, Sloan Hospital for Women and Francis Delafield Hospital
Dr. Margaret E. Long, Research Assistant, Department of Obstetrics and Gynecology, College of Physicians & Surgeons, Columbia University.

Name of Institution: College of Physicians & Surgeons, Columbia University, New York, N. Y.

Summary of Proposed Work:

This program of investigation is designed to study the radiosensitivity of cervical cancer by histochemical means. We propose to enlarge the work already done in our laboratory in this field in a project which utilizes histochemical means for designating active or inactive tumor cells obtained by biopsy of the active zone of such tumors before, during and after radiation with both radium and x-ray. Biopsy of the active zone is performed by the use of a modified endocervical biopsy curette. Activity of tumor cells is assayed by the nucleoprotein pattern.

It is hoped by this means to arrive at a definitive test for aiding in the decision for treatment of an individual cancer of the cervix by either radiation or radical surgery. This choice at the present time is unaided in most clinics by any precise data which can be brought to bear on this decision.

Grant No.	Period of Operation	PRINCIPAL	Amt. Approved
C 1793	1/1/53 - 12/31/53		$7,500
1793 C1	1/1/54 12/31/54		6,400 *

* Commitment

NOTICE OF RESEARCH PROJECT
Bio-Sciences Information Exchange
Not for Publication

Project No. C-1793 (C)
~~Rad.~~ (5) Path

Supporting Agency: Public Health Service

Title of Project: Radiosensitivity of Cervical Cancer in Humans

Professional Personnel: Dr. Saul B. Gusberg, Asst. Prof. Gynecology, Columbia Univ. Dept. Obstetrics and Gyn. and Asst. Attending Obstetrician and Gynecologist, Sloane Hospt. for Women and Francis Delafield Hospt.
Dr. Margaret E. Long, Res. Asst., Dept. of Obstetrics and Gyn., College Physicians & Surgeons, Columbia Univ.

Name of Institution: Dept. Obstetrics & Gynecology, College of Physicians and Surgeons, Columbia Univ., 630 W. 168th St., NY 32, N. Y.

Summary of proposed work:

This program of investigation is designed to continue the study of radiosensitivity of cervical cancer. We propose to continue the work already done in our laboratory by histochemical means, by the use of another histochemical means of differentiating DNA from RNA in the tumor cell nucleus and also to make a parallel study of radio-sensitivity by the cytologic study of normal cells.

By obtaining biopsies of the active zone of cervical cancers under radiation with our own biopsy instrument we have been able to demonstrate a shift from active to relatively inactive cells in this area. We hope now by refining the histochemical methods employed to define the nuclear changes to a sufficient degree so that this method will be applicable for clinical testing of radiosensitivity of such tumors in an effort to aid the therapeutic choice of radium or surgery in these individuals.

Grant No.	Period of Operation	Amt. App.
C-1793	1/53 - 12/53	$7,500
1793 C1	1/54 - 12/54	6,400

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT.

PROJECT NO. (Do not use this space)
C-1793(C2)
Path (3)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

RADIOSENSITIVITY OF CERVICAL CANCER IN HUMANS

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

GUSBERG, S.B. - Assistant Professor (after July 1, 1954) Associate Professor - of Obstetrics and Gynecology, College of Physicians & Surgeons, Columbia University.
LONG, Margaret E. - Histochemist, Research Associate
TOVELL, Harold M.M. - Assisting Attending Physician, Obstetrics and Gynecology, Sloane Hospital for Women, Presbyterian Hospital.
HILL, Jane C. - Cytologist

NAME AND ADDRESS OF APPLICANT INSTITUTION:
College of Physicians and Surgeons, Dept. Obs. & Gyn., Columbia University
630 West 168th Street, New York 32, N.Y.

SUMMARY OF PROPOSED WORK — Do not exceed 200 words — Omit Confidential data.)

In the Medical Sciences Information Exchange repositories of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The radiosensitivity of cervical cancer in patients undergoing radiation therapy has been studied by two histochemical methods used to define the nucleoprotein pattern and its changes under such therapy. This analysis has been made to separate the choice of radiation or surgical treatment of such patients.

Observations indicated that nucleoprotein pattern changes are of an order of magnitude that can be evaluated within two weeks from the onset of therapy and correlate well with the clinical outcome of the disease.

The change in nucleoprotein pattern indicates in general a tendency to reversal in the D.N.A. - R.N.A. ratio in the tumor cell nuclei under radiation.

SIGNATURE OF PRINCIPAL INVESTIGATOR: S.B. Gusberg

Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified:
SCHOOL College of Phys.&Surg. - Columbia Univ.

Submitted for period beginning-January 1955

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-1793	1/53 - 12/53	$7,500
1793 C1	1/54 - 12/54	6,400
1793 C2	1/55 - 12/55	9,047
1793 C3	1/56 - 12/56	8,831 *

* Commitment

PHS 166
REV 1955

Form Approved
Budget Bureau No. 72-R001.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1793(C3)
Path (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Radiosensitivity of Cervical Cancer in Humans

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

S. B. Gusberg, M.D. - Principal Investigator
Margaret Long, Ph.D - Histochemist
Jane C. Hill, B.A. - Cytologist
Janet Ward - Histochemical technician

from Department of Obstetrics and Gynecology

NAME AND ADDRESS OF APPLICANT INSTITUTION College of Physicians and Surgeons
Columbia University
630 West 168th St. NY 32 NY

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project concerns radiosensitivity testing of patients with cervical cancer by cytologic and cytochemical means. The study of nucleoprotein shifts under radiation has proved to be a moderately accurate method of predicting local tumor healing.

At the present time orcein fast green and methyl green pyronin stains are being used for nuclear definition following a test dose of radiation delivered by trans-vaginal cone. The serial biopsies taken from the tumor under radiation are used to prepare tissue smears studies by these methods.

SIGNATURE OF PRINCIPAL INVESTIGATOR

Submitted for period beginning-January 1956

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Grant No.	Period of Operation	Amt. Appr.
C-1793	1/53 - 12/53	$7,500
1793 C1	1/54 - 12/54	6,400
1793 C2	1/55 - 12/55	9,047
1793 C3	1/56 - 12/56	9,403

LEAVE BLANK

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

IC-MEDICAL SCIENCES INFORMATION EXCHANGE
Smithsonian Institution
C O P Y

PROJECT NO. (Do not use this space)
C-1756
Rad. Com. (1)

SUPPORTING AGENCY: Public Health Service

TITLE OF PROJECT:
Multimillion volt x-ray and electron beam cancer therapy
~~SUPPORT FROM THIS SOURCE TERMINATED~~

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

Golden, Ross, M.D.	Professor of Radiology (Executive Officer)
Failla, G., Sc. D.	Professor of Radiology
Jacox, Harold W., M.D.	Professor of Radiology
Quimby, E. H., Sc. D.	Associate Professor of Radiology
Kligerman, Morton M., M.D.	Assistant Professor of Radiology

NAME AND ADDRESS OF AGENCY OR INSTITUTION: Columbia-Presbyterian Medical Center (Presbyterian Hospital in the City of New York) 622 West 168 Street, New York 32, New York

