MASONIC CANCER CENTER
UNIVERSITY OF MINNESOTA

APPLICATION FOR FEDERAL ASSISTANCE

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
WASHINGTON, D.C.

APPLICATION FOR FEDERAL ASSISTANCE
FOR CONSTRUCTION OF HEALTH
AND EDUCATIONAL FACILITIES

LEAVE BLANK

STATE	DHEW
Date Rec'd.	
Project Number	

GENERAL INFORMATION

1. LEGAL NAME OF APPLICANT

REGENTS OF THE UNIVERSITY OF MINNESOTA

2. ADDRESS OF APPLICANT *(street, city, country, congressional district, state, zip code, and telephone number)*

MINNEAPOLIS, HENNIPIN COUNTY
MINNESOTA 55455
CONGRESSIONAL DISTRICT #5
(612) 373-7733

3. APPLICANT APPLIES FOR FEDERAL FUNDS FOR CONSTRUCTION UNDER THE FOLLOWING PROGRAM(S):

(A) CODE NO. *(See Program Instructions)*	SHORT TITLE	(B) GRANT AMOUNT	OTHER (IDENTIFY)
(1)	CRF Cancer Fac.	$ 6,173,060	$ 2,699,653
(2)		$	$
(3)		$	$
(4)		$	$

4. PROPOSED FACILITY AND PROJECT

(A) Name and Type

MASONIC CANCER CENTER

(B) Address *(street, city, county, congressional district, state, zip code)*

MINNEAPOLIS, HENNEPIN COUNTY
MENNESOTA 55455
CONGRESSIONAL DISTRICT #5
(612) 373-7733

(C) Type of construction *(Check all that apply)*

- [XX] New facility
- [ ] Expansion of existing facility
- [ ] Remodeling
- [ ] Acquisition
- [ ] Equipment only
- [ ] Other *(specify)*

(D) Type of Ownership

[XX] Public [ ] Other Nonprofit

(E) Type of operational control in other than the owner

[XX] Public [ ] Other Nonprofit

5. APPLICANT'S REPRESENTATIVE *(Name, title, address, telephone number)*

C. T. Johnson
Assistant Vice President and Treasurer
University of Minnesota
Minneapolis, Minnesota 55455
(612) 373-2058

6. PROJECT ARCHITECT *(Name, address, telephone number)*

The Architects Collaborative, Inc.
46 Brattle Street
Cambridge, Massachusetts 02138
(612) 868-4200

HEW-537(10/70)

PROGRAM INFORMATION

7. APPLICANT ELIGIBILITY AND NEED FOR FACILITY

(See program instructions for detailed requirements for this item)

SEE APPENDIX A

8. OCCUPANCY DATA

(See program instructions for detailed requirements for this item)

SEE APPENDIX B

9. DESCRIPTION OF PROGRAMS TO BE CONDUCTED IN FACILITY

(See program instructions for detailed requirements for this item)

SEE APPENDIX B

10. DESCRIPTION OF FACILITY

(See program instructions for detailed requirements for this item)

SEE APPENDIX C

FACILITY INFORMATION

11. APPLICANT'S FINANCIAL RESOURCES APPLICABLE TO THIS FACILITY

A. Cash and negotiable and non-negotiable securities . . . . . $ _____

B. Pledges: Face value: $ _____

Discounted Value . . . . . $ _____

C. Contingent gifts and bequests . . . . . $ _____

D. Bonds authorized but not yet sold . . . . . $ _____

E. Mortgage . . . . . $ _____

F. Appropriations:

	Available *(specify date)*	Anticipated *(specify date)*
State	$ _____	$ _____
Local	$ _____	$ _____

TOTAL . . . . . $ _____

G. Other *(Specify)* . . . . . Private contribution . . . . . $ 2,699,653

H. TOTAL . . . . . $ 2,699,653

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12. OTHER FEDERAL ASSISTANCE FOR THIS PROPOSED FACILITY

	PROGRAM	FED. AGENCY	STATUS	AMOUNT	PROJECT NUMBER
A.					
B.					
C.					

13. TOTAL DEVELOPMENT COST

(Sum of items 3, 11, and 12) $ 8,230,747

---

14. SITE AND IMPROVEMENTS

A. Title or Other Interest in Site is or will be Vested in:

XX Applicant _____ Agency or institution which is to operate the facility

_____ Other *(specify)*

B. Indicate whether applicant/operator has:

_____ Fee simple title _____ Leasehold interest XX - See attachment this section Other *(specify)*

C. If applicant/operator has leasehold interest, give following information:

(1) Length of lease or other estate interest: _____

(2) Number of years to run: _____

(3) Is lease renewable? ___ Yes ___ No

(4) Current appraised value of land: $ _____

(5) Annual rental: $ _____

D. Attach an opinion from acceptable title counsel describing the interest applicant operator has in the site and certifying that the estate or interest is legal and valid.

E. Attach site survey, soil investigation reports and where applicable copies of land appraisals.

F. Where applicable attach certification from architect on the feasibility of improving existing structures.

G. Attach plot plan. See attachment this section.

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15. CONSTRUCTION SCHEDULE ESTIMATES:

A. Target dates for completion of drawings:

Schematics _____ Preliminary Feb. 77 Final Oct. 77

B. Target dates for: Bid advertising Oct. 77; Contract award Jan. 78;

Construction completed May 79; Occupancy June/July 79;

16. BUDGET INFORMATION
ESTIMATED FACILITY BUDGET

A. Building identification: _____
(if more than one structure)

B. Budget Line	C. New construction	D. Other *(identify)*	E. Total
1. Building work			
a. General construction	$ 2,957,741	$	$
b. Plumbing	336,560		
c. Heating, air cond., ventilation	1,203,440		
d. Electrical work	609,280		
e. Elevators	282,240		
f. Other building work *(attach list and itemization of costs)*			
g. TOTAL FOR BUILDING WORK Escalated 12% to January 1978	5,389,261		
2. Site work			
a. Site preparation	85,000		
b. Site development and parking facilities	110,000		
c. Utility connecting lines	8,000		
d. Special use items			
e. TOTAL FOR SITE WORK	203,000		

ESTIMATED FACILITY BUDGET (Cont'd.)

B. Budget Line	C. New construction	D. Other *(identify)*	E. Total
3. Off-site work			
a. Connecting lines to central utility plant	$	$	$
b. Other items *(list and itemize costs)* Control Center - prorata share	10,136		
c. TOTAL FOR OFF-SITE WORK	10,136		
4. Central utility plant *(prorata share for this structure)*	55,700		
5. TOTAL–CONSTRUCTION COSTS	5,658,097		
6. Built-in equipment	1,030,400		
7. Architectural and engineering costs			
a. Architect's basic fee	472,786		
b. Supervision and inspection *(project representative)*	80,246		
c. Surveys, tests, and borings	21,000		
d. Other items *(list and itemize costs)**	321,085		
e. TOTAL–ARCHITECTURAL AND ENGINEERING COST	895,117		

* Grant preparation (architect & consultant) - $50,000
Consultants (Cost - $25,000; Vibration - $8,000; Radiation Protection - $10,000)
Special Charges (SAC Charges - $2,000; Permit (.002%)- $12,839)
U of Minn. (Misc. Engineering - $45,000; HSPO (1.25%)-$80,246; Activation and Incidentals- $8,000)
Reimbursable Expenses (Travel-$25,000; Printing - $20,000; Additional Services, Field Verification, etc.- $30,000)
TOTAL - $321,085

ESTIMATED FACILITY BUDGET (Cont'd.)

B. Budget Line	C. New construction	D. Other *(identify)*	E. Total
8. Movable equipment	$ 641,966	$	$
9. TOTAL COST FOR CONSTRUCTION FIXED EQUIP. A/E FEES AND MOVABLE EQUIPMENT	8,225,580		
10. Contingency	331,133		
11. Purchase of Land	160,000		
12. Purchase of Buildings			
13. Other *(list and itemize)* *	156,000		
14. Subtotal-Lines 9 to 13 incl.			
15. Works of Art			
16. TOTAL DEVELOPMENT COST	$ 8,872,713	$	$

* Relocation of existing radiation therapy machines	$100,000
Relocation of Apartment occupants	35,000
Relocation of Departments	20,000
Legal Services	1,000
	$156,000

17. SPACE ALLOCATION BY GRANT PROGRAM

A. Building identification *(if more than one structure)* _____

B. Gross area in facility 53,008 S.F. C. Net area in facility 20,920 S.F.

Alternate I	GRANT PROGRAMS				APPLICANT SPACE
	1) CRF Cancer F. PROGRAM CODE	2) PROGRAM CODE	3) PROGRAM CODE	4) PROGRAM CODE	5)
D. Net area by program(s)	20,920 SF	SF	SF	SF	SF
E. Cost allocation ratio by programs *(D/C X 100—to two decimals)*	%	%	%	%	%
Alternate II					
F. Gross area by program(s)	53,008 SF	SF	SF	SF	SF
G. Cost allocation ratio by programs *(F/B X 100—to two decimals)*	100 %	%	%	%	%

18. COSTS ELIGIBLE FOR FEDERAL PARTICIPATION
(BY PROGRAMS)

A. Budget line	B. Total cost *(col. E, item 16)*	C. Total eligible cost	D. Amounts eligible for Federal participation *(for each grant program)*			
			1) Program code ____, ____ % from item 17E ___ or 17G ___	2) Program code ____, ____ % from item 17E ___ or 17G ___	3) Program code ____, ____ % from item 17E ___ or 17G ___	4) Program code ____, ____ % from item 17E ___ or 17G ___
1g. Building work	$ 5,389,261	$ 5,389,261	$	$	$	$
2e. Site work	203,000	203,000				
3c. Off-site work	10,136	10,136				
4. Central utility plant	55,700	55,700				
6. Fixed equipment	1,030,400	1,030,400				
7e. A/E costs	895,117	895,117				
8. Movable equipment	641,966					
10. Contingency	331,133	331,133				
11. Purchase of Land	160,000	160,000				
12. Purchases of Building(s)						
13. Other	156,000	156,000				
15. Works of Art						
16. TOTALS *(1g. through 15)*	$ 8,872,713	$ 8,230,747	$	$	$	$
17. Amount of Fed. Assist Requested			$ 6,173,060	$	$	$
18. Fed. Share Request—Percentage			75 %	%	%	%

19. ASSURANCES

The following assurances are divided into two parts. Part A assurances are required for all applicants applying for construction program support including the acquisition of facilities where applicable, from the Department of Health, Education, and Welfare. Part B assurances are ones which relate only to individual construction grant or loan programs. Signature by the applicant's representative will indicate that the institution agrees to all Part A assurances and to the Part B assurances required by the program or programs to which it is applying for support.

The applicant gives assurance that:

Part A:

1. It possesses legal authority to apply for and receive the grant or loan, and to finance and construct the proposed facilities; that a resolution, motion or similar action has been duly adopted or passed as an official act of the applicant's governing board, authorizing the filing of the application, including all understandings and assurances contained therein, and directing and authorizing the person identified as the official representative of the applicant to act in connection with the application and to provide such additional information as may be required.

2. It will comply with the provisions of the National Environmental Policy Act, PL 91-190; Executive Order 11296, relating to flood-plain elevation and necessary controls; and Executive Order 11288 relating to the prevention, control, and abatement of water pollution.

3. Sufficient funds will be available to meet the non-Federal share of the cost of constructing the facility, and that sufficient funds will be available when construction is completed to assure effective operation and maintenance of the facility for the purposes for which constructed.

4. Approval by the HEW Secretary or his designee* of the final working drawings and specifications will be obtained before the project is advertised or placed on the market for bidding; that it will construct the project, or cause it to be constructed, to final completion in accordance with the application and approved drawings and specifications; that it will submit to the Secretary or his designee for prior approval changes that materially alter the scope or costs of the project, use of space, or functional layout; that it will not enter into a construction contract(s) for the project or a part thereof until the conditions of the construction grant or loan programs have been met.

5. Except as otherwise provided by State/local law, all contracting for construction (including the purchase and installation of built-in equipment) shall be on a lump sum fixed-price basis, and contracts will be awarded on the basis of competitive bidding with award of the contract to the lowest responsive and responsible bidder. The provision for exceptions based on State and local law will not be invoked to give local contractors or suppliers a percentage preferance over non-local contractors bidding for the same contract. Such practices are precluded by this assurance.

6. Except as otherwise provided by law, all laborers and mechanics employed by contractors and subcontractors on all construction and minor remodeling projects will be paid wages at rates not less than those prevailing as determined by the Secretary of Labor in accordance with the Davis-Bacon Act, as amended (40 U.S.C. 276a-276a-5) and 29 CFR Part 1, and shall receive overtime compensation in accordance with and subject to the provisions of the Contract Work Hours Standards Act (40 U.S.C. 327-332); that such contractors and subcontractors shall comply with the provisions of 29 CFR Part 3; and that all construction contracts and subcontracts shall incorporate the contract clauses required by 29 CFR 5.5(a) and (c). Such contracts shall also include the applicable provisions of Executive Order 11246, as amended (Nondiscrimination in Construction Contract Employment), and the applicant shall otherwise comply with the requirements of section 301 of said Executive Order. The contractor shall furnish performance and payment bonds, each in the amount of the full contract price; and provide, during the life of the contract, for adequate fire, public liability, property damage, and workmen's compensation insurance.

7. It will provide and maintain competent and adequate architectural engineering supervision and inspection at the construction site to insure that the completed work conforms with the approved drawings and specifications; that it will furnish progress reports and such other information as the Secretary or his designee may require.

8. An assurance of compliance with Title VI of the Civil Rights Act of 1964 (Form HEW 441) applying to the facility described in this application was filed or is attached to this application.

9. It will maintain grant or loan accounting records (identifiable by grant or loan number), including all records relating to the receipt and expenditure of Federal grant or loan funds and to the expenditure of the non-Federal share of the cost of a project, for three years after the completion of the project if an audit is conducted by or on behalf of the Department within that period, or in the case where no audit is performed, for five years; except that should audit questions arise with respect to the grant or loan, the records will be maintained until all such questions are resolved. Representatives of the Federal Government shall have access at all reasonable times to the grantee's records and to work whenever it is in preparation or progress, and the contractor shall provide proper facilities for such access and inspection.

10. The facility will be operated and maintained in accordance with the requirements of

*The term Secretary or his designee shall mean Commissioner of Education with respect to Office of Education programs.

applicable Federal, State and local agencies for the maintenance and operation of such facilities.

11. The applicant will require the facility to be designed to comply with the "American Standard Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped," Number A117.1-1961, as modified by other standards prescribed by the Secretary of HEW or the Administrator of General Services. The applicant will be responsible for conducting inspections to insure compliance with these specifications by the contractor.

12. The applicant will cause work on the project to be commenced within a resonable time after receipt of notification from the Secretary or his designee that funds have been awarded, and that the project will be prosecuted to completion with reasonable diligence.

13. Any Federal funds received pursuant to a grant or loan will be used solely for defraying the development cost of the proposed project.

Part B.

1. Hill-Burton, Community Mental Health Centers, and Mental Retardation Facilities.

   a. That it will conform to all the applicable requirements of the appropriate State plan and the regulations pertaining thereto.

   b. That all portions and services of the entire facility for the construction of which, or in connection with which, aid is sought, will be made available without discrimination on account of creed, and no professionally qualified person will be discriminated against on account of creed with respect to the privilege of professional practice in the facility.

   c. That the facility will furnish a community service and:

      (1) will furnish below cost or without charge a reasonable volume of services to persons unable to pay therefore; or

      (2) will NOT furnish below cost or without charge a reasonable volume of services to persons unable to pay therefore, because of the justification which is attached.

   d. The facility will be used for the purposes for which it is constructed for not less than 20 years after the completion of the construction.

2. Community Mental Health Centers:

   That the services to be provided by the facility, alone or in conjunction with other facilities owned or operated by the applicant, will be made available for a program providing principally for persons residing in a particular community or communities in or near which such facility is to be situated, at least the essential elements of comprehensive mental health services-i.e., inpatient services, outpatient services, partial hospitalization services (including at least day care services), emergency services provided 24 hours per day, and consultation and education services available to community agencies and professional personnel.

3. Health Professions and Allied Health Professions Teaching Facilities, Nurse Training Facilities, Medical Library Facilities, and Health Research Facilities.

   a. The facility will not be used for sectarian instruction or as a place for religious worship.

   b. The Health Professions Teaching facility is intended to be used for the purpose set forth in this application.

   c. The Allied Health Professions Teaching facility or Health Research facility will be used for the purpose for which it is constructed for not less than 10 years after the completion of construction.

   d. The Nurse Training facility or Medical Library facility will be used for the purpose for which it is constructed for not less than 20 years after the completion of construction.

   e. The Health or Allied Health Professions Training facility or Nurse Training facility will provide for increased enrollment as set forth in the program instructions and in this application.

4. School Construction under P.L. 81-815:

   a. It is a local educational agency having administrative control and direction of free public elementary or secondary education in the applicant school district, or a State agency which has the responsibility for providing school facilities.

   b. It is a local educational agency created and authorized to construct and maintain school buildings under constitutional, statutory, or charter provisions; and that it may accept and disburse Federal funds to aid in financing the cost of constructing school buildings in accordance with constitutional, statutory, or charter provisions cited:

      Legal Classification:

      Citation:

   c. The applicant has or will have title to the site or the right to build the school facilities on the site and to maintain them on the site for at least twenty years.

   d. The applicant's school facilities will be available to the children for whose education contributions are provided with funds under Public Law 81-815, as amended, on the same terms, in accordance with the laws of the State in which applicant is situated, as they are available to other children in applicant's school district.

HEW-537

e. The applicant will cause due consideration to be given to excellence of architecture and design of project and to the inclusion of works of art the cost of which does not exceed one percent of the Federal share of the cost of the project.

5. Higher Education Facilities under Titles I, II, III of the Higher Education Facilities Act.

a. No part of the eligible areas included in the proposed project: (1) is intended primarily for events for which admission is to be charged to the general public; (2) is especially designed for athletic or recreational activities other than for an academic course in physical education; (3) will be used for sectarian instruction or as a place for religious worship or primarily in connection with any part of the program of a school or department of divinity (as defined in P.L. 88-204); or (4) will be used by a "school of medicine," "school of dentistry," "school of osteopathy," "school of pharmacy," "school of optometry," "school of podiatry," or "school of public health" as these terms are defined in section 724 of the Public Health Service Act, or by a "school of nursing" as defined in that Act under section 843.

b. The applicant is fully cognizant of the requirements regarding economical methods of purchase of movable equipment in accordance with sound business practice, as set forth in the applicable regulations, (45 CFR 170.4), and all movable equipment, the cost of which is to be charged to the project, will be procured in accordance with such regulations. It is understood and agreed by the applicant that the eligible project development cost and the Federal grant or loan amount may be reduced at settlement by the Commissioner of Education based on the amount of any costs claimed under the project which are for elaborate or extravagant equipment items.

c. It is understood and agreed by the applicant that the Commissioner of Education may, from time to time, after execution of a grant or loan agreement for the project, and prior to final settlement under the grant or loan agreement, make downward amendments in the grant or loan amount to adjust to a reduction in the cost of the facilities, the identification of ineligible costs, or a reduction in the size of the project.

d. The applicant has reviewed the academic and financial requirements for operation of the facilities upon completion, and considers the plans for operation of the facilities to be practical and within the financial capabilities of the institution.

e. The facility will be used as an academic facility for not less than twenty (20) years after completion of construction (unless otherwise approved by the U.S. Commissioner of Education), or for so long as the Government holds any of the bonds pursuant to a loan from the Government, whichever is longer.

20. CERTIFICATION BY APPLICANT

The applicant hereby certifies that the foregoing information in this application (including all assurances and all attachments) are correct to the best of its knowledge and belief.

C. T. Johnson
(Legal Name of Applicant)

(Address)

C. T. Johnson
(Signature of Authorized Officer)

(Address if different than above)

Assistant Vice President of the Treasury
University of Minnesota
(Typed Name and Title of Authorized Officer)

(Date of Application)

"The NCI-funded facility will be used for the purpose of which it is constructed for a period of 20 years of for the useful life of the facility, whichever is less, unless otherwise approved by the Director, NCI."

HEW 537

ITEM 14B.

The site for the proposed new facility extends onto property not owned by the University at this time. This property is known as 500 Harvard Street, S.E., and has a three story, 16 unit apartment building situated on it. The property is totally surrounded by other University property and its purchase for this facility is a part of the Master Plan. Negotiations are underway for the purchase of this property and an appraisal of the current market value at $160,000.00 is attached.

Projects costs contained in this application include the cost of this property as well as tenant relocation costs as required under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

Shenehon-Goodlund & Associates, Inc.
REAL ESTATE ANALYSTS
612/377-6957 • 2311 WAYZATA BOULEVARD, MINNEAPOLIS, MINNESOTA 55405

April 30, 1975

Mr. Vernon L. Ausen
Coordinator, Property Acquisition
348 Elliot Hall
Minneapolis, Minnesota 55455

Dear Mr. Ausen:

At your request, we have appraised the property known as 500 Harvard Street Southeast in Minneapolis. The legal description for this property is:

The north 63 feet of Lots 1 and 2, Block 45
St. Anthony City, Hennepin County, Minnesota

As a result of our investigation and appraisal, it is our opinion that this property, on April 21, 1975, has a current market value of:

ONE HUNDRED SIXTY THOUSAND DOLLARS----------($160,000.00)

Subject building is at the southwest corner of the intersection of Essex Street Southeast and Harvard Street. The balance of the block is occupied by University of Minnesota related housing and parking facilities. The subject is one block from the main University of Minnesota Hospital; and, as such, is very convenient for interns or nurses working at the hospital and would, of course, also be suitable for students at the University. Most of the land north of Washington Avenue is now owned by the University and used for parking lot purposes. There is off-street parking available for approximately a total of four cars. Subject is in the best rental area remaining on the east bank of the University of Minnesota campus. The lack of off-street parking is not serious in this area, as most of the tenants would be within walking distance of their place of employment or school.

DOUGLAS E. FRUEN • GERALD R. GOODLUND • GERALD R. HELGREN • HOWARD E. SHENEHON • DENNIS E. TAYLOR

SUMMARY

The result of my three approaches to value were as follows:

Cost Approach:	$163,200.00
Income Approaches:	
Straight Capitalization	$157,500.00
Building Residual	$150,000.00
Cash Flow Method	$155,000.00
Market Approach:	$162,000.00

After giving considerations to the above approaches and more consideration to some than others, it is our opinion that the value of $160,000.00 would be fair for the subject property.

All the approaches are actually based on the market and, in our opinion, should be reasonably close.

We have no present or contemplated interest in the subject property, and our fee was not contingent upon arriving at a predetermined value.

Very truly yours,

SHENEHON-GOODLUND & ASSOCIATES, INC.

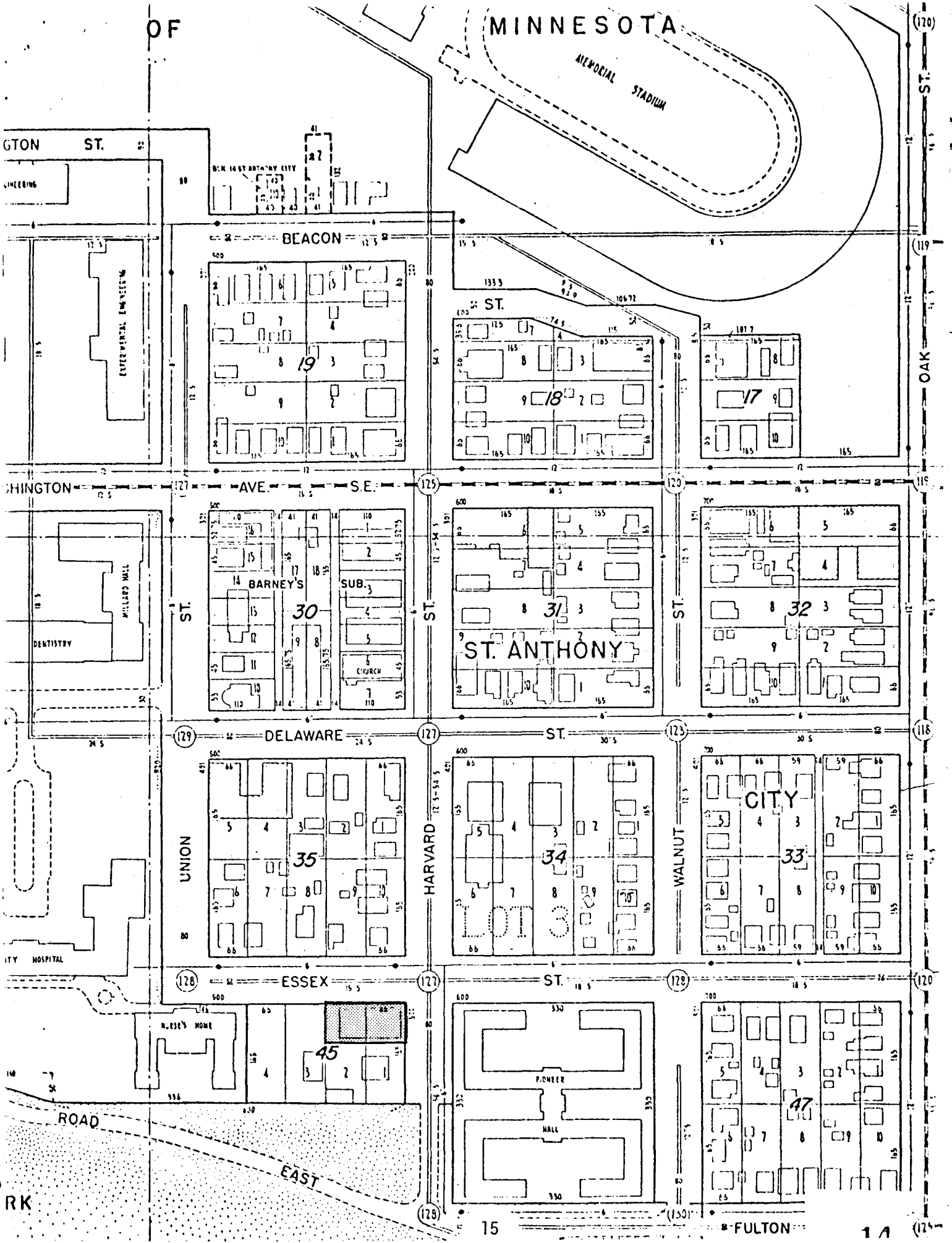
Dennis E. Taylor

Dennis E. Taylor, RM, SRA, SRPA

Gerald R. Goodlund

Gerald R. Goodlund, SREA, MAI

DET/b


OF
MINNESOTA
MEMORIAL STADIUM
GTON ST.
BEACON
ST.
OAK
ST.
EXPERIMENTAL ENGINEERING
19
18
17
HINGTON
AVE.
S.E.
BARNEY'S
SUB.
30
31
32
ST. ANTHONY
CHURCH
MILLARD HALL
DENTISTRY
DELAWARE
ST.
UNION
HARVARD
WALNUT
CITY
35
34
33
LOT 3
ITY HOSPITAL
ESSEX
ST.
NURSE'S HOME
45
PIONEER
HALL
47
ROAD
EAST
RK
FULTON
15
14

APPENDIX A

MASONIC CANCER CENTER
APPLICANT ELIGIBILITY AND NEED

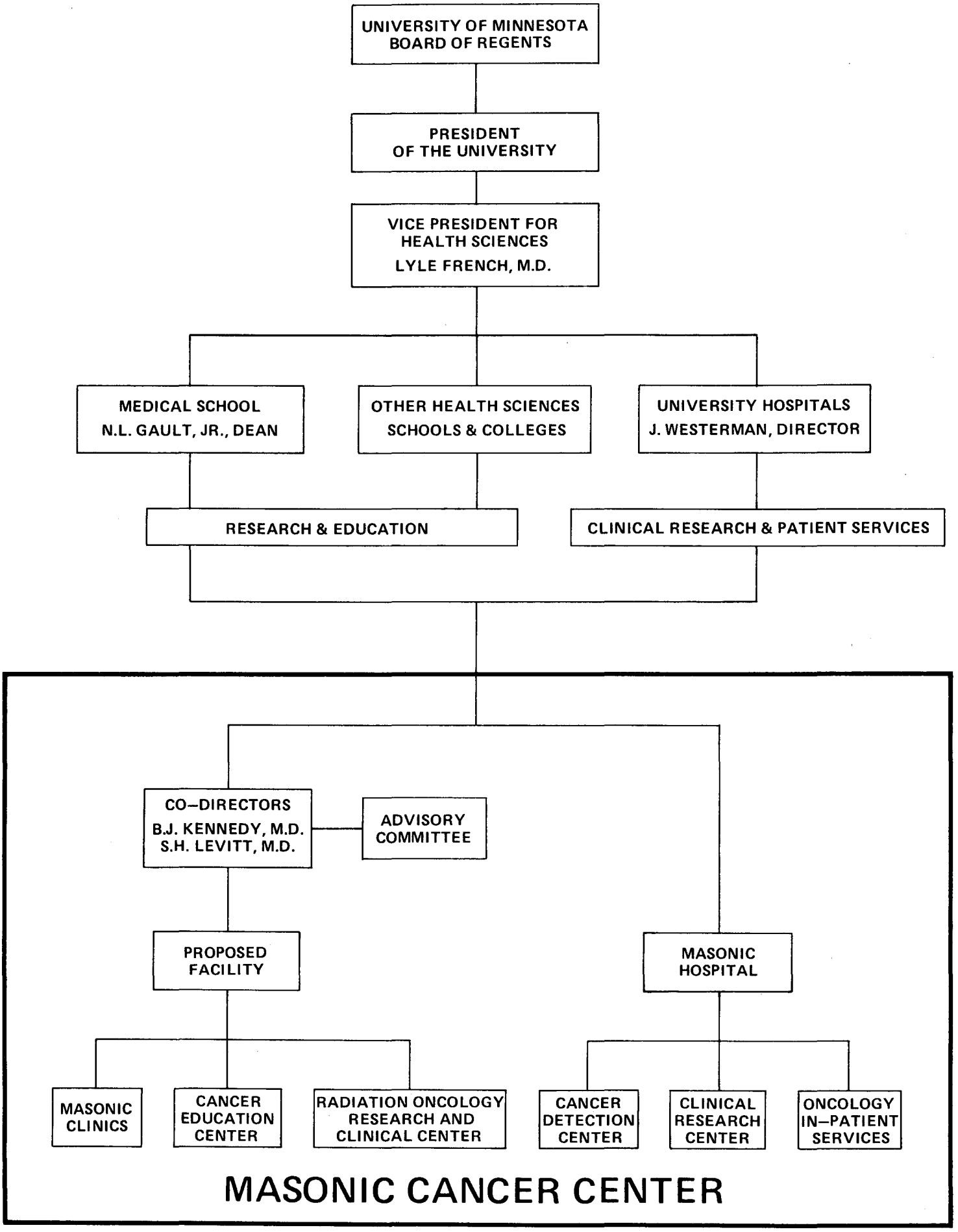
A1. NATURE OF APPLICANT INSTITUTION

A1.1 Applicant Institution

The University of Minnesota is the applicant institution for the building herein proposed. The University was founded in 1851, 7 years before the Territory of Minnesota became a state. Beginning as a preparatory school, the University was beset by financial crises during its early years and was forced to close during the Civil War. When it reopened in 1869, there were only 9 faculty members and 13 freshmen students. The University has since grown into a major center of education, creative scholarship, research and service. Today, it is one of the largest and strongest universities in the U.S. with an enrollment of nearly 50,000 full-time students. This construction grant application is being submitted by the University on behalf of the Masonic Cancer Center, a new term to designate the coalescence of several cancer facilities and cancer research and education programs. A part of the University of Minnesota Health Sciences Center, the Masonic Cancer Center is composed of Hospital and Medical School facilities. It is responsible for its administration to the University Hospitals and Medical School. All research programs and education programs are approved by the University Health Sciences Center and all students in the Masonic Cancer Center are part of the University of Minnesota system.

Figure A-1 shows the organizational relationship of the proposed new facility to the Masonic Cancer Center and to the University. The operation of this new cancer facility will be under the direct authority of permanent Co-directors; the Director of Medical Oncology and the Head of the Department of Therapeutic Radiology, B.J. Kennedy, M.D. and S.H. Levitt, M.D., respectively. These co-directors will have the responsibility for day-to-day operation as well as the assignment of space within the new facility. They will be assisted in the execution of these duties by a special Advisory Committee composed of representatives from the Dean's office of the Medical

FIGURE A-1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S.H. LEVITT, M.D.
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CANCER EDUCATION CENTER
RADIATION ONCOLOGY RESEARCH AND CLINICAL CENTER
CANCER DETECTION CENTER
CLINICAL RESEARCH CENTER
ONCOLOGY IN–PATIENT SERVICES
MASONIC CANCER CENTER

School, Hospitals Administration's office, and the major programs housed in the new facility.