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

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

The project includes plans for the following procedures to be carried out: measurement of multimillion volt x-rays and beta rays in terms of energy absorbed in body tissues for purposes of biological and clinical dosage; determination of the distribution of radiation in the body under different conditions for both x-ray and electron beams; modification of beams to determine the most desirable distribution of radiation in the body for specific clinical applications; observation of the biological effects of x-rays and beta rays for the purpose of bringing out any radiobiological advantages in these radiations applicable to the treatment of cancer; study of the effects of multimillion volt x-ray and electron beams on human cancers.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Approved
C-1756	12/52 - ~~5/55~~ ~~12/55~~ 12/56	$235,975

~~SUPPORT FROM THIS SOURCE TERMINATED~~

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-1742(C4)
Rad (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT: PRELIMINARY

Effects of X-radiation on DNA Synthesis

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

Cyrus P. Barnum, Jr. - Professor of Physiological Chemistry

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of Minnesota, Minneapolis 14, Minnesota

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

An intensive study of the effect of X-radiation on P^{32} incorporation into DNA is planned. For this study both malignant tissue and normally regenerating liver tissue will be used. A comparison of whole body versus local irradiation will be made. Perhaps the most extensive phase of the proposed research will be to study the time relationships between irradiation and evaluation of DNA synthesis in the hope of throwing light on the question as to whether there is a phase in the life cycle of the cell that is more sensitive to the X-radiation inhibition of this function--DNA synthesis.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL **Medical**

INVESTIGATOR — DO NOT USE THIS SPACE

PRELIMINARY

PHS-166
REV. 5-54

Form Approved
Budget Bureau No. 92-R001.2

Prepared for Office of Exchange Information PUBLIC HEALTH SERVICE. Not for publication or publication reference without consent of the principal investigator(s)

NOTICE OF RESEARCH PROJECT

C - 1738

M & G (1)

CONTRACTING AGENCY: FEDERAL SECURITY AGENCY, PUBLIC HEALTH SERVICE

TITLE OF PROJECT:

The cellular nucleic acid content of the thymus as related to involution, regeneration and tumor formation induced by roentgen irradiation

Give names, departments, and official titles of PRINCIPAL INVESTIGATOR(S) and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

William H. Carnes, M.D. — Associate professor of Pathology
Henry S. Kaplan, M.D. — Professor of Radiology
Patricia P. Weymouth, Ph.D. — Research Asociate in Radiology

NAME AND ADDRESS OF INSTITUTION:

Stanford University School of Medicine, San Francisco 15, Calif.

APPLICANT — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. App.
C-1738	7/1/52 - 8/31/53	$ 4,539

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

In the Program of Exchange of Information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This work is intended to supplement a study already begun on factors influencing the induction of tumors by roentgen irradiation. Schedules of irradiation designed to induce (1) a high incidence of thymic lymphoid tumors and (2) a high incidence of thymic recovery without tumor formation will be used. The thymic cellular content of both types of nucleic acid will be determined by means of chemical, microphotometric and cytological measurements during the periods of involution, regeneration and tumor formation. Correlations will be made between the cellular nucleic acid content in the various periods and the statistically established probability of tumor development.

Confidential

PHS-166-1 (Rev.) REV. 6-49
FORM APPROVED
BUDGET BUREAU NO. 68-R403

SIGNATURE OF PRINCIPAL INVESTIGATOR W. H. Carnes

REMOVE SMUDGE SHEET BEFORE TYPING
Replace smudge sheet when finished and return all copies to PHS.

Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1737
Rnd. (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md. THIS SOURCE TERMINATED

TITLE OF PROJECT

C O P Y

Studies on the effect of irradiation and anticarcinogenic drugs on the oxygen tension and oxygen consumption of benign and malignant neoplasms in vivo.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Principal Investigators: Frederick Urbach, M.D., Instructor, Department of Dermatology, University of Pennsylvania
Coleman Jacobson, M.D., Assistant Instructor, Department of Dermatology, University of Pennsylvania

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Pennsylvania
Philadelphia 4, Pennsylvania

SUMMARY OF PROPOSED WORK *(300 words or less — omit confidential data)*

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are furnished to investigators who request such information. Your summary is to be used for these purposes.

The oxygen tension and oxygen consumption of benign and malignant neoplasms will be studied by polarographic techniques in vivo. The effects of ionizing radiation, radiomimetic drugs and adrenal steroids on the pO_2 of normal and abnormal human skin will be investigated. The response of radiosensitive experimental animal tumors to ionizing radiation during induced hypoxia and hyperoxia will be studied. An attempt will be made to correlate degree of hypoxia and radiation protection of tissues. The applicability of polarographic measurement of oxygen tension of neoplasms to the study of the effects of various types of therapy and its use as a possible diagnostic tool will be explored.

SIGNATURE OF PRINCIPAL INVESTIGATOR Dr Frederick Urbach

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

University of Pennsylvania School of Medicine

Grant No.	Period of Operation	Amt. App.
C-1737	9/1/52 - 8/31/53	$ 7,023
1737 C1	9/1/53 - 8/31/54	7,000*

LEAVE BLANK

SUPPORT FROM THIS SOURCE TERMINATED

*Commitment

NOTICE OF RESEARCH PROJECT
Bio Sciences Information Exchange
Not for Publication

SUPPORT FROM THIS SOURCE TERMINATED 1/54

Project No. C-1737 C1
Rad. (5)

Supporting Agency: Public Health Service

Title of Project: "Studies on the Effect of Irradiation and Anticarcinogenic Drugs on the Oxygen Tension and Oxygen Consumption of Benign and Malignant Neoplasms in Vivo"

Professional Personnel: Frederick Urbach, M.D., Assoc. Dept. of Dermatology, Principal Investigator
Coleman Jacobson, M.D., Instructor, Dept. of Dermatology

Name of Institution: Department of Dermatology, University of Pennsylvania
Philadelphia, Pennsylvania

Summary of proposed work:

1. To study the oxygen tension and oxygen consumption of benign and malignant human neoplasms in vivo, using the platinum oxygen cathode method.

2. To study the effects of ionising radiation, radiomimetic drugs and adrenal steroids in the oxygen tension and oxygen consumption of these tumors and of the adjacent normal skin.

3. It has been shown that hypoxia tends to protect tissues against the effects of ionising radiation. Quantitative correlations between degrees of hypoxia and protection against radiation, as well as possible augmentation of radiation effects due to hyperoxia, are to be investigated.

University of Pennsylvania School of Medicine

Grant No.	Period of Operation	Int. App.
C-1737	9/52 - 8/53	$7,023
1737 C1	9/53 - ~~8/54~~ 1/54	7,000

Support from this source terminated 1/54

NOTICE OF RESEARCH PROJECT

COPY

C-1714

Neuro. (1)

CONTRACTING AGENCY: FEDERAL SECURITY AGENCY, PUBLIC HEALTH SERVICE

TITLE OF PROJECT:

Preoperative Localization of Brain Tumors by Means of Radioactive Dyes

Give names, departments, and official titles of PRINCIPAL INVESTIGATOR(S) and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Leo M. Davidoff, M. D., Neurosurgeon to the Hospital (principal investigator)
Alexander Langer, M. D., Fellow in Neurosurgery
Robert Loevinger, Ph.D., Assistant physicist

NAME AND ADDRESS OF INSTITUTION:

The Mount Sinai Hospital
11 East 100th Street, New York 29, New York

In the Program of Exchange of Information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The use of diiodofluorescein for the preoperative localization of brain tumors was introduced by G. E. Moore. He demonstrated increased concentration of the material in malignant tumor tissue of the nervous system, and showed that with suitably collimated detection devices, a tumor of the brain may be localized by the concentration in it of radioactive material. Several groups have reported success with the method in diagnosis and localization of brain tumors.

By certain modifications of the techniques of previous investigators, it appears possible to improve the accuracy of the methods, and make the results more objective. A suitable routine for the taking of observations minimizes the effect of a concentration decrease with time. A method of calculation has been devised which indicates more clearly deviations from a normal pattern of brain absorption. A coordinate system has been used which allows a more accurate presentation and visualization of the tumor localization. It is proposed to develop and evaluate these improvements in technique, and to coordinate the results with other clinical localization methods.

SIGNATURE OF PRINCIPAL INVESTIGATOR

PHS-166-1 (RG) REV. 6-49
FORM APPROVED

Grant No.	Period of Operation	Amt. Appr.
C-1714	7/52 - 8/54	$21,113
1714 C1	9/54 - 8/55	16,500 *

* Commitment

Prepared for the Medical Sciences Information Exchange. Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK) C-1714(C)

Neuro (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Preoperative Localization of Brain Tumors by means of Radioactive Dyes

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Leo M. Davidoff, M.D., Neurosurgeon to the Hospital (principal investigator)

Alexander Langer, M.D., Fellow in Neurosurgery

Robert Loevinger, Ph.D., Assistant physicist

NAME AND ADDRESS OF APPLICANT INSTITUTION

The Mount Sinai Hospital, 11 East 100th Street, New York 29, N.Y.

SUMMARY OF PROPOSED WORK (300 words or less – omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The use of diiodofluorescein for the preoperative localization of brain tumors was introduced by G. E. Moore. Dr. Moore demonstrated increased concentration of the material in malignant tumor tissue of the nervous system, and showed that with suitably collimated detection devices, a tumor of the brain may be localized by the concentration in it of radioactive material. Several groups have reported success with the method in diagnosis and localization of brain tumors.

By certain modifications of the techniques of previous investigators, it appears possible to improve the accuracy of the methods, and make the results more objective. A suitable routine for the taking of observations minimizes the effect of a concentration decrease with time. A method of calculation has been devised which indicates more clearly deviations from a normal pattern of brain absorption. A coordinate system has been used which allows a more accurate presentation and visualization of the tumor localization. It is proposed to develop and evaluate these improvements in technique, and to coordinate the results with other clinical localization methods.

SIGNATURE OF PRINCIPAL INVESTIGATOR

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Grant No.	Period of Operation	Amt. Appr.
C-1714	7/52 - 8/54	$21,113
1714 C1	9/54 - 8/55	16,500

LEAVE BLANK

PHS-166-1(RG)
Rev. 8-51

Form Approved
Budget Bureau No. 72-R014

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-1714(C2)
Neuro (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Preoperative Localization of Brain Tumor by Means of Radioactive Dyes.

SUPPORT FROM THIS SOURCE TERMINATED 12/53

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

Leo M. Davidoff M.D. Neurosurgeon to the Hospital.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

The Mt. Sinai Hospital, 11 East 100-th Street, New York 29, N.Y.

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

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

A modification of the Moore technique of isotope-encephalography is described. Two shielded scintillation counters are used with a two-channel scaling circuit. Measurements are made at 32 fixed points on the head, the results are averaged and compared to a "normal" skull pattern, and then plotted on a special spread-out map of the skull. The technique has been studied on a human skull phantom. Inherent biological limitations of the method are described. Results of measurements on 250 patients are tabulated in terms of a comparison with clinical diagnosis. Tumors located well, and located poorly by this method are discussed. Conclusions: the method is without risk to the patient, yields useful clinical information, and has been repeatedly verified in practice. False positive and negative diagnosis occur by this method, but their incidence could probably be lowered by study of additional cases. Improved instrumentation would presumably be somewhat helpful, but discovery of tagged substances specifically localized in tumors would very materially improve the method.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Leo M. Davidoff M.D.

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

SCHOOL

Submitted for period beginning-September 1955

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-1714	7/52 - 8/54	$21,113
1714 C1	9/54 - 8/55	16,500
1714 C2	9/55 -12/55	3,028

SUPPORT FROM THIS SOURCE TERMINATED 12/55

PHS 166
REV. 10-52

Form Approved
Budget Bureau No. 72-R001.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-2093
Biochem (1)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Metabolism of Phosphoprotein in Normal and Malignant Tissue

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Eugene P. Kennedy, Assistant Professor
Ben May Laboratory for Cancer Research and Department of Biochemistry

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of Chicago*

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is the purpose of this investigation to explore the physiological significance of the high metabolic activity displayed by the phosphoprotein fraction of normal and malignant tissues. This high metabolic activity is shown by the rapid rate of incorporation of radioactive inorganic phosphate into the crude "phosphoprotein" fraction obtained by the usual trichloroacetic fractionation procedures. Many previous investigators have considered that this high radioactivity of the "phosphoprotein" fraction may be the result of contamination by other components of high specific activity, such as inorganic ortho or metaphosphate. Very recently, however, chromatographic techniques have been developed in this laboratory which have made possible the isolation of serine-phosphoric acid of very high specific activity from hydrolysates of the protein of Ehrlich ascites tumor, offering for the first time unequivocal proof of a very rapid turnover of this phosphorylated amino acid residue in proteins.

It is proposed to investigate the enzyme systems catalyzing the turnover of phosphoprotein in vitro in isolated mitochondria, with P^{32} as an isotopic tracer, to determine what proteins may act as substrates, and other properties of the enzyme system. In addition, efforts will be made to learn what function the phosphorylated amino acids may fulfill in protein synthesis and protein structure.

SIGNATURE OF PRINCIPAL INVESTIGATOR Eugene P. Kennedy

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Grant No.	Period of Operation	Amt. App.
C-2093	1/54 - 12/54	$6,966
2093 C1	1/55 - 12/55	6,966 *
2093 C2	1/56 - 12/56	6,966 *

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* Commitment

PHS-166-1(RG)
Rev. 8-51

Form Approved
Budget Bureau No. 92-R001.1

NOTICE OF RESEARCH PROJECT
Bio Sciences Information Exchange
Not for Publication

Project No. C 2078
No. S.S. (1)

Supporting Agency: Public Health Service

Title of Project: Influence of Sheath Design on Energy Absorbed by Tissue Around Cobalt-60 Sources and its Clinical Significance

Professional Personnel: G.H. Fletcher, M.D., Radiology Department, Radiologist-in-Chief (Principal Investigator)
F. G. Bloedorn, M.D., Radiology Department, Associate Radiotherapist
P. Wootton, B.S., Department of Physics, Clinical Physicist

Name of Institution: The University of Texas, M.D. Anderson Hospital for Cancer Research, 2310 Baldwin, Houston 6, Texas

Summary of Proposed Work:

Investigate differences in energy delivered to volumes of tissue surrounding radium and cobalt gamma-ray sources in giving the same therapeutic dose, determining the influence of container design and loading patterns on these differences. Design cobalt loadings and sheaths for various purposes in the light of these results. Correlate these designs with medical consideration by clinical experiments in which implants, using radium and cobalt sources composed and ensheathed in current style, and cobalt ensheathed and made up in the light of the above researches, are performed in similar sites and conditions, preferably in the same person. Modify, if necessary, current dosage systems to utilize to optimum properties of cobalt in various forms of sheathing and compose tables of dose rate around such sources, analogous to the Quimby tables.