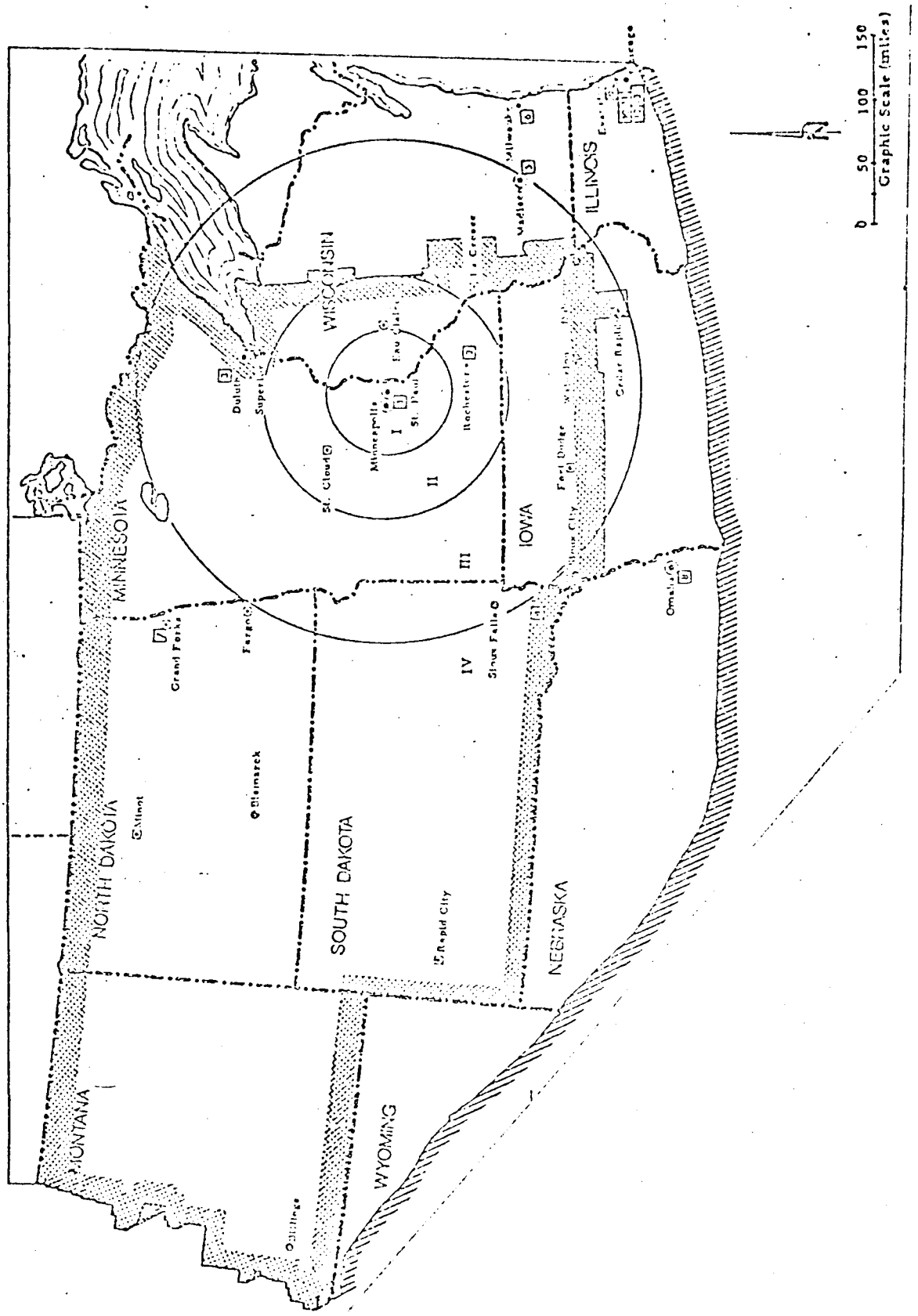
This application is requesting a major portion of the funds required to construct a building which is necessary to provide adequate facilities to support both new and ongoing programs in basic and clinical research, as well as training of medical professionals, public education programs, and continuing education programs for health professionals in the area of cancer. Additional funding will be provided from cash contributions, primarily by the Masons of Minnesota.

A1.2 Overview

A1.2.1 The University of Minnesota Health Sciences Center exists as a major component of the University of Minnesota and is directed by the Vice President for Health Sciences Affairs. He is responsible for the administrative coordination of the Medical School, Dental School, School of Nursing, School of Public Health, College of Pharmacy, School of Veterinary Medicine, and the University Hospitals. The Vice President of Health Sciences Affairs is assisted in his duties related to the respective schools and hospitals by a Council comprised of their deans and directors.

The University of Minnesota Health Sciences Center is situated on the Minneapolis campus of the University of Minnesota and is a referral center for much of the Upper Midwest including Minnesota, North Dakota, South Dakota, and parts of Wisconsin, Iowa, Montana, and Michigan. The total population of this service area, which is depicted in Figure A-2, is approximately six million. The crude mortality from cancer in this population in 1967 was 150/100,000. The Minneapolis-St. Paul Metropolitan Statistical Area (including Anoka, Dakota, Hennepin, Ramsey, and Washington counties) includes a population of approximately two million. More exact data is known for this area from the Third National Cancer Survey. In 1969, 7,029 new tumors were diagnosed, of which 5,266 involved people residing in this area. The incidence rates of new malignancies in all sites in this population in 1970 was 321/100,000 compared with 297/100,000 in 1950. The role of the University Hospitals in this cancer problem is shown in the tabulation of cancer patients admitted to the University of Minnesota Hospitals in 1969 (Table A-1).

FIGURE A-2



MONTANA
NORTH DAKOTA
MINNESOTA
SOUTH DAKOTA
WYOMING
NEBRASKA
IOWA
WISCONSIN
ILLINOIS
Minot
Bismarck
Grand Forks
Fargo
Rapid City
Sioux Falls
Omaha
Fort Dodge
Cedar Rapids
Madison
La Crosse
Rochester
St. Paul
Minneapolis
St. Cloud
Duluth
Superior
I
II
III
IV
0
50
100
150
Graphic Scale (miles)

TABLE A-1

CANCER PATIENTS AT MINNESOTA UNIVERSITY HOSPITALS
BY SITE IN 1969 AS COMPILED FOR THE NCI THIRD NATIONAL CANCER SURVEY

Site[a]	Number of Cancer Cases Admitted to Minnesota University Hospitals During 1969	Number of Cancer Cases Newly Diagnosed at Minnesota University Hospitals During 1969	Expected Distribution[b]
All Sites Combined:	1259	629	629[c]
Lip	4	2	2
Tongue	8	4	4
Salivary Gland	8	3	2
Gum and Mouth	27	18	6
Oropharynx	11	10	3
Nasopharynx	6	2	1
Hypopharynx	4	2	2
Pharynx, Unspec.	1	--	1
Esophagus	13	9	7
Stomach	32	22	24
Small Intestine	6	4	2
Ascending Colon	6	5	8
Sigmoid Colon	13	4	24
Other Large Intestine	34	18	38
Rectum, Rectosigmoid	37	18	31
Liver	1	1	5
Gallbladder, Biliary	7	4	7
Pancreas	32	26	20
Other Digestive	8	2	3
Larynx	13	5	10
Lung and Bronchus	78	56	80
Other Resp.	11	2	2
Breast	159	41	85
Cervix Uteri., Invas.	102	70	20
Corpus Uteri	37	20	22
Uterus, Unspec.	3	--	3
Ovary	50	30	16
Other Female Genital	23	13	4
Prostate	30	15	49
Other Male Genital	18	8	4
Urinary Bladder	21	10	29
Kidney	21	14	12
Other Urinary	7	5	3
Bones and Joints	14	7	2
Soft Tissues	12	5	4
Melanomas of Skin	15	2	5
Eye and Orbit	27	20	2
Brain	53	29	10
Other Nervous System	11	4	1
Thyroid	14	7	7
Other Endocrine	5	--	1
Leukemias	100	40	21
Hodgkin's Disease	51	19	7
Other Lymphomas	98	40	20
Unknown Site	28	13	24
TOTAL PATIENTS	1248	622	

[a] Excludes cervix in situ.

[b] Distribution by site expected for the same number of newly diagnosed cases using the NCI Third National Survey (1969) cancer incidence by site for the "Northern Region" (i.e., combined incidence in the Minneapolis - St. Paul Standard Metropolitan Statistical Area (SMSA), Pittsburgh SMSA, State of Iowa, and the Detroit SMSA).

[c] Due to round off the total by individual site is 633.

A1.2.2 The University Hospitals began in 1905 when money for the construction of a hospital was offered to the University by the executor of a private estate. In 1911, following legislative approval and the collection of additional funds, The Elliot Memorial Hospital was dedicated as the first unit of the University Hospitals. The act of acceptance passed by the legislature stated that the hospital would belong to and be a part of the University, that the indigent residents of Minnesota would receive free care and treatment, and that the hospital would be controlled by the Regents of the University. Additional Health Sciences buildings have been constructed through grants, gifts, and appropriations. These include the Todd Hospital, Eustis Hospital, Mayo Memorial, Dialysis Center, Variety Club Heart Hospital, Masonic Memorial Hospital, Veterans of Foreign Wars Cancer Research Center, and the Children's Rehabilitation Center.

These buildings, collectively called the University Hospitals, contian 787 beds. In 1975-76, there were 21,583 admissions and the Outpatient Department had 195,717 visits. In addition to the University Hospitals, the Medical School is also affiliated for major programs with the Minneapolis Veterans Administration Hospital, the Hennepin County General Hospital, the St. Paul Ramsey Hospital, and Northwestern Hospital.

A1.2.3 The Medical School at the University began in 1888 when three of the four private or proprietary medical schools in Minneapolis and St. Paul offered their charters and resources to the state. In accepting this offer, the Regents assumed responsibility on behalf of the people of the State of Minnesota for medical education. In 1908 the remaining proprietary school was incorporated into the University Medical School.

The "Mission Statement" of the Medical School clearly demonstrates its commitment to not only education, but also basic and applied research. The Mission Statement is as follows:

"The primary mission of the Medical School is to provide opportunities and programs in undergraduate and graduate medical education for future physicians and related health professionals to serve the health care needs

of the State and Nation. This objective includes the provision of continuing medical education to maintain and develop the competence of health professionals in practice."

"A second objective is to engage in research to advance the health sciences. This, in the broadest sense, should include basic bio-medical research, investigation of the normal functions of the human body and mechanisms of disease processes, factors contributing to the prevention of delivery of health care and health services in relation to community needs throughout the State, and studies of the process of communication and education through which the effectiveness of all the health sciences may be increased."

"The third major objective of the Medical School is to provide health care services to the people of the State. This objective is closely correlated with the education and research missions of the School since each is supportive of the other. The faculty provides health care services that are used as teaching laboratory and demonstration models for the health professions. To obtain the most effective delivery of health care requires that opportunity be widely available for the maintenance of the competence of the practicing health science professionals. Direct patient care is an essential method for maintaining the educational proficiency of the faculty and for establishment of appropriate educational relationships with community health professionals throughout the state."

The strong commitment of the Medical School to research is further demonstrated by the total operating budget which shows Sponsored Research as the single largest line item.

TOTAL OPERATING BUDGET 1974-75

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL

General Operation & Maintenance (0100 funds)	$ 6,335,419
University of Minnesota Hospitals	3,130,323
Sponsored Research (1)	21,246,863
Sponsored Teaching and Training (2)	19,720,677
Sponsored Multi-Purpose & Service Programs	4,772,926
Grand Total	$55,206,208

(1) Includes special State appropriations of $871,299.
(2) Includes special State appropriations of $5,131,463.

A1.2.3.1 The University of Minnesota School of Medicine has a long history of major interest in cancer. The University of Minnesota College of Medical Sciences was the recipient of a Clinical Cancer Training grant for 19 consecutive years beginning in 1948 (T2-CA-523). This training brought together many disciplines of the Medical School in a cancer teaching program through the coordination of a Cancer Coordinating Committee. These efforts were directed by a cancer coordinator who acted as executive secretary of the Cancer Coordinating Committee. A major use of the grant over these years was partial support of full-time faculty members who had a specific interest in cancer teaching.

The Cancer Coordinating Committee advised the Dean of the Medical School with respect to matters relating to cancer education, distribution of interdisciplinary cancer research funds, and development of cancer research facilities for the medical center. The activities of the Cancer Coordinating Committee were partially responsible for the accomplishments of the Medical School in cancer research and Cancer teaching that have obtained international acclaim.

In July of 1967, a new program of clinical cancer training was instituted with support from the National Cancer Institute Clinical Cancer Training Grant (2-T12-CA-08101). This new cancer teaching program provided intensification of training of specific medical students in problems of cancer. The Cancer Training Program provided the opportunity to develop cancer courses that the regular medical school curriculum had not previously provided.

In 1970, the University of Minnesota redesigned the administrative structure of the College of Medical Sciences and other health sciences schools. The Office of Health Science Affairs was developed with the appointment of a vice president. This incorporated the Medical School, Dental School, School of Pharmacy, School of Nursing, School of Public Health, School of Veterinary Medicine, and the University Hospitals.

In the reorganization of the Medical School, the new curriculum taught cancer by the organ system. Clinical oncologists in the Medical School have been concerned that this method of cancer teaching is inadequate in view of

the marked progress that has been made in neoplastic diseases. Evolving about the Masonic Memorial Hospital, a group of clinical oncologists have developed working interrelationships that provide a sound basis for improving the cancer education program at the University of Minnesota School of Medicine. The disciplines of Therapeutic Radiology, Surgery, Medical Oncology, Pediatric Oncology, and Cancer Detection predominate. This group of educators is developing a cancer program that will provide increased exposure of the medical student to the principles of oncology and patient management. An expansion of the cancer teaching program in clinical oncology for the fourth-year medical students is underway. Recently, a Cancer Education grant was awarded that will expedite this program. The overall objective for cancer education is to provide a cancer training program that encompasses nurses, medical students, residents, clinical associates, faculty, and postgraduate health sciences participants.

A1.3 Background

The University of Minnesota Health Sciences Center has long had a commitment to cancer research, education and care of patients. Major steps in this effort include the construction of a 120 bed cancer hospital (the Masonic Memorial Hospital),* construction of the Veteran's of Foreign Wars Cancer Research Building, development of a Radiation Oncology Research and Clinical Center, and development of an interdepartmental Cancer Center for the Study of Advanced Malignant Diseases.

A1.3.1 The Masonic Memorial Hospital was originally constructed in 1958 as a two-story clinical facility for patients with advanced malignant diseases. Two additional floors were constructed in 1967. The VFW Cancer Research Building was added in 1959 as a research component to encourage basic research relating to patient care problems.

A1.3.2 The Masonic Memorial Hospital houses the activities of a special research program named by the National Cancer Institute as a Special Cancer Center for the Study of Advanced Malignant Diseases. Under this study, a group of qualified investigators from various disciplines are involved in working with the problems of advanced malignant diseases. Their care of

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*Masonic Memorial Hospital now has 117 beds. Space for three beds was remodeled to provide additional support services.

patients having advanced cancer, is an effort to provide these patients with the benefits of the most recent developments in basic and clinical cancer research. By employing a multidisciplinary approach to the study of advanced neoplasms, a comprehensive program has been developed. The presence of patients with advanced cancer are a challenge to the investigators in the laboratory, who in turn, are stimulated to search out the rational approach to the solution of the cancer problems encountered. In doing so, the techniques of immunology, radiobiophysics, metabolism, molecular biology, virology, and pharmacology, among others, are considered along with a study of the effects of the various modalities of therapy. The aim of this research support of the Special Cancer Center for the Study of Advanced Malignant Diseases is to increase the capacity for controlling advanced malignant disease by a multidisciplined approach to cancer problems, initiate basic research designed to answer problems that relate to the development of new therapeutic approaches, and realistically employ those therapeutic techniques that prove most effective.

This research effort is designed to increase our capability for controlling advanced malignant diseases. Although initially directed at disseminated disease, the concept of advanced cancer now encompasses lesions when they first become palpable. The research effort and the therapeutic involvement encompass a broad spectrum of activities as spin off projects of the initial effort. The basic incentive is a clinical facility that contains patients with advanced malignant disease in need of care. Basic research problems are designed to answer problems that directly relate to the development of new therapeutic approaches, establishment of better therapeutic indices, and improvement of older therapeutic techniques.

A1.3.2.1 The Section of Medical Oncology has developed an applied research program to improve the management of patients with advanced malignant diseases and leukemia. Specific agents are selected for in-depth study of their molecular biology, mechanisms of action, etiology, pharmacology, and biologic and chemical effects on the tumor and the host. By such studies an improved therapeutic index for the agent is developed. Among the studies of significance have been those relating to mithramycin, uracil mustard, hydroxyurea,

daunorubicin, platinum, combination chemotherapies, and hormonal therapies. Concomitantly, studies of tumor-host metabolic interrelationships and complications of malignancies are conducted. The unit has pioneered new concepts in nutrition in cancer. The general activities of Medical Oncology include long-range clinical protocol studies for a variety of diseases. These are supplemented by biological studies to add to the understanding of tumor growth. These include studies in calcium metabolism, immunology, virology, steroid receptors, hormone assays, cell kinetics, and psychologic studies. In addition to independent studies, the Section of Medical Oncology is a participating member of the Cancer and Leukemia Group B.

A1.3.2.2 The Pediatric Oncology group at the University of Minnesota has an active program covering a full spectrum of clinical, investigative, and educational aspects of the care and management of children with acute leukemia and solid tumors. The initial investigations and interests centered on the role of single chemotherapeutic agents and combination of chemotherapeutic agents in the treatment of children with leukemia and solid tumors. The research has broadened to include immuno-classification of lymphoproliferative malignancies, evaluation of the immune and para-immune mechanisms of host resistance, the genetic and immunological evaluations of leukemic children, the addition of radiation therapy to chemotherapy in the treatment of certain childhood malignancies, investigation of platelet function in leukemia, and the feasibility of bone marrow transplantation as an addition or supplemental therapy for refractory pediatric malignancies.

A1.3.2.3 The Surgical Oncology Group at the University of Minnesota has an active program in adjuvant cancer chemotherapy and immunotherapy. These studies include immunogenetic study of chemical carcinogenesis, general host immune response in the presence of chemical carcinogen-induced sarcoma, *in vitro* immunization and inhibition of cell growth *in vitro*, and human immunotherapy of melanoma and sarcoma. The Department of Surgery has been an active participant in Special Cancer Center Study of Advanced Malignant Diseases and was a participant in the Central Oncology Group with Phase I and III trials. Subsequently, the Department of Surgery has joined the

Minnesota Group of the Cancer and Leukemia Group B. This adds to the interdisciplinary nature of this cooperative group. The Cancer Detection Center in the basement of the Masonic Memorial Hospital is supervised by the staff of the Department of Surgery.

A1.3.2.4 The Gynecologic Oncology Service is located in the Masonic Memorial Hospital. Twenty-five beds are devoted to this program. Gynecologic tumors involve the interdisiplinary therapies of Therapeutic Radiology and Medical Oncology. The Gynecology Department maintains a special Cancer Registry.

A1.3.3 The Masonic Leukemia Treatment Center evolved in the Masonic Memorial Hospital to meet the needs of intensive treatment progress in acute leukemia and long-range programs of acute and chronic leukemia. This Center is composed of the following:

- Adult acute leukemia program. This includes cooperative studies of the Cancer and Leukemia Group B.
- Adult chronic leukemia program.
- Childhood leukemia therapy (Pediatric Oncology, directed by Dr. Mark Nesbit). Includes cooperative studies of Childhood Acute Leukemia Group A.
- Leukapheresis Unit.
- Masonic Research Clinic (Pediatric and Medical Oncology) for the follow-up and treatment of ambulatory patients.

A1.3.4 The Department of Therapeutic Radiology is a nationally recognized leader in the treatment of children's tumors, particularly with regard to the development of various approaches to central nervous system leukemia, and other aspects of leukemia and pediatric tumors. Areas of major effort include lymphomas, gynecological cancer, and central nervous system tumors.

The Department of Therapeutic Radiology presently provides a nucleus for clinical cancer care, clinical research, basic cancer research, graduate and postgraduate education and outreach efforts to improve patient care. To further develop, extend, and integrate these programs, as well as

initiate new ones, funding was applied for and approved by the National Cancer Institute for the development of a Radiation Oncology Research and Clinical Center. This 3-year, $1.2 million project began in July, 1975.

A1.3.4.1 The specific aims of this Radiation Oncology Research and Clinical Center are separated into the following areas:

Clinical Radiation Oncology.

To expand and integrate present clinical research and develop and carry out new clinical investigations, utilizing radiation alone or combined with other agents, and to improve the results in the treatment of human cancer. To provide cancer patients in the region served by the Center with the most advanced, yet economically feasible, radition therapy available.

Cancer Biology

To develop a center for research in basic radiation cancer biology, radiation immunology, and related basic sciences. To integrate and enhance the ongoing research programs and to stimulate new programs investigating the basic mechanisms or radiation and combinations of radiation and other agents in the treatment and control of cancer, with the goal of human application.

Radiation Physics

To develop a center for research in radiation physics which will stimulate new programs in the application and investigation of radiation physics in the treatment of cancer patients.

Education

To provide a Training Program in radiation oncology for graduate and undergraduate physicians, technicians, nurses and other medical and paramedical personnel in this region. To provide a center for demonstration and teaching of the appropriate advanced therapeutic methods and techniques, so that physicians, medical students, and support personnel of this area can improve patient care.

Outreach

To provide a highly visible, centralized source of expertise as a nucleus for improving radiation oncology in the outlying regions of this area by providing practitioners consultation, guidance and support. The feasibility of establishing a network of radiation therapy facilities is being analyzed as part of the outreach effort. In two areas of the state, specific feasibility studies have been carried out and completed.

A1.3.5 Many investigators in the University of Minnesota Health Sciences Center have interests in problems of malignant diseases. Research related to advanced malignant diseases provides a means of stimulating and encouraging new concepts and cooperation with other investigators. The interdepartmental concept provides the opportunity for associations between investigators interested in a common problem. These include the College of Pharmacy, Department of Laboratory Medicine and Pathology, School of Public Health, School of Nursing, among others. Studies involving the psychological aspects of patients with cancer have been established between the Division of Clinical Psychology, the Psychology Department, Social Service Department, and the clergy.

A1.4 The Masonic Cancer Center

A1.4.1 The concept of the Masonic Cancer Center has developed out of the close associations of a group of physicians and scientists incorporating the specialties of Medical Oncology, Radiation Oncology, Surgical Oncology, Pediatric Oncology, Biometry, Pathology, and Gynecologic Oncology who have been participating as an interdisciplinary group in the activities described herein.

Although much progress has been made by the individual programs listed herein toward achieving the general goals of the National Cancer Plan, a facility where these activities can be conducted and developed in a coordinated manner is now essential for further progress.

The proposed new facility will bring together in a cooperative manner the ambulatory research programs of all of these groups and unite the Radiation Oncology Research and Clinical Center with the clinical research center of the Masonic Memorial Hospital. This concentration of cancer research and education will provide a focal point for all cancer activities underway at the University.

The proposed program does not intend to incorporate the entire cancer research activity of the University of Minnesota, but in keeping with the National Cancer Plan, this new space will be devoted to the task of translating findings in basic science into the applied technologies needed to

bring these findings to the community with the least possible delay. Appendix D includes letters of endorsement supporting this coordinating role of the Masonic Cancer Center.

A2. PRESENT RESEARCH FACILITIES

A2.1 The University of Minnesota, as the largest academic center in the state and one of the major centers in the country, is heavily involved in research of all types. Throughout the total insitution[1] which occupies a 300 acre campus, there are 848,311 N.S.F. of facilities used for research. This represents 15.4% of the total space within the University. Of this research space, 288,915 N.S.F. are devoted to medical research within the Medical School. Tables A-2, A-3, and A-4 show the Current Medical School Research and Support Space, additional Health Sciences Research and Support Space, and Medical School Animal Facilities, respectively.

A2.1.1 The University Hospitals utilize 787 beds for all services. An additional 2583 beds are available in various hospitals associated with the University. There are no discreet research beds within the University Hospitals with the exception of the Masonic Memorial Hospital which has 117 beds devoted to cancer research patients. All hospitals within the University system are utilized as teaching laboratories for the Health Sciences Center and therefore all beds are available for clinical research. Table A-5 indicates the number and location of hospital beds.

1-The University of Minnesota occupies (as of 6/74) 22,600 acres on six campuses and various branch stations throughout the state. For the purpose of this application, the terms University and Institution refer to the main campus located in Minneapolis.

TABLE A-2. CURRENT MEDICAL SCHOOL RESEARCH AND SUPPORT SPACE

	TOTAL FACILITIES	RESEARCH FACILITIES	CANCER RESEARCH FACILITIES
Basic Sciences			
Anatomy	47,854	17,087	1,715
Biochemistry	49,451	14,684	3,057
Microbiology	28,839	14,511	6,346
Pharmacology	34,809	17,547	3,557
Physiology	42,609	24,014	0
Subtotal	203,562	87,843	14,675
Clinical Sciences			
Anesthesiology	3,959	1,315	0
Dermatology	4,638	2,030	1,502
Family Practice	5,938	0	0
Laboratory Medicine & Pathology	62,748	27,305	10,900
Medicine	39,420	27,997	4,405
Neurology	15,805	8,839	0
Neurosurgery	4,388	1,896	1,527
Ob/Gyn	12,572	6,002	2,100
Ophthalmology	5,536	2,700	0
Orthopaedic Surgery	3,352	1,587	
Otoloaryngology	10,265	7,456	746
Pediatrics	36,536	27,817	2,609
Physical Medicine & Rehab.	22,617	10,969	0
Psychiatry	17,300	7,651	0
Radiology	4,238	1,688	0
Surgery	55,931	43,435	13,481
Therapeutic Radiology	5,632	3,566	3,566
Urologic Surgery	4,843	4,104	4,104
Subtotal	319,618	183,357	44,940
Dean's Offices	7,435	0	0
Others			
5th Floor Owre	3,536	3,536	0
Research Animal Resources	637	0	0
Mayo Amphitheratres and Auditoriums	8,231	0	0
Lab. Safety Group	334	0	0
Rural Physicians Program	756	0	0
Human Sexuality	6,933	0	0
Animal Hospital	4,890	5,890	0
Administrative & Shared CVCC Space	4,392	4,392	0
Shared Space in Gould	4,163	0	0
Undeveloped Space in Stone I	3,804	0	0
Space in Unit K/E Utilized by Institute of Technology for Cardiovascular Research	3,897	3,897	0
TOTAL	573,188	288,915*	59,615

*To replace the REsearch Animal Space lost during construction of our new Unit B/C, the University has completed construction of a new Research Animal Facility on the ST. Paul Campus. This new animal facility contains approximately 14,000 NSF and is scheduled for occupancy in the Fall of 1976. The amount of space in this facility that will be designated to support research in Cancer cannot be identified since specific assignments have not been finalized at the time of this grant application.

TABLE A-3. ADDITIONAL HEALTH SCIENCES RESEARCH & SUPPORT SPACE

	TOTAL FACILITIES	RESEARCH FACILITIES
Dental School	203,176	36,000
College of Pharmacy	44,376	10,000
Public Health	71,301	40,500
Nursing School	17,450	2,000
TOTAL		88,500

TABLE A-4. MEDICAL SCHOOL ANIMAL FACILITIES

DEPARTMENT	TOTAL NSF	CANCER RELATED NSF
Anatomy	4,225	676
Biochemistry	1,500	299
Dermatology	340	340
Laboratory Medicine & Pathology	4,840	*
Medicine	1,039	*
Microbiology	1,457	*
Pediatrics	1,937	491
Pharmacology	1,326	521

*These departments and other departments in the Medical School with cancer research projects will be using a recently completed Research Animal Facility on the St. Paul Campus. This new facility contains approximately 14,000 NSF and is scheduled for occupancy in the Fall of 1976. The amount of space in this facility that will be designated to support research in cancer cannot be identified since specific assignments have not been finalized at the time of this grant application.

TABLE A-6 . PRESENT MEDICAL SCHOOL CANCER RESEARCH FACILITIES

Department	Cancer Research Facilities in Square Feet	
Laboratory Medicine and Pathology	10.900	Main hospital complex, Diehl Hall, Jackson Hall
Pediatrics	2,609	Diehl Hall, Masonic Hospital
Surgery	13,481	VFW Cancer Research Building, Masonic Hospital, Diehl Hall, HS Unit A, 2630 Univ. Ave. S.E.
Medicine	4,405	Masonic Hospital and Mayo Building
Urologic Surgery	4,104	Diehl Hall and 429 29th Ave. S.E.
Pharmacology	3,557	Millard Hall and Lyon Laboratories
Microbiology	6,346	Mayo Building and Diehl Hall
Biochemistry	3,057	Millard Hall and Lyon Laboratories
Dermatology	1,502	Diehl Hall
Anatomy	1,715	Jackson Hall, Jackson OWRE Add.
Neurosurgery	1,527	Diehl Hall
Therapeutic Radiology	3,566	Diehl Hall, Masonic Hospital, Mayo Building
Obstetrics/Gynecology	2,100	Powell Hall, Diehl Hall, Building A
Otolaryngology	746	Research East
	59,615	

- An Animal Research Laboratory providing small animals in support of cancer research and activities conducted in the cancer center.

- Radiation Laboratories providing counting equipment and a hot laboratory.

- A Tumor Immunology Laboratory devoted to the study of the aspects of immune response to malignant disease.

- The Clinical Research Center which conducts studies in a variety of clinical areas, including problems in neoplastic diseases. The unit has a number of ongoing research protocols related to leukemia and solid tumors. Facilities include special metabolic units and labs, and a laminar flow room for controlled environmental conditions. It also has 11 beds devoted solely to clinical research which are located in the Masonic Hospital.

- Staff Offices of the Division of Biometry.

A2.2.3 Department of Therapeutic Radiology

The department occupies 10,220 net square feet (3050 sq ft of which is temporary space) allocated to clinical facilities, offices, examination rooms, and laboratory space. This space is located in four separate facilities:

- The sub-basement of Diehl Hall houses 3340 sq ft of research space comprised of four adjoining general laboratories, a tissue culture room, a histology room, an office, a dark room for autoradiography, a walk-in cold room, and three animal rooms.

- The first floor of Powell Hall (basement level) contains 2640 sq ft of departmental space comprised of three examination rooms for initial visit and follow-up, one reception office, eight offices, and an employees lounge. This space is temporary in that Powell Hall is scheduled for demolition under the approved Master Plan.

- The first floor of the Mayo Building (basement level) has 4100 sq ft of clinical space which contains four radiation therapy machine rooms, one central control station, three examination rooms, one treatment planning/conference room, one dosimetry room, and one machine/electronics shop (which

shares space with steam distribution and other mechanical equipment). Two rooms, B-179 and B-191, are temporary allocations and contain 260 sq ft. Room 420 containing 140 sq ft on the fourth floor of Masonic Memorial Hospital has been loaned temporary to Therapeutic Radiology. The Department also operates the Department of Radiation Therapy at the Veterans Administration Hospital which occupies 2223 square feet.

The department has a SHM 4 MeV Linear Accelerator, a Toshiba 13 MeV Linear Accelerator, an Eldorado-8 Cobalt 60 Telecobalt unit, a General Electric Maxitron X-ray KVP unit, a General Electric Maximar X-ray 220 KVP research unit, a Picker 120 KVP X-ray unit and a Phillips Contract X-ray 50 KVP unit.

Other equipment includes a transverse Axial Tomogram unit, a Toshiba treatment simulator and an automatic processor. A PC-12 treatment planning computer is being used for treatment planning and training. The department is also connected with a 3300 unit which increases the speed and capacity of the computer program.

The equipment at the Veterans Administration Hospital includes a Cobalt rotational machine (Picker), a 4 MeV linear Varian, a 250 KVP Maximar X-ray Unit (GE), a Superficial 120 KVP X-ray Unit (Picker), a Strontium-90 Applicator (Tracer-lab), and a Rad 8 computer.

Radiotherapy beds are assigned to the department in the University Hospitals. The department also has unlimited admitting in the minimal care and outpatient treatment facilities, as well as access to other acute beds when needed.

A2.2.4 Radiation Biology occupies 3500 sq ft of research space in Diehl Hall. This includes four adjoining general laboratories, a tissue culture room, a histology room, an office, a dark room for autoradiography, a walk-in cold room, and three animal rooms. In addition, a 200 sq ft office in the clinical area of Therapeutic Radiology and 499 sq ft of X-ray rooms are allocated to radiobiological research.

Equipment in these laboratories includes: 220 KVP X-ray machine, well-type γ-scintillation counter with attached rate meter and recorder;

Beckman model DU spectrometer; two laminar-flow tissue culter hoods; fume hoods; gas, thin-layer and paper chromatography apparatus; electrophoresis apparatus; high speed refrigerated and standard centrifuges; coulter counter; automatic pipetting machine; polarographic oxygen analyzer; balances; pH meters; ovens; incubators; water baths; refrigerators; Revco subzero freezer; Zeiss phase contrast and America Optic microscopies; Nikon inverted microscope; autoclave; and an icemaker. In addition, the computer unit at the University of Minnesota Medical School and other irradiation facilities, such as ^{60}Co, a 250 KVP X-ray machine, and the 13 MeV Toshiba Electron Linear Accelerator of the department, are available.

A2.2.5 Radiation Physics utilizes 500 sq ft consisting of a chemical laboratory shared with others and used as a preparation room for animal X-ray irradiation research (100 sq ft), an X-ray irradiation room (220 KVP Maximar) (100 sq ft); a machine shop - electronics shop (120 sq ft); a computer/ Treatment planning room for research as well as routine work (100 sq ft); and a physics laboratory currently used as an office as well as LiF dosimetry (80 sq ft).