Grant No.	Period of Operation	Amt. App.
C 2078	9/53 - ~~8/54~~ 2/55	$10,600
2078 C1	~~9/55 - 8/56~~ 2/56	10,600 *

* Commitment

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-2078(C)
No. S. S. (5) Rad.

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Influence of Sheath Design on Energy Absorbed by Tissue Around Cobalt-60 and Cesium-137 Sources and its Clinical Significance

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Gilbert H. Fletcher, M.D., Radiologist-in-Chief, Department of Radiology
Warren K. Sinclair, Ph. D., Senior Physicist, Department of Physics
Fernando G. Bloedorn, M.D., Associate Radiotherapist, Department of Radiology

NAME AND ADDRESS OF APPLICANT INSTITUTION

The University of Texas, M.D. Anderson Hospital for Cancer Research
Texas Medical Center, Houston 25, Texas

SUMMARY OF PROPOSED WORK *(300 words or less — omit confidential data)*

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The specific aims and the method of procedure to be adopted for the study of distribution of dose around Cobalt-60 needles will be followed as outlined in our original application. It is proposed now to repeat these investigations along similar lines for Cesium-137 needles, which are also to be commercially available. The methods used in these investigations have not enabled dosage rates to be measured at very short distances from these needles. It is proposed in furthering the investigation to develop both ionisation and chemical methods of measuring doses at very close distances from the surface of the needles.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Gilbert H. Fletcher, M.D.

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

The University of Texas Postgraduate School of Medicine, Houston, Texas

Grant No.	Period of Operation	Amt. Appr.
C-2078	9/53 - 2/55	$10,600
2078 C1	3/55 - 2/56	10,600

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PHS-166-1(RG)
Rev. 8-51

Form Approved
Budget Bureau No. 72-R001.1

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

Bio MEDICAL SCIENCES INFORMATION EXCHANGE

NATIONAL ACADEMY OF SCIENCES — NATIONAL RESEARCH COUNCIL

COPY

PROJECT NO. (Do not change this number)

C-2076

M&N (1)

SUPPORTING AGENCY: Public Health Service

TITLE OF PROJECT

Amino Acid Metabolism in Neoplastic Disease

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

Alfred Gellhorn, M.D. Director, Institute of Cancer Research, Columbia University
Samuel Graff, Ph.D. Principal Chemist, Francis Delafield Hospital

NAME AND ADDRESS OF AGENCY OR INSTITUTION:

College of Physicians and Surgeons, Columbia University
630 West 168th Street, N. Y. 32

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

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

The utilization of amino acid for serum protein synthesis and for oxidative deamination will be determined in normal and cancerous individuals. The technique consists of the administration of an N_{15} labelled amino acid and the determination at subsequent times of the specific activities of serum proteins and urinary urea.

Re-Submitted for period

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. App.
C2076	9/53 - 8/54	$10,534
2076 C1	9/54 - 8/55	10,534 *

* Commitment

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-2076(C)
M & N (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Amino Acid Metabolism in Neoplastic Disease.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Graff, Samuel: Associate Professor of Biochemistry, Principal Chemist Francis Delafield Hosp.
Gellhorn, Alfred: Associate Professor of Medicine, Director Institute of Cancer Research.
Engelman, Morris: Assistant Professor of Biochemistry
Marshall, Margaret
Graff, Ada M.
Peters, Mark

NAME AND ADDRESS OF APPLICANT INSTITUTION

Columbia University, College of Physicians and Surgeons, 630 West 168th Street, New York 32, New York

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Inanition of advanced cancer appears to involve errors in protein metabolism. This experiment consists in the study of the intermediary metabolism of selected amino acids in these patients. N^{15} l-aspartic acid was employed first in order to study transamination behavior. 2-C^{14} l-aspartic acid is now under preparation for the purpose of studying the fate of the carbon chain as well. It is anticipated that the greatest emphasis will be placed on the essential amino acids. These are under preparation while the many N^{15} aspartic acid experiment specimens are under assay.

SIGNATURE OF PRINCIPAL INVESTIGATOR Samuel Graff

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED. Columbia University, College of Physicians and Surgeons

Grant No.	Period of Operation	Amt. Appr.
C-2076	9/53 - 8/54	$10,534
2076 S	3/54 - 8/54	5,589
2075 C1	9/54 - 8/55	21,712

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Rev. 8-53

Form Approved
Budget Bureau No. 72-R001.1

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2076(C2)
M & N (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Amino Acid Metabolism in Neoplastic Disease.

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

Samuel Graff, Ph.D. Professor of Biochemistry, College of P & S, Principal Chemist, Francis Delafield Hospital
Alfred Gellhorn, M.D. Associate Professor of Medicine, College of P & S, Director, Institute of Cancer Research
Graff, Ada M., B.A., Research Associate, Department of Biochemistry
Marshall, Margaret E., Ph.D., Chemist Peters, Mark, B.E.E., Electrical Engineer
Engelman, Morris, Ph.D., Assistant Professor of Biochemistry, College of P & S.
Osserman, Elliott, M.D., Instructor in Medicine, College of P & S.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Columbia University, College of Physicians and Surgeons, 630 West 168th Street, New York 32, N. Y.

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

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

This project is a study of amino acid metabolism in cancer insofar as this may be studied with isotopically labelled amino acids or other metabolites. The substance labelled with either N^{15} or C^{14} is administered to the patient, specimens of urine and blood are taken at timed intervals thereafter, as well as surgical specimens when they are available. The specimens are fractionated by appropriate means and analyzed for isotopic content for comparison of incorporation. It is hoped in this way to bring to light metabolic faults which are thought to accompany the cancerous state. This information might prove useful as a guage of therapy as well as an aid in the design of chemotherapy.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Samuel Graff

Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified: Columbia University College of Physicians and Surgeons
SCHOOL

Submitted for period beginning - September 1955

INVESTIGATOR

Grant No.	Period of Operation	Amt. Appr.
C-2076	9/53 - 8/54	$10,534
2076 S1	3/54 - 8/54	5,589

*Commitment

DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2076 C1	9/54 - 8/55	$21,712
2076 C2	9/55 - ~~8/56~~ 12/56	23,119
2076 C3	1/57 ~~9/56~~ - ~~8/57~~ 12/57	23,119*
2076 C4	1/58 ~~9/57~~ - ~~8/58~~ 12/58	23,119*

C-539

PHS 166
REV. 10-62

Form Approved
Budget Bureau No. 72-R001.2

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FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-2076(S)
H & N (4)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

A Study of Intermediary Amino Acid Metabolism in Clinical Cancer

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Samuel Graff, Ph. D., Associate Professor of Biochemistry, Principal Chemist, Francis Delafield Hospital
Alfred Gellhorn, M.D., Associate Professor of Medicine, Director, Institute of Cancer Research
Ada M. Graff, B.A., Research Associate, Department of Biochemistry
Margaret E. Marshall, Ph.D., Chemist, Department of Biochemistry
Morris Engelman, Ph.D., Assistant Professor of Biochemistry

NAME AND ADDRESS OF APPLICANT INSTITUTION

College of Physicians and Surgeons, Columbia University
630 West 168th Street, New York 32, N. Y.