Equipment in these facilities includes an Artronix PC-12 computer with water phantom and film densitometer used for treatment planning, machine data acquisition, and training. This computer is connected with a CRT and a data storage unit (Sykes) for patient data management system. We have access to a CDC 3300 for research and data analysis. Dosimetry equipment includes a Victoreen R-meter Model #570 and chambers, a Victoreen Radacon Model #555 and chambers, Macbeth densitometer, Model TD-500; Toshiba Model MRA 101 (two dimensional) Isodose; Plotter with two Toshiba Dosimeters (instrumentation is obsolete and difficult to maintain proper adjustment and is not applicable to electrons); Nuclear Chicago Survey Meter (Cutie Pie); Madison Research Thermoluminescent Dosimeter and associated accessories; Film Dosimetry System; Mechanical Scanner for beam flatness; Keithly Model #602 Electrometer; access to Lauritsen electroscope; Manderli-Bruno Intracavitary probe; and Alderson Rando Phantom. Electronic measuring equipment includes a Tektronics Dual Trace Oscilloscope, Hewlett-

Packard Power Meter, Data Precision Digital Multi-meter model 245, Sencore Automatic Transistor Analyzer, Yewtec Insulation Tester, General Electric Halogen Leak Detector.

A2.2.6 Department of Laboratory Medicine and Pathology occupies 10,900 sq ft of cancer-related research space scattered between the Mayo Building, Diehl Hall, and Jackson Hall. Cell preservation and storage facilities are small and located in the individual laboratories as are those for medic preparation and storage. The current facilities for handling biologically hazardous materials are inadequate and located in Jackson Hall. Special facilities include cold rooms, data and gamma counters and centrifuges.

A2.2.7 Department of Pediatrics cancer-related research activities are currently located in Diehl Hall and Masonic Hospital and occupy 2609 sq ft. Pediatric oncology patients are cared for on the general pediatric service which has 125 beds in Mayo Memorial Hospital. An electron microscope and its laboratory are located in a small space in the basement of Diehl Hall. A cell culture laboratory and four other laboratories are located on the fourth floor of the Masonic Memorial Hospital.

Equipment in these laboratories include a Philips 200 electron microscope, a scanning electron microscope, a Beckman ultra centrifuge, a freeze etching machine, Zeiss phase-flourescence photomicroscope, 6 tissue culture hoods, 4 incubators, and 2 refrigerators.

A2.2.8 Department of Surgery utilizes 13,481 sq ft, mostly devoted to tumor immunology, located on the first floor of the VFW Cancer Research Building, the fourth floor of Masonic Hospital, the fifth floor of the Mayo Building, and the basement of Diehl Hall. In addition to tumor immunology, there are laboratories for clinical chemotherapy of solid tumors, medic preparation rooms, two tissue culture labs, a sterilization room, tumor banking facility, a dishwashing room, and two walk-in cold rooms.

Equipment available in these laboratories includes: Revco (-70°C) freezer; liquid nitrogen refrigerator; Nuclear Chicago liquid scintillation

counter; 2 International refrigerated centrifuges; International high speed centrifuge; Beckman L-2 ultra centrifuge; Analytical Balance; Spectrophotometer; pH meter; Fraction collector; Isco U.V. analyzer control; column chromatography equipment; millipore filtration unit; Amicon ultrafiltration equipment; Immunoelectrophoresis apparatus; Glass still; 4 CO_2 incubators; Autoclave; Ice making machine; Zeiss phase contrast microscope; Leitz inverted microscope.

A2.2.9 The Department of Medicine cancer research activities (Medical Oncology) occupy 4405 square feet located on the fourth floor of the Masonic Hospital. This contains the offices and laboratories of the Section of Medical Oncology. Seven laboratories are devoted to immunology, virology, biochemistry, receptor laboratory cell kinetics, pharmacology, nutrition and hematology. Each laboratory has a study carrell housing a research fellow in Medical Oncology. Collaborative studies exist with basic scientists and their laboratories located in other facilities of the Health Sciences.

The equipment in the Medical Oncology includes: Revco freezer, liquid nitrogen storage, Packard scintillation counter, Nuclear Chicago scintillation counter, Nuclear Chicago gamma counter, Beckman L-2 ultra centrifuge, 2 ultra centrifuges, International high speed centrifuge, analytical balance, spectrophotometer, pH meters, 5-CO_2 incubators, icemaking machine, dishwashing facilities, tissue microscope, and 3 Leitz microscopes.

Forty-five beds in the Masonic Memorial Hospital are assigned to the Section of Medical Oncology. These are divided into 3 services, each consisting of 2 medical students, one G-1 resident, one G-2 resident, one clinical associated, and an attending physician. Three medical oncology research nurses support clinical research studies.

A2.2.10 The division of Urology occupies 4104 sq ft for the study of the possible viral etiology or urological tumors. This space is located in Diehl Hall (2800) and at 429 29th Ave. S.E.

A2.2.11 The Department of Pharmacology, heavily involved in cell membrane studies, occupies 3557 sq ft distributed between Millard Hall and Lyon Laboratories.

A2.2.12 Department of Microbiology laboratory space devoted to cancer research totals 6346 sq ft located on the 10th floor of the Mayo Building, and in Diehl Hall.

A2.2.13 The Department of Biochemistry occupies 3057 sq ft of laboratory space in Millard Hall and Lyon Laboratories devoted to cancer research. The activities of this department of the Medical School overlap and are coordinated with the comparable department in the College of Biological Sciences in St. Paul.

A2.2.14 The Department of Oral Pathology cancer research activities are conducted within these general labs which total 4200.

A2.2.15 The Department of Obstetrics and Gynecology utilizes 2100 sq ft in its laboratory and 2000 sq ft in the Gynecological Oncology Clinic. The Clinic is housed in Powell Hall and the research takes place in Diehl Hall and Building A.

The departments equipment is available for use by the cancer investigators and consists of 8 microscopes (A & O, Zeiss, Nikon), 2 photomicroscopies (Zeiss and Reichert), 1 Digital Equipment PDP 8/F computer and 1 tape memory, 1 ASR 33 teletype with tape reader and interface, 1 automatic slide stainer (GamRad), and microtomes, autotechnicon, glassware and other histology and cytology equipment.

A2.2.16 The Department of Otolaryngology's cancer research activities in immunologic and viologic studies are conducted in 746 sq ft of laboratories in Research East.

A2.2.17 The Department of Dermatology has a strong interest in malignancies and has conducted collaborative studies in the Masonic Cancer Center. At present, it conducts a dermatology pathology laboratory in the Mayo Building and an electron microscope laboratory in the Masonic Hospital basement utilizing 1502 sq ft for cancer research.

A2.2.18 The Neurosurgery Department has established a Brain Tumor Center for the clinical and laboratory study of primary brain tumors. Research

is devoted to the study of brain edema and chemotherapy of brain tumors. Research laboratories (Diehl Hall - 1000 sq ft) include a monkey colony, and electronmicroscope (Masonic Memorial Hospital - 27 sq ft).

A2.2.19 The Bio-Medical Data Processing Center consists of heavy equipment in the basement of the Masonic Memorial Hospital and offices on the entire third floor of the VFW Cancer Research Building. These facilities support the Cancer Registry and research activities in cancer.

A2.2.20 The Cancer Detection Center occupies 1680 sq ft in the basement of the Masonic Memorial Hospital and has been in existence for more than 21 years. It encompasses a complete examination of healthy people in an attempt to detect cancer. It exemplifies various techniques for diagnosing asymptomatic or early cancer and is a model for teaching cancer students, clinical fellows, staff, and community physicians in the appropriate examination technique for cancer diagnosis. It is recognized as one of the few medical centers from which cancer detection statistics can be obtained in the nation.

A2.2.21 A Cancer Registry is maintained by the University Hospitals. Initially sponsored by the Cancer Coordinating Committee, insufficient funds were available to maintain this adequately. In 1975, the Medical Oncology Section, with assistance from the Minnesota Masons, provided $12,000 in support of the computerized effort to develop the cancer registry. This support will continue until December of 1976. This investment represents the intent of this institution to have an established cancer registry.

Currently, the University Hospitals is planning computer recording of all inpatient and outpatient visits. This system would provide a modern means for cancer patient follow-up and record indexing system.

A2.3 Supportive Departments, Schools, and Facilities

A2.3.1 The Department of Physical Medicine and Rehabilitation provided rehabilitative services to 3,651 patients in 1975. Of that total 20% were patients with neoplastic diseases, representing the second largest disease category for the disability of patients seen by the service. Currently, many types of cancer patients are seen for rehabilitative management on problems secondary to cancer including:

- vertebral collapse secondary to matastases
- Post mastectomy lumphedema
- paralysis secondary to cancer metastases
- frozen shoulder
- amputation
- relief of pain
- psychological support
- pre-vocational or vocational services

A2.3.2 The School of Veterinary Medicine has physical facilities on the St. Paul Campus and at the University's Rosemount Research Center. The College has nine Departments including Anatomy, Microbiology and Public Health, Physiology, Pharmacology, Pathology and Parasitology, Diagnostic Laboratories, Medicine, Septics, and Gynecology, Surgery and Radiology. The Department carries on many cancer related research programs including extensive research into the etiology of leukemia in cattle.

A2.3.3 The College of Biological Sciences promotes the development and integration of teaching and research activities in Biological Sciences. The College includes the Departments of Biochemistry, Botany, Ecology and Behavioral Biology, Genetics and Sub-Biology and Zoology and utilizes both the Minneapolis and St. Paul campuses. Current research support totals about 1.6 million dollars, of which a significant proportion is involved in cancer-related activities especially within areas of genetics and cell biology, biochemistry and zoology.

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A2.3.4 The Minnesota Medical Foundation is a non-profit autonomous organization dedicated to education and research at the University of Minnesota. The foundation is locally controlled and its funds are generated primarily from local sources. Funds are extended largely toward research by the University of Minnesota faculty and students. The Minnesota Medical Foundation has actively supported the development of new and young investigators and contributed significantly to development of cancer research within the University of Minnesota.

A2.3.5 The University of Minnesota Foundation operates within the University to administer funds from private sources within the local community. Significant proportions of these funds are utilized for basic cancer research. The Veterans of Foreign Wars, the American Legion, and the Leukemia Research Fund are all administered through the University of Minnesota Foundation.

It is also of note that major construction for the Health Sciences has received generous support by private funds. Specific buildings include the Masonic Memorial Hospital, the VFW Cancer Research Center, the Variety Club Heart Hospital and the Cardiovascular Research Center.

A2.3.6 Diehl Hall Library is a fully equipped modern bio-medical library serving all components of the University of Minnesota. The library encompasses the entire range of Health Sciences and contains strong supporting collections in the biological sciences as well, thereby providing an enlarged resource for each of the fields or disciplines served. Although most units of the Health Sciences Center maintain a working library collection within the School, each depends heavily on the total library resources for its own and related fields for in-depth coverage of the literature. Occupying 82,900 net sq ft on four floors in Diehl Hall, the bio-medical library provides seating space for 740 readers and a shelving capacity at approximately 250,000 volumes. Present library statistics are as follows:

Library Statistics

July 1, 1975 - June 30, 1976

Collections

Number of volumes	246,133
Number of volumes added during the year	9,062
Number of current periodical subscriptions	2,558
Total number of serial titles received	3,334

Staff

Professional	17
Clerical	14
Student assistant (FTE)	14

Service

Annual circulation	119,737
Total attendance (turnstile count)	343,641

The Bio-Medical Library is part of the University Library system and can draw on all library resources within the University. These resources total approximately 4,000,000 volumes. Departmental libraries, particularly the Veterinary Medicine, Pharmacy, Entomology, and Chemistry Libraries, provide resources which supplement the Bio-Medical Library. Twice daily deliveries enable books and journals to be quickly and easily requested and delivered to and from other library units. Items which are not available on campus are usually secured either from the Mayo Clinic Library in Rochester which totals more than 100,000 volumes and with whom we have a mutual agreement to provide next day service and free photocopy, or from the Midwest Regional Library located in the John Crerar Library in Chicago. Arrangements with local and out-of-state hospital libraries enable these libraries to obtain loans or photocopy from the Bio-Medical Library. A total of 9,478 requests were filled for local hospital libraries last year

and 3,799 for other libraries. A statewide regional medical library system is presently being considered.

The library is open 92 hours a week and provides full service whenever open. Trained librarians provide a variety of reference services to users, such as locating specific information or facts, locating and borrowing materials from other libraries, verification of citations, compilation of selected bibliographies, instruction in the use of the library indexes and reference books, and providing MEDLINE computer-produced bibliographies using an on-line terminal. MEDLINE service is also being made available to all health practitioners within the state. Interlibrary loans, which are secured for patrons if the material is not available in the Library or on campus, are transmitted to other medical libraries via teletypewriter and are usually filled by photocopy at no charge to the patron.

The Bio-Medical Library has been developing computer based operations for over seven years. An automated system for handling all aspects of journal control went into operation in January 1968, and an acquisitions and accounting system was added in 1969. Plans are in progress to develop a total on-line system for the library including circulation, cataloging, and computer-aided reference.

A2.3.7 The primary goal of Health Computer Sciences (HCS) is the advancement of research and technology using computers in medicine and health care delivery. Avenues to this goal include internal or "core" research and computer systems development, instruction in the use of computers in medicine and maintenance of computer facilities oriented toward the advancement of medical research, clinical practice, and the analysis of health care delivery. The computer hardware facility at HCS are complemented by supporting professional Health Sciences staff who work with Health Science investigators in their quest for improved health care and its delivery.

Consultation is available on various aspects of computer hardware, systems configuration, experimental design and applied techniques. Health Computer Sciences offices are located on the third floor, VFW Cancer Research Center.

The CDC 3300 Computer Center is in operation 24 hours a day, five days a week, with special scheduling available on weekends. The system includes 105 million characters of on-line storage, 4 magnetic tape drives, and a Calcomp plotter. There is no charge for standard printer and plotter paper; rates for plotter acetate and special printer forms are available from the Center. Essential languages available are USASI, FORTRAN, USASI COBOL, HCS FORTRAN, MSSORT, HCS BASIC, and COMPASS. Special simulation languages such as GPSS II and author language compilers are also available.

The Applications Programming staff, working with investigators, offers professional computer programming and data base management. The availability of this centralized staff, with hands-on access to the computer, promotes efficiency in computer utilization. Programming assistance and cost estimates of tasks are available and may be requested by an investigator.

Tabulation services are available to anyone in the Health Sciences, with or without other HCS services. The tab services staff utilizes IBM tab equipment with CDC-compatible codes. In addition, they offer limited key-to-tape service, 7-track CDC-compatible.

The DEC PDP-12 is conceptually designed for ease of laboratory instrumentation interface. HCS's PDP-12 configuration consists of 16,000 twelve-bit words, one-half million word on-line storage, two LINC tapes, high-speed paper tape reader/punch, and 7-track/9-track tape transports. The PDP-12 is currently connected to the CDC 3300 and a Spear PC in Nuclear Medicine. A general purpose graphics terminal is soon to be interfaced to the PDP-12. In addition to stand alone use, the PDP-12 offers time sharing over voice-grade telephone lines, and offers the capability of page tape/7-tract-9 track tape conversation. The essential languages available are FOCAL, BASIC, DIAL, PS-8, FORTRAN, SABR, and PAL-D.

A3. NEED FOR ADDITIONAL SPACE

The current cancer facilities at the University of Minnesota are characterized by their inadequate size and fragmented, unconnected relationship to each other. They are distributed throughout the buildings of the Health Sciences complex, buildings of the College of Biological Sciences at the Minneapolis and St. Paul campuses, and the Veterinary School on the St. Paul campus. Even within individual departments, cancer research takes place in several areas remote from each other. The result being intradepartmental communication in cancer research is difficult and intradepartmental collaboration even more difficult.

The proposed program does not intend to incorporate the entire cancer research activity of the University of Minnesota but to bring together those programs which, through a cooperative effort, can reasonably achieve the specific goal of the National Cancer Plan to translate findings in basic science into the applied technologies necessary to bring these findings to the community with the least possible delay. The proposed new facilities will bring together in a cooperative manner the ambulatory research programs of Medical Oncology, Therapeutic Radiology, Surgical Oncology, Pediatric Oncology, and Gynecologic Oncology and unite the Radiation Oncology Research and Clinical Center with the clinical research center of the Masonic Memorial Hospital.

A3.1 Department of Therapeutic Radiology

At present, Therapeutic Radiology is located in three separate buildings, all remote from the Masonic Memorial Hospital and all inadequate in size and archaic in presence. The department is totally decentralized and is bisected by two major traffic circulation corridors and a tunnel to the other components of the University Hospitals.

Clinical facilities are located on the First Floor (basement) of the Mayo Hospital complex in an area that was constructed in 1925, and within an addition developed in the 1950s to house their linear accelerators. Research laboratories are housed in the sub-basement of Diehl Hall and the balance of the department, primarily the medical staff, house officers, therapists, and outpatient clinic are housed in Powell Hall (basement) in vacated dormitory quarters.

Functionally, the department has "made do" with what space it could develop around a general geographic hub. This location apparently was the only area in which the massive shielding requirements of the therapy units could readily be accommodated with the Mayo Hospital complex. There is no functional relationship to this location and access for patients to the facility. Since at least 80 percent of the patients using the unit are outpatients, the difficulties of patient access are considerable. In-patients treated in this department must be transported approximately two blocks from the current patient facility in the Masonic Hospital. Not only is this facility remote, but the connecting underground tunnel has a severe grade problem which forces patients to be transported via an even longer and more circuitous route to avoid this tunnel. This situation is very detrimental to the patient's conditions as well as being very time consuming and requiring additional support personnel.

In 1974, the University Hospitals' Planning Department conducted a detailed space analysis of this Department which concluded:

1. Access to the department by inpatients and outpatients is unsatisfactory.

2. The present waiting room is inadequate and lacks a separate waiting area to accommodate patient gurneys. There is also no separation of those patients in street clothes from those gowned and awaiting treatment, examination, or access to the simulator or therapy rooms.

3. The dressing rooms are insufficient in size and number and toilet facilities are lacking.

4. The examination rooms should be larger to accommodate demonstrations and the added number of medical education personnel.

5. The simulator should be in close proximity to the dressing, exam and treatment areas.

6. Gurney access to one of the cobalt rooms is difficult and inadequate.

7. There is no reception/control/records area.

8. There is insufficient record and supply storage and no provision for a soiled holding area.

9. Staff and housestaff facilities are inadequate such as office/consultation areas, conference/classroom areas, lockers, toilets, or adjacent access to common facilities. Additionally, space to support the research activities of this department is severely limited.

10. At present, this facility is landlocked without potential for expansion in any direction because of other building commitments and structural limitations.

Over the past five years, Therapeutic Radiology has essentially doubled the number of patients and procedures. (At the present time, approximately 700 new patients and 200 returning patients are treated per year with a present growth rate of 5% per year.) Despite this increase, no additional space has been available for expansion. Litter patients are lying in the hallways and in the Cobalt control area. It is impossible to place them so they can be comfortable and protected from routine traffic through the department. Pediatric patients requiring anesthesia must be given their premedication in an open area. There is no place to hold them prior to their return to the Recovery room and ward other than the control area. There is no place to discuss problems with patients privately or to examine litter patients. There are insufficient examining rooms and the situation becomes worse daily. This area has been characterized as the most underspaced and overutilized clinical area in the Institution.

Patients certainly are not comfortable in this situation, the efficiency of the department is seriously affected, and the morale of the staff is affected. Recently, three senior nursing personnel were lost due to the poor quarters, overwork and inadequate facilities. This kind of situation can only lead to inferior performance which is certainly a disadvantage for the entire Institution, particularly for its cancer program. If the progress made by this department is to continue, even at its present level, it is essential that adequate facilities be provided.

In addition to the essential new space, request is also being made for a high energy linear accelerator with electron capabilities. The Department of Therapeutic Radiology has been designated by the NCI as a specialized center for Radiation Oncology. As such, it has responsibility for research, education, outreach and patient care for the entire area of Minnesota, North Dakota, South Dakota, western Wisconsin, northern Iowa and eastern Montana. In order to fulfill this role and provide the complete range of therapy capabilities required, it is necessary for the department to have available specialized equipment such as a 25 MeV accelerator. There is no equivalent equipment in the area and likewise there is no other facility in the region which has the role of the Radiation Oncology and Clinical Center. Acquisition of this equipment will

provide the Center with complete photon and electron capability and will provide a unique facility for patients located in our service region, both for research and treatment. It is essential that such equipment be available for the six million residents of this area and certainly there is not one other local site for the placement of such a unit as is at this research, education and clinical center.

A3.2 Masonic Memorial Hospital is a 117 bed cancer research hospital. All patients, both ambulatory and in-patients, are research patients involved in one or more established protocols. The Masonic Memorial Hospital was initially built as a clinical unit. An additional expansion added more beds and new laboratory space in 1967. It was planned for growth to occur within that space. The Veterans of Foreign Wars Building was also built on the same principle. Both of these facilities have added faculty and support systems that were not even conceived of when the hospital was built. The hospital did not have an outpatient clinic when created because the large ambulatory load was not expected. Effective development of research and education has resulted in improved patient care, providing shorter hospitalization periods, improved rehabilitation and, therefore, a vast outpatient population. The existing facilities are grossly inadequate for handling this outpatient load.

A3.2.1 During 1975-76, the Medical Oncology Service had 1,140 admissions with an occupancy rate of 95 percent (occupancy rate is calculated on the basis of actual bed occupancy). Patients sent home for one or two days on pass are not included in occupancy data, however, this is part of a treatment program system and, therefore, the service has in effect an occupancy in excess of 100 percent. This active load can be contrasted to the remainder of the Depart- of Medicine (45 Medical Oncology beds and 75 Medicine beds). The other medicine categories had 1,953 admissions with 75 percent occupancy. Restriction of patients admitted to this unit is required because of the bed occupancy rate and extra patients are housed in the main hospital of the University Hospitals on various services or are referred to other physicians in the vicinity. The Gynecology Oncology Service also has an occupancy rate of approximately 95 percent. The Diagnostic Care Unit has a lower occupancy rate, since it is primarily used on a five day per week basis. However, because of the bed needs, this unit has been upgraded in terms of usage. Its use of short-term chemotherapy treatments is underway, hence its occupancy will also be increased.

This high occupancy rate demonstrates that the Masonic Memorial Hospital is utilized effectively in terms of its beds. However, it also means that patients are discharged as soon as the minimal requirements of hospitalization are met. As a result, the ambulatory patients referred to the clinic in general have more problems than in the usual outpatient system.

Table A-2 depicts bed assignment and occupancy data for Masonic Memorial Hospital since 1959. Figures A-3 shows the admission rate to the Masonic Memorial Hospital and the duration of stay during its history. As the average length of hospitalization has decreased from 28 to 7.5 days, the number of admissions has concomitantly quadruped. Figure A-4 shows the increasing ambulatory load on the Masonic Clinic.

A3.2.2 The Masonic Clinic was officially created in 1968 as a result of the increasing outpatient research load of the Masonic Memorial Hospital. It was designed as a research clinic, not as a service clinic for patients with cancer. As a research clinic, it provides blood testing, new chemotherapy and study of advanced malignant diseases as designed under the Special Cancer Center Program, The Study of Advanced Malignant Diseases. As the clinical research program has expanded, the number of visits to the Masonic Clinic has also increased.

In 1975, the Medical Oncology Service of the Masonic Clinic had 5,376 return visits (a 34 percent increase from the preceding year). The Pediatric Oncology Service had 3,160 visits (a 27 percent increase over the previous year). For 1975 therefore, there were 8,536 out-patient visits.

In addition to this ambulatory load, the Medical Oncology Service has also had 1,274 visits in the Medical Oncology Clinic and New Oncology Clinic. The Medical Oncology Clinic is located in the regular outpatient facility of the University Hospitals. Since it is also a research component of the Medical Oncology Service, it will be incorporated in the Masonic Clinic activities. Combining these outpatient activities, the Pediatric and Medical Oncology Mervices in 1975 saw 9,810 patient visits.

TABLE A-2 Masonic Memorial Hospital Bed Assignment and Occupancy Data

First Floor	
Medicine (Diagnostic Care Unit)	19*
Second Floor	
Gynecology	25
Surgery	14
Clinical Research Center	11
Third Floor	
Medical Oncology	34**

Patient Statistics for Calendar Years Ending December 31, 1974

	Discharges and Transfer-Outs	Patient Days	Avg. Daily Census	Avg. Length of Stay
1959	381	13,082	35.8	27.1
1960	730	23,456	64.1	22.8
1961	706	21,878	59.9	31.0
1962	750	23,906	65.9	31.9
1963	741	34,487	67.0	23.1
1964	687	21,675	59.2	21.2
1965	749	21,683	59.4	20.3
1966	774	23,844	65.3	21.0
1967	1071	20,545	59.0	19.1
1968	1530	23,395	64.0	16.8
1969	1593	27,349	74.9	15.6
1970	2141	27,028	74.05	11.9
1971	3374	28,384	77.8	8.4
1972	3471	29,933	81.5	8.6
1973*	3370	27,498	75.4	8.1
1974**	2698	27,512	80.0	10.2
1975	2720	27,165	74.0	7.5
	27,340	411,635		

* First Floor beds were reduced by 11 in order to temporarily house the New Medicine Clinic during construction of a new outpatient facility.
**In 1974, third floor beds were reduced from 40 to 37 to provide support facilities.

FIGURE A-3. AVERAGE LENGTH OF HOSPITALIZATION FOR PATIENTS IN THE MASONIC HOSPITAL AND THE NUMBER OF DISCHARGES (BLACK LINE).

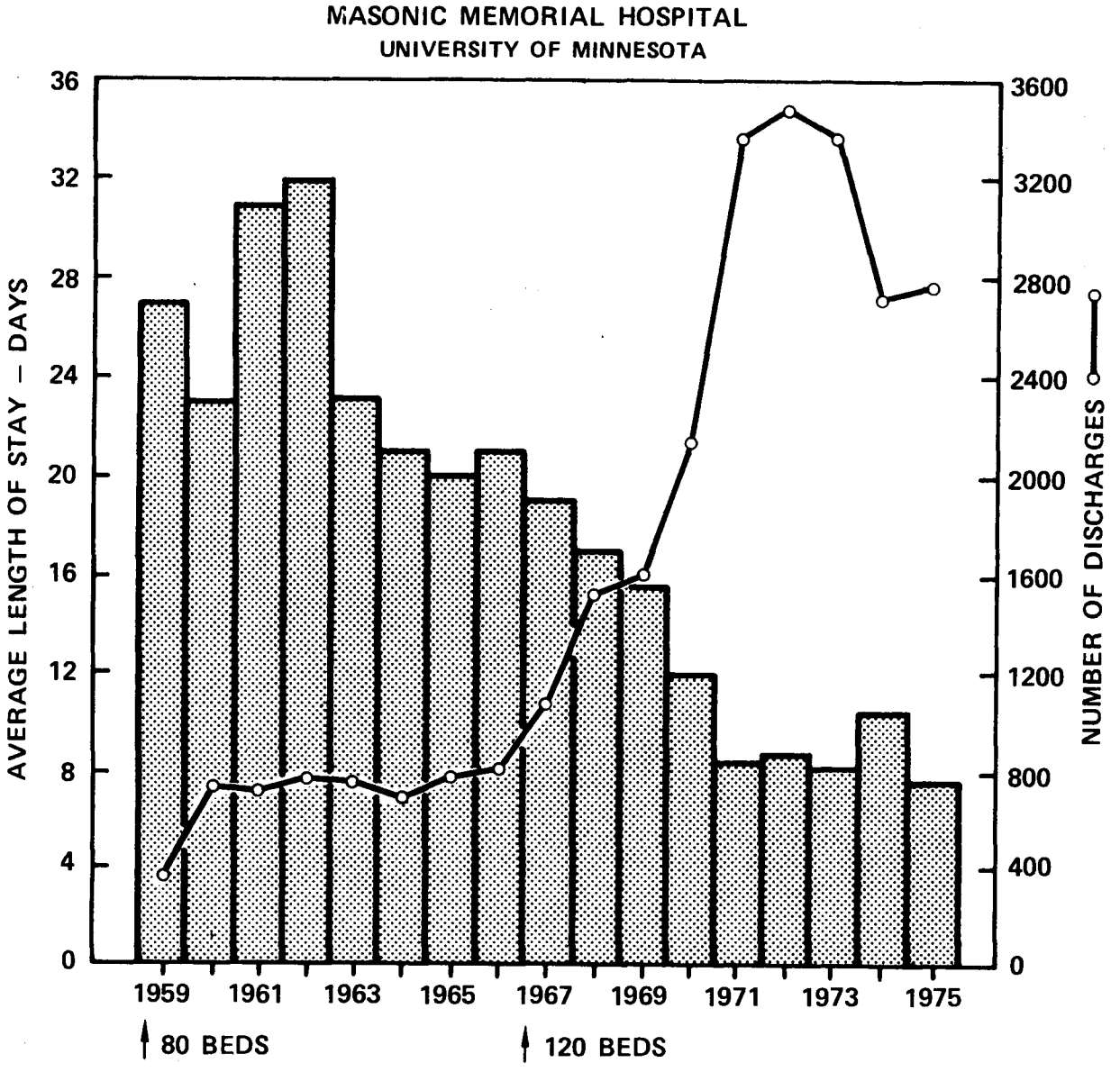
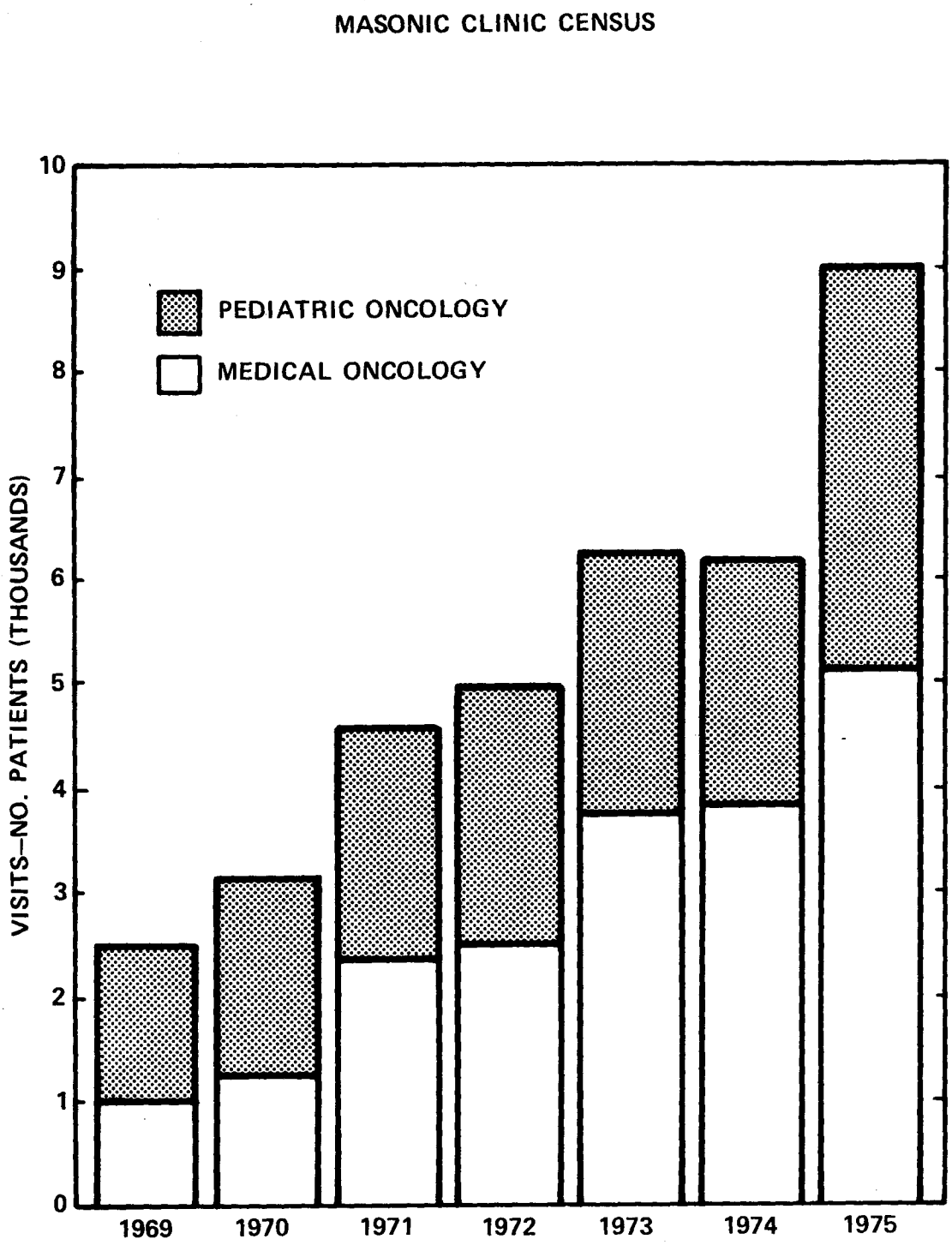


FIGURE A-4. INCREASING NUMBER OF MASONIC RESEARCH CLINIC VISITS. THIS DOES NOT REFLECT THE ONCOLOGY VISITS TO OTHER FOLLOW-UP CLINICS AT THE UNIVERSITY HOSPITALS.



The Medical Oncology Program consists of an intensive clinical research program with supporting laboratory research. With the increased number of research protocols sponsored by the Cancer and Leukemia Group B and independent Minnesota Studies, more professional support of Medical Oncologists is required. However, there is no clinical space to house the clinical activities of an expanded staff. It is quite evident that the current Masonic Clinic (four examining rooms) has been extended far beyond its capability to handle the current patient load. The waiting area is inadequate and patients now wait in the hall for their visits.

To supplement the existing 6 faculty members of Medical Oncology, an additional 2 faculty members are required to provide supervisory support of the clinical research programs on the inpatient service and in the Masonic Clinic. Since clinical research is also supported by Clinical Associates and Research Specialists, the existing space is made even more inadequate. An expanded Masonic Clinic facility is required to meet the needs of the research and education program. Improved coordination of the laboratory and clinics will occur if the clinic space is more adequate. Also, the proposed new addition allows the advantage of consultation between Medical Oncology and Therapeutic Radiology resulting in more rapid handling of patients, reduction in cost of visits to the patient and further fusing the interdisciplinary research studies.