SUMMARY OF PROPOSED WORK (300 words or less—omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Inanition and cachexia are of frequent occurrance in the advanced cancer patient. It appears desirable to isolate and characterize the metabolic faults as a preliminary to the design of prospective chemotherapeutic agents.

This investigation, to that end, is an application of isotopic intermediary metabolism techniques to the cancer patient. Amino acids labelled with N^{15} or with C^{14} in various carbon atoms, or with combinations thereof will be administered to patients suffering from various forms of cancer. Incorporation of labelled [illegible] and the distribution of such labels in the blood proteins and their constituent amino acids, and in solid tumors, leukemic white cells, and normal tissues, where available, will be determined by means of chemical, physical and chromatographic separation and analysis by mass spectrometer and geiger counter techniques. End products of amino acid metabolism in terms of blood urea, and urinary urea, uric acid, and ammonia will be followed similarly.

Close observance will be paid to the necessity of employing only L-amino acids of highest specific isotope content practicable in order to minimize unphysiological side reactions. The behavior of the amino group and its transaminating functions will be studied initially. It is anticipated that special emphasis will be placed on the metabolic behavior of the essential amino acids in these patients.

SIGNATURE OF PRINCIPAL INVESTIGATOR Samuel Graff

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

College of Physicians and Surgeons, Columbia University

Grant No.	Period of Operation	Amt. App.
C-2076	9/53 - 8/54	$10,534
2076 S1	3/54 - 8/54	5,589
2076 C1	9/54 - 8/55	~~10,534~~ * 21,712

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* Commitment

PHS-166-1(RG)
Rev. 8-51

Form Approved
Budget Bureau No. 72-R001.1

Prepared for the Medical Sciences Information Exchange.
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FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-2074
E.T. (4)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Isotopic tracer studies of tissue synthesis and the reactions of metabolite antagonists.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

David M. Greenberg, Professor of Biochemistry
Department of Physiological Chemistry
School of Medicine

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of California, Berkeley 4, California

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

SIGNATURE OF PRINCIPAL INVESTIGATOR

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED

Grant No.	Period of Operation	Amt. App.
C-2074	7/53 - 8/54	89,855
2074 C1	7/53 - 8/54	8,447 *
2074 C2	7/53 - 8/54	8,447 *

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* Commitment

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
B-2074(01 & C2)
PET (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

Isotopic tracer studies of tissue synthesis and the reactions of metabolite antagonists (chemotherapy)

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

David M. Greenberg, Professor and Chairman
Department of Physiological Chemistry
University of California School of Medicine

NOTICE OF RESEARCH PROJECT
Bio Sciences Information Exchange
Not for Publication

Project No. C-2071
Endo (1)

Supporting Agency: Public Health Service

Title of Project: Metabolism of C-14 labeled estrone in cancerous and non-cancerous animals and women.

Professional Personnel: Dr. Gray H. Twombly, Dept. of Obs. and Gyn., Professor of Gynecology
Dr. Mortimer Levitz, Dept. of Biochemistry, Research Associate
Miss Doris Meisel, Dept. of Obs. and Gyn., Research Assistant

Name of Institution: New York University - Bellevue Medical Center
New York University College of Medicine
477 First Avenue, New York 16, New York

Summary of Proposed Work:

β-estradiol labeled with C-14 in position 16 has been synthesized by a new method from the dimethyl ester of o-methylmarrianolic acid using the acyloin condensation to reconstitute the D ring. The product has a high specific activity. It is planned to use this material to inject mice of five different strains and rats of two strains in amounts which would normally cause tumor formation, to collect urine and feces during this administration and assay the same for total excretion rates and to fractionate these excretory products both by partition between organic solvents and by chromatography and to identify the end products of estradiol metabolism. Evidence of tissue localization in the target organs, uterus, pituitary, ovaries, breasts, etc., and in tumors will be sought. The studies will be extended to other laboratory animals and it is hoped with permission of the A.E.C. to carry out similar work in patients with and without cancer.

Grant No.	Period of Operation	Amt. Approved
C-2071	10/53 - 9/54	$15,930
2071 01	10/54 - 9/55	16,000 *
2071 02	10/55 - 9/56	16,500 *
2071 03	10/56 - 9/57	17,000 *

* Commitment

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-2071(C)
Endo (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Metabolism of C^{14} labeled estrone in cancerous and non-cancerous animals and women.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Dr. Gray H. Twombly, Dept. of Obstetrics and Gynecology, Professor of Gynecology

Dr. Mortimer Levitz, Dept. of Chemistry, Research Associate

Miss Doris Meisel, Dept. of Obstetrics and Gynecology, Research Assistant

NAME AND ADDRESS OF APPLICANT INSTITUTION

New York University-Bellevue Medical Center
477 First Avenue, New York 16, N.Y.

SUMMARY OF PROPOSED WORK (300 words or less—omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are furnished to investigators who request such information. Your summary is to be used for these purposes.

Three main lines of investigation are planned for the coming year:

1. The metabolism of 17β-estradiol-16-C^{14}. Experiments on normal and tumor-bearing mice will be continued. Special emphasis will be placed on the non-ether extractable metabolites in the mouse urine and feces which comprise a major part of the injected hormone.
2. The metabolism of 17β-estradiol-16-C^{14} in normal and cancerous women. This will be based chiefly on urinary excretion since about 50% of the injected radioactivity appears there in 24 hours.
3. The determination of the role played by 16-keto estradiol and 16-keto estrone in the metabolism of the natural estrogens in the human. We appear to have achieved a facile synthesis of these compounds labeled with carbon 14 which will be used in these experiments.

SIGNATURE OF PRINCIPAL INVESTIGATOR Gray H. Twombly

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

New York University-Bellevue Medical Center

Grant No.	Period of Operation	Amt. Appr.	Grant No.	Period of Operation	Amt. Appr.
C-2071	10/53 - 9/54	$15,930	C-2071 C2	10/55 - 9/56	$16,500 * Approved
2071 C1	10/54 - 9/55	16,000	2071 C3	10/56 - 9/57	17,000 *

LEAVE BLANK

* Commitment

PHS-144-1(RG)
Rev. 8-51

Form Approved
Budget Bureau No. 72-R001.1

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO (Do not use this space)
C-2071(C3)
Endo (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT: Metabolism of C14 labeled estrone in cancerous and non-cancerous animals and women

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

Dr. Gray H. Twombly, Dept. of Obstetrics and Gynecology, Professor of Gynecology
Dr. Mortimer Levitz, Department of Chemistry, Research Associate
Miss Doris Meisel, Research Assistant, Dept. of Obst. and Gyn.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

New York University-Bellevue Medical School
550 First Avenue, N.Y. 16, N.Y.

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

To the Medical Sciences Information Exchange summaries of work in progress are exchanged with Government and private agencies supporting research in medical and related fields and are furnished to investigators who request such information. Your summary is to be used for these purposes.

Our demonstration that unchanged 16-ketoestradiol could be recovered from the urine of human subjects after its injection, suggests experiments in which labeled 17β-estradiol and unlabeled 16-ketoestradiol would be administered simultaneously and the urine analyzed for radioactivity in the latter. These studies, designed to determine whether 16-ketoestradiol is a transitory intermediate in the normal or abnormal metabolism of 17β-estradiol, will be conducted on normal and cancerous patients. We intend to prepare 17β-estradiol-16-C14-16d. The metabolism of this substance should throw much light on the mechanism of estrogen conversions. For example, the presence of deuterium in estriol would point to a direct hydroxylation in its formation from estradiol. We plan also to carry out studies on the urine of patients injected with 17β-estradiol-16-C14. Considerable experience has been gained at this institution on the separation of steroids by paper and column chromatography. By combing this with radioactive scanning techniques we hope to gain much more information on the metabolic fate of estradiol. Finally, we hope to adapt our perfusion apparatus for in vitro studies on the fate of estradiol in the normal and cancerous uterus.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Gray H. Twombly

Identify the professional group (medical, dental, public health, graduate, or other) with which this project should be identified:

SCHOOL: New York University-Bellevue Medical School

Submitted for period beginning - October 1955

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2071	10/53 - 9/54	$15,930
2071 C1	10/54 - 9/55	16,000
C-2071 C2	10/55 - 9/56	$17,569
2071 C3	10/56 - 9/57	~~17,000~~ * 15,101

* Commitment

PHS 446
REV. 12-52

Form Approved
Budget Bureau No. 72-R001.2

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2071 (C3)
BIDO (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

PRELIMINARY

TITLE OF PROJECT:

Metabolism of C^{14} labeled estradiol in cancerous and non-cancerous animals and women.

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

Dr. Gray H. Twombly, Dept. of Obstetrics and Gynecology, Professor of Gynecology
Dr. Mortimer Levitz, Dept. of Obstetrics and Gynecology, Research Associate

NAME AND ADDRESS OF APPLICANT INSTITUTION:

New York University-Bellevue Medical Center
550 First Avenue, New York 16, N.Y.

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To gain further information on the mechanism of formation of the 16 oxygenated estrogens, it is desirable to determine the metabolic fate of estriol. It is planned to attempt to prepare estriol-16-C^{14} from 16-ketoestradiol-17β-16-C^{14} which is available in our laboratory. The urine of patients receiving estriol-16-C^{14} will be examined for radioactive 16-ketoestradiol, estriol-16β and ketoestrone. The gross metabolic pathways of estradiol and estriol especially the magnitude of the acidic and non-ether extractable fractions, will be compared. Studies on the urinary metabolites obtained from patients receiving estradiol-17β-C^{14}, by the procedures developed in our laboratory, will be continued. Probably 6 to 8 such studies can be carried out in the following year, 1/2 on patients with breast cancer and the rest on normal individuals. The structure of unidentified metabolites will be investigated. We have just completed the preparation of 125 mg. of estradiol-17β-16-C^{14}, Sp.ac.6μc/mg to be used in these and related studies. Experiments on the conversion of acetate-1-C^{14} to radioactive estradiol by the perfused human placenta will be continued. If estradiol of sufficiently high specific activity is obtained, degradative studies will be carried out to determine the position of incorporation of the C^{14} atom. Finally, it is planned to study the transport of estradiol across the placenta in humans and guinea pigs. The experiments on the placenta are carried out in collaboration with Dr. Joseph Dancis.

SIGNATURE OF PRINCIPAL INVESTIGATOR

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

SCHOOL

INVESTIGATOR — DO NOT USE THIS SPACE

PRELIMINARY

PHS-166
REV. 6-64

Form Approved
Budget Bureau No. 92-R001.2

NOTICE OF RESEARCH PROJECT
Bio Sciences Information Exchange
Not for Publication

Project No. C 2054
ENDO (1)

Supporting Agency: Public Health Service

Title of Project: 1. A method of concentration of gonadotrophins by means of ion exchange resins. 2. Endocrine assays in disturbed pregnancy and infertility using simplified techniques. 3. Endocrine studies in relation to radiation sensitivity of gynecologic cancer.

Professional Personnel: John McLean Morris, M.D., Associate Professor of Gynecology, Dept. of Obstetrics & Gynecology, Yale University School of Medicine
Edward Harry Gee Hon, M.D. Research Fellow, Dept. of Obstetrics & Gynecology, Yale University School of Medicine

Name of Institution: Yale University School of Medicine, 333 Cedar Street, New Haven, Conn.

Summary of Proposed Work:

Simplified techniques for concentrating pituitary and chorionic gonadotrophin employing ion exchange resins will be used in an attempt to establish more rapid and less cumbersome methods of bioassay of these materials.

In the disturbances of pregnancy quantitative chorionic gonadotrophin determinations utilizing the male frog and/or the male toad Bufo americanus will be attempted as a clinically feasible method to determine prognoses and therapy.

These and other endocrine studies will be done in cases of infertility and anovulatory menstruation and in cases of carcinoma of the cervix and corpus uteri undergoing radiation therapy. The latter study is being done in conjunction with a separate project attempting to correlate certain hormone patterns with radiation sensitive and radiation resistant tumors.

Grant No.	Period of Operation	Amt. App.
C 2054	9/53 - 8/54	$7,755
2054 C1	9/54 - 8/55	8,000*

*Commitment

SOURCE TERMINATED 9/55

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-2054(C)
Endo (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT: 1. A method of concentration of gonadotrophins by means of ion exchange resins. 2. Endocrine assays in disturbed pregnancy and infertility using simplified techniques. 3. Endocrine studies in relation to radiation sensitivity of gynecologic cancer.

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

John McLean Morris, M.D., Associate Professor of Gynecology, Department of Obstetrics & Gynecology, Yale University School of Medicine

Edward Harry Gee Hon, M.D., Research Fellow, Department of Obstetrics & Gynecology, Yale University School of Medicine

NAME AND ADDRESS OF APPLICANT INSTITUTION:

Yale University School of Medicine, 333 Cedar Street, New Haven, Conn.

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

To the Medical Sciences Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Simplified techniques for concentrating pituitary and chorionic gonadotrophin employing ion exchange resins will be used in an attempt to establish more rapid and less cumbersome methods of bioassay of these materials.

In the disturbances of pregnancy quantitative chorionic gonadotrophin determinations utilizing the male frog and/or the male toad Bufo americanus will be attempted as a clinically feasible method to determine prognoses and therapy.