A3.2.3 The Surgical and Gynecology Oncology Clinics also carry out cancer chemotherapy research programs. Association of specific surgery and gynecology research activities with the Masonic Clinic would be advantageous to improved patient research. However, the lack of space in the Masonic Clinic prevents the surgical or gynecology groups from joining with the Masonic Clinic activity conducted by the Pediatric and Medical Oncology services. Since all four of these services are closely linked with Radiation Oncology, a clinic facility that would benefit all five services is proposed.

A3.2.4 New Oncology Clinic. Currently new oncology patients, new to the University Hospitals and the Medical Oncology service, are seen in the New Medicine Clinic on the first floor of the Masonic Hospital. With

completion of the B/C out-patient facility, this clinic will be moved. It is the intent of the Medical Oncology Service to retain the concept of the New Oncology Clinic in the Masonic Clinic area. Because of the needs of Pediatric Oncology to see new oncology patients, and also for Radiation Oncology to see new patients, a new clinic is proposed (New Oncology Clinic) as an arm of the Cancer Education Program. The proposed New Oncology Clinic would be the entry point for new oncology patients to be examined by medical students, supervised by the cancer education program. This would be a multidisciplinary clinic and provide for inter-reaction between the oncology subspecialties. It would also provide for additional patients for medical student teaching.

A4. BIOHAZARD CONTAINMENT

A4.1 All new construction will be built in strict accoradance with local, state and federal codes and regulation. These shall include, but not be limited to, requirements for biohazard containment and employee safety (Williams-Steiger Occupation Safety and Health Act of 1970). The University of Minnesota has created, internally, a Department of Environmental Health and Safety. This Department has the responsibility to insure that all facilities and procedures comply with all regulations and standards of good practice in order tp protect the health and welfare of the University's employees, students and the community at large. Attachment 1 to the Environmental Analysis contained in Appendix C describes some of the progress and procedures of the Department of Environmental Helath and Safety.

Paragraph C1.4.1.4, Appendix C, gives additional information relative to biohazard containment.

APPENDIX B - OCCUPANCY DATA AND DESCRIPTION OF NEW PROGRAMS

B1. SPECIFIC RESEARCH PROGRAMS

The clinical research programs to be conducted in the new cancer research building are almost entirely multi-departmental/discipline efforts. This clinical protocol research is summarized in Table B-1.

In addition to the clinical protocol research, there are a number of clinical, pre-clinical and basic research programs supported by the specialized cancer center grants and other sources. These include:

Radiations Physics (Drs. Khan, Fullerton, Sewchano, and Lee; Therapeutic Radiology)

The overall objective of the physics project is to apply the technology of te dedicated mini-computer to evolving radiation oncology problems. This progress is mandatory if the advantages of contemporary radiation therapy are to be financially accessible to the average cancer patient. The four specific program objectives are: (1) procedure for routine electron beam rotation therapy of the chest wall, (2) accurate determination of high energy photon radiation distributions with film, (3) a system to provide tumor location and cross-sectional density for computerized treatment planning and (4) an inexpensive, convenient patient-data management system. The solutions we are studying rely on new applications of the mini-computer.

Tumor Vascularization (Drs. Song and Tanaka; Therapeutic Radiology)

The principal objective of this study is to define the relationship between tumor vascular changes and tumor curability during and following multifraction radiation regimens to normal and hypertensive patients.

Radiation Effects on Cell-mediated Immune Reactions in Vitro (Dr. Song; Therapeutic Radiology)

The general purpose of this study is to examine the effect of radiation on the cytolysis of tumor cells by cell-mediated immune reactions.

Tumor Cell Kinetics (Dr. Clement; Therapeutic Radiology)

The overall objectives of this project are to investigate the effects of single and fractionated irradiation on cell synchrony, cell progression through the cell cycle, and cell survival in solid tumors and to examine the possibility that effective fractionation regimens can be designed based on considerations of cyclic cell radiosensitivity.

Steroid Receptors in Breast Cancer (Dr. Kiang; Medical Oncology)

Estrogen reception determination in breast cancer discloses different biological behavior of breast cancer and provides prediction of clinical response to endocrine therapy.

Thyrotropic Releasing Factors (Dr. Theologides; Medical Oncology)

Thyrotropic releasing factors seem to have effect on hyperthalmic nucleides regulating hunger and satiety. The role of this hormone is the genesis of anorexia in cancer.

Nutrition in Cancer: Caloric Intake Changes in Advanced Cancer (Dr. Theologides; Medical Oncology)

This study will evaluate quantitative and qualitative changes in caloric intake of patients with cancer. This will facilitate nutritional management with elemental diets.

Effect of Chemotherapy on Heme Turnover in Patients with Advanced Cancer (Dr. Theologides; Medical Oncology)

This will study and evaluate induction of ineffective and effective crythropoeisis, induced by chemotherapeutic agents in patients with advanced cancer.

Serum Alkaline Phosphatase, 5-Nucleotidase, Gamma-Gluanyl Transpeptidase in Differential Diagnosis of Hepatic and Osseous Metastases (Drs. Kim and Theologides; Medical Oncology)

The role of these enzymes in the diagnosis of hepatic and osseous metastases will be evaluated and correlated to ultrasound and radioisotope scan.

Acetyl Spermidine and Other Polyamines as Predictors of Response in Cancer Chemo-Therapy (Drs. Abdel-Monem and Theogides; Medicinal Chemistry, Medical Oncology)

This study will evaluate the usefulness of acetyl spermidine and other polyamines in predicting response to various chemotherapeutic aids.

Tumor Associated Antigens for Human Pancreatic Cancinoma (Drs. McMillen and Theologides; Medical Oncology)

This will study and attempt to isolate pancreatic cancer antigens in the patient's blood.

Macrophage Function in Malignancy (Dr. Vosika; Medical Oncology)

The goal of this project is to determine if the effects in monocytes function pur se are discernable in patients with malignancy who are anergic.

Suppressor Cells and Immunology in Cancer (Dr. Vosika; Medical Oncology)

Patients with malignancies frequently are anergic. This project will determine if such anergy is due to a suppressor lymphocyte population.

Immune Response in Malignancy (Dr. Vosika; Medical Oncology)

Patients with advanced malignancy disease (especially lung cancer and lymphoma) will be studied immunologically, looking particularly at the monocyte and lymphocyte function.

Virology of C-type RNA Viruses in Human Diseases (Drs. Vosika and Krivit; Medical Oncology and Pediatrics)

Immunological and molecular hybridization techniques are being used to look for indices of C-type RNA in normal people and in people with cancer.

In Vitro Cytotoxicity Assay for Drug Response Prediction (Dr. Theologides; Medical Oncology)

With a full chromatic function and with DNA histograms, the potential cytotoxicity of chemotherapeutic drugs will be evaluated.

Radiation Pathology (Dr. Song; Neurological Pathology)

The objective of this study is (1) to investigate the morphological response of normal brain tissue and brain tumors to ionizing radiation and/or chemotherapeutic agents in man and experimental animals and (2) to investigate several factors or conditions which may influence radiation damage to the brain of experimental animals.

Experimental Pathology and Immunology (Dr. Kersey; Lab. Medicine, Pathology, Pediatrics)

Antigen binding to T&B lymphocytes is under experimental study as an approach to the nature of the antigen receptor of these sub-classes. Other studies underway relate to immunity and aging, and the mitogenic effects of phorbal esters.

Clinical Tumor Immunology and Bone Marrow Transplantation (Dr. Kersey; Lab. Medicine, Pathology and Pediatrics)

We recently observed that determination of T&B lymphocytes following immunosuppression with drugs may be useful in predicting the success of marrow transplantation in humans. We are currently extending these studies to patients who receive irradiation prior to marrow transplantation.

Localization of Labeled Antibodies in Tumors (Dr. Buchsbaum; Therapeutic Radiology)

The overall objective of this work is the development of an immunologic procedure for tumor detection and localization utilizing radiolabeled purified

antibodies to tumor-associated antigens.

Host Defense of Patients Treated with Radiotherapy and/or Chemotherapy (Drs. Nesbit, and Kersey; Therapeutic Radiology, Pediatrics, and Lab. Medicine)

The multiple objectives of this project are:

1. To evaluate with serial studies the relative effects of chemotherapy and radiotherapy or this combination on the host defense system (cellular and humoral immunity).

2. To examine the quantitative phagocytic and chemotactic capacity of neutrophils in childhood malignancy, especially leukemia, and to correlate this with the patients' immunologic status, tumor status, and modalities of therapy (chemotherapy and radiotherapy).

3. To similarily examine the capacity of the peripheral and bone marrow macrophages to ingest and kill bacteria and respond to chemotactic stimuli.

4. To evaluate the influence of platelet bacterial interaction and therapy (chemotherapy and radiotherapy) on platelet function.

Cervical Cancer Mortality Study (Dr. Jones; Therapeutic Radiology)

A review of all deaths due to carcinoma of the uterine cervix in the State of Minnesota for 1971 and 1972.

Radiotherapy combined with Immunotherapy (Drs. Song and Collins; Therapeutic Radiology)

The combined effects of Corynebacterim parvum treatment and radiation on a methycholanthrene-induced fibrosarcoma in C3H/HeJ mice, and mastocytoma in DBA mice are studied.

Carcinoma of the Uterine Cervix (Dr. Kennedy; Medical Oncology)

A retrospective and ongoing study of all patients treated for malignancies originating in the uterine cervix from 1970 was undertaken. A subunit of this study has been the evaluation of lymphangiography for the determination of radiation fields for treatment of cervical cancer.

Evaluation of Combined Therapy for Cancer of the Ovary (Dr. Kennedy; Medical Oncology)

An evaluation of the survival and complications of a planned combination of maximum surgery, radiation and chemotherapy in all stages of malignant epitherlial tumors of the ovary was undertaken. The study has been increased to include Stage 1A tumors.

Carcinoma of the Endometrium (Dr. Kennedy; Medical Oncology)

A retrospective analysis of all new patients with malignancies of the uterus except uterine cervix seen at the University of Minnesota regardless of treatment was undertaken.

Finally, there are a number of educational and cancer control programs that will be based in the new building. These include:

Education Training Programs (Drs. Levitt, Kennedy, Krivit, Hertel and Grage; Therapeutic Radiology, Medical Oncology, Pediatrics, Pathology and Surgery)

Training programs in oncology for graduate and undergraduate physicians, technicians, nurses and other medical and paramedical personnel in this region and in the process to provide a center for demonstration and teaching of the appropriate advanced therapeutic methods and techniques, so that physicians, medical students, and support personnel of this area can improve patient care. The Department of Therapeutic Radiology, in conjunction with the Office of Continuing Education, conducts an annual postgraduate course in Radiation Therapy and Oncology. This is the only course of this type offered in this country.

Radiation Therapy Technology School (Dr. Levitt, et al; Therapeutic Radiology)

The Department of Therapeutic Radiology has applied for accreditation as a Radiation Therapy Technology School. This program would help out the need for trained, certified technologists.

Outreach (Dr. Levitt; Therapeutic Radiology)

This program is to provide a highly visible, centralized source of expertise as a nucleus for improving radiation oncology in the outlying regions of this area by providing practitioners consultation, guidance and support. A network of Radiaton Therapy facilities may be undertaken as part of the outreach effort. In two area of the state, feasibility studies have been carried out and completed. Radiological physics services may be provided and educational opportunities are offered.

Patient Oncology Research Project Measuring Surface Markers (Dr. Coccia, Pediatrics)

This study measures surface markers in patients with acute lymphatic leukemia, American Burketts, and other known lymphomas. These markers will be used as prognostic factors in the treatment of these diseases.

Marrow Transplantation (Dr. Kersey; Pediatrics)

Nineteen bone marrow transplantations have been done in the University of Minnesota: 9 in patients with malignancies, 2 with advanced Burkitt's. Total body radiation is used. Plans are to develop an extensive study on controlled basis using acute myelogenous leukemia as model.

Platelets Studies (Dr. White; Pediatrics)

This study measures platlets function in patients receiving chemotherapy and radiotherapy and determines quantitative and qualitative results.

Host Defense Mechanisms (Dr. Clawson; Pediatric Oncology)

Monocyte and macrophage systems is studied during neutropenia. The residual effectiveness of neutrophil responses will be determined.

Lymphocyte Response (Dr. Nesbit; Pediatric Oncology)

This study involves the serial examination of the immunological activity of lymphocytes from adults through chemotherapies, radiotherapies, and maintenance therapies. This will be used as a prognostic method of measuring response.

Pharmacodynamics of Cyclophosphamide (Dr. Nesbit; Pediatric Oncology)

This study will use deuterium-labeled compound in Burkitt's lymphoma, acute lymphatic leukemia, Ewing's sarcoma and bone marrow transplants to measure metabolites.

In Vitro Bone Marrow Culturing (Dr. Ramsay; Pediatric Oncology)

This study will measure physiological effects in bone marrow of chemotherapy, radiotherapy, and congenital neutropenia in patients with bone marrow transplantation, leukemia and Ewing's sarcoma.

Prognostic and Diagnostic Hemoglobinopathies (Dr. Krivit; Pediatric Oncology)

Measurement of featal hemoglobin in cells will be used to determine progress and response of patients with acute lymphatic leukemia and erythro leukemia. Both pediatric and adult oncology patients will be studied.

Evaluation of Support Groups (Dr. Martinson; Pediatric Oncology)

The value of nursing support for patients with severe residual disease for at-home effort having received maximum therapy will be determined.

Suppressor T-Cells (Dr. Krivit; Pediatric Oncology)

This study will concentrate on investigating the supporssor T cells in patients with severe suppression. Graft versus host reaction will be studied.

Progestaglandin and Platelet Reaction (Dr. White; Pediatric Oncology)

Progestaglandin and platelet reaction will be measured before, during, and after use of drugs such as Adriamycin and Actinomycin D.

DNA and RNA Metabolic Viral Gnomes (Dr. Girard; Pediatric Oncology)

DNA and RNA metabolic viral gnomes of quail and other suitable experimental models will be studied for possible extrapolation in human experiments.

Hypofibrinogenemia (Dr. Hasagawa; Pediatric Oncology)

As a result of chemotherapy, hypofibringoenemia resulting from intensive chemotherapy (particularly asparaginase) will be studied)

TABLE B-1.

LEUKEMIA AND LYMPHOMA

	Protocol	Status	Therapeutic Radiology	Medical Oncology	Pediatrics	Other
1.	Presymptomatic Cranial Spinal Axis Irradiation in Acute Lymphatic Leukemia in Adults (Dr. Bloomfield and Levitt)	Local	x	x		
2.	Non-Hodgkin's Lymphoma Stage I and II-Staging and Treatment Protocol (Drs. Kennedy, Levitt, Nesbit, Sosin and Smith)	Local Ongoing	x	x		Surgery
3.	Hodgkin's Disease, Stage III, Randomized (Drs. Bloomfield, Nesbit, Levitt and Sosin)	Local Ongoing	x	x		Surgery
4.	Lymphography as a Guide to Laprotomy in Hodgkin's and Non-Hodgkin's Lymphomas (Drs. Cotman and Levitt)	Local Completed Paper in Progress	x			
5.	Non-Hodgkin's Lymphoma (Drs. Lee, Levitt, Bloomfield, and Nesbit)	Local Ongoing Paper Published	x	x		
6.	Hodgkin's Disease (Drs. Keating, Levitt, Nesbit, and Bloomfield)	Local Ongoing Paper Published	x	x		
7.	Combination Chemotherapy and Radiotherapy for Stage IV Hodgkin's Disease, No Prior Treatment (Drs. Kennedy, Levitt)	National Ongoing ALGB	x	x		
8.	Evaluation of Immune Function in Patients Undergoing Fractional Total Body Irradiation (Drs. Bloomfield, and Levitt)	Local In Progress	x	x		
9.	Hodgkins Disease Stage IIIB and IV - Chemotherapy Induction followed by Randomization between Irradiation to Initial Disease sites vs. Consolidation Chemotherapy. (Drs. Oken, Levitt and Haselow)	National Ongoing ECOG	x			

LEUKEMIA AND LYMPHOMA (continued)

	Protocol	Status	Therapeutic Radiology	Medical Oncology	Pediatrics	Other
10.	Chronic Lymphocytic Leukemia - Randomizing between Chemotherapy and Total Body Irradiation (Drs. Oken, Levitt and Haselow)	National Ongoing ECOG	x			
11.	Combination of Chemotherapy and Immunotherapy for Previously Treated Stage III B and IV Hodgkin's Disease (Dr. Kennedy)	National Ongoing		x		2
12.	Therapy of CML in Blastic Crisis (Dr. Kennedy)	National Ongoing		x		
13.	The Effectiveness of Radiation Therapy Plus Combination Chemotherapy in the Treatment of Stage IB and IIB Hodgkin's Disease (Drs. Levitt, and Bloomfield)	Local Ongoing	x	x		
14.	Comparison of Radiation Therapy and Chemotherapy in Hodgkin's Stage IIIA (Drs. Levitt and Kennedy)	Local Ongoing	x	x		
15.	Non-Hodgkin's Lymphoma (nodular) Combination (CVP) vs Single Drug Therapy (Dr. Kennedy)	Local Ongoing		x		
16.	Histiocytic Lymphoma: Total Body Radiotherapy + Polychemotherapy versus Polychemotherapy Only (Drs. Theologides and Levitt)	Local Ongoing	x	x		
17.	Non-Hodgkin's Lymphoma: Total Body Radiotherapy + Polychemotherapy versus Polychemotherapy Only (Drs. Therologides and Levitt)	Local Ongoing	x	x		
18.	Therapy for Acute Lymphatic Leukemia in Adults (Dr. Bloomfield)	Local Ongoing		x		
19.	Therapy of Acute Promyelocytic Leukemia (Dr. Bloomfield)	Local Ongoing		x		

LEUKEMIA AND LYMPHOMA (continued)

Protocol	Status	Therapeutic Radiology	Medical Oncology	Pediatrics	Other
20. Chemotherapy of Chronic Myelogenous Leukemia with Hydrea (Dr. Kennedy)	Local Ongoing		x		
21. Treatment of Blastic Crisis in Acute Leukemia (Drs. Nesbit, Krivit, and Levitt)	Proposed Local	x		x	
22. Treatment of Symptomatic Involvement of Genitourinary System in Acute Leukemia (Drs. Stoffel, Nesbit, and Levitt)	Local Ongoing Paper in Progress	x		x	
23. Treatment of Recurrent Central Nervous System Disease in Lymphocytic Leukemia (Drs. Nesbit, Kim, and Levitt)	Local Ongoing	x		x	
24. Clinical Application of Extended Field Radiation Therapy of Acute Lymphoblastic Leukemia (Drs. Kim, Nesbit, and Levitt)	Local Completed	x		x	
25. Treatment of Newly Diagnosed Acute Lymphocytic or Undifferentiated Leukemia with Intensive Chemotherapy and Radiation Therapy (Drs. Nesbit & Levitt)	Completed Paper in Progress	x		x	
26. Leukemia of the Central Nervous System (Drs. Kim, Nesbit, and Levitt)	Completed Papers in Progress	x		x	
27. Leukemia-Renal (Drs. Stoffel, Nesbit, and Levitt)	Local Completed Paper in Progress	x		x	
28. Leukemia-Testicular (Drs. Stoffel, Nesbit and Levitt)	Completed Paper in Progress	x		x	
29. Therapy for Acute Non-Lymphacytic Leukemia (Drs. Theologides and Levitt)	Local Ongoing	x	x		

SOLID TUMORS

Protocol	Status	Therapeutic Radiology	Medical Oncology	Pediatrics	Other
Gynecological					
1. Evaluation of Lymphangiography for the Determination of Radiation Fields of Patients with Cancer of the Cervix (Drs. Jones and Prem)	Local Ongoing	x			OB/GYN
2. Evaluation of Combined Surgery, Radiation Therapy and Chemotherapy in the Management of Patients with Cancer of the Ovary (Drs. Jones and Prem)	Local Ongoing	x			OB/GYN
3. Cervical Cancer Mortality Study (Drs. Jones and Prem)	Local Completed	x			OB/GYN
4. Carcinoma of the Cervix (Drs. Jones and Prem)	Local Ongoing	x			OB/GYN
5. Carcinoma of the Endometrium (Drs. Jones and Prem)	Ongoing	x			OB/GYN
Head and Neck					
1. Influence of External Radiation on Thyroid Function (Drs. Keating, Levitt, and Doe)	Local Terminated	x			Medicine
2. Radiation Therapy and Surgery in the Treatment of Head and Neck Tumors (Drs. Smith and Duvall)	Local In progress	x			Otolaryngology
3. A Prospective Randomized Study of Intra-Arterial Infusion of Three Cancer Chemotherapeutic Drugs as Adjuvant Therapy in the Treatment of Oral Cancers (Drs. Smith and Grage)	Local Terminated	x			Surgery
4. A Prospective Randomized Study of Intra-arterial Infusion of Three Cancer Chemotherapeutic Drugs as Adjuvant Therapy in the Treatment of Oral Cancers (Drs. Smith and Grage)	National Ongoing COG				

SOLID TUMOR (continued)

Protocol	Status	Therapeutic Radiology	Medical Oncology	Pediatrics	Other
5. Advanced Head and Neck Cancer-Treatment Randomizing between Chemotherapy, Immunotherapy and no Treatment following Definitive Treatment with Irradiation and Surgery. (Dr. Oken, Levitt and Haselow)	National Ongoing ECOG	x			
Gastrointestinal					
1. Preoperative Irradiation in Potentially Curable Adenocarcinoma of the Rectum (Drs. Smith and Grage)	National Terminated RTOG	x			Surgery
2. Comparison of 5-Fluorouracil Alone with Radiation Therapy Plus 5-Fluorouracil in the Treatment of Locally Unresectable Stomach and Pancreatic Cancer (Dr. Smith)	National Terminated RTOG	x			
3. Unresectable Stomach and Pancreatic Carcinoma Randomizing between Chemotherapy and Chemotherapy plus Local Irradiation (Drs. Oken, Levitt, and Haselow)	National Ongoing ECOG	x			
4. Residual, Recurrent, and Inoperable Carcinoma of the Rectum Randomizing Irradiation against Irradiation plus Chemotherapy (Drs. Oken, Levitt and Haselow)	National Ongoing ECOG	x			
5. Treatment of Advanced Cancer of Pancreas VP-16 + 5FU (Dr. Kennedy)	Local Ongoing		x		
Central Nervous System					
1. Influence of External Radiation on Pituitary and Hypothalamic Functions (Drs. Keating, Levitt, and Doe)	Local Terminated	x			
2. Palliation of Brain Metastases Phase II (Dr. Smith and Staff)	National Terminated RTOG	x			

SOLID TUMORS (continued)

Protocol	Status	Therapeutic Radiology	Medical Oncology	Pediatrics	Other
3. Glioblastoma Multiforme-Randomizing between Irradiation and Irradiation plus Chemotherapy (Drs. Oken, Levitt and Haselow)	National Ongoing ECOG	x			
Lung					
1. Definitive Radiation Therapy in Inoperable Cancer of the Lung (Squamous Cell and Adenocarcinoma and Large Cell Undifferentiated Type) (Dr. Smith)	National Terminated RTOG	x			
2. Treatment of Small Cell Carcinoma of the Lung (Drs. Kennedy, and Levitt)	National Ongoing ALGB	x	x		
Genitourinary					
1. Preoperative Irradiation for Renal Cell Carcinoma (Dr. Levitt)	National Terminated RTOG	x			
2. Preoperative Irradiation in Potentially Curable Adenocarcinoma of the Rectum (Dr. Smith)	National Ongoing COG	x			
3. Adriamycin + Platinum in Advanced G. U. Tumors (Dr. Kennedy)	Local Ongoing		X		
4. Treatment of Advanced Testis Cancer: i. Mithramycin ii. Velban Bleomycin Infusion iii. Velban Bleomycin Infusion (Dr. Kennedy)	Local Ongoing		X		
5. Adjuvant Chemotherapy of Testis (Dr. Kennedy)	Local Ongoing		X		

SOLID TUMORS (continued)

Protocol	Status	Therapeutic Radiology	Medical Oncology	Pediatrics	Other
Breast					
1. Combination Chemotherapy of Patients with Metastatic Recurrent or Inoperable Carcinoma of the Breast (Dr. Kennedy)	National Ongoing		X		
2. Adjuvant Therapy for Breast Cancer: Test of Effectiveness (Drs. Kennedy and Kiang)	Local Ongoing		X		Surgery
3. Endocrine Therapy Plus Chemo-Therapy in Postmenopausal Patients with Advanced Breast Cancer (Estrogen Receptor Study (Dr. Kiang)	Local Ongoing				
4. Tamoxifen in Advanced Breast Cancer (Dr. Kiang)	Local Ongoing				
Miscellaneous					
1. Combination Therapy of Inoperable and Solitary Metastatic Parenchymal Sarcomas with Radiation, Chemotherapy and Immunotherapy (Drs. Jones and Fortuny)	Local Terminated	x	x		
2. Effect of Radiation on the Immune Response in Pateints with Solid Tumors (Drs. McKhann and Levitt)	Local Completed	x			Surgery
3. Human Trials of Pion Radiation (Dr. Levitt and Staff)	National Proposed	x			
4. Human Cytogenics Research Proposals (Drs. Cervenka, Levitt)	Ongoing Local	x		x	

SOLID TUMORS (continued)

	Protocol	Status	Therapeutic Radiology	Medical Oncology	Pediatrics	Other
16.	Treatment of Chronic Pain with Nefopam HCl (Dr. Kennedy)	Local Outgoing		X		
17.	Group Counseling (Dr. Ferlic)	Local Outgoing		X		
18.	High Dose Methotrexate (Drs. Peterson and Trowbridge)	Local Outgoing		X		
	Pediatric					
1.	Treatment of Recurrent Central Nervous System Tumors in Children with Surgery, Radiotherapy, and Chemotherapy (Drs. Ausman, Nesbit, Smith and Chou)	National Ongoing	x		x	Surgery
2.	Combination of Surgery, Radiotherapy, Chemotherapy and Immunotherapy for Treatment of Metastatic Neuroblastoma (Drs. Nesbit, Levitt, and Simmons)	National Ongoing CCSG	x		x	
3.	Role of Radiotherapy in the Treatment of Diabetes Insipidus of Histiocytosis (Drs. Nesbit and Levitt)	Ongoing Local	x		x	
4.	Intergroup Ewing's Sarcoma Study (Drs. Nesbit and Levitt)	National Ongoing CCSG	x		x	
5.	Role of Post-Operative Radiotherapy, and Combinations of Dactinomycin, Vincristine, Cyclophosphamide and Adriamycin in Childhood Rhabdomysarcoma. (Drs. Levitt and Nesbit)	National Ongoing CCSG	x		x	
6.	Radiation Therapy Plus Chemotherapy in Childhood Hepatoma (Drs. Nesbit and Levitt)	National Ongoing CCSG	x		x	

SOLID TUMORS (continued)

Protocol	Status	Therapeutic Radiology	Medical Oncology	Pediatrics	Other
7. Metastatic Osteogenic Sarcoma (Drs. Nesbit and Levitt)	Local Ongoing	x		x	
8. A Comparison of Cyclophosphamide Versis No Chemotherapy for Patients with Non-Metastatic Neuroblastoma Following Surgical Resection and Radiation Therapy (Drs. Nesbit and Levitt)	National Ongoing CCSG	x		x	
9. National Wilm's Tumor Study (Drs. Levitt and Nesbit)	National Ongoing CCSG	x		x	
10. Neuroblastoma (Drs. Kim and Nesbit)	Local Completed Paper in Progress	x		x	
11. Medulloblastoma (Drs. Kim, C. Smith, Levitt and Nesbit)	Local Ongoing Paper in Progress	x		x	
12. Surgery, Radiation Therapy plus Chemotherapy for Metastatic Neuroblastoma (Drs. Kim and Nesbit)	Local Completed	x			
13. Evaluation of Cyclocytidine NSC 145668 (Dr. Nesbit)	Local Ongoing			x	
14. Treatment of Refractory Childhood Acute Myelomoncytic, Myelocytic, Monocytic or Histiocytic Leukemias and Refractory Hodgkins Disease and Non-Hod. Lymphomas (Dr. Nesbit)	Ongoing Local			x	
15. Total Body Irradiation for Bone Marrow Transplant (Drs. Kim, Kersey, Levitt)	Ongoing Local	x	x	x	

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Byrl James Kennedy, M.D.	Professor of Medicine Director of Medical Oncology Masonic Professor of Oncology	June 24, 1921
PLACE OF BIRTH (City, State, Country)	PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)	SEX
Plainview, Minnesota	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota, Minneapolis	B.A., B.S.	1943	Pre-Med
University of Minnesota, Medical School	B.M.	1945	Medicine
University of Minnesota, Medical School	M.D.	1946	Medicine
McGill Medical School, Montreal	M.Sc.	1951	Exper. Medicine

HONORS Alpha Omega Alpha, 1945
Damon Runyon Fellow, 1949-51
Lucius Littauer Fellow
Harvard Cancer Commission, 1947
NIH Post-doctorate Research Fellow, 1948
Masonic Professor of Oncology, 1970

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Medical Oncology	Principal Investigator Director of Medical Oncology

RESEARCH SUPPORT *(See instructions)*

	Amount 1975-6	To
NIH CA-08832, Study of Advanced Malignant Diseases	444,282	9/30/76
NIH CA-05158, Medical Oncology Training Grant	85,125	6/30/76
NIH CA-08101, Clinical Cancer Training Grant	81,460	6/30/76
NIH CA-16450-01 ALGB	49,057	1/31/76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List a or most representative publications. Do not exceed 3 pages for each individual.)*

Masonic Professor of Oncology, January, 1970-present
Professor of Medicine and Director, Medical Oncology, Department of Medicine, University of Minnesota, 1967-present
Associate Professor of Medicine, University of Minnesota, 1957-1967
Assistant Professor of Medicine, University of Minnesota, 1952-1957
Resident in Medicine, Massachusetts General Hospital, 1951-1952
Research Fellow in Medicine, McGill Medical School and Royal Victoria Hospital, Montreal, Canada, 1949-1950 (Damon Runyon Fellow)
Research Fellow in Medicine, Harvard Medical School in Medicine, 1947-1948, (National Cancer Institute Postdoctorate Research Fellow, 1948-1949)
Assistant Resident in Medicine, Massachusetts General Hospital, 1946-1947
Intern in Medicine, Massachusetts General Hospital, Boston, 1945-46

Current Scientific Activities:
Member: American Board of Internal Medicine
Chairman, Subspecialty Committee for Medical Oncology, ABIM
Board of Directors: American Cancer Society, Minnesota Division and Nation
Director; Section of Medical Oncology, University of Minnesota School of Medicine
Total Publications: 350

Kennedy, B.J.: Progestogens in the Treatment of Carcinoma of the Endometrium. Surg. Gynec. & Obstet. 127:103-114, (July) 1968.

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Greeley, J., Theologides, A. and Kennedy, B.J.: Apparent Chemotherapeutic Cure of Malignant Lymphoma. Cancer 27:887-893, (April) 1971.

Kiang, D.T. and Kennedy, B.J.: Combination of Cyclophosphamide and Estrogen Therapy in DMBA-Induced Rat Mammary Cancer. Cancer 28:1202-1210, (November) 1971.

Kennedy, B.J. and Theologides, A.: Controls in Cancer Chemotherapy. Ann. Intern. Med. 76:321-322, 1972.

Kennedy, B.J.: Chemotherapy of Brain Tumors. Cancer Chemotherapy II. Isadore Broadsky and S.B. Kohn, Grunn and Stratton, New York. pp. 221-229, 1972.

Kennedy, B.J.: Mithramycin Therapy in Testicular Cancer. Jour. Urol. 107:429-432 (March), 1972.

Kennedy, B.J.: Hydroxyurea Therapy in Chronic Myelogenous Leukemia. Cancer 29:1052-1056, (April), 1972.

Kennedy, B.J. and Kiang, D.T.: Hypophysectomy in the Treatment of Advanced Cancer of the Male Breast. Cancer 29:1606-1612, (June) 1972.

Garfield, D.H. and Kennedy, B.J.: Regression of Metastatic Renal Cell Carcinoma Following Nephrectomy. Cancer 30:190-196, (July) 1972.

Bloomfield, C.D., Brunning, R.D., and Kennedy, B.J.: Daunorubicin Therapy in Adult Acute Lymphatic Leukemia. Cancer 30:47-55, (July) 1972.

Kennedy, B.J., Calabresi, P., Carbonne, P., Frei, III, E., Holland, J., Owens, H., Sleisenger, M.H. and Beck, J.C.: Training Program in Medical Oncology. Ann. Intern. Med. 78:127-130, (January), 1973.

Bloomfield, C.D., Brunning, R.D., Theologides, A., and Kennedy, B.J.: Daunorubici Prednisone Remission with Hydroxyurea Maintenance in Acute Non-lymphocytic Lymphoma. Cancer 31:931-938, 1973.

Fortuny, I.E., Crandall, L., McCullough, J., Theologides, A. and Kennedy, B.J.: Leukapheresis in the Management of Chronic Leukemia. Minnesota Medicine. 56:674-676, (August) 1973.

Kennedy, B.J. et al.: Advanced Cancer, New Concepts of Medical Therapy. Geriatrics 28:51-75, 1973.

Kennedy, B.J.: Masonic Memorial Hospital. A Special Cancer Center for the Study of Advanced Malignant Diseases. Minnesota Medicine. 57:527-531, (July) 1974.

Kennedy, B.J., Smith, R. and Goltz, R.: Skin Changes Secondary to Hydroxyurea. Arch Derm. 111:183-187 (Feb) 1975.

Kennedy, B.J.: Medical Oncology in the United States. Med. Ped. Onc. 1:23-1975.

Twito, D. and Kennedy, B.J.: Treatment of Testicular Cancer. Ann. Rev. Med 26:235-243, 1975.

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Seymour H. Levitt, M.D.	Professor and Head Therapeutic Radiology	7/18/28
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Chicago, Illinois, U.S.A.	U.S.A.	[X] Male [ ] Female

EDUCATION (Begin with baccalaureate training and include postdoctoral)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Colorado (Graduated Cum Laude)	B.A.	1950	
University of Colorado	M.D.	1954	Medicine

HONORS
Phi Beta Kappa; Alpha Omega Alpha; Alpha Epsilon Delta, Pre-Medical Honorary Society; Phi Sigma, Biology Honorary Society; Fellow, American College of Radiology

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Radiation Biology, Oncology; Radiation Immunology	Principal Investigator

RESEARCH SUPPORT (See instructions)

NIH CA08832 Integrated Study of Advanced Malignant Diseases $35,269 (10/1/71 - 9/30/76) B.J. Kennedy, Principal Investigator. 3% effort.
NIH CA13353-01 Vascularity and Reoxygenation in X-irradiated Tumors. $37,872, $115,882 (2/1/73 - 1/31/76). C.W. Song, Principal Investigator. 5% effort.
NIH CA15548-01A1 Radiation Oncology Research and Clinical Center $376,859, $1,161,756 (7/1/75 - 6/30/78). 40 effort.
NIH CA16545-01 A Community Cancer Program Based on Radiation Oncology $75,301, $127,361 (7/1/75 - 6/30/77) 15 effort.
NCI CA 16450 Acute Leukemia Group B, B.M. Kennedy, Principal Investigator.5%

RESEARCH AND/OR PROFESSIONAL EXPERIENCE (Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)

Professor and Head, Dept. of Therapeutic Radiology, Univ. of Minnesota, August 1970 - present.
Consultant Radiotherapist, VA Hospital, Mpls., Minnesota, August 1970 - present.
Professor and Chairman, Division of Radiation Therapy, Medical College of Virginia, May 1966 - August 1970.
Associate Professor, Department of Radiology, University of Oklahoma, 1963-1966.
Radiotherapist and Chief of Division of Radiation Therapy, University of Oklahoma Medical Center, 1963 - 1966.
Assistant Radiotherapist, University of Rochester Medical Center, 1962 - 1963.
Instructor in Radiation Therapy, University of Michigan, 1961 - 1962.
American Cancer Society Clinical Fellow, 1959 - 1960.
Military Service, U.S. Army MC, U.S.A.E., 1955 - 1957.
Residencies in Internal Medicine, University of California, 1957 - 1958 and Radiology, University of California, 1958 - 1961.
Internship, Philadelphia General Hospital (Rotating Internship), 1954 - 1955.

RESEARCH AND TRAINING SUPPORT (Cont.)

PDT - 17 American Cancer Society Treatment of Tumor with Combination of Radiotherapy and Immunotherapy $44,358, $89,016 (7/1/75 - 6/30/78) C.W. Song, Principal Investigator 10% effort.

U.S. GOVERNMENT PRINTING OFFICE : [illegible]

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Seymour H. Levitt, M.D.	Professor and Head Therapeutic Radiology	7/18/28
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Chicago, Illinois, U.S.A.	U.S.A.	☒ Male ☐ Female

EDUCATION (Begin with baccalaureate training and include postdoctoral)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Colorado (Graduated Cum Laude)	B.A.	1950	
University of Colorado	M.D.	1954	Medicine

HONORS Phi Beta Kappa; Alpha Omega Alpha; Alpha Epsilon Delta, Pre-Medical Honorary Society; Phi Sigma, Biology Honorary Society; Fellow, American College of Radiology

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Radiation Biology, Oncology; Radiation Immunology	Principal Investigator

RESEARCH SUPPORT (See instructions)

NIH CA08832 Integrated Study of Advanced Malignant Diseases $35,269 (10/1/71 - 9/30/76) B.J. Kennedy, Principal Investigator. 3% effort.
NIH CA13353-01 Vascularity and Reoxygenation in X-irradiated Tumors. $37,872, $115,882 (2/1/73 - 1/31/76). C.W. Song, Principal Investigator. 5% effort.
NIH CA15548-01A1 Radiation Oncology Research and Clinical Center $376,859, $1,161,756 (7/1/75 - 6/30/78). 40 effort.
NIH CA16545-01 A Community Cancer Program Based on Radiation Oncology $75,301, $127,361 (7/1/75 - 6/30/77) 15 effort.
NCI CA 16450 Acute Leukemia Group B, B.M. Kennedy, Principal Investigator.5%

RESEARCH AND/OR PROFESSIONAL EXPERIENCE (Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)

Professor and Head, Dept. of Therapeutic Radiology, Univ. of Minnesota, August 1970 - present.
Consultant Radiotherapist, VA Hospital, Mpls., Minnesota, August 1970 - present.
Professor and Chairman, Division of Radiation Therapy, Medical College of Virginia, May 1966 - August 1970.
Associate Professor, Department of Radiology, University of Oklahoma, 1963-1966.
Radiotherapist and Chief of Division of Radiation Therapy, University of Oklahoma Medical Center, 1963 - 1966.
Assistant Radiotherapist, University of Rochester Medical Center, 1962 - 1963.
Instructor in Radiation Therapy, University of Michigan, 1961 - 1962.
American Cancer Society Clinical Fellow, 1959 - 1960.
Military Service, U.S. Army MC, U.S.A.E., 1955 - 1957.
Residencies in Internal Medicine, University of California, 1957 - 1958 and Radiology, University of California, 1958 - 1961.
Internship, Philadelphia General Hospital (Rotating Internship), 1954 - 1955.

RESEARCH AND TRAINING SUPPORT (Cont.)

PDT - 17 American Cancer Society Treatment of Tumor with Combination of Radiotherapy and Immunotherapy $44,358, $89,016 (7/1/75 - 6/30/78) C.W. Song, Principal Investigator 10% effort.

PUBLICATIONS

Levitt, S.H.: Letter to the editor in response to Ansfield, F.J., Radiotherapy for breast cancer. Submitted to JAMA.

Song, C.W., Clement, J.J. and Levitt, S.H.: Preferential inhibitory effect of 5-Thio-D-Glucose against anoxic tumor cells. J. Natl. Cancer Inst, in press.

Kim, T., Nesbit, M.E., and Levitt, S.H.: The role of irradiation in treatment of neuroblastoma. In preparation.

Levitt, S.H., Nesbit, M.E., Kim, T., and Stoffel, T.J.: Radiation therapy in the treatment of extramedullary leukemia in children. Submitted to Int. J. Radiat. Onc.

Cotma, H.E., Amplatz, K., Bloomfield, C., Sosin, H., Kuisk, H., and Levitt, S.: Use of the bipedal lymphogram as a guide during laparotomy in Hodgkin's and non-Hodgkin's lymphomas. Submitted to Clin. Rad.

Khan, F.M., and Levitt, S.H.: Field shaping in electron beam therapy. Br. J. Rad., in press.

Levitt, S.H., and McHugh, R.B.: The role of radiotherapy in the treatment of operable cancer of the breast. In Advances in Cancer Surgery, Eds: Najarian, J.S. and Delaney, J.P., Stratton Intercontinental Medical Book Corp., New York, 1976, pp. 503-509.

Clement, J.J., Song, C.W., and Levitt, S.H.: Changes in functional vascularity and cell number following X-irradiation of a murine carcinoma. Int. J. Radiat. Onc., in press.

Song, C.W., and Levitt, S.H.: Radiation effects on the formation of effector cells and on the cytotoxicity of the effector cells. In "Radiation and the Lymphatic System", 14th Hanford Biology Symposium, Richland, Washington, 1974, ERDA Symposium Series, 1976, pp. 169-174.

Levitt, S.H., Bloomfield, C.D., Lee, C.K.K., Nesbit, M.E., and McKenna, R.W.: Extended field radiotherapy in non-Hodgkin's lymphoma. Radiology, 118:457-459, 1976.

Levitt, S.H., and McHugh, R.B.: Early breast cancer and postoperative irradiation. Lancet, 2:1258-1259, 1975.

Song, C.W., and Levitt, S.H.: Immunotherapy with neuraminidase - treated tumor cells after radiotherapy. Radiat. Res., 64:485-491, 1975.

Stoffel, T.J., Nesbit, M.E., and LEvitt, S.H.: The role of radiotherapy in renal involvement in acute childhood leukemia. Radiology, 117:687-694, 1975.

Levitt, S.H.: Clarifying the use of radiotherapy for non-Hodgkin's lymphomas. Geriatrics, 30:97-99, 1975.

Kim, T., Song, C.W., and Levitt, S.H.: Effect of irradiation on immune cell-mediated cytolysis of tumour cells. Eur. J. Cancer, 11:589-591, 1975.

PUBLICATIONS, cont.

Song, C.W., and Levitt, S.H.: The lymphocyte response to phytohaemagglutinin after in vitro irradiation. B. J. Radiol., 48:504, 1975.

Smith, D.G., Jones, T.K., and Levitt, S.H.: Hodgkins Disease. Historical perspective and current radiotherapeutic management at University of Minnesota. Minn. Med., 58:156-162, 1975.

Stoffel, T.J., Nesbit, M.E., and Levitt, S.H.: Extramedullary involvement of the testes in childhood leukemia. Cancer, 35:1203-1211, 1975.

Fuller, L.G.A., Rogoff, E., Deck, M., Galicich, J., Ghavimi, F., Levitt, S., Smith, C.E., and D'Angio, G.J.: Recent experience with intrathecal radiogold for medulloblastoma and ependymoblastoma: A prograss report. Am. J. Roentgenol. Radium Ther. Nucl. Med., 122:75-79, 1974.

Smith, D.G., and Levitt, S.H.: Radiation carcinogenesis: An unusual familial occurrence of neoplasia following irradiation in childhood for benign disease. Cancer, 34:2069-2071, 1974.

Song, C.W., Sung, J.H., Clement, J.J., and Levitt, S.H.: Vascular changes in neuroblastoma of mice following X-irradiation. Cancer Res., 34:2344-2350, 1974.

Song, C.W., and Levitt, S.H.: Combined cytolytic effect of S-irradiation and cell-mediated immune reactions on tumor cells in vitro. Radiology, 111: 213-214, 1974.

Khan, F.M., Moore, V.C., Jones, T.K., Stryker, J.A., and Levitt, S.H.: Dose distribution analysis of moving-strip technique for abdominal irradiation using 10 MV X-rays. Radiology, 112:421-424, 1974.

Feola, J.M., SOngs, C.W., Khan, F.M., and Levitt, S.H.: Lethal response of C57BL mice to 10 MeV X-rays and to ^{60}Co gamma-rays. Int. J. Radiat. Biol., 26:161-165, 1974.

Khan, F.M., Moore, V.C., and Levitt, S.H.: Effect of various atomic number absorbers on skin dose for 10-MeV X-rays. Radiology, 109:209-212, 1973.

Smith, C.E., Long, D.M., Jones, T.K., Jr., and Levitt, S.H.: Medullo-blastoma: An analysis of time-dose relationships and recurrence patterns. Cancer, 32:722-728, 1973.

Smith, C.E., Long, D.M., Jones, T.K., Jr., and Levitt, S.H.: Experiences in treating medulloblastoma at the University of Minnesota Hospitals. Radiology, 109:179-182, 1973.

Khan, F.M., Levitt, S.H., Moore, V.C., and Jones, T.K., Jr.: Computer and approximation methods of calculating depth dose in irregularly shaped fields. Radiology, 106:433-436, 1973.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Mahmoud M. Abdel-Monem	Associate Professor	June 7, 1938
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Cairo, Egypt	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
College of Pharmacy, Cairo University Egypt	B.Pharm.	1959	Pharmacy
University of Minnesota, Minneapolis, MN	Ph.D.	1966	Medicinal Chemistry
University of Minnesota, Minneapolis, MN	Postdoctoral	1968-1970	Medicinal Chemistry

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Drug Design Metabolism	Participant

RESEARCH SUPPORT *(See instructions)*

CA-14238 Synthesis of Ornithine Decarboxylase Inhibitors 14,760 30,356 10% NIH(ends 12-31-7

CA-14239 Elucidation of Polyamine Conjugates in Urine 17,260 32,856 10% NIH(ends 3-31-76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1. Associate Professor, Dept. of Medicinal Chemistry starting August 1, 1971.
2. Assistant Professor of Chemistry, College of Pharmacy, University of Illinois, from 9-1-70 to 7-31-71.
3. Research specialist, Dept. of Medicinal Chemistry, College of Pharmacy, University of Minnesota, from 3-15-68 to 8-31-70. Research training in the area of drug distribution and metabolism.
4. Head, Pharmaceutical Chemistry Research Dept., Nile Co. for Pharmaceutical Research and Chemical Industries, Cairo, U.A.R., from 2-20-65 to 3-15-68. Research activities involved the design and evaluation of novel pro-drugs and studies on bioavailability of drug products.
5. Graduate Student, University of Minnesota, Minneapolis, MN. from 1-10-62 to 12-31-64. Research work involved the structural elucidation of natural products.

Publications

1. Structures of Some degradation Products of (±)-N-Methylpavine, Mahmoud M. Abdel-Monem and Taito O. Soine, J. Pharm. Sci., 56, 976 (1967).
2. Correlation of Analgesic Potencies of N-Substituted Normeperidines and *in vitro* N-Dealkylation, Mahmoud M. Abdel-Monem and Philip S. Portoghese, J. Pharm. Pharmacol., 23, 875 (1971).
3. N-Demethylation of Morphine and Structurally Related Compounds with Chloroformate Esters, Mahmoud M. Abdel-Monem and Philip S. Portoghese, J. Med. Chem., 15, 208 (1972).

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4. Stereochemical Studies on Medicinal Agents. 11. Metabolism, and Distribution of Prodine Isomers in Mice, Mahmoud M. Abdel-Monem, D. L. Larson, H. J. Kupferberg and P. S. Portoghese, J. Med. Chem., 15, 494 (1972).
5. Pharmacokinetics, Metabolism and Urinary Excretion of [^{3}H]-Alphaprodine in Dogs, Mahmoud M. Abdel-Monem, P. A. Harris and P. S. Portoghese, J. Med. Chem., 15, 506 (1972).
6. Acid-Labile Derivatives of Chloramphenicol as Potential Latentiation Forms, Andree D. Gillet and Mahmoud M. Abdel-Monem, J. Med. Chem., 16, 992 (1973).
7. Inhibitors of Polyamine Biosynthesis. 1. α-Methyl-($\pm$)-ornithine, an Inhibitor of Ornithine Decarboxylase, Mahmoud M. Abdel-Mone, N. E. Newton and C. E. Weeks, J. Med. Chem., 17, 447 (1974).
8. Potential Inhibitors of Polyamine Biosynthesis. 2. α-Alkyl- and Benzyl- ($\pm$)-ornithine, Mahmoud M. Abdel-Monem, N. E. Newton, B. C. Ho, and C. E. Weeks, J. Med. Chem., 18, 600 (1975).
9. Inhibitors of Polyamine Biosynthesis. 3. ($\pm$)-5-Amino-2-hydrazino-2-methylpentanoic Acid, and Inhibitor of Ornithine Decarboxylase, Mahmoud M. Abdel-Monem, N. E. Newton, and C. E. Weeks, J. Med. Chem., 18, 945 (1975).
10. Isotope Effects in Enzymatic N-Demethylation of Tertiary Amines, Mahmoud M. Abdel-Monem, J. Med. Chem., 18, 427 (1975).
11. Separation of the Dns Derivatives of Polyamines and Related Compounds by Thin-layer and High-pressure Liquid Chromatography, Mahmoud M. Abdel-Monem and Kosei Ohno, J. of Chrom. 107, 416 (1975).
12. Polyamine Metabolism. 1. Synthesis and Elucidation of the Dns Monoacetyl Diamines and Polyamines in Human Urine, Mahmoud M. Abdel-Monem and Kosei Ohno, Clin. Chim. Acta, submitted (1975).
13. Polyamine Metabolism. 2. Monoacetyl Diamines and Polyamines in Human Urine, Mahmoud M. Abdel-Monem and Kosei Ohno, Clin. Chim. Acta, submitted (1975).
14. Acetyl Spermidines in Human Urine, Mahmoud M. Abdel-Monem, Kosei Ohno, I. Fortuny and A. Th eologides, Lancet, submitted, (1975).

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Yusuf J. Abul-Hajj	Associate Professor	4-3-1940
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Jerusalem, Jordan	Jordanian (Immigrant visa)	☒ Male ☐ Female

EDUCATION (Begin with baccalaureate training and include postdoctoral)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
American University of Beirut, Lebanon	B.S.; M.S,	1962; 1964	Chemistry
University of Wisconsin, Madison	Ph.D.	1968	Pharmaceutical Biochemistry

HONORS

Rho Chi Society, Sigma Xi, APHA, AAAS, ASP

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Mechanisms of Steroid Metabolism in normal and neoplatic cells	Principal Investigator

RESEARCH SUPPORT (See instructions)

Training Grant to College 1 T01 GM02064-03 (Supporting one graduate student)
NIH General Research Support ($45,765 to College, $2,500 for personal use)
College of Pharmacy - supporting one graduate student
Request from NIH on proposal to be submitted on Feb. 1, 1976 on "Metabolism of Steroid Hormones by Human Breast Carcinoma" amount $70,000

RESEARCH AND/OR PROFESSIONAL EXPERIENCE (Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)

Associate Professor, College of Pharmacy, University of Minnesota, 1972-present.
Visiting Associate Professor, School of Medicine, American University of Beirut, Lebanon, 1974-75.
Assistant Professor, College of Pharmacy, University of Minnesota, 1968-1972
Research Associate, School of Pharmacy, University of Wisconsin, 1967-1968
Research Assistant, School of Pharmacy, University of Wisconsin, 1964-1967

During the last two years we worked on several aspects related to the proposed project.

a) We have established an assay system for the simultaneous determination of seven common urinary 17-ketosteroids, pregranediol and pregnanetriol and have determined the urinary excretion pattern of steroid metabolites in 18 normal human females as well as with other patients with various types of gynecological problems.

b) During the 1974-75 academic year I was on sabbatical leave at the American University Hospital, Beirut, Lebanon, and worked on the metabolism of steroid hormones by human mammary tumor tissues. The efforts of our research resulted in the publication of the manuscript entitled "Metabolism of Dehydroepiandrosterone by Hormone Dependent and Hormone Independent Human Breast Carcinoma" which will appear in a future issue of Steroids.

c) During my sabbatical year, we also determined the estrogen receptor content in 11 patients with advanced breast cancer that were undergoing endocrine ablation therapy. Of 7 patients with estrogen receptor positive tumors 4 responded to endocrine ablation while the remaining 3 showed no response. Furthermore, all 6 patients with estrogen

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receptor negative tumors, did not respond to endocrine ablative therapy.

PUBLICATIONS

1. Y.J. Abul-Hajj. "Microbiological Hydroxylation of 4-Androstene-3, 17-doine." Lloydia, 33, 278 (1970).

2. Y.J. Abul-Hajj, "Catalytic Reduction of 3β-Hydroxyandrost-4-ene-17-one with Tritium. I. The Distribution and Configuration of Label in 3β- Hydroxy-5α-androstane-17-one." J. Labelled Compounds, 7, 33 (1971).

3. Y.J. Abul-Hajj. "catalytic Reduction of 3β-Hydroxyandrost-4-ene-17-one with Titium. II. The Distribution and Configuration of Label in 3β-Hydroxy-5β-androstane-17-one." J. Labelled Compounds, 7, 261 (1971).

4. Y.J. Abul-Hajj, "Stereochemistry of Enzymic C-4,5 Dehydrogenation of Steroids," Biochem, Biophys, Res. Commun., 43, 766 (1971).

5. Y.J. Abul-Hajj. "Sterospecific Reduction of Steroidal-4-ene-3β-ols with Hydrazine." J. Org. Chem. 36, 2730 (1971).

6. Y.J. Abul-Hajj. "Effect of 11-Oxygen Function on the Steric Course of Reduction of Steroids by Homogeneous Catalytic Hydrogenation." Steroids, 18, 281 (1971).

7. Y.J. Abul-Hajj. "Stereospecificity of Hydrogen Transfer from NADPH by Steroid Δ^4-5α-and Δ^4-5β-Reductase." Steroids, 20, 215 (1972).

8. Y.J. Abul-Hajj. "Stereochemsitry of c-1,2 Dehydrogenation of 5β-Pregnane-3,11, 20-trione by Septomyxa affinis." J. Biol. Chem., 247, 686 (1972).

9. K.L. Su, E.J. Staba, and Y.J. Abul-Hajj. "Preliminary Chemical Studies of Aquatic Plants from Minnesota," Lloydia, 36, 72 (1973).

10. K.L. Su, Y.J. Abul-Hajj, and E.J. Staba. "Antimicrobial Effects of Aquatic Plants from Minnesota," Lloydia, 36, 80 (1973).

11. A. Shafiee, E.J. Staba and Y.J. Abul-Hajj. "Partial Purification of Antigen E from a mxiture of stems and leaves of Short Ragweed Plant." J. Pharm. Sci. 62, 1654 (1973).

12. J.E. Houglum, and Y.J. Abul-Hajj, and H.P. Morris. "Steroid Δ^4-Reductase Activity in Hepatomas of Different Growth Rate" Cancer Res., 34, 938

13. Wai-Ming Tom, Yusuf J. Abul-hajj, and Masato Koreeda, "Microbial Oxidation of Ecdysones. A convenient preparation of Rubrosterone." J. Chem. Soc. Chem. Commun., p. 24, 1975.

14 Y.J. Abul-Hajj, "Metabolism of Dehydroepiandrosterone by Hormone-dependent and Hormone-Independent Human Breast Carcinoma, "Steroids (In Press).

15. Y.J. Abul-Hajj and H.P. Morris, "Metabolism of Estrogens in Hepatomas of Different Growth Rates", In preparation.

16. Y.J. Abul-Hajj and H.P. Morris, "Cholesterol and Cholesterol esters in Hepatomas of Different Growth Rates". In preparation.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Gerard V. Aranha	Fellow in Surgical Oncology	5/5/43
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Bangalore, Mysore, India		☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
St. Joseph's College, Bangalore, India		1961-1962	
Bangalore Medical College, Bangalore	M.B.BS.	1967	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Surgical Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1975-Present Fellow in Surgical Oncology, University of Minnesota.
1971-1975 Resident, V.A. Hospital, Hines, Illinois.
1970-1971 Intern, Christ Community Hospital, Oak Lawn, Illinois.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Perico Banat Arcedo, M.D.	M.D.	June 14, 1939
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Philippines	U.S. Citizen	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of the Philippines Far Eastern University, Manila, Philippines	A.A. M.D.		Therapeutic Radiologist

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Radiology	

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

INTERSHIP: Far Eastern University, (rotating internship) 1964-1965
St. Luke's Hospital, St. Paul, Minnesota July 1972-1973

RESIDENCY: Surgery - San Pedro Hospital, Davao City, Philippines 1965-1967

Therapeutic Radiology University of Minnesota and Veterans Administration Hospital, July 1973-1976

PRIVATE PRACTICE: General Practice, Kabacan Cotabato, Philippines 1967-1968

STAFF POSITIONS: House Staff, Unity Hospital, Fridely, Minnesota
1968-1972

Veterans Administration Hospital, Minneapolis, MN
Therapeutic Radiologist, July 1976 - present

MEDICAL LICENSES: Philippines, Minnesota

PROFESSIONAL ORGANIZATIONS: Philippine Minnesota Medical Association Member, 1976
American College of Radiology

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
James I. Ausman	Assistant Professor	12/10/37
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Milwaukee, Wisconsin	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Tufts University	BS	1959	Chemistry-Biology
Johns Hopkins School of Medicine	MD	1963	Medicine
State Univ. of New York at Buffalo	MA	1964	Physiology
George Washington University	PhD	1969	Pharmacology

HONORS Phi Beta Kappa; Magna Cum Laude; Sigma Xi' Tufts University Society of Scholars; American Field Service International Student Exchange Scholarship

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Neurosurgery	Participant

RESEARCH SUPPORT *(See instructions)*

NIH CA-08832 Study of Advanced Malignant Diseases $444,282.00 9/30/76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1975-Present Assistant Professor, University of Minnesota, Minneapolis, MN.
1970-1975 Instructor, University of Minnesota, Minneapolis, MN.
1968-1972 Resident in Neurosurgery, University of Minnesota, Minneapolis, MN.
1966-1968 Full Surgeon - Comissioned Corps, United States Public Health Service.
1964-1966 Resident in Neurosurgery, University of Minnesota, Minneapolis, MN.
1963-1964 Intern in Surgery, University of Chicago Hospitals, Chicago, Ill.
1962-1963 Research Fellow in Neurosurgery, Roswell Park Memorial Institute, New York.

Gold, L.H., Ausman, J.I., and Amplatx, K.: Intraparenchymal Embolization: A New Technique for Obliteration of an Intramedullary Arterio-Venous Malformation of the Spinal Cord. In preparation and to be presented at the Joint Meeting on Stroke and Cerebral Circulation, Dallas, TX, February, 1976.

Smith, S.H. and Ausman, J.I.: Brain Biopsy: A New Successful Approach to the Diagnosis of Progressive Central Nervous System Disease. In preparation.

Ausman, J.I., Rogers, C., Sharp, H.: Decompressive Craniectomy for Encephalopathy of Reye's Syndrome. Submitted for publication. JAMA, 1975.

Ausman, J.I., Chou, S.N., Chater, N.: Occipital Artery to Cerebellar Artery Anastomosis in Vertebral-Basilar Atherosclerosis. Submitted for Publication, JAMA, 1975. Presented at the Microneurosurgery Symposium, Cincinnati, OH, May 1975.

Ausman, J.I., Lee, M., Klassen, A., Seljeskog, E.L., and Shou, S.N.: Stroke: What's New: Cerebral Revascularization. Submitted for publication, MN Medicine 1975.

Ausman, J.I., Levin, V.A., Brown, W.E., Jr., Rall, D.P., Jr., and Fenstermacher, J.D.: Brain Tumor Chemotherapy: Pharmacological Principles Derived from a Monkey Brain Tumor Model, Submitted for publication J. Neurosurg. 1975.

Ausman, J.I., French, L.A., and Chou, S.N.: Metastatic Brain Tumors: A Review. Submitted for publication. Ann. Int. Med. 1975.

Ausman, J.I., French, L.A., and Chou, S.N.: Metastatic Brain Tumors: Diagnosis and Treatment. Submitted for Publication, JAMA, 1975.

Ausman, J.I., Moore, J., and Chou, S.N.: Case Report: Spontaneous Cerebral Revascularization in a Patient with STA-MCA Anastomosis. In Press, J. Neurosurg. 1975.

Ausman, J.I.: Microneurosurgery: Cerebral Revascularization and Arteriovenous Malformations of the Spinal Cord. Minnesota Medicine, 57:580-581, 1974.

Ausman, J.I.: Factors Influencing the Outcome of Chemotherapy of Brain Tumors. Proceedings 7th National Cancer Conf. Lippincott, Philadelphia, 805-809, 1973.

Levin, V.A., Clancy, T.P., Ausman, J.I., and Rall, D.P.: Uptake and Distribution of 3H-Methotrexate by the Murine Ependymoblastoma. J. Nat. Cancer Inst. 48:875-883, 1972.

Ausman, J.I.: New Developments in Anticonvulsant Therapy. Post-graduate Medicine 48:112-127, 1970.

Ausman, J.I. , Shapiro, W.R., and Rall, D.P.: Studies on the Chemotherapy of Experimental Brain Tumors: Development of an Experimental Model . Cancer Research 30:2394-2400, 1970.

Shapiro, W.R., Ausman, J.I., and Rall, D.P.: Studies on the Chemotherapy of Experimenta Brain Tumors: Evaluation of 1,3-bis (2-chloroethyl)-1-Nitrosourea, Cyclophosphamide, Mithramycin, and Methotrexate. Cancer Research 30:2401-2413, 1970.

Ausman, J.I., and Levin, V.A.: Intra- and Extravascular Distribution of Standard Drug Molecules in Brain Tumor and Brain. Fourth International Congress of Neurosurgery - Ninth International Congress of Neurology; Excerpta Medica, New York 1969.

Levin, V.A., Clancy, T.P., and Ausman, J.I.: Methotrexate Permeability and Steady State Distribution in the Murine Ependymoblastoma. Trans. Amer. Acad. Neurol., 1969.

Levin, V.A. and Ausman, J.I.: Relationship of Peripheral Venous Hematocrit to Brain Hematocrit. J. Appl. Physiol. 26:433-437, 1969.

Ausman, J.I. and Owens, G.: The Production of a Virus-Induced Tumor in the Central Nervous System of MOnkeys. J. Neurosurg. 21:660-666, 1964.

Costal, M., Ausman, J., Wodlring, S., and Owens, G.: Monoventricular Hypothermic Perfusion: Cortical Electric Responses to Analeptic Agents. J. Neurosurg. 20: 675-687, 1963.

Costal, M., Ausman, J., Woldring, S., and Owens, G.: Experimenta Observations During Selective Brain Cooling Produced by Cerebral Ventricular Perfusion Techniques. Neurology 14:244-246, 1964.

Ausman, J., Young, R., and Owens, G.: Radiopaque Dyes and Other Agents in the Production of Endothelial Damage. J. Surg. Res. 4:349-355, 1964.

Ausman, J., Van Nimwigen, D., and Owens, G.: Electron Microscopic Evidence of Potential Blood Flow from Vein to Capillary Bed in Brain. N.Y. State J. Med. 64:2917-2919, 1964.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Bloomfield, Clara D.	Assistant Professor	5/15/52
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Flushing Long Island, N.Y.	U.S.	[ ] Male [XX] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Wisconsin			
San Diego State College, Calif.	B.A.	1963	
University of Chicago, Ill.	M.D.	1968	Medicine

HONORS

Alpha Omega Alpha, Merck Book Award, Visiting Professor, University of West Virginia, Phi Beta Kappa

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Medical Oncology/Hematology	Participant

RESEARCH SUPPORT *(See instructions)*	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Disease	$444,282.00	9-30-76
NIH CA-05158 Medical Oncology Training Grant	$ 85,125.00	6-30-76
NIH CA-16450 Acute Leukemia Group B	$ 47,057.00	1-31-77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1973-present	Assistant Professor of Medicine, University of Minnesota
1972-1973	Instructor of Medicine, University of Minnesota
1972	Chief Resident in Medicine, University of Minnesota (6 months)
1971-1973	Medical Oncology Fellow, University of Minnesota
1969-1971	Resident, Internal Medicine, University of Minnesota
1968-1969	Straight Medicine Intern, University of Chicago Hosptials & Clinics

Bloomfield, C.D., Brunning, R.D., Kennedy, B.J.: Daunorubicin Therapy in Adult Acute Lymphatic Leukemia. Cancer 30:47-55, 1972.

Bloomfield, C.D., Brunning, R.D., Theologides, A., Kennedy, B.J.: Daunorubicin-prednisone Remission Induction with Hydroxyurea Maintenance in Acute Non-lymphocytic Leukemia. Cancer 31:931-938, 1973.

Kennedy, B.J., Theologides A., Fortuny, I.E., Bloomfield, C.D., Kelly, R.T.: Advanced Cancer: New Concepts of Medical Therapy. Geriatrics 28:51-72, 1973.

Bloomfield, C.D., Theologides, A.: Acute Granulocytic Leukemia in Elderly Patients. J.A.M.A. 226:1190-1193, 1973.

Gajl-Peczalska K.J., Hansen, J.A., Bloomfield, C.D., Good, R.A.: B-lymphocytes in Untreated Patients with Malignant Lymphoma and Hodgkin's Disease. Journal of Clinical Investigation 52:3064-3073, 1973.

Dick, F., Bloomfield, C.D., Brunning, R.D.: Incidence, Cytology and Histopathology of non-Hodgkin's Lymphomas in the Bone Marrow. Cancer 33:1382-1398, 1974.

Bloomfield, C.D., Kennedy, B.J.: Cephalothin, Carbenicillin, and Gentamicin Combinatio Therapy for Febrile Patients with Acute Non-lymphocytic Leukemia. Cancer 34: 431-437, 1974.

Hansen, J.A., Bloomfield, C.D., Dupont, B., Gajl-Peczalska, K., Keszkiss, D., Good, R.A Lymphocyte Subpopulations and Immunodeficiency in Lymphoproliferative Malignancies. In Proceedings of the Eighth Leucocyte Culture Conference. (Ed. K. Lindahl-Kiesslin New York, Academic Press, 1974 pp. 119-125.

Bloomfield, C.D., Brunning, R.D.: Prognostic Implications of Cytology in the Adult Acute Leukemias. The Case for Subacute Leukemia. Human Pathology 5:641-659, 1974.

Bloomfield, C.D., Goldman, A., Dick, F., Brunning, R.D., Kennedy, B.J.: Multivariate Analysis of Prognostic factors in the non-Hodgkin's Malignant Lymphomas. Cancer 33:870-879, 1974.

Gajl-:eczalska, K.J., Bloomfield, C.D., Nesbit, M.E., Kersey, J.H.: B Cell Markers on Lymphoblasts in Acute Lymphoblastic Leukemia. Clinical and Experimental Immunology 17:561-569, 1974.

Bloomfield, C.D.: Modern Management of Acute Leukemia. Minnesota Medicine 57:532-537, 1974.