These and other endocrine studies will be done in cases of infertility and anovulatory menstruation and in cases of carcinoma of the cervix and corpus uteri undergoing radiation therapy. The latter study is being done in conjunction with a separate project attempting to correlate certain hormone patterns with radiation sensitive and radiation resistant tumors.

SIGNATURE OF PRINCIPAL INVESTIGATOR: John McL. Morris

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

Submitted for period beginning-September 1954

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-2054	9/53 - 8/54	$7,755
2054 C1	9/54 - 8/55	8,000

SUPPORT FROM THIS SOURCE TERMINATED 8/55

PHS 46
REV 10-52

Form Approved
Budget Bureau No. 72-R001.2

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1984
~~No. 8-S~~ (1) Rad.

SUBMITTED TO: Public Health Service, National Institutes of Health Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Microdosimetry Determinations in Radiation Therapy

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Richard H. Chamberlain, M. D., Associate Professor of Radiology, Univ. of Pa. School of Medicine
John Hale, Research Associate in Radiologic Physics, Hospital of the University of Pennsylvania
Robert O. Gorson, Instructor in Radiologic Physics, Graduate School of Med. & School of Med., Univ. of Pa.

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Pennsylvania School of Medicine
Hospital of the Univ. of Pa., 3400 Spruce St., Philadelphia 4, Pa.

SUMMARY OF PROPOSED WORK (300 words or less—omit confidential data)

In the exchange of information summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The increasing use of radioactive isotopes and long wavelength x-ray sources has posed new problems in dosimetry within very small volumes of tissue. The patterns of distribution of radiation from radioactive isotopes localized in small volumes of tissue or from long wavelength x-ray sources is of crucial importance in analyzing the expected effectiveness of the radiation therapy of malignant tissues.

We plan the further development of instruments for measurement of tissue isodose curves from long wavelength x-rays produced by beryllium window tubes. Scintillation crystal fluorometry will be explored for optimum crystal characteristics, wavelength dependence, and application to phantom measurements. The distribution of radiation dosage in intracavitary and interstitial uses of radioactive isotopes will be investigated further. Particular emphasis will be placed on beta and gamma dosimetry with colloidal radioactive gold and radioactive gold wire. Interrelationship of patterns obtained with scintillation instruments and photographic emulsions to patient dose will be studied.

SIGNATURE OF PRINCIPAL INVESTIGATOR

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

School of Medicine, University of Pennsylvania

Grant No.	Period of Operation	Amt. App.
C-1984	4/53 - 3/54	$2, 612
1984 C1	4/54 - 3/55	4,000*

LEAVE BLANK

Comment

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1984 (C) & (C2)
No. S.S. (5) Rad.

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

Microdosimetry Determinations in Radiation Therapy

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
C-1984(C3)
Rad. (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT: Microdosimetry Determinations in Radiation Therapy

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

Richard H. Chamberlain, M.D., Professor of Radiology *
John Hale, M.S., Associate in Radiological Physics *
Robert O. Gorson, M.S., Associate in Radiological Physics *
Jean Linder, A.B., Assistant Physicist *

* From the Radiology Department, Hospital of University of Pennsylvania.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of Pennsylvania, School of Medicine, Hospital of the University of Pennsylvania, 3400 Spruce Street, Philadelphia 4, Pennsylvania

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 medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The goals toward which this project is directed involve attempts at more precise specification of radiation therapy dosage in certain areas where such information is presently inadequate. Included are several aspects of dosage determination.

(1) The description of the three-dimensional isodose patterns obtained with long wavelength x-rays generated in beryllium window x-ray tubes operating at 10 to 50 KVP.

(2) Exploration of the extent to which dosage information regarding patients who have been given radioisotopes can be deduced from data obtained by external scanning of the patients.

(3) Investigation of the distribution of absorbed energy from a beta particle point source embedded in tissue equivalent media.

(4) Clinical investigation of the practical value of the method of radiation therapy based on interstitial implantation of nylon ribbons pre-loaded with solid particulate radioactive sources.

PROFESSIONAL SERVICES TO BE CERTIFIED

Submitted for period beginning - April 1956

SIGNATURE OF PRINCIPAL INVESTIGATOR: Richard H. Chamberlain

Identify the professional school (medical, dental, public health, graduate, or other) with which this project should be identified.

SCHOOL: Medical School, University of Penna.

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C 1984	4/53 - 3/54	$2,612
1984 C1	4/54 - 3/55	4,000
1984 C2	4/55 - 3/56	5,940
1984 C3	4/56 - 3/57	8,165
1984 C4	4/57 - 3/58	$8,050 *
1984 C5	4/58 - 3/59	8,090 *

* Commitment

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1915
Surg. (1) Exmo (-)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

RADIOGOLD IN THE STUDY OF LYMPHATIC EXTENSION OF HUMAN CANCER AND ITS USE AS A GUIDE FOR TREATMENT

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Colin G. Thomas, Jr. M.D.
Department of Surgery, School of Medicine, University of North Carolina
Assistant Professor of Surgery

Richard M. Peters, M.D.
Department of Surgery, School of Medicine, University of North Carolina,
Assistant Professor of Surgery

NAME AND ADDRESS OF APPLICANT INSTITUTION

Department of Surgery, School of Medicine
University of North Carolina, Chapel Hill, North Carolina

SUMMARY OF PROPOSED WORK (300 words or less — omit confidential data)

In the exchange of information, summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

By appropriate placement of radiogold, it is planned to determine routes of lymphatic drainage in various types of cancer as influenced by the presence of lymph node metastases and location of the primary neoplasm. The adequacy of surgical extirpation of routes of lymphatic drainage will be determined, as well as a quantitative evaluation of the phagocytosis of radiogold by normal and cancerous lymph nodes.

SIGNATURE OF PRINCIPAL INVESTIGATOR

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Department of Surgery, School of Medicine
University of North Carolina

Grant No.	Grant No.	Period of Operation	Operat. Amt. App.	Amt. App.
C 1915		12/1/52 - 11/30/53 11/30/54	$5,477	
	1915 C1	5/31/54 - 11/30/55	3,240 *	
	1915 C2	5/31/55 - 11/30/56	3,240 *	

LEAVE BLANK

* Commitment

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

(LEAVE BLANK)
C-1915(C)
Surg(S)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

RADIOGOLD IN THE STUDY OF LYMPHATIC EXTENSION OF HUMAN CANCER AND ITS USE AS A GUIDE FOR TREATMENT

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

C. G. Thomas, M. D., Assistant Professor, Department of Surgery
Richard M. Peters, M. D., Assistant Professor, Department of Surgery

NAME AND ADDRESS OF APPLICANT INSTITUTION

Department of Surgery, School of Medicine, University of North Carolina, Chapel Hill, North Carolina

SUMMARY OF PROPOSED WORK (300 words or less – omit confidential data)

In the exchange of information concerning work in progress are exchanged with government and private agencies supporting research in medical and related fields and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

SPECIFIC AIMS: 1. In human subjects with externally situated cancer to determine routes of lymphatic drainage as modified by the presence of lymph node metastases and location of the neoplasm.

2. In conjunction with the surgical treatment of human cancer to determine the adequacy of removal of regional lymphatic drainage.