Bloomfield, C.D., Brunning, R.D., Kennedy, B.J.: Daunorubicin-prednisone Treatment of Erythroleukemia. Annals of Internal Medicine 81:746-750, 1974.

Brunning, R.D., Bloomfield, C.D., McKenna, R.W., Peterson, L.: Bilateral Trephine Bone Marrow Biopsies in Lymphoma and other Neoplastic Diseases. Annals of Internal Medicine 82:365-366, 1975.

McKenna, R.W., Bloomfield, C.D., Brunning, R.D.: Nodular Lymphoma: Bone Marrow and Blood Manifestations. •Cancer 36:428-440, 1975.

Bloomfield, C.D.: Recognizing and Evaluating Non-Hodgkin's Lymphomas. Geriatrics, 1975 (in press).

Peterson, L.C., Bloomfield, C.D., Sundberg, R.D., Gajl-Peczalska, K.J., Brunning, R.D.: Morphology of Chronic Lymphocytic Leukemia and its Relationship to Survival. The American Journal of Medicine, 1975 (in press).

McKenna, R., Connelly, D., Matsen, J., Bloomfield, C.D., Kennedy, B.J., McCullough, J.: Hepatitis Surveillance in an Oncology Unit. New England Journal of Medicine 292: 1191, 1975. (Letter)

Bloomfield, C.D., Theologides, A., Kennedy, B.J.: Effectiveness of Chemotherapy for Non-Hodgkin's Lymphomas. Geriatrics, 1975 (in press).

McKenna R.W., Bloomfield, C.D., Dick F., Nesbit, M.E., Brunning, R.D.: Acute Monoblastic Leukemia: Diagnosis and Treatment of Ten Casses. Blood, 1975 (in press).

Fortuny, I.E., Bloomfield, C.D., Hadlock, D.C., Goldman, A., Kennedy, B.J., McCullough, J.J.: Granulocyte Transfusion: A Controlled Study in Patients with Acute Non-lymphocytic Leukemia. Transfusion, 1975 (in press).

Gajl-Peczalska, K.J., Bloomfield, C.D., Coccia, P.F., Sosin, H., Brunning, R.D., Kersey, J.H.: B and T Cell Lymphomas: Analysis of Blood and Lymph Nodes in 87 Patients. The American Journal of Medicine, 1975 (in press).

Bloomfield, C.D., McKenna, R.W., Brunning, R.D.: Significance of Hematologic Parameter in the Non-Hodgkin's Malignant Lymphomas. British Journal of Haematology, 1975 (in press).

Bloomfield, C.D.: Non-Hodgkin's Lymphoma: A Review for the Surgeon. In Majarian, J.S. and Delaney, J.P. (ed.): Cancer Surgery. New York, Intercontinental Medical Book Corporation, 1975 (in press).

Bloomfield, C.D., Kennedy, B.J.: The Malignant Lymphomas. In Nealon T.F. (ed.): Management of the Patient with Cancer, 2nd ed. Philadelphia, W.B. Saunders, 1975 (in press).

Bloomfield, C.D., Brunning, R.D.: Syndromes Terminating in Acute Leukemia. Seminars in Oncology, 1975 (in press).

Peterson, L.C., Bloomfield, C.D., Brunning, R.D.: Blast Crisis as an Initial or Termin Manifestation of Chronic Myeloid Leukemia: A Study of 28 patients. The American Journal of Medicine, 1975 (in press).

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Brady, Albert M.	Clinical Associate	12/3/45
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Omaha, Nebraska	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of California at Los Angeles	MD	1963	Medicine

HONORS

Howard P. Lewis Memorial Teaching Award, 1975
Ford Foundation Fellow
AOA, ARCS Fellow

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Medical Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Diseases	$444,282.00	9-30-76
NIH CA-05158 Medical Oncology Training Grant	$ 85,125.00	6-30-76
NIH CA-16450 Acute Leukemia Group B	$ 47,057.00	1-31-77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List or most representative publications. Do not exceed 3 pages for each individual.)*

1975-Present	Chief Resident, University of Oregon Medical School Hospital, Portland OR
1973-1974	Resident, University of Oregon, Portland, OR.
1971-1973	Military Service, USPHS Full Surgeon.
1970-1971	Internship, Duker University, Durham, North Carolina.

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Briscoe, Kathleen E.	Instructor	12/10/41

PLACE OF BIRTH *(City, State, Country)*	PRESENT NATIONALITY *(If non-U.S. citizen, indicate kind of visa and expiration date)*	SEX
Alameda, California	U.S.	☐ Male ☒ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Washington, Seattle			
University of California, San Francisco	M.D.	1966	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Oncology-Pharmacology	Participant

RESEARCH SUPPORT *(See instructions)*

Clinical Cancer Education Program, Parts I and II, NIH CA 19527-01 application pending
Study of Advanced Malignant Diseases, NIH CA 08832, 85,125, to 9/30/76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Instructor in Medicine, Department of Medicine, Section of Medical Oncology, University of Minnesota School of Medicine, May 1976-
Clinical Assistant Professor of Medicine, Indiana University School of Medicine, July 1974-March 1976
Associate Clinical Pharmacologist, Eli Lilly & Company, Indianapolis, October 1975- March 1976
Associate Clinical Investigator, Eli Lilly & Company, Indianapolis, November 1973-October 1975
Assistant Clinical Professor of Medicine, University of California, San Diego, July 1971-October 1973
Southern California Permanente Medical Group, July 1972-October 1973
Coordinator, Medicine Clerkship, University of California School of Medicine, San Diego, July 1970-July 1972Director, San Ysidro Health
Director, Ysidro Health Health Center, July 1970-June 1972

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Brunning, Richard D.	Professor	3/5/32
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Grand Forks, North Dakota	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of North Dakota	BS	1975	Medicine
McGill University, Montreal, Canada	MD	1959	Medicine

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Laboratory Medicine/Hemopathology	Participant

RESEARCH SUPPORT *(See instructions)*	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Diseases	$444,282.00	9-30-76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List or most representative publications. Do not exceed 3 pages for each individual.)*

1974-Present	Professor, University of Minnesota, Minneapolis, Minnesota
1969-1974	Associate Professor, University of Minnesota, Minneapolis, Minnesota
1966-1969	Assistant Professor, University of Minnesota, Minneapolis, Minnesota
1965-1966	Instructor, University of Minnesota, Minneapolis, Minnesota
1960-1964	Resident, University of Minnesota, Minneapolis, Minnesota
1959-1960	Internship, Ancker Hospital, St. Paul, Minnesota

Hundschenk, D., Connelly, D., White, J., and Brunning, R.: An Electronic Method for the Determination of Platelet Size and Shape. J. Lab. and Clin. Med., in press.

Peterson, L., Bloomfield, C., and Brunning, R.: Morphology of Blast Crisis of Chronic Myelogenous Leukemia. Am. J. Med., In press.

Bloomfield, C., McKenna, R., and Brunning, R.: Significance of Hematologic Parameters in the Non-Hodgkin's Malignant Lymphomas. Brit. J. Haem., in press.

McKenna, R., Bloomfield, C., Nesbitt, M., Dick, R., and Brunning, R.: Acute Monoblastic Leukemia; Diagnosis and Treatment of Ten Cases. Blood, 1975.

Kazimiera, J., Bloomfield, C., Coccia P., Sosin, H., Brunning, R., and Kersey, J.: B and T Cell Lymphomas: Analysis of Blood and Lymph Nodes in 87 patients. Am. J. Med. In press.

Peterson, L., Bloomfield, C., Kazimiera, J., Sundberg, R.D., and Brunning, R.D.: Morphology of Chronic Lymphocytic Leukemia and Its Relationship to Survival. Am. J. Med. Sept. 1975.

Brunning, R.: Bone Marrow and Peripheral Blood Involvement in the Non-Hodgkin's Lymphomas. Geriatrics. In press.

Brunning, R., and Parkin, J.: Ribosome-Lamella Complexes in Neoplastic Hematopoietic Cells. Am. J. Path. 79:565-578, 1975.

Weiss, R.B., Brunning, R.D., and Kennedy, B.J.: Hodgkin's Disease in the Bone Marrow Cancer, in press.

McKenna, R.W. and Brunning, R.D.: Reed-Sternberg Like Cells in Nodular Lymphoma Involving the Bone Marrow. Amer. J. Clin. Path. 63:779-785, 1975.

L'Esperance, P., Brunning, R., Deinard, A., Park, B., Biggar, D., Good, R.: Congenital Neutropenia - Impaired Maturation with Diminished Stem Cell Input in Immunodeficiency Diseases in Man and Animals. Birth Defects: Original Articles Series, Vol XI, No. 1, Ed. D. Bergsma, p. 59-65, Sinauer Associates, Sunderland, Mass. 1975.

Brunning, R.D., Bloomfield, C.D., McKenna, R.W., and Peterson, L.: Bilateral Trephine Bone Marrow Biopsies on Lymphoma and Other Neoplastic Diseases. Ann Int. Med. 82:365, 1975.

Brunning, R.D., and Parking, J.: Ultrastructural Studies of Parallel Tubular Arrays in Human Lymphocytes. Amer. J. Path. 78:59-70, 1975.

McKenna, R., Bloomfield, C.D., and Brunning, R.: Nodular Lymphoma, Bone Marrow and Peripheral Blood Manifestations. Cancer August, 1975.

Bloomfield, C.D., Brunning, R.D., and Kennedy, B.J.: Daunorubicin-Prednisone Therapy for Erythroleukemia. Ann. Int. Med. 81:746-750, 1974.

Brunning, R., Britten, G., Guest Editors. Symposium on Hematology, Vol. 5, Nos. 5 & 6, 1974.

Brunning, R.D., Bloomfield, C.D.: Prognostic Significance of Cytology in the Acute Leukemias. Human Pathology 5:641-659, 1974.

Brunning, R.D., Parkin, J., Nesbit, M.: Histochemical and Ultrastructural Studies of Unusual Granules in the Blast Cells in Four Patients with Down's Syndrome and Acute Leukemia. Blood 44:735-741, 1974.

Kiang, D.T., Fortuny, I.B., Brunning, R.D., Sundberg, R.D., Theologides, A., and Kennedy, B.J.: Clinical Evaluation of Multiple Myeloma. Minn. Med. 57:542-548, 1974.

Humphrey, C.B., Nesbit, M., Brunning, R.D.: Prognostic Significance of the Periodic Acid Schiff Reaction in Acute Lymphatic Leukemia in Children. Am. J. Clin. Path. 61:393-397, 1974.

Bloomfield, C.D., Golden, A., Brunning, R., Dick, F., Kennedy, B.J.: Multivariate Analysis of Prognostic Factors in the Non-Hodgkin's Malignant Lymphomas. Cancer 33:870-879, 1974.

Dick, F.R., Bloomfield, C., Brunning, R.D.: Incidence, Cytology, and Histopathology of Non-Hodgkin's Lymphomas in the Bone Marrow. Cancer 33:1382-1398, 1974.

Brunning, R.D.: Differential Diagnosis of Anemia in the Elderly. Geriatrics 29:52-60, 1974.

Swaiman, K.F., Halvorsoon, D., Sharp, H.L., Brunning, R.D., Lockman, L.A.: Sea Blue Histiocytes Associated with Posterior Column Dysfunction in Childhood. Neurology 23:474-477, 1973.

L'Esperance, P.L., Brunning, R.D., Good, R.A.: Maturation Defect in Congenital Neutropenia: Simulation by In Vitro Bone Marrow Culture. Proc. Nat. Acad. of Sci. of USA 70:669-672, 1973.

Brunning, R.D.: The Effects of Leukemic and Lymphoma Chemotherapy on Hematopoietic Cells. American Journal of Medical Technology. 39:165-174, 1973.

Bloomfield, C.D., Brunning, R.D., Theologides, A., Kennedy, B.J.: Daunorubicin-Prednisone Remission Induction with Hydroxyurea Maintenance in Acute non-Lymphocytic Leukemia. Cancer 31:931-938, 1973.

Weiss, R., Brunning, R., Kennedy, B.J.: Lymphosarcoma Terminating in Acute Myelogenous Leukemia. Cancer 30:2175-2178, 1972.

Bloomfield, C.D., Brunning, R.D., Kennedy, B.J.: Daunomycin Therapy in Adult Acute Lymphatic Leukemia. Cancer 30:47-55, 1972.

Davis, A. Todd, Brunning, R.D., Quie, Paul G.: Polymorphonuclear Leukocyte Myeloperoxidase Deficiency in Myelomonocytic Leukemia. N.E.J.M., 285:789-790, 1971.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
BUCHSBAUM, DONALD J.	ASSISTANT PROFESSOR THERAPEUTIC RADIOLOGY	March 27, 1945
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
New York, New York,	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Carnegie-Mellon University, Pittsburg, Penn.	B.S.	1967	Physics
University of Rochester, Rochester, N.Y.	M.S.	1969	Radiation Biophysics
University of Rochester, Rochester, N.Y.	Ph.D.	1972	Biophysics (Immunology)

HONORS

Sigma Xi

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Tumor Immunology	Investigator-Labeled Antibodies

RESEARCH SUPPORT *(See instructions)*

NIH CA 1 5548-01A1 Radiation Oncology Research and Clinical Center, $376,859, $1,161,756 (7/1/75 - 6/30/76) 83% effort.

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Assistant Professor, Department of Therapeutic Radiology, July 1975 - present.

Instructor, Department of Therapeutic Radiology, University of Minnesota, July 1, 1972 - July, 1975.

Research Associate, Laboratory of Tumor Immunology, Dep rtment of Surgery, University of Minnesota, July 1, 1972 - April 15, 1974.

PUBLICATIONS

Buchsbaum, D.J.: Effect of rat tumor allografts on the blood level of passively transferred alloantibodies. Proc. Soc. Exp. Biol. Med., 139: 1197-1201, 1972.

Izzo, M.J., Buchsbaum, D.J., and Bale, W.F.: Localization of an ^{125}I-labeled rat transplantation antibody in tumors carrying the corresponding antigen. Proc. Soc. Exp. Biol. Med., 139: 1185-1188, 1972.

Buchsbaum, D.J., and Izzo, M.J.: Studies on the fate of a transplantation antibody in allogeneic and syngeneic rats. Fed. Proc., 31: 930, 1972 (Abstract).

Izzo, M.J., Buchsbaum, D.J., and Bale, W.F.: Preparation and *in vitro* reactivity of a purified radioactive rat transplantation antibody. Fed. Proc., 31: 932, 1972 (Abstract).

Buchsbaum, D.J.: Effect of rat tumor allografts on the distribution of passively transferred alloantibodies studied by hemagglutination and isotopic tracer techniques, Ph.D. Thesis, University of Rochester, 1972.

McKhann, C.F., Buchsbaum, D.J. and Jagarlamoody, S.M.: The effect of antiplasma cell serum on tumor growth and blocking antibody. Second Joint Meeting of the Surgical Research Society, The Society of the University Surgeons, and the European Society for Experimental Surgery. Garmisch-Partenkirchen, West Germany, 1973 (Abstract).

McKhann, C.F., Buchsbaum, D.J., and Jagarlamoody, S.M.: The effect of antiplasma cell serum on tumor growth and blocking antibody. The Eighth Leukocyte Culture Conference, 1973 (Abstract).

Buchsbaum, D.J., Burk, M.W., and McKhann, C.F.: The effect of antiplasma cell serum and antilymphocyte serum on the response of mouse lymphoid cells to non-specific mitogens. Fed. Proc., 33: 742, 1974 (Abstract).

Bale, W.F., Contreras, M.A., Izzo, M.J., Della Penta, D., and Buchsbaum, D.J.: Preferential in vivo localization of ^{125}I-labeled antibody in a carcinogen-induced syngeneic rat tumor. Prog. Exp. Tumor Res., 19: 270-283, 1974.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Erskine M. Caperton, Jr.	Assistant Professor	3/30/40
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Beckley, West Virginia	U.S. Citizen	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
West Virginia University	B.S.	1962	
West Virginia University	M.D.	1965	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Rheumatology	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1973-present	Chief of Rheumatology Service, Department of Medicine, University of Minnesota Hospitals
1971-1973	Major, United States Army Reserve, Chief of Rheumatology, Brooke General Hospital, Fort Sam Houston, San Antonio, Texas
1970-1971 1973-	Assistant Professor of Medicine, Department of Medicine, University of Minnesota Hospitals
1969-1970	Instructor in Medicine and Director, Arthritis Division, Department of Medicine, University of Minnesota School of Medicine
1969-1970	Chief Resident and Instructor, Department of Medicine, University of Minnesota Hospitals
1968-1969	Fellow in Rheumatology, University of Minnesota Hospitals
1966-1968	Resident, Internal Medicine, University of Minnesota Hospitals
1965-1966	Intern, University of Minnesota Hospitals

Mullin, G.T., Caperton, E.M., Jr., Crespin, S.R. and Williams, R.C., Jr.: Arthritis and skin lesions resembling erythema nodosum in pancreatic disease. Ann. Int. Med. 68:75, 1968.

Chally, C.H., Caperton, E.M., Jr., White, J.G. and Willians, R.C., Jr.: Antinuclear antibodies--attempts at ultrastructural localization. Proc. Soc. Exp. Biol. & Med. 128:520, 1968

Caperton, E.M., Jr. and Williams, R.C., Jr.: Encephalomalacia, hypothermia and pancreatitis (abstract) Ann. Int. Med. 68:1145, 1968.

Caperton, E.M., Jr. and Edson, J.R.: Studies of IgM rheumatoid factors from mixed cryoglobulines. J. Lab. & Clin. Med. 74:239, 1969.

Caperton, E.M., Jr. and Williams, R.C., Jr.: In vivo study of IgM rheumatoid factors from mixed cryoglobulins. J. Lab. & Clin. Med. 74:239, 1969.

Messner, R.P., Caperton, E.M., Jr., King, R.A. and Williams, R.C., Jr.: Interactions between rheumatoid factors, gammaglobulin antibodies, lymphocytes and phagocytes. Ann. N.Y. Acad. Sci. 168:93, 1969.

Caperton, E.M., Jr. and Edson, J.R.: Clot promoting activity in cryoglobulinemia. Clin. Research 17:531, 1969.

Eggert, R.E. and Caperton, E.M., Jr.: Anti-IgA "Rheumatoid Factors" in chronic lung disease. J. Lab. & Clin. Med. 76:1025, 1970.

Eggert, R.C., Brauer, D.J. and Caperton, E.M., Jr.: Anti-IgA antibodies in rheumatic and pulmonary disease. Ann. Rheum. Diseases 32:41, 1973.

Caperton, E.J., Jr., Mullin, G.T., Dick, F.R. and Michael, A.F.: Successful results with an aggressive approach to SLE. Arth. & Rheum. 15:432, 1972.

Caperton, E.M., Jr., Bean, S.F. and Dick, F.R.: Immunofluorescent skin test in SLE. I. Lack of relationship with renal disease. JAMA 222:935, 1972.

Caperton, E.J., Jr., Baker, D.R. and King, R.A.: Lymphocyte reactivity in rheumatoid arthritis: Mixed lymphocyte culture. Annals of Rheum. Diseases 34:231-234, 1975.

Caperton, E., Cunningham, G. and Goldzieher, J.: Endocrinologic effects of intra-articular steroids (abstract). Clin. Research 22:610A, 1974.

Cunningham, G.R., Caperton, E.M. and Goldzieher, J.W.: Antiovulatory activity of synthetic corticoids. J. Clin. Endocrin. & Metabolism 40:265, 1975.

Cunningham, G.R., Caperton, E. and Goldzieher, J.W.: Antivulatory effect of triamcinalone in man (abstract) Fourth International Congress on Hormonal Steroids.

Lockhart, J., McIntyre, W. and Caperton, E.M., Jr.: Esophageal ulceration in Behcet's disease. (submitted for publication).

Caperton, E.M. and Hathaway, D.E.: Scleroderma with eosinophilia and hypergamma-globulinemia. The Shulman syndrome. Arth. & Rheum. 391, 1975.

Mahowald, M.L., Peters, T., Handwerger, B., Caperton, E.M.Jr. and Douglas, S.D.: A comparison study of rosette formation in human lymphocytes. Clin. Res. 23:493A, 1975.

Caperton, E.M., Hathaway, D., Dougan, J. and Dehner, L.: Scleroderma-like illness with eosinophilia (in preparation).

Golden, R. and Caperton, E.M., Jr.: Effect of beta blockade on immune complex vasculitis. (in preparation).

Hom, D. and Caperton, E.M., Jr.: The effect of short-term neutropenia on adjuvant arthritis (in preparation).

Lockhart, J., Hathaway, D.E., Felt, J.C. and Caperton, E.M.: Unilateral inflammatory sacroillitis (in preparation).

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
J oslav Cervenka	Associate Professor	March 15, 1933
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
rague, Czechoslovakia		☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Charles University, Prague, Czechoslovakia	M.D.	1958	
Academy of Sciences, Prague, Czech.	C.Sc.	1968	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
ediatric Oncology	Co-investigator

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Associate Professor, School of Dentistry, University of Minnesota 1971 - present
Assistant Professor, School of Dentistry, University of Minnesota 1968-1971
Acting Chief, Labroatory of Plastic Surgery, Czechoslovakia Academy of Sciencies 1967-68
Visiting Professor, Oral Pathology, School of Dentistry, University of Minnesota, Minneapolis, Mn 1965-67
Research Specialist, Laboratory of Plastic Surgery, Czechoslovakia Academy of Sciences, Prague, Czechoslovakia 1961-65
Oral Surgeon, Public Health Institution, Jaromer, Nachod (Czechoslovakia) 1958-61
Medical Corps, State Military Service, Czechoslovakia 1958

Publications:

1. Cervenka, J., Ruzicka, L. and Klaskova, O.: Seasonal incidence and variation of cleft lip and palate in Bohemia. Cleft Palate J. 6:35-39, 1969
2. Gorlin, R.J., Cervenka, J., Kellum, M. and Hall, J.: Is the gene for congenital thrombocytopenia with bilateral absent radius located on chromosome No. 18? Am. J. Dis. Child. 115:473, 1968.
3. Cervenka, J., Jacobson, D.E. and Gorlin, R.J.: Fluorescing structures of human metaphase chromosomes. Detection of "Y body". Am. J. Human Genet. 23:317, 1971.
Cervenka, J. and Bushkell, L.: Y-body and chromosomal analysis in bone marrow and lymphocyte transplantation. Transplantation (submitted)
5. Elliot, A.Y., Fraley, E.E., Cleveland, P., Castro, E., Cervenka, J., Stein, N. and Makala, P.: Characterization of cell line from human transitional cell tumor of the

urinary tract. J. Natl. Cancer Inst. 53:1341-1349, 1974.
6. Cervenka, J. and Thorn, H. L.: Chromosomes and spray adhesives. New England J. Med. 290:543-545, 1974.
7. Cervenka, J. and Ballin, R.: Tissue culture and chromosomal analysis of dental pulp cells. J. Dent. Res. 53:768, 1974.
8. Elliot, A. Y., Fraley, E.E., Cleveland, P., Castro, E., Cervenka, J., Stein, N. and Makala, P.: Characterization of cell line from human transitional cell tumor of the urinary tract. J. Natl. Cancer Inst. 53:1341-1349, 1974.
9. Elliot, A.Y., Fraley, E.E., Cleveland, P.H., Cervenka, J., Stein, N., and Wirth, P.: In vitro neoplastic transformation produced by acellular tissue culture fluids of human transitional cell cancers of the urinary tract. Science (submitted)

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
C. Carlyle Clawson, M.D.	Associate Professor	6/13/34
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Montevideo, Minnesota	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Hamline University, St. Paul, Mn.	B.S.	1956	Biology
University of Minnesota, Mpls, Mn.	M.D.	1960	Medicine
University of Minnesota, Mpls, Mn.	---	1961-63	Pediatrics
University of Minnesota, Mpls, Mn.	---	1964-68	Immunobiology

HONORS Borden Undergraduate Research Award, 1960; USPHS Special Fellowship, 1967; Faculty Research Associateship, American Cancer Society, 1968-73; Leukemia Scholarship (not accepted) Leukemia Society of America, 1968; Jane Nugent Cochens Prize for Thrombosis Research, 1972.

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Host Defense Mechanisms	Co-Investigator

RESEARCH SUPPORT *(See instructions)*

American Heart Association: Platelet Participation in Host Resistance to Infection. 7/1/74-6/30/77 $16,800/yr.

NIH-5-R10-CA-11996 Leukemia Center Program (Co-investigator with Dr. William Krivit) 5/1/74 - 4/30/77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Associate Professor Pediatrics, University of Minnesota, Mpls, Mn.	1971-present
Research Fellow, Institute of Child Health, London England	7/1/75 - 9/30/75
Assistant Professor Pediatrics, University of Minnesota, Mpls, Mn.	1968-71
Staff Member University of Minnesota Hospitals, Mpls, Mn.	1967-present
Instructor Pediatrics, University of Minnesota, Mpls, Mn.	1967-68
Cardiovascular Research Training Program (Immunobiology-Pediatrics) (Dr. R.A.Good) University of Minnesota, Mpls, Mn.	1964-68
Private Pediatric Practice, Montevideo, Minnesota	1963-64
Medical Student Research Program, Department of Pediatrics (Dr. R.L. Vernier) University of Minnesota, Mpls, Mn.	1958-60
Medical Student Research Program, Department of Anatomy, (Dr. J.F. Hartman) University of Minnesota, Mpls, Mn.	1958

BIBLIOGRAPHY - Selected Titles, not complete

1. Clawson, C.C., Rodey, G.E., and Good, R.A.: Ultrastructure of familial lipochrome histiocytosis. Lab. Invest. 22:294-300, 1970.
2. Clawson, C.C. and Dajani, A.S.: Effect of bactericidal substance from Staphylococcus aureus on group A streptococci. II. Structural alterations. Infection and Immunity 1:491-498, 1970.
3. Clawson, C.C. and Good, R.A.: Micropapillae: A surface specialization of human leukocytes. J. Cell Biol. 48:207-211, 1971.

White, James G.
474-22-6920

Bibliography - C.C. Clawson continued

4. Clawson, C.C. and White, J.G.: Platelet interaction with bacteria. I. Reaction phases and effects of inhibitors. Am. J. Path. 65:391-404, 1971.
5. Clawson, C.C. and White, J.G.: Platelet interaction with bacteria. II. Fate of the bacteria. Am. J. Path.65:405-422, 1971.
6. Clawson, C.C.: Platelet interaction with bacteria. III. Ultrastructure. Am. J. Path. 70:449-472, 1973.
7. Clawson, C.C., Rao, G.H.R., and White, J.G.: Platelet interaction with bacteria. I.V. Stimulation of the release reaction. Am. J. Path. 81:197-206, 1975.
8. Repine, J.E., Clawson, C.C., White, J.G. and Holmes, B.M.: Spectrum of function of neutrophils from carriers of sex-linked chronic granulomatous disease. J. Pediat. 87:901-907, 1975.
9. Clawson, C.C. and Repine, J.E.: Quantitation of maximal bactericidal capability in human neutrophils. J. Lab. Clin. Med. (In press), 1975.
10. Clawson, C.C.: Platelet interaction with bacteria: A double-edged sword? Recipient: Jane Nugents Cochems Prize for Thrombosis Research, Denver, Colorado, 1972.
11. Clawson, C.C.: Modification of neutrophil function by platelets. In: Platelets: Production, Function, Transfusion and Storage. (Baldini,and Ebbe, Eds), Grune and Stratton, N.Y., 1974.
12. Clawson, C.C. and Repine, J.E.: Products of platelet aggregation and release as a chemotactic factor for human leukocytes. V. Congress Thrombosis Haemostasis, 1975. (Abstract).
13. Perman, V., Clawson, C.C., Domek, N., White, J.G., Loken, M. and Krivit, W.: Effect of Thrombocytopenia on clearance and organ distribution of technicium ($99^{m}Tc$) tagged bacteria in dogs. Am. Soc. Hematol. 1975 (Abstract).
14. Clawson, C.C. and White, J.G.: Platelet interaction with bacteria. V. Congenital afibrinogenemia. (In preparation).
15. Clawson, C.C. Perman, V., Domek, N. White, J., Loken, M. and Krivit, W.: Platelet interaction with bacteria. VI. Effect of thrombocytopenia on clearance of blood borne bacteria. (In preparation).

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
CLEMENT, JACOB JAMES	ASSISTANT PROFESSOR THERAPEUTIC RADIOLOGY	February 28, 1944
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Chicago, Illinois	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
St. Mary's College, Winona, Minn.	B.A.	1966	Biology
Rooselvelt U., Chicago, Ill.	M.S.	1969	Biology
U. of No. Carolina, Chapel Hill, NC	M.S.P.H.	1970	Radiological Hygiene
U. of No. Carolina, Chapel Hill, NC	Ph.D.	1973	Radiological Hygiene

HONORS

Beta, Beta, Beta, Honorary Biology Fraternity, The Society of the Sigma Xi, Roosevelt U. Academic Scholarship, Radiological Hygiene Traineeship (69-73)

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Tumor Cell Kinetics	Investigator - Tumor Cell Kinetics

RESEARCH SUPPORT *(See instructions)*

NIH CA 133353-01 Vascularity and Reoxygenation in X-irradiated Tumors. $37,872, $115,882 (2/1/73 - 1/31/76). C.W. Song, Principal Investigator. 22% effort.

NIH CA 15548-01A1 Radiation Oncology Research and Clinical Center, $376,859, $1,161,756, (7/1/75 - 6/30/76); Tumor Cell Kinetics. $34,412; $112,626 (7/1/75 - 6/30/78). 76% effort.

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Assistant Professor, Department of Therapeutic Radiology, July, 1975 - present.
Instructor, Department of Therapeutic Radiology, September, 1973 - July 1975.

CLEMENT, JACOB JAMES

Publications

Hayano, M., Sung, J.H., Song, C.W., and Clement, J.J., "Intracisternal A and bar-shaped particles in murine neuroblastoma" In press.

Clement, J.J., Song, C.W., and Levitt, S.H., "Changes in Functional Vascularity and cell number following x-irradiation of a murine carcinoma" In press.

Watkins, E.B., Willhoit, D.G., and Clement, J.J., "The combined effect of hydrogen peroxide and gamma radiation on the mitotic activity of the Ehrlich ascites tumor" submitted for publication.

Levitt, S.H., Song, C.W., and Clement, J.J., "Combined effects of irradiation and cellular immune reactions on tumor cells in vitro" Rad. Res. Soc. 23rd annual meeting, 1975.

Clement, J.J., Song, C.W., and Levitt, S.H., "Post irradiation changes in cellularity and vascularity of a transplantable murine carcinoma" Rad. Res. Soc. 23rd annual meeting, 1975.

Song, C.W., Clement, J.J., and Levitt, S.H., "Functional vascularity in several experimental tumors following x-irradiation" Rad. Res. Soc. 23rd annual meeting 1975.

Clement, J.J., Song, C.W., and Levitt, S.H. "Biological modifiers of tumor vascularity." Cancer Res. 16: 169, 1975.

Clement, J.J., Willhoit, D.G. "Radiation responses of ascites tumor cells to fractionated irradiation." Submitted for publication.

Clement, J.J., and Willhoit, D.G. "Effect of fractionated irradiation on the Ehrlich ascites tumor." Rad. Res. 59: 183, 1974.

Song, C.W., Sung, J.H., Clement, J.J., and Levitt, S.H. "Vascular changes in neuroblastoma of mice following x-irradiation." Cancer Res. 34: 2344-2350, 1974.

Clement, J.J. "Tumor cell kinetics following fractionated irradiation." Ph.D. Thesis, Chapel Hill, North Carolina, 1973.

Clement, J.J., and Willhoit, D.G. "Survival patterns of mice after 2-dose and 3-dose fractionation regimens." Rad. Res. 48: 409-417, 1971.

Clement, J.J., and Willhoit, D.G. "Effect of dose per fraction and total dose on mean survival time of mice following 2-and 3-dose fractionation regimes." Rad. Res. 47: 321,1971.

Clement, J.J., and Willhoit, D.G., "Comparison of recovery kinetics for two and three dose fractionation regimes." Health Physics 19: 346, 1970.

Seaman, G.R., and Clement, J.J. "Tricarboxylic acid cycle enzymes in Tetrahymena Protozool. 17: 287-290, 1970.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Peter Felix Coccia	Assistant Professor of Peds	May 27, 1941
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Rome, New York	U.S. citizen	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Hamilton College, Clinton, New York	A.B.	1963	A.B. - chemistry
Upstate Medical Center, Syracuse, New York	M.D.	1968	M.D.

HONORS

New York State Regents Scholarship for Undergraduate Study
New York State Regents Science and Engineering Scholarship
New York State Regents Scholarship for the Professional Study of Medicine

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pediatric Hematology-Oncology	Co-investigator

RESEARCH SUPPORT *(See instructions)*

None

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Assistant Professor, Department of Pediatrics and Laboratory Medicine-Pathology, University of Minnesota, Minneapolis, Minnesota July 1974 - present
Fellow, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota June 1973 - July 1974
Resident, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota July, 1972 - June 1973
Clinical Pathologist, USPHS Hospital, Staten Island, New York - July 1971 - June 1972 (Deputy Chief Pathology)
Clinical Pathologist, (Staff Pathologist) USPHS Hospital, Staten Island, New York July 1970 - June 1971
Resident, Clinical Pathology, Upstate Medical Center, Syracuse, New York July 1969 - June 1970
Intern, Clinical Pathology, Upstate Medical Center, Syracuse, New York January 1969 - June 1969
Intern, Department of Pediatrics, Upstate Medical Center, Syracuse, New York - July 1968 - December 1968

SOCIETIES

American Society of Clinical Pathology
Northwestern Pediatric Society

REFERENCES - Peter Coccia

1. Coccia, P.F. and Westerfeld, W. W.: The Metabolism of Chlorpromazine by Liver Microsomal Enzyme Systems. J. Pharmacol. Exp. Therap. 157:446-458, 1967.
2. Levine, P. H., Stevens, D. A., Coccia, P. F., Dabich, L. and Roland A.: Infectious Mononucleosis Prior to Acute Leukemia: A Possible Role for the Epstein-Barr Virus. Cancer 30:875-880, 1972.
3. Coccia, P. F., Krivit, W., and Nesbit, M. E.: Malignant Bone Tumors in Children: Recent Advances in the Treatment. Minnesota Medicine 57:549-552, 1974.
4. Gajl-Peczalska, K. J., Bloomfield, C. D., Coccia, P. F., Sosin, H., Brunning, R. D., and Kersey, J. H.: B and T Cell Lymphomas: Analysis of Blood and Lymph Nodes in 87 Patients. American Journal of Medicine (in press).

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Collins, Amy Louise	Research Associate	April 30, 1948
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Hong Kong, China	Chinese, Permanent Resident	☐ Male ☒ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota	B.A.	1970	Chemistry
Stanford University	Ph.D.	1974	Medical Microbiology

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Combined Radiotherapy and Immunotherapy	Research Associate - Radiation-Immune Reaction

RESEARCH SUPPORT *(See instructions)*

PDT-17 Am. Can. Society Treatment of Tumor with Combination of Radiotherapy and Immunotherapy, $44,658 (7/1/75 - 6/30/76), Chang W. Song, Principal Investigator. 100% effort.

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

University of Minnesota, Department of Therapeutic Radiology, Research Associate, 10/16/75 - present.

Stanford University, Department of Medical Microbiology, Graduate Student and part time Research Assistant , 1970 - 1974.

☆ U. S. GOVERNMENT PRINTING OFFICE : 1974 584-253/3084

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Richard M. Condie	Instructor	8/31/26
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Brookline, Massachusetts	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Utah State University	BA	1951	
University of Minnesota, Minneapolis	Ph.D.		Anatomy

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Surgery	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1972-Present	Director, Cancer Immunodiagnostics, University of Minnesota.
1971-Present	Instructor in Surgery, Director Minnesota Antilymphocyte Globulin Program.
1970-1971	Assistant Professor, Columbia College of Physicians and Surgeons.
1968-1971	Immunologist, Roosevelt Hospital, Department of Medicine.
1964-1968	Assistant Professor, University of Wisconsin.
1958-1964	Research Fellow, American Legion.
1957-1958	Instructor, Pediatrics, University of Minnesota.
1957	Instructor, Anatomy, University of Minnesota
1956-1957	Fellow, National Institutes of Allergy and Infectious Diseases.
1951-1955	Teaching Assistant, Anatomy, University of Minnesota.
1944-1946	United States Marine Corps.

Simmons, R.L., Thompson, E.J., Kjellstrand, C.M., Yunis, E.J., Condie, R.M., Mauer, S.M., Buselmeier, T.J., Najarian, J.S.: 100 Sibling Kidney Transplants Followed 2 to 7 1/2 years: A Multifactorial Analysis. Sent to the Annals of Internal Medicine, October, 1975.

Martin, W., Blumenthal, M., Roitman, B., Condie, R.M., Simmons, R.L., and Najarian, J.S.: Allergic Reactions to Anti-lymphoblast Globulin in Renal Transplant Patients. Submitted to Journal of American Medical Association, October, 1975.

Toledo-Pereyra, L.H., Condie, R.M., Simmons, R.L., Najarian, J.S.: Renal Preservation with Silica Gel Fraction (SGF) of Plasma. Dialysis and Transplantation, Volume 4, 5:20-22, August, September, 1975.

Toledo-Pereyra, L.H., Condie, R.M., Mozes, M., Moberg, A.W., Simmons, R.L., Najarian, J.S.: Clinical Kidney Preservation Results with a Silica Gel Fraction of Plasma. Clinical Dialysis and Transplant Forum. IV:193, November, 1974.

Toledo-Pereyra, L.H., Condie, R.M., Simmons, R.L., Moberg, A.W., Najarian, J.S.: Advantages of Silica Gel Absorbed Plasma Perfusate for Clinical Renal Preservation Transplantation Proceedings Vol VII:573-575, 1975 (Supl. #1).

Toledo-Pereyra, L.H., Condie, R.M., Callender, C.O., Mozes, M.F., Moberg, A.W., Santiago-Delpin, E.A., Simmons, R.L., and Najarian, J.S.: Hypothermic Pulsatile Kidney Preservation. Archives of Surgery, 109:816-819, December, 1974.

Toledo-Pereyra, L.H., Condie, R.M., Simmons, R.L., and Najarian, J.S.: Complete Protection of Severely Damaged Kidneys by a Silica Gel Plasma Perfusate. Surgical Forum, 25:294-295, 1974.

Toledo-Pereyra, L.H., Condie, R.M., Malmberg, R., Simmons, R., and Najarian, J.S.: A Fibrinogen Free Plasma Perfusate for 120 Hour Kidney Preservation. Surgery, Gyn, and Ob., 138:901-905, June, 1974.

Toledo-Pereyra, L.H., Condie, R.M., Ma.mberg, R., Simmons, R.L., and Najarian, J.S.: Long-term Kidney Preservation with a New Plasma Perfusate. Proc. Dialysis Transplant Forum, 3:88-91, 1974.

Snyder, P.D., Jr., Wold, R., Bernlohr, R.W., Dullum, D., Desnick, R.J., Krivit, W., and Condie, R.M.: Purified Human - alpha Galactosidase A: Stabilization Modification, Biochemica et Biophysica Acta, 350:432-436, 1974.

Condie, R.M., White, J.G., and Najarian, J.S.: Platelet Activity of Anti-lymphocyte Serum (ALS) Preparations. Trans. Proc. Vlume 5, No. 1:555-559, March, 1973.

Callender, C.O., Santiago, E., Sutherland, D., Howard, R.J., Toledo-Pereyra, L.H., Olson, L., Condie, R.M., Simmons, R., and Najarian, J.S.: Renal Allograft Prolongation After Graft Profusion with Heterologous ALG. Surgical Forum, 24: 306-308, 1973.

Simmons, R.L., Moberg, A.W., Condie, R.M., and Najarian, J.S.: Prolongation of Skin Allografts in Man Using Anti-lymphoblast Globulin. Behring Institute Mitteilung (ALG Therapy and standardization workshop) 51:119-123, 1972.

Condie, R.M., Ames, W.E., and Pollara, B.: A Method for Intravascular Injection and Bleeding of Fishes. Amer. Fishery Soc. Transactions 95:317-318, 1966.

Condie, R.M., Staab, E.V., and Good, R.A.: Biologic Relationship of Endotoxin and Other Toxic Proteins. V. Hypersusceptibility to Snake Venom with Alteration in Blood Brain Barrier. Proc. Soc. Exp. Biol. and Med. 119:1030-1034, 1964.

Condie, R.M., Langer, R.B.: Linerar Polymerization of Gastropod Hemocyanin, Science 144:1138-1140, 1964.

Condie, R.M., Staab, E.V., and Good, R.A.: Biologic Relationship fo Endotoxin and Other Toxic Proteins. IV. Effect of Heparin on Endotoxin-Induced Hypersusceptibility to Snake Venom. Proc. Soc. Exp. Biol. and Med. 116:696-701, 1964.

Papermaster, B.W., Condie, R.M., Finstad, J., and Good, R.A.: Evolution of the Immune Response. I. The Phylogenetic Development of Adaptive Immunologic Responsiveness in Vertegrates. J. Exp. Med. 119:105-130, 1964.

Staab, E.V., Good, R.A., and Condie, R.M.: Studies on the Biologic Relationship of Endotoxins and Other Toxic Proteins. III. Effect of Ferrous Iron on the Toxicity of Endotoxin and Snake Venom. Proc. Soc. Exp. Biol. and Med. 115:622-630., 1964.

Page, A.R., Condie, R.M., and Good, R.A.: The Suppression of Plasma Cell Hepatitis with 6-Mercaptopurine. Am. J. Med. 36:200-213, 1964.

Papermaster, B.W., Condie, R.M., Finstad, J., and Good, R.A.: Significance of the Thymus in Evolution of the Lymphoid Tissue and Acquired Immunity. The Thymus in Immunobiology, Hoeber-Harper, 1964, pp. 551-591.

Good, R.A., Martinez, C., Papermaster, B.W., Condie, R.M., and Gabrielson, A.E.: Immunologic Competence--its development and relation to Thymic Function. In: Congential Malformations, The International Medical Congress, Ltd., New York, pp. 240-246, 1974.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Amos S. Deinard	Associate Professor	11/12/35
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Minneapolis, Minnesota	U.S.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Harvard Univ., Cambridge, Mass.	B.A.	1957	Chemistry
Univ. of Minn. Law School			Law
Univ. of Minn. Med. School	M.D.	1962	Medicine

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
	Principle Investigator

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all most representative publications. Do not exceed 3 pages for each individual.)*

Associate Profess, Dept. of Peds. & Program in Maternal & Child Health, School of Public Health, Univ. of Minn. - 1975-present
Assistant Professor, Program in Maternal and Child Health, School of Public Health, Univ. of Minn. - 1974-75
Assistant Professor, Dept. of Peds., Univ. of Minn. - 1970-75
Instructor, Dept. of Peds., Univ. of Minn. - 1969-70
Research Fellow, Dept. of Peds., Univ. of Minn. - 1965-69
Medical Fellow, Dept. of Peds., Univ. of Minn. - 1964-65
Medical Fellow, Dept. of Peds., Univ. of Minn. - 1963-64
Intern, Univ. of Minn. Hospitals (Pediatrics) - 1962-63

McCullough, J., Weiblen, B.J., Hadlock, D., Deinard, A.S., Fortuny, I.: Effectis of Collection and Storage on Granulocyte Post-Transfusion Survival. (Abstract - Amer. Assoc. Blood Banks, Chicago, Illinois, November, 1975.

Deinard, A.S. and Libit, S.L.: Screening of a High-Risk Ambulatory Female Population for Urinary Tract Infections: A Cost-Effectiveness Study. (in preparation).

Deinard, A.S., Geehan, G., Holmes, B. and Page, A.R.: Functional Studies on Monocytes in Cyclic Neutopenia. (in preparation.)

L/Esperance, P., Brunning, R., Deinard, A.S., Park, B.H., Biggar, W.D. and Good, R.A.: Congenital Neutropenia: Impaired Maturation with Diminished Stem-Cell Input. Immunodeficiency in Man and Animals. Ed. - Bergsma, D. Vol. XI, pp. 59-65, 1975.

Fisch, R., Deinard, A., Disch, L. and Krivit, W.: Potential Toxicity of Iron Overload in Successive Generations of Rats. Am. J. Clin. Nutr. 28:136, 1975.

Deinard, A.S. and Page, A.R.: A Study of Steroid-Induced Granulocytosis in a Patient with Chronic Benign Neutropenia of Childhood. Brit. J. Haemat. 28: 337, 1974.

Biggar, W.D., Holmes, B., Page, A.R., Deinard, A.S., L'Esperance, P. and Good, R.A.: Metabolic and Functional Studies of Monocytes in Congenital Neutropenia. Brit. J. Haemat. 28:233, 1974.

Anderson, G.L. and Deinard, A.S.: The Nitroblue Tetrazolim (NBT) Test: A Review. Am. J. Med. Tech. 40:345, 1974.

Deinard, A.S., Bilka, P.J., Venters, H.D., Herrmann, K.L. and Page, A.R.: Rubella Antibody Titers in Patients with Rheumatoid Arthritis. Lancet I: 526, 1974.

Deinard, A.S., Fortuny, I.E., Theologides, A., Anderson, G.L., Boen, J. and Kennedy, B.J.: Studies on the Neutropenia of Cancer Chemotherapy. Cancer 33:1210, 1974.

Deinard, A.S., Hoban, T.W. and Venters, H.D.: Clinical Reactions in Children after Rubella Vaccination. Health Service Reports 88:457, 1973.

Gatti, R.A., Robinson, W.A., Deinard, A.S., Nesbit, M., McCullough, J.J., Ballow, M. and Good, R.A.: Cyclic Leukocytosis in Chronic Myelogenous Leukemia: New Perspectives on Pathogenesis and Therapy. Blood 41:771, 1973.

Deinard, A.S. and Libit, S.A.: Coagulase Negative Staphylococcus Bacteriuria in a Child. Pediatrics 49:300, 1972.

Deinard, A.S. and Bilka, P.J.: Joint Involvement Following Vaccination for Rubella--an Unusual Presentation in an Adult. Minnesota Medicine 54:377, 1971.

Deinard, A.S. and Page, A.R.: An Improved Method for Performing Neutrophil Survival Studies. Blood 36:98, 1970.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Lynda M. Ellis	Assistant Professor	11/25/45
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Los Angeles, California	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Southern California	BS	1965	
Brandeis University	Ph.D.	1971	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Lab Medicine & Pathology	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1974-Present	Director, Health Information Systems Instruction, University of Minnesota.
1973-Present	Assistant Professor, Lab Medicine and Pathology, University of Minnesota.
1971-1973	Postdoctoral Fellowin Laboratory Medicine & Biochemistry, U of MN.
1970-1971	Research Assistant, Brandeis University.
1965-1970	National Science Foundation Graduate Fellow, Brandeis University.
1965	Research Assistant, Department of Biochemistry , U of Southern Calif.

Ellis, L., and Woodward, C.: On the molecular weight of rhodanese. Biochem. Biophys. Acta - In press.

Ellis, L., Woodward, C.K., and Bloomfield, V.: Analysis of the distribution of rate constants for hydrogen exchange in proteins. Presented at the 1974 Joint Meeting of the American Society of Biological Chemists and the Biophysical Society, Minneapolis, Minnesota - June, 1974.

Bloomfield, V., Ellis, L., and Woodward, C.K.: Simulating hydrogen exchange kinetics using a Zim-Schultz function. (Manuscript - in preparation).

Ellis, L.M., and Woodward, C.K.: Solvent accessibility in folded soybean trypsin inhibitor (Kunitz) and in its trypsin-inhibor complex. (Manuscript - in preparation).

Ellis, L.M.: Computer Applications in the Biomedical Sciences: Example BASIC Programs. DNCS Internal Report 60 pages, August 1974.

Rector, A., and Ellis, L.M.: MISER: A system for patient simulation based on statistical techniques, 65 pages, December 1973, DHCS Internal Report.

U.S. GOVERNMENT PRINTING OFFICE 1971 O 451-736

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Rolf. R. Engel	Associate Professor	7/9/34
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Berlin, Germany	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Reed College, Portland, Oregon	BA	1956	Biology
University of Oregon	MD	1961	
University of Oregon	MS	1961	Physiology

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pediatric Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1974-Present Associate Professor in Peidatrics, University of Minnesota, Minneapolis.
1973-Present Director of Newborn Intensive Care Unit, Hennepin County Medical Center, Minneapolis, Minnesota.
1968-1974 Assistant Professor in Pediatrics, University of Minnesota, Minneapolis.
1966-1968 Military Obligation as L CDR, M.C. at Naval Medical Research Institute, Bethesda, Maryland.
1963-1966 Research Fellow in Pediatrics, University of Minnesota, Minneapolis.
1961-1963 Internship and Residency, Pediatrics, University of Minnesota, Mpls.

Engel R.R.: Studies of the G.I. Flora in Necrotizing Enterocolitis. Ross Conference, 1975.

Engel R.R.: Alternative Sources of Carbon Monoxide. Fogarty Symposium on Chemistry and Physiology of Bile Pigments, 1975.

Saror D.I., Engel R.R., Perman, V., and Stevens, J.B.: Carboxyhemoglobin Concentrations in Normal Cattle. Amer. J. Vet. Res. 36:463-464, 1975.

Roback S.A., Foker, J., Frants, I.F., Hunt, C.E., Engel, R.R., and Leonard, A.S.: Necrotizing Enterocolitis: An Emerging Entity in the Regional Infant Intensive Care Facility. Arch. Surg. 109:314-319, August, 1974.

Fisch, R.O., Bilek, M.K., Miller, L.D., and Engel, R.R.: Physical and Mental Status at Four Years of Age of Survivors of the Respiratory Distress Syndrome. Journal of Pediatrics, 84:497-503, 1975.

Levitt, M.D., Hanson, R.F., Bond, J.D., and Engel, R.R.: Failure to Demonstrate Degradation of 4-^{14}C Cholesterol to Voliatile Hydrocarbons in Rats and in Human Fecal Homogenates. (Accepted for publication by Lipids).

Frantz, I.D., L'Heureux, P., Engel, R.R., Leonard, A.S., and Hunt, C.E.: Necrotizing Enterocolitis. The Journal of Pediatrics, 86:259-263, 1975.

Levitt, M.D., and Engel, R.R.: Intestinal gas. Advances in Internal Medicine. 20:151-165, 1975.

Kubic, V.L., Anders, M.W., Engel, R.R., Barlow, C.H. and Caughey, V.L.: Metabolism of Dihalomethanes to Carbon Monoxide. I. In Vivo Studies. Drug Metabolism and Disposition 2:#1, 53-57, 1974.

Rodkey, F.L., Umstead, M.E., Engel, R.R. and Rubenstein, C.J.: Endogenous Formation of Carbon Monoxide and Methane at Elevated Pressure. Aerospace Med., 45:397-399, 1974.

Engel, R.R., Modelr, S., Matsen, J.M. and Petryka, Z.J.: Carbon MOnoxide Production from Hydroxocobalamin by Bacteria. Biochem & Biophysica Acta 313:150-155, 1973.

Engel, R.R., Bracho, M., Schwartz, S., and Rodkey, F.L.: Carboxyhemoglobin and Fecal Urobilinogen in Bovine Erythropoietic Porphyria. Amer. J. Vet. Res. 34:743-746, 1973.

Engel R.R., Matsen, J.M., Chapman, S.S., and Schwartz, S.: Carbon Monoxide Production from Heme Compounds by Bacteria. J. Bacteriol 112:1310-1315, 1972.

Engel, R.R., Rodkey, F.L., and Krill, C.E.: Carboxyhemoglobin Levels as an Index of Hemolysis. Pediat. 47:723-730, 1971.

Bond, J.H., Engel, R.R., and Levitt, M.D.: Factors Influencing Pulmonary Methane Excretion in Man. J. Exp. Med. 133:572-588, 1971.

Engel, R.R., and Elin,, R.J.: Hypermagnesemia from Birth Asphyxia. J. Pedit. 77:631,637, 1970.

Rodkey, F.L., Collison, H.A., and Engel, R.R.: Release of Carbon Monoxide from Acrylic and Polycarbonate Plastics. J. Appl. Physiol. 27:554-555, 1969.

Wolfson, J.J., and Engel, R.R.: Anticipating Meconium Peritonitis from Metaphyseal Bands. Radiol. 92:1055-1060, 1969.

Engel, R.R., Rodkey, F.L., and Collison, H.A.: Relative Affinity of Human Fetal Hemoglobin for Carbon Monoxide and Oxygen. Blood. 33:36-45, 1969.

Fisch, R.O., Gravem, H.J., and Engel, R.R.: Neurological Status of Survivors of Neonatal Respiratory-distress Syndrome. J. Pediat. 73:395-403, 1968.

Engel, R.R., Hammond, D., Eitzman, D.V., Pearson, H., and Krivit, W.: Transient Congenital Leukemia in 7 Infants with Mongolism. J. Pediat. 65:303, 1964.

Engel, R.R.: A Study of Anoxia Tolerance in Newborn Pups Using Direct and Indirect Calorimetry. Pp. 1-128 M.S. Thesis in Physiology, 1963, University of Oregon Medical School.

Swank, R.L., and Engel, R.R.: Production of Convulsions in Hamsters by High Butter-fat Intake. Nature 181:1214, 1958.

Engel, R.R.: Determination of the Michaelis-Menten Constant for Hyaluronidase. pp. 1-48 B.A. Thesis, 1956, Reed College.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Anthony James Faras	Assistant Professor	12/23/42
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Chisholm, Minnesota, U.S.A.	U.S. Citizen	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota, Duluth	B.A.	1965	Biology
University of Colorado Medical School	Ph.D.	1970	Pathology

HONORS U.S. Public Health Service Predoctoral Fellowship, Dept. of Pathology, Univ. of Colorado Med. School, 1966-1970; U.S. Public Health Service Postdoctoral Fellowship, Dept. of Microbiology, University of California Med. School, 1970-1973; Member, American Society of Microbiology, 1970-present; Member, American Assn. for the Advancement of Science 1966-present

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Microbiology	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1975-present	Assistant Professor, Department of Microbiology, University of Minnesota
1973-75	Assistant Professor, Department of Microbiology, Univeristy of Michigan
1970-71	Assistant Professor, Department of Microbiology, San Francisco State University
1970-73	Instructor, Department of Microbiology, University of California Med. School
1965-66	Graduate Teaching Assistant, University of Colorado (Biology)
1964-65	Undergraduate Teaching Assistant, Department of Biology, University of Minnesota, Duluth

Haase, A., Garapin, A., Faras, A., Bishop, J.M. (1974). "A comparison of the high molecular weight RNAs of visna virus and Rous Sarcoma Virus", Virology 57:259.

Haase, A., Garapin, A., Taylor, J., Varmus, H., Faras, A., Bishop, J.M. (1974). "Characterization of the nucleic acid product of the visna virus RNA-directed DNA polymerase", Virology 57:251.

Taylor, J.M., Varmus, H.E., Faras, A.J., Levinson, W.E., and Bishop, J.M. (1974). "Evidence for non-repetitive subunits in the genome of Rous Sarcoma Virus", J. Mol. Biol. 84:217.

Dahlberg, J., Sawyer, R., Taylor, J., Faras, A., Levinson, W., Goodman, H., and Bishop, J. (1974). "Transcription of DNA from the 70S RNA of Rous Sarcoma Virus: Identification of a specific 4S RNA which serves as primer", J. Virology 13:1126.

Faras, A.J., Dahlberg, J., Sawyer, R., Harada, F., Taylor, J., Levinson, W., Bishop, J., and Goodman, H. (1974). "Transcription of DNA from the 70S RNA of Rous Sarcoma Virus: Structure of a 4S primer", J. Virology 13:1134.

Murphy, W.H., Maisel, J., Bullis, C., and Faras, A.J. (1974). "Selective inhibition by kanamycin of focus formation by Rous and Moloney Sarcoma virus", J. Natl. Cancer Inst. 52:1462.

de la Maza, L.M., Faras, A.J., Varmus, H.E., Vogt, P.K., and Yunis, J. (1975). "Integration of Avian Sarcoma Virus in Mammalian Chromatin", Exptl. Cell Res. 93:484.

Faras, A.J. and Dibble, N.A. (1975). "RNA-directed DNA Synthesis by the DNA Polymerase of Rous Sarcoma Virus: Structural and Functional Identification of the RNA Primer Molecule in Uninfected Cells", Proc. Nat. Acad. Sci. U.S.A. 72:859.

Faras, A.J. (1975). "The Methionyl tRNAs of Rous Sarcoma Virus", Virology 83:583.

Kieras, R.M., and Faras, A.J. (1975). "DNA Polymerase of Reticulendotheliosis Virus: Inability to Detect Endogenous RNA-directed DNA Synthesis", Virology 65:514.

Collett, M.S., Kieras, R.M., and Faras, A.J. (1975). Studies on the Replication of Reticuloendotheliosis Virus: Detection of Viral-specific DNA Sequences in Infected Chick Cells", Virology 65:436.

Collett, M.S., and Faras, A.J. (1975). "In vitro transcription of DNA from the 70S RNA of Rous Sarcoma Virus: Identification and characterization of various size classes of DNA transcripts", J. Virology 16:1220.

Faras, A.J., and Dibble, N.A. (1975). "RNA-directed polymerase of avian oncornaviruses: Further characterization of the major species of primar RNA from virions of Rous sarcoma virus and uninfected chick cells", J. Virology, submitted for publication.

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Mary O. Ferlic	Senior Social Worker	2/3/48
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Chicago, Illinois USA		☐ Male ☒ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Notre Dame University - St. Mary's College South Bend, Indiana	B.S.W.	1970	Social Work
University of Minnesota, Minneapolis, MN	M.S.W.	1973	Psychiatric Social Wor

HONORS

Magna cum laude - graduated with honors for B.S.W. Thesis "The Changing Roles of and Within the Hospital".

Graduated with honors M.S.W. program.

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Family Counseling Programs	Coordinator

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Medical Social Worker -- Oncology Unit, University of Minnesota Hospitals
& Family Counselor
January 1975 - Present

Group Therapist -- Rancho Los Amigo Rehabilitation Hospital, Downey, California
July, 1974 to January, 1975

Administrative Intern -- Social Service Department, University of Minnesota Hospitals
August, 1973 to June, 1974

Psychiatric Social Worker -- Hennepin County Mental Health Center, Minneapolis, MN
August, 1972 to June, 1973

Medical Social Worker -- New York Hospital, Cornell Medical School, New York, N.Y.
January, 1971 to May, 1972

Caseworker -- Catholic Charities, Chicago, Illinois
March, 1970 to January, 1971

Medical Social Worker -- Outpatient Department, St. Joseph's Hospital, South Bend, Ind.
June, 1969 to March, 1970

PUBLICATIONS:

"Psychological Coping of Spinal Cord Injury Patients", Rancho Publications, August, 1974

"The Use and Abuse of Groups in a Rehabilitation Setting", Rancho Publications, December, 1974

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Fortuny, Igancio E.	Associate Professor	8/17/27
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY** (If non-U.S. citizen, indicate kind of visa and expiration date)	**SEX**
Guatemala City, Central America	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Carroll College, Helena, Montana	B.A.	1950	Biology-Chemistry
University San Carlos, Guatemala, C.A.	M.D.	1056	M.D.

HONORS

Scholarship: Natonal Catholic Welfare Conference, Nov. 1945-1949
Fellowship Medicine, OAS, Washington, D.C., May 1958-May 1959
Medical Oncology Clinical Professorship, American Cancer Society, July 1973-July 1976

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Medical Oncology: 1) education, 2) immunology 3) granulocyte kinetics	Participant

RESEARCH SUPPORT *(See instructions)*

	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Disease	$444,282.00	9-30-76
NIH CA-05158 Medical Oncology Training Grant	$ 85,125.00	6-30-76
NIH CA-16450 Acute Leukemia Group B	$ 47,057.00	1-31-77
American Cancer Society-Professorship of Oncology	$ 25,000.00	5-31-76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1971-present	Associate Professor of Medicine, University of Minnesota
1971-present	Clinical Coordinator, School of Medicine Phase A Curriculum: Introduction to Clinical Medicine
1970-	Executive Secretary, Cancer Coordinating Committee
1967-1971	Assistant Professor of Medicine, Director Tutorial Cancer Teaching program, University of Minnesota
1967	Instructor in Medicine, University of Minnesota
1964-1967	Associate Clinical Professor, Medicine and Pediatrics, University of San Carlos, Hospital General, Guatemala
1964-1967	Clinical Consultant: Department of Medicine, Military Hospital, Guatemala
1963-1967	Head, Section of Hematology and Medical Oncology: Hospital General Guatemala
1963-1967	Instructor in Medicine, University of Minnesota

Dick, F.R., Fortuny, I.E., Theologides, A., Greally, J., Wood, N. and Yunis, E.J.: HL-A and Lymphoid Tumors. Cancer Res. 32:2608-2611, 1972.

McCullough, J., Fortuny, I.E., Branda, R.F., Edson, R.E., Kennedy, B.J.: Rapid Plasma Exchange Using the Continuous Flow Blood Cell Separator. Transfusion 13:94-99,1973

Fortuny, I.E., Crandall, L., McCullough, J., Theologides, A., Kennedy, B.J.: Leukapheresis in the Management of Chronic Leukemia. Minn. Med. 56:674-676, 1973.

Crandall, L., Fortuny, I.E., McCullough, J., Kennedy, B.J.: The Cell Separator. A Continuous Flow Centrifuge for Blood Component Collection. Minn. Med. 56:759-761,1

Kennedy, B.J., Theologides, A., Fortuny, I.E., Bloomfield, C., Kelly, R.T.: Advanced Cancer: New Concepts of medical Therapy. Geriatrics 28:51-75, November 1973.

Fortuny, I.E., Theologides, A.: Late Toxic Effects of Cytotoxic Drugs. Minn. Med. 57:19-21, 1974.

Deinard, A., Fortuny, I.E., Theologides, A., Anderson, G., Boen, J., Kennedy, B.J., Studies on the Neutropenia of Cancer Chemotherapy., Cancer 33:1210-1218, 1974.

Mishler, J.M., Hadlock, D.C., Fortuny, I.E., McCullough, J.J., Increased Efficiency of Leukocyte Collection by the Addition of Hydroxyethyl Starch to the Continuous Flow Centrifuge, Blood 44:571-582, 1974.

Kiang, D.T., Sundberg, D., Fortuny, I.E., Brunning, R.D., Goldman, A., Kennedy, B.J., Multiple Myeloma, Clinical Evaluation. Minn. Med. 57:542-548, 1974.

Fortuny, I.E., Theologides, A., Kennedy, B.J.: Hepatic Arterial Infusion for Liver Metastases from Colon Cancer: Comparison of Mitomycin - C to 5-Fluorouracil. Cancer Chemo. Rep. 59:401-404, 1975.

Fortuny, I.E., Bloomfield, C.D., Hadlock, D.C., Goldman, A., Kennedy, B.J., McCullough, J.J.: Granulocyte Transfusion: A Controlled Study in Patients with Acute Non-lymphocytic Leukemia. Transfusion (in press).

Fortuny, I.E., Hadlock, D.C., Kennedy, B.J., Theologides, A., McCullough, J.J.: The Role of Continuous Flow Centrifuge Leukapheresis in the Management of Chronic Lymphatic Leukemia. Britt. J. Hematol. (in press).

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Frenning, Daniel H.	Clinical Associate	7/16/44
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
St. Paul, Minnesota	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
College of St. Thomas, St. Paul, MN	BS	1966	Biology-Chemistry
University of Minnesota, Minneapolis MN	MD	1970	Medicine

HONORS **Diplomate of American Board of Internal Medicine**
Alpha Omega Alpha Honor Society, Medical School
Delta Epsilon Sigma Catholic Honor Society, Undergraduate
Graduated Magna Cum Laude from College of St. Thomas

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Medical Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Diseases	$444,282.00	9-30-76
NIH CA-05158 Medical Oncology Training Grant	$ 85,125.00	6-30-76
NIH CA-16450 Acute Leukemia Group B	$ 47,057.00	1-31-77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1975 to Present	Clinical Associate, Section of Oncology, Department of Medicine, University of Minnesota, Minneapolis, MN.
1974-1975	Medicine Resident, University of Minnesota, Minneapolis, MN.
1972-1974	Medical Officer, U.S. Navy, Chinhae, Republic of Korea.
1971-1972	Medicine Resident, University of Minnesota, Minneapolis, MN.
1970-1971	Inter, Department of Medicine, University of Minnesota, Minneapolis.

SECTION II - PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Gary D. Fullerton	Ph.D. Assistant Professor	November 10, 1939
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Santa Paula, California, USA	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of California, Berkley	B.A.	1963	Physics
University of Vienna, Vienna Austria	None	1966	German/Physics
University of Wisconsin, Madison WI	M.S.	1971	Physics (Solid State)
University of Wisconsin, Madison WI	M.S.	1972	Radiological Physics
University of Wisconsin, Madison WI	Ph.D.	1974	Radiological Physics

HONORS

Five year Competitive Undergraduate Scholarship (1958-1963) - Student Engineering Development Program - Pacific Missile Range, Point Mugu, California

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Solid state dosimetry, problems of applied dosimetry in radiation therapy, biomedical imaging.	Investigator - Radiation Physics

RESEARCH SUPPORT *(See instructions)*

NIH CA15548-01A1 Radiation Oncology Research and Clinical Center $376,859, $1,161,756 (7/1/75 - 6/30/78); Radiation Physics Projects $71,559; $221,110 (7/1/75 - 6/30/78) 100% effort.

433-0325-4909-02 Grant-in-aid-Research, University of Minnesota Graduate School $3,000 (7/1/75 - 7/30/76) 5% effort.

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Assistant Professor, Department of Therapeutic Radiology, University of Minnesota, 1975 - present.

Radiological Physicist, Midwest Center for Radiological Physics, University of Wisconsin, Madison, Wisconsin, 1974 - 1975.

Training Fellow in Radiotherapy Physics, Radiotherapy Center, University Hospitals, Madison, Wisconsin, 1973 - 1974.

Radiological Physicist, Wisconsin Radiological Physics Laboratory, Madison, WI. 1971-1972.

Research Assistant and Teaching Assistant, University of Wisconsin, Madison, Wisconsin, 1970 - 1971.

Radioisotopes Specialist, University Hospitals, Madison, Wisconsin, 1970.

Research Assistant, University of Wisconsin, Madison, Wisconsin, 1969.

High School Physics Teacher, American International School, Vienna, Austria, 1966 - 1968.

Aerospace Engineer, Federal Civil Service, Pacific Missile Range, Point Mugu, California, 1963 - 1965.

PATENTS

"Sensitized Thermoluminescent Phosphor and Method". Inventors: M.R. Mayhugh and Gary D. Fullerton, assigned to Wisconsin Alumni Research Foundation (WARF), 1974.

"Dielectric Material for Thermocurrent Dosimeters and Method for Preparing Same". Inventors: P.R. Moran, E.B. Podgorsak, G.E. Fuller and G.D. Fullerton, assigned WARK, 1973.

PUBLICATIONS

Fullerton, G.D., Cameron, J.R., Mayhugh, M.R. and Moran, P.R.: Thermocurrent Dosimetry with Al_2O_3, Part II: Radiation Measurements, submitted to Health Physics (1976).

Fullerton, G.D., Cameron, J.R., Mayhugh, M.R. and Moran, P.R.: Thermocurrent Dosimetry (TCD) with AL_2O_3, Part I: Properties of TC. Submitted to Health Physics (1976).

Fullerton, G.D., Moran, P.R. and Cameron, J.R.: Personnel Dosimetry by the Thermocurrent Effect in Sapphire (Al O). Abstract, 1975, Health Physics 29, 5, 915.

Fullerton, G.D., Cameron, J.R. and Moran, P.R.: Thermocurrent Dosimetry with High Purity Aluminum Oxide. University of Wisconsin USAEC Technical Report COO-1105-217, 1975.

Mayhugh, M.R. and Fullerton, G.D.: Thermoluminescence in LIF: Sensitization Useful at Low Exposures. March 1975, Health Physics, 28, 297-299.

Fullerton, G.D., Cameron, J.R., Mayhugh, M.R. and MOran, P.R.: High Sensitivity Thermocurrent Dosimetry (TCD) with Alumina. IAEA Symposium on "Advances in Medical and Biological Radiation Dosimetry", Vienna, Austria, March 14-17, 1975.

Mayhugh, M.R. and Fullerton, G.D.: Thermoluminescence in LIF: Useful Sensitization by Pre-irradiation. Abstract, 1974, Health Physics, 27, 6, 621.

Mayhugh, M.R. and Fullerton, G.D.: Altering the Energy Dependence of LiF TLDs by Pre-irradiation. 1974, Medical Physics, 1, 5, 275-276.

Fullerton, G.D. and Moran, P.R.: Single Crystal Sapphire: A Thermally Stimulated Conductance Radiation Dosimeter. 1974, Medical Physics, 1, 3, 161-162.

Moran, P.R., Podgorsak, E.B., Fuller, G.E. and Fullerton, G.D.: New Development in Passive Radiation Dosimetry: Radiation Induced Thermally Activated Currents. Medical Physics, 1974, 1, 3, 155-160.

Mayhugh, M.R. and Fullerton, G.D.: Thermoluminescence in LiF: Useful Sensitization by Pre-irradiation. 1974, University of Wisconsin AEC Progress Report COO-1105-209.

Fullerton, G.D. and Moran, P.R.: Single Crystal Sapphire: A Thermally Stimulated Conductance (TSC) Radiation Dosimeter. 1974, University of Wisconsin AEC Progress Report COO-1105-208.

Moran, P.R. and Fullerton, G.D.: Sensitive Radiation Dosimetry by the RITAC Effect. Abstract, 1974, Medical Physics, 1, 2, 104.

Moran, P.R. and Fullerton, G.D.: Sensitive Radiation Dosimetry by the RITAC Effect. 1974, University of Wisconsin AEC Progress Report COO-1105-207.

Fullerton, G.D. and Moran, P.R.: High Temperature RITAD Dosimetry. 1973, University of Wisconsin AEC Progress Report COO-1105-201.

McCullough, E.C., Fullerton, G.D. and Cameron, J.R.: Thermoluminescence in Natural Calcium Fluoride as a Dosimeter of Terrestial Solar Ultraviolet Radiation. 1972, Journal of Applied Physics, 43, 77.

Fullerton, G.D. and McCullough, E.C.: Potential Eye Hazards of Sunglasses. 1971. Survey of Ophthalmology, 16, 108.

McCullough, E.C., Fullerton, G.D. and Cameron, J.R.: Thermoluminescence in CaF_2: nat as a Dosimeter of Terrestial Solar Ultraviolet Environment. 1970, University of Wisconsin AEC Progress Report COO-1105-160.

Cameron, J.R., Fullerton, G.D. and Mueller, M.N.: A Quantitative Measure of Skin Transparency in Relation to Osteoporosis. Abstract, 1969, AAPM Quarterly Bulletin, 3, 4, 38.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Vincent F. Garry, Jr.		
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)* U.S.A.	**SEX** ☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Providence College, Providence, R.I.	B. A.	1959	
New York Medical College		1961	
Fordham University, New York	M. S.	1964	
University of Michigan, Ann Arbor, MI	M. D.	1967	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Laboratory Medicine and Pathology	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1974-present	Senior Resident and Instructor in Laboratory Medicine, University of Minnesota
1971-1974	Chief of Pathology, Biophysics Laboratory, U. S. Army, Edgewood Arsenal, MD
1970-1071	Postdoctoral Fellow in Toxicology and Pharmacology, University of Kansas
1968-1970	Resident Fellow in Experimental Pathology, University of Kansas
1967-68	Intern, Pathology, University of Michigan
1966-1967	Research Fellow, American Cancer Society, University of Michigan
1964-1965	Technician: Tissue Culture, Viralogy, Public Health Research Institute, New Yo

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V. Garry, E. Lopez-Corella, F. V. Plapp, and M. Chiga: Different Effects of Pretreatment with 2-Diethyl-aminoethyl-2, 2-Diphenylvalerate on the mouse liver polysomal disaggregation by dimethylnitrosamine and lasiocarpine. Res. Commun. in Chem and Pharmac. Vol. 3, Nol. 1, Jan. 1972.

V. Garry, and E.M.Uyeki: Effects of Phenothiazines on the development of immunity in vitro. Biochemical Pharmacology, Vol. 21, No. 20, Oct. 15, 1972, p. 2801.

V. Garry, and E. M. Uyeki: Detergent effects on the development of antibody producing cells in vitro: A model for the study of chemical effects on cell differentiation in a developing system. Oncology Vol. 27, No. 2 (pp. 160-167), 1973.

V. Garry (continued)

V. Garry and E. M. Uyeki: Phenothiazines analogs on the development of immunity in vitro. Abstract. Federation Proceedings, Vol. 20, No. 2, March-April 1971, no. 1076.

F. V. Plapp, V. Garry, and M. Chiga: Demonstration of liver polysomal disruption due to nitrosamine by acrylamide gel polymerization after centrifugation. Abstract. Federation Proceedings. Vol. 20, No. 2, March-April 1971. No. 2442.

Harris, L.W., Garry, V.F. and R.D. Moore: Biosynthesis of Cholinesterase in rabbit bone marrow cells in culture: Effect of Dibutryl cAMP. Abstract. Federation Proceedings. Vol. 32, No.2, March-April 1973.

V. F. Garry, and R. D. Moore. Initial characterization of neural type cell from MAHE human embryonic skin cultures. The Physiologist, Vol. 16, No. 3, August 1973.

L. W. Harris, V.F. Garry, and R.D. Moore: Biosynthesis of Cholinesterase in rabbit bone marrow cells in culture. Biochemical Pharmacology, Vol. 23, pp. 2155-5163, 1974.

V. F. Garry and R.D. Moore: A miniculture cytotoxicity assay system: Measurement of cell number and cell viability by laser cytograg. Abstract. In Vitro, June 1973.

L. W. Harris, D. Stitcher, and V.F. Garry: Effects of B-Diethylaminoethyl-Diphenylproylacetate on Sickling in vitro. Abstract. Federation Proceedings. Vol. 33, no. 3, March 1974.

V.F. Garry and R.D. Moore. Use of the Cytograf to determine cytotoxicity in fibroblast cell culture. Oncology 29:429-38, 1974.

L.W. Harris, D. Stitcher, and V.F. Garry. The involvement of adenosine 3', 5'-Monophosphate i Poisoning of animals by anticholinesterase. Abstract. Federation Proceedings Vol. 34, No. 3, March 1975.

V.F. Garry, L.W. Harris, and R.D. Moore. Some effects of dibutryl cyclic adenosine monophosphate (DBcAMP) on rabbit bone marrow cells in culture: Cell clumping and cholinesterase production. Oncology Vol. 30, No. 6:517-529, 1974.

Manuscripts in Preparation

V. F. Garry, D. Heitkamp, C. Hopkins, and V. Lundy. A toxicologic evaluation of long term implants: plastics and ceramics.

V. F. Garry, and W. Swaim. Effect of stress on platelet aggregates in vivo.

V. F. Garry and G. Vosika. In Vitro characterization of human bone marrow cells: childhood leukemia in remission.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Gerrard, Jonathan M.	Instructor	10/13/47
PLACE OF BIRTH (City, State, Country)	PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)	SEX
Birmingham, England	Canadian	XX Male ☐ Female

EDUCATION (Begin with baccalaureate training and include postdoctoral)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Univ. of Saskatchewan	B.A.	1967	Economics
McGill University	M.D.C.M.	1971	Medicine

HONORS

Minnesota Heart Association Fellowship - 1975-76.

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pediatric Oncology	Co-Investigator

RESEARCH SUPPORT (See instructions)

RESEARCH AND/OR PROFESSIONAL EXPERIENCE (Starting with present position, list training and experience relevant to area of project. List all most representative publications. Do not exceed 3 pages for each individual.)

Instructor, Dept. of Peds., Univ. of Minn. - 1975
Fellow, Dept. of Peds., Univ. of Minn. - 1973-75
Resident, Dept. of Peds., Univ. of Minn. - 1972-73
Intern, Dept. of Peds., Univ. of Minn. - 1971-72

Publications:

1. Gerrard, J., Kohn, J. and Turner, M.W.: A non-immunoglobulin γ-protein of human serum present in increased amounts in patients with severe burns. Clin. Chim. Acta 40:243-248, 1972.
2. Gerrard, J., Komvopoulos, A., and Tuner, M.W.: Mild chymotryptic cleavage of human IgG and its major subclasses. Scand. J. Immunol. 3:11-19, 1974.
3. Hill, H.R., Gerrard, J.M., HOgan, N.A. and Quie, P.G.: Hyperactivity of neutrophil leukotactic responses during active bacterial infection. J. Clin. Invest. 53:996-1002, 1974.
4. White, J.G., Rao, G.H.R., and Gerrard, J.M.: Effects of the ionophore A23187 on blood platelets. I. Influence on aggregation and secretion. Am. J. Path. 77:135-149, 1974.
5. Gerrard, J.M., White, J.G., and Rao, G.H.R.: Effects of the ionophore A23187 on blood platelets. II. Influence on ultrastructure. Am. J. Path. 77:151-166, 1974.
6. Gerrard, J.M., White, J.G., Rao, G.H.R., Krivit, W., and Witkop, C.J., Jr.: Labile aggregation stimulating substance (LASS): The factor from storage

pool deficient platelets correcting defective aggregation and release of aspirin treated normal platelets. Brit. J. Haematol. 29:657-665, 1975.

7. Vosika, G.J., Krivit, W., Gerrard, J.M., Coccia, P.F., Nesbit, M.E., Coalson, J.J., and Kennedy, B.J.: Oncornavirus-like particles from cultured bone marrow cells preceding leukemia and malignant histiocytosis. Proc. Nat. Acad. Sci. USA, 72:2804-2808, 1975.
8. Gerrard, J.M., and White, J.G.: The influence of prostaglandin endoperoxides on platelet ultrastructure. Am. J. Path. 80:189-202, 1975.

Accepted for Publication:

1. Gerrard, J.M., White, J.G., and Krivit, W.: Platelets in pediatrics: Normal and abnormal pathophysiology. Brenneman's Practice of Pediatrics.
2. Gerrard, J.M., White, J.G., and Krivit, W.: Labile aggregation stimulating substance, free fatty acids and platelets. J. Lab. Clin. Med.
3. Gerrard, J.M., White, J.G.: Platelet structure and function with emphasis on their contractile nature. Pathobiology Annual.
4. Gerrard, J.M., White, J.G.: The influence of aspirin and indomethacin on the platelet contractile wave. Am. J. Path.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Victor A. Gilbertsen	Associate Professor	-1/4/24
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Winona, Minnesota	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Haline University, St. Paul, Minnesota	BA	1948	
University of Minnesota, Minneapolis	BS	1950	
University of Minnesota Medical School	MB	1952	
University of Minnesota Medical School	MD	1953	
University of Minnesota	MS	1957	Surgery

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Surgical Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1971-Present	Associate Professor, Medical Schoo, University of Minnesota.
1971-Present	Lecturer, Department of Surgery, University of Minnesota.
1961-Present	Assistant Professor, Surgery, University of Minnesota.
1960-Present	Director, Cancer Detection Center, University of Minnesota.
1960-1971	Assistant Professor, Department of Surgery, University of Minnesota.
1958-present	Surgery Staff (courtesy), Mt. Sinai Hospital, Minneapolis.
1958-1960	Instructor, Department of Physical Medicine, University of Minnesota.
1958-1960	Instructor, Department of Surgery, University of Minnesota.
1953-1958	Medical Fellow in Surgery, University Medical Center.
1952-1953	Intern, University of Minnesota Hospitals.

Reducing the Incidence of Cancer of the Lower Bowel. Cancer. 1974 (in press).

The Earlier Detection of Breast Cancer. Seminars in Oncology. 2:87-89, 1974.

Mayor Supervivencia Para Los Pacientes Con Cancer de Mam. Folia Clinica Internacional. 22:285-286, 1972.

Why Fuss with Proctoscopy? Pennsylvania Medicine. 74:56, 1971.

Detection of Breast Cancer by Periodic Utilization of Methods of Physical Diagnosis (with Marcus Kjelsberg, Ph.D.). Cancer. 28:190-193, 1971.

Palmar Keratoses. Archives of Dermatology. 105:221-224, 1972.

Screening for Breast Cancer. (with Dowdy, Andrew H., Alcorn, Franklin S., Dodd, Gerald D., Stevens, G. Melven, and Marax, Philip). Southern Medical Bulletin. 59:23-25, 1971.

U.S. GOVERNMENT PRINTING OFFICE

Cancer of the Prostate Gland: The Results of Early Diagnosis and Therapy Undertaken for Cure of the disease. JAMA. 215:81-84, 1971.
The Earlier Diagnosis of Adenocarcinoma of the Large Intestine. Cancer. 27: 143-149, 1971.
Improving Prognosis for Survival Following Earlier Detection of Cancer. Geriatrics. 25:149-154, 1970.
Improving the Prognosis for Breast Cancer Patients. Rocky Mountain Medical Journal. 67:33-36, 1970.
Detection of Breast Cancder in a Specialized Cancer Detection Center. Cancer. 24:1192-1195, 1969.
Segmental Resection in Surgery of Peptic Ulcer with Special Reference to Duodenal Ulcer in Surgery of the Stomach and Duodenum. (with Wangensteen, O.H., and Sosin, Henry). ed. 2, Boston, Little, Brown and Co., 1969.
Indications Et Resultats De La Prostatectomie Totale Des Cancers De La Prostate. La Vie Medicale. 2:1815-1816, 1969.
Results of Treatment of Stomach Cancer: An Appraisal of Efforts for More Extensive Surgery and a Report of 1,983 Cases. Cancer 23:1305-1308, 1969.
The Early Detection and Treatment of Cancer of the Large Intestine: Proceedings of the Second International Symposium on Cancer Prevention and Precancerous Conditions, Rome, 1968.
Early Detection of Cancer: The Results of a 20 Year Study at the University of Minnesota in Detection of Cancer: Premier Symposium International, Spa, 1968. Dr. A. Liegeois, ed., Liege, Belgium, 1969, pp. 617-621.
Experience with 75,000 Proctosigmoidoscopic Examinations in the Detection of Bowel Cancer. Proceedings of the Sixth National Cancer Conference, Denver. pp. 439-442, 1968.
The Detection of Cancer of the Lung. British J. of Clinical Practice, 23:4, 1969.
Motivation Factors in Persons Seeking Early Diagnosis of Cancer. (with J.J. McCullough) Geriatrics, 23:117-125, 1969.
T e Case for Periodic Cancer Detection Examinations. Indiana State Medical Journal, 61:468-472, 1968.
The Case for Periodic Cancer Detection Examinations. CA 17:219-225, 1967.
Improving the Prognosis for Patients with Intestinal Cancer. Surg., Gynec., & Obst. 124:1253-1259, 1967.
Does Occult Stool Blood Help Detect Gastrointestinal Cancer? Postgrad. Med. 41: A48-A52, 1967.
Gastric Analysis as a Screening Measure for Cancer of the Stomach. Cancer 20:127-133, 1967.
Forum: Operation for Carcinoma of the Pelvic Colon. Modern Medicine 34:190-192, 1966.
Lower Bowel Cancer: Preventable Deaths. Medical Tribune. February 23, 1966.
Improving Breast Cancer Prognosis. Geriatrics 21:128-132, 1966.
The Minnesota Breast Cancer Clinics. (with J.J. McCullough, D.E. Stewart, Lyle Hay, and O.H. Wangensteen) Minnesota Med. 49:683-687, 1966.
The Potentiality for Survival Enhancement by Expeditious Detection of Neoplastic Diseases: The Experience of the Cancer Detection Center at the University of Minnesota. in Volume 2, Progress in Clinical Cancer: Irving Ariel, editor, New York City, Grune & Stratton, Inc. pp. 48-67, 1966.
Survival of Asymptomatic Breast Cancer Patients. Surg., Gynec., & Obst. 122:81-83, 1966.
The Erythrocyte Sedimentation Rates of 4,341 "Normal" 45-79 Year Old White Persons. Postgraduate Med. 38:A44-A52, 1965.
Earlier Detection of Cancer of the Prostate Gland. JAMA 192:910-911, 1965.
The Prevalence of Gastric Achlorhydria in the Normal Population (with J. Knatterud) Postgraduate Med. 37:A50-A54, 1965.
Invasive Carcinoma of the Large Intestine: A Preventable Disease? (with O.H. Wangensteen, P. Lober, and J. Knatterud) Surgery 57:363-365, 1965.
The Results of Efforts for Asymptomatic Diagnosis of Malignant Disease. in Problems of the Aged: Veder, C.B., and Lefkowitz, A.S. pp. 166-171. Springfield, Charles C. Thomas, 1965.

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Anne Ipsen Goldman	Assistant Professor	4/13/35
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Copenhagen, Denmark	U.S.A.	☐ Male ☒ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Radcliffe College, Cambridge, Mass.	AB	1956	Mathematics
Harvard University, Cambridge, Mass.	Ph.D.	1971	Statistics

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Biometry	Participant

RESEARCH SUPPORT *(See instructions)*

NIH CA-08832, Study of Advanced Malignant Diseases $444,282.00 9/30/76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1972-Present Direcor, Biometry Consulting Laboratory, University of Minnesota, Mpls.
1970-Present Assistant Professor of Biometry & Consultant in Biometry Consulting Laboratory, University of Minnesota, Minneapolis.
1971-1972 Supervisor, Biometry Consulting Laboratory, University of Minnesota, Mpls.

Goldman, A., Ebert, R.V., et al. (1973) "Anticoagulants in Acute Myocardial Infarction," J. Am. Med. Assoc., 225:724.

Bloomfield, C., Goldman, A., Dick, F., Brunning, R.D., Kennedy, B.J., (In press) "Multivariate Analysis of Prognostic Factors in the non-Hodgkin's Malignant Lymphomas," Cancer.

Goldman, A. (1972) "The Comparison of Multidimensional Rate Tables -- a Simulation Study," ONR Technical Report No. 38.

Goldman, A. (1971) "The Comparison of Multidimensional Rote Tables -- a Simulation Study," Ph.D . Thesis, Harvard University.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Grage, Theodor B.	Associate Professor of Surgery	3/24/27
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Muenster, Germany	U.S.A.	[x] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Univ. of Muenster Med. School		1946-1951	
Creighton University, Nebraska	MD	1955	
University of Minnesota, Minneapolis	MS	1963	Biochemistry
University of Minnesota, Minneapolis	Ph.D.	1963	Maj.Surg., Minor Bio-Chem.

HONORS

Creighton University Honorary Medical Fraternity - Upsilon Pi - June, 1955
Alpha Omega Alpha - 1968
Advanced Clinical Fellow - American Cancer Society 1962-1965

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Surgical Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

	CURRENT AMT.	TO
NIH CA 12282 Central Oncology Group	$ 45,260.00	1-31-76
NIH CA 08832 Study of Advanced Malignant Disease	$444,282.00	9-30-76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1969-Present	Associate Professor of Surgery, University of Minnesota, Minneapolis.
1963	Assistant Professor of Surgery, University of Minnesota, Minneapolis.
1962-1965	Advanced Clinical Fellow, American Cancer Society
1961	Instructor in Surgery, University of Minnesota, Minneapolis.

Grage, T.B. Preoperative Radiation in the Treatment of Rectal Cancer. In "Controversy in Surgery". W.B. Saunders Co., 1975.

DeCosse, J.J. and Grage, T.B.: Surgeons and Cancer - Editorial. Arch. Surg. 110: 370, 1975.

Grage, T.B., Weiss, A.J., Wilson, W. and Reynolds, V.: Phase I Studies of Porfiromycin (NSC-56410) in Solid Tumors. Accepted for publication in J. Surg. Onc.

Grage, T.B., and Barbee, C.L.: Intra-Arterial Hepatic Infusion Chemotherapy and Ligation of the Hepatic Artery in the Treatment of Metastatic Tumors to the Liver. in: Surgery of the Liver and Biliary Tract. To Be Published by Intercontinental Medical Book Corporation, 1975.

Grage, Theodor B.: Surgical Management of Carcinoma of the Large Bowel. Current Concepts in Cancer, JAMA 231:1183, 1975.

Shatney, Clayton H., Grage, Theodor B.: Diagnostic and Surgical Aspects of Insulinoma: A Review of 27 Cases. Am. J. Surg., 127:174, 1974.

Ramirez, G., Wilson, W., Grage, T. and Hill, G.: Phase II Evaluation of 1, 3-Bis(2-chloroethyl)-1-nitrosurea (BCNU: NSC-409962) in Patients with Solid Tumors. Cancer Chem. Rep., 56:787-790, 1972.

Grage, T.B., Weiss, A.J., Rochlin, D.B. and Reynolds, V.: A Phase I Study of Porfiromycin. Cancer Chem. Rep., 53:#1:87, February 1969.

Grage, Theodor B., Rochlin, Donald B., Weiss, Arthur J. and Wilson, William I.: Phase I Study of Tubercidin with EDTA. Cancer Research 30:79, January 1970.

Grage, T.B. and Jochimsen, P.R.: Multiple Primary Carcinoma of the Gastrointestinal Tract. Minnesota Medicine 50:1855, 1967.

Grage, T.B. and Cueto, J.: The Surgical Management of Carotid Body Tumors Surgery, 62:742, 1967.

Grage, Theodor B. and Lober, Paul H.: Benign Lymphoepithelial Lesions of the Salivary Gland. Am. J. Surg., 108:495, 1965.

Grage, Theodor B., and Lober, Paul H.: Malignant Tumors of the Major Salivary Glands. Surgery 52:284, 1962.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Duane K. Hasegawa	Clinical Associate	6/21/47
PLACE OF BIRTH (City, State, Country)	PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)	SEX
Denver, Colorado	U.S.	☑ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Trinity College, Conn.	B.S.	1969	Biology
Univ. of So. Cal.	M.D.	1973	Medicine

HONORS

FOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pediatric Oncology	Co-Investigator

RESEARCH SUPPORT *(See instructions)*

PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all most representative publications. Do not exceed 3 pages for each individual.)*

Chief Resident in Pediatrics, Univ. of Minn., 1975-76
Resident in Pediatrics, Univ. of Minn. - 1974-75
Intern in Pediatrics, Univ. of Minn. - 1973-74

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Haselow, Robert E.	Instructor	June 1, 1944
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Neilsville, Wisconsin	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Wisconsin	B.S.	June 1966	
University of Wisconsin	M.D.	June 1969	Medicine

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Clinical Research	Instructor - Clinical Research

RESEARCH SUPPORT *(See instructions)*

CI 15548 Radiation Oncology Clinical & Research Center $376,859, $1,161,756, (7/1/75 - 6/30/76) Seymour H. Levitt, Principal Investigator. 100% effort.

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Instructor, Department of Therapeutic Radiology, University of Minnesota, June 1, 1976

Resident, Department of Therapeutic Radiology, University of Minnesota, July 1974 - June 1, 1976

Resident, General Radiology, University of Vermont, July 1972 - June 1974.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Daniel E. Hathaway	Assistant Professor	8/15/43
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Milwaukee, Wisconsin, U.S.A.	U.S. Citizen	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Williams College, Williamstown, Mass.	A.B.	1965	
University of Wisconsin Medical School	M.D.	1969	

HONORS

Pfizer Laboratories Award - 1968
Evan & Marion Helfair Scholarship Award - 1969
Alpha Omega Alpha

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Nephrology	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1974-present	Assistant Professor, Department of Medicine, University of Minnesota
1973-1974	Instructor, Department of Medicine, University of Minnesota
1973	Chief Resident, St. Paul-Ramsey Hospital, St. Paul, Minnesota
1970-1972	Resident, Department of Medicine, University of Minnesota
1969-1970	Intern, University of Minnesota

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Bruce F. Hertel	Instructor	9/29/47
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Passaic, New Jersey	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Wisconsin, Madison	BS	1968	
Washington University School of Medicine, St. Louis, MO	MD	1972	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pathology	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1975-Present	Instructor, Department of Pathology, University of Minnesota.
1974-1975	Resident-Post-Doctoral Fellow, Dept. of Pathology, Stanford University Medical Center, Stanford, California.
1973-1974	Resident, Dept. of Pathology, Stanford University Medical Center.
1972-1973	Intern, Department of Pathology, Stanford Medical Center.

Mattas, A., Hertel, B.F., Roasi, J., Mastri, A., Simmons, R.L., and Najarian, J.S.: The Pathogenesis of Post Transplant Lymphomas: Distinctive Pathologic Feature of Two Cases. (Submitted to Am. J. Med.).

Hertel, B.F., Zalondek, C., Kempson, R.L.: Breast Adenomas. (Accepted for Cancer).

Hertel, B.F., Kempson R.L. and Zalondek, C.: Breast Adenomas. Lab Invest. 32:10, 1975.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Jones, Thomas	Associate Professor	10/31/34
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Youngstown, Ohio	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Ohio State University, Columbus, Ohio	BS	1955	Biological Sciences
Johns Hopkins University, Baltimore, Maryland	MD	1959	Medicine

HONORS

Phi Beta Kappa
Alpha Epsilon Delta
Phi Eta Sigma

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Therapeutic Radiology	Participant

RESEARCH SUPPORT *(See instructions)*

	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Diseases	$444,282.00	9-30-76
NIH CA-13353-01 Vascularity and Reoxygenation in X-irradiated Tumors	$ 37,832.00	1-31-76
NIH CA-15548-01A1 Radiation Oncology Research and Clinical Center	$376,859.00	6-30-78
NIH CA-16545-01 A Community Cancer Program Based on Radiation Oncology	$ 75,301.00	6-30-77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List a or most representative publications. Do not exceed 3 pages for each individual.)*

1973-Present	Associate Professor, University of Minnesota, Minneapolis, MN.
1971-1973	Assistant Professor, University of Minnesota, Minneapolis, MN.
1970	Instructor, University of Minnesota, Minneapolis, MN.
1970	Medical College of Virginia
1967-1970	Resident, Therapeutic Radiology, Medical College of Virginia.
1959-1961	Intern and Resident, General Surgery, Union Memorial Hospital, Baltimore, Maryland.

Smith, C.E., Long, D.M., Jones, T.K., and Levitt, S.H.: Medulloblastoma: An Analysis of Tim-Dose Relationships and Recurrence Patterns. Cancer 32:722-728, 1973.

Smith, C.E., Long, D.M., Jones, T.K., and Levitt, S.H.: Experiences in Treating Medulloblastoma at the University of Minnesota Hospitals. Radiology 109:179-182,19

Khan, F.M., Levitt, S.H., Moore, N.C., and Jones, T.K.: Computer and Approximation Methods of Calculating Depth Dose in Irregularly Shaped Fields. Radiology 106:433-435, 1973.

Khan, F.M., Levitt, S.H., Moore, V.C., and Jones, T.K.: Physical Considerations in Sanctuary Radiotherapy of Acute Lymphoblastic Leukemia in Children. Radiology 105:665-669, 1972.

Jones, T.K., Levitt, S.H., and King, E.R.: Retreatment of Persistant and Recurrent Carcinoma of the Cervix with Irradiation. Radiology 95:167-174, April, 1970.

Levitt, S.H., Jones, T.K., Kilpatrick, S.J., and Bogardus, C.R.: Malignant Superior Vena Caval Obstruction. Cancer 23:447-451 September, 1969.

SECTION II -- PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Jorgens, Carol Lundeen	Instructor	3/8/43
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Minneapolis, Minnesota	U.S.	☐ Male ☒ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
St. Olaf College, Northfield, Minn.	B.S.N.	1965	Nursing
University of Minnesota, Minneapolis, Minnesota	M.S.	1975	Nursing

HONORS

Sigma Theta Tau (Nursing Honer Society)

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Support for parents of ill children	Co-Project Director

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Teaching

Didactic

University of Minnesota School of Nursing

1975 - "Nursing Leadership Management"

1974 - "Nursing Care of Persons with Chronic Illness"
"Nursing Care of Persons Experiencing Stress and Crisis"
"Helping Relationships"

1973 - "Nursing Care of the Acutely Ill"

Abbott-Northwestern Hospital School of Nursing

1969-71 - "Pediatric Nursing"
"Nursing Care of Families"

Clinical

University of Minnesota School of Nursing

1973-75 - Pediatric hospital setting with high percentage of pediatric oncology cases

Abbott-Northwestern Hospital School of Nursing

1969-71 - Pediatric hospital setting

Clinical

University of Minnesota Hospitals

1975 - Will be involved in ongoing parent support group

Abbott-Northwestern Hospital

1973 - Organized, led, and evaluated support group for mothers of newborns

Research

University of Minnesota School of Nursing

1973-75 - Graduate program research: "Patient Perception of Selected Nurse Behaviors and Patient Perception of Nurse-Patient Relationship Helpfulness: A Correlation Study Utilizing an Investigator Developed Tool"

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Kersey, John H.	Associate Professor	4/22/38
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Minneapolis, Minnesota	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Dartmouth College, Hanover, New Hampshire	BA	1959	
Dartmouth Medical School, New Hampshire	BMS	1962	Medicine
University of Minnesota, Minneapolis		1961	Physiology
University of MN Medical School, Mpls.	MD	1964	

HONORS
Honors List, Dartmouth College
Cancer Research Fellowship, U.S.P.H.S.

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pediatric Oncology	Participant

RESEARCH SUPPORT *(See instructions)*	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Disease	$444,282.00	9-30-76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1974-Present	Associate Professor, Depts. of Lab. Med. & Pathology & Pediatrics, U of Minnesota Hospitals, Minneapolis, Minnesota.
1971-1974	Assistant Professor, Depts. of Lab. Med. & Pathology, and Pediatrics, University of Minnesota, Minneapolis.
1970-1972	Residency in Pediatrics, University of Minnesota, Minneapolis, Minnesota.
1970	Research Fellowship in Pathology and Immunology, University of Minnesota.
1968-1970	Residency in Pathology, University of Minnesota, Minneapolis.
1965-1967	Pediatrics and General Practice, U.S. Army.
1964-1965	Rotating Internship, Ancker Hospital, St. Paul, Minnesota

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Chen, P.K., Kersey, J.H., Clawson, C.C. and Yunis, E.J.: Thymic Aplasia with Possible Graft Versus Host Reaction. J. Pediatr. 86:904, 1975.

Kersey, J., and Spector, B.: Immunodeficiency and malignancies. Persons at High Risk for Cancer (J. Fraumeni, ed.), Academic Press, New York, 1975, in press.

Kersey, J.H., Roloff, J., Hokeness, S., Johnson, F.L., Nesbit, M., and Krivit, W.: Retransplantation of Human Bone Marrow: Two Immunosuppressive Drug Regimens. Transplantation 19:475, 1975.

Kersey, J.H. and Booth, G.J.: Cellular Recognition and Activation within the Lymphoid System. Am. J. Clin. Path. 63:629, 1975.

Luckasen, J.R., Gajl-Peczalska, K.J., Zu[illegible]man, J., Kersey, J.H.: Abnormalities of T and B Lymphocytes in Keratosis Folli[illegible]aris. Submitted for publication, 1974.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Kersey, John H.	Associate Professor	4/22/38
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Minneapolis, Minnesota	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Dartmouth College, Hanover, New Hampshire	BA	1959	
Dartmouth Medical School, New Hampshire	BMS	1962	Medicine
University of Minnesota, Minneapolis		1961	Physiology
University of MN Medical School, Mpls.	MD	1964	

HONORS
Honors List, Dartmouth College
Cancer Research Fellowship, U.S.P.H.S.

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pediatric Oncology	Participant

RESEARCH SUPPORT *(See instructions)*	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Disease	$444,282.00	9-30-76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1974-Present	Associate Professor, Depts. of Lab. Med. & Pathology & Pediatrics, U of Minnesota Hospitals, Minneapolis, Minnesota.
1971-1974	Assistant Professor, Depts. of Lab. Med. & Pathology, and Pediatrics, University of Minnesota, Minneapolis.
1970-1972	Residency in Pediatrics, University of Minnesota, Minneapolis, Minnesota.
1970	Research Fellowship in Pathology and Immunology, University of Minnesota.
1968-1970	Residency in Pathology, University of Minnesota, Minneapolis.
1965-1967	Pediatrics and General Practice, U.S. Army.
1964-1965	Rotating Internship, Ancker Hospital, St. Paul, Minnesota

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Chen, P.K., Kersey, J.H., Clawson, C.C. and Yunis, E.J.: Thymic Aplasia with Possible Graft Versus