3. To appraise the phagocytosis of radiogold by lymph nodes containing metastatic cancer.

SIGNATURE OF PRINCIPAL INVESTIGATOR C. G. Thomas, M. D.

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Department of Surgery, School of Medicine, University of North Carolina, Chapel Hill, N. C.

Grant No.	Period of Operation	Amt. App.
C-1915	12/52 - 4/54	$5,477
1915 C1	5/54 - 4/55	3,240 *
1915 C2	5/55 - 4/56	3,240 *

LEAVE BLANK

* Commitment

PHS-166-1(RG)
Rev. 8-51

Form Approved
Budget Bureau

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
0-1915 (C2)
Surg (5)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

RADIOGOLD IN THE STUDY OF LYMPHATIC EXTENSION OF HUMAN CANCER AND ITS USE AS A GUIDE FOR TREATMENT

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

C. G. Thomas, Jr., M. D., Assistant Professor of Surgery, Department of Surgery
Richard M. Peters, M. D., Assistant Professor of Surgery In Charge of Thoracic Surgery, Department of Surgery

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of North Carolina, Chapel Hill, N. C.

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

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

During the past two years studies with radioactive colloidal gold have been carried out in patients with externally situated neoplasm. Tracer amounts of radiogold have been injected in the region of the malignant neoplasm, for example, carcinoma of the breast, oral cavity, and hypopharynx, patients surveyed for location of radiogold following such injection and the surgical specimen also appraised with the relative intensity and location of the radiogold. Preliminary although incomplete observations have indicated that there is little evidence of filtering of colloidal gold particles by proximal lymph nodes. Deposition of radiogold occurred throughout the regional lymph nodes and only with extensive involvement of lymph nodes by cancer is there any suggestion of alteration in "normal" lymphatic flow. These observations are to be continued with particular attention to those patients with medially situated carcinoma of the breast.

Initial studies have indicated that complete replacement of a lymph node by carcinoma is necessary to exclude the depositing of the gold colloids. Apparently the presence of only a small amount of lymphoid tissue renders a carcinomatous node capable of phagocytizing appreciable quantities of radiogold. These observations procured by examination of the operative specimen following the injection of radiogold are to be extended and also correlated with any radiation effect of the radiogold on metastatic cancers.

SIGNATURE OF PRINCIPAL INVESTIGATOR: Calvin G. Thomas Jr.

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

SCHOOL:

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amt. Appr.
C-1915	12/52 - 4/54	$5,477
1915 C1	5/54 - 4/55	3,240
1915 C2	5/55 - 4/56	3,240

PHS-166
REV. 10-52

Form Approved
Budget Bureau No. 72-R001.2

Prepared for the Bio Sciences Information Exchange.
Not for publication or publication reference.

HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

PROJECT NO. C-1915(C3)

Surg (2)

SUBMITTED TO: Public Health Service, National Institutes of Health, Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT:

RADIOISOTOPES IN THE STUDY OF THE DYNAMICS OF THE LYMPHATIC DISSEMINATION OF CANCER

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

Colin G. Thomas, Jr., M.D., Department of Surgery, Associate Professor of Surgery

Richard H. Peters, [illegible]

NAME AND ADDRESS OF APPLICANT INSTITUTION:

University of North Carolina, Chapel Hill, North Carolina

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

In the Bio-Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are furnished to investigators who request such information. Your summary is to be used for these purposes.

Previous studies with radiogold have demonstrated its dissemination by the lymphatics to be a useful guide in determining the predominant route of lymphatic flow in the evaluation of patients with superficially located cancers. The use of collateral pathways was roughly proportional to the extension of metastatic disease. These studies will be continued and extended employing silver-coated radiogold (which has a somewhat different biological action than Au^{198}) and erythrocytes tagged with [illegible]. Tracer amounts of the isotope will be injected in the region of externally situated neoplasms (breast, oral cavity and cervix) and its dissemination traced by topographical survey. Following surgical treatment, the patient will be again surveyed for location of remaining isotope. The surgical specimen will be appraised to correlate phagocytosis of the particulate matter introduced with the anatomic structure of the lymph node with particular reference to the presence of metastatic neoplasm and of "sinus histiocytosis". Certain [illegible] changes in a lymph node have been said to be an expression of host resistance and these should be correlated with the phagocytic function of [illegible] as measured by the deposition of the radio colloids. Since there are means of enhancing the function of the reticulo-endothelial system, this correlation may be of value in the management of human cancer.

Submitted for period beginning [illegible] 1956

SIGNATURE OF PRINCIPAL INVESTIGATOR: Colin G Thomas Jr

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

SCHOOL: Medical

INVESTIGATOR — DO NOT USE THIS SPACE

Grant No.	Period of Operation	Amount Approved
C-1915	12/52 - 4/54	$5,477
1915 C1	5/54 - 4/55	3,240
1915 C2	5/55 - 4/56	3,240
1915 C3	5/56 - 4/57	3,956
C4	5/57 - 4/58	3,956 *
C5	5/58 - 4/59	3,956 *

* commitment

Prepared for the Medical Sciences Information Exchange.
Not for publication or publication reference without consent of the principal investigator.

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

NOTICE OF RESEARCH PROJECT

COPY

(LEAVE BLANK)
C-1908
Endo (1)

SUBMITTED TO: Public Health Service, National Institutes of Health—Div. of Research Grants, Bethesda 14, Md.

TITLE OF PROJECT

The metabolism of C-14 labeled (radioactive) diethylstilbestrol in cancerous and non-cancerous animals and in patients suffering from various forms of cancer, including cancer of the breast and prostate

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATOR AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THIS PROJECT.

Dr. Gray H. Twombly, M.D. Professor of Gynecology, Dept. of Obstetrics and Gynecology,

Dr. Mortimer Levitz, Ph.D. Organic Chemist, Dept. Of Obstetrics and Gynecology

NAME AND ADDRESS OF APPLICANT INSTITUTION

New York University College of Medicine
477 First Avenue, New York 16, N.Y.

SUMMARY OF PROPOSED WORK (300 words or less — unclassified)

In the exchange of information [illegible] of work in progress are exchanged with government and private agencies supporting research in medical and related fields and are furnished to investigators who request such information. This summary is to be used for these purposes.

Diethylstilbestrol labeled in one of the ethyl groups with C14 is available in this laboratory. It has a specific activity of 5.72 microcuries per milligram. Our project is to determine with this material whether patients with cancer of the breast or prostate who show regression on treatment with diethylstilbestrol differ in their metabolism and excretion rates from those whose cancers are not affected. So far 29 cancer patients have been studied of whom 7 have had inoperable cancer of the breast. The work is continuing. No conclusions have been arrived at, at this time.

SIGNATURE OF PRINCIPAL INVESTIGATOR

IDENTIFY ANY PROFESSIONAL SCHOOL (MEDICAL, DENTAL, PUBLIC HEALTH, GRADUATE, OR OTHER) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED.

Grant No.	Period of Operation	Amt. App.
C 1908	10/1/52 - 9/30/53	$14,000

Support from this source terminated 9/53

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PHS-164-1(RG)
Rev. 8-51

Form Approved
Budget Bureau No. 72.R001.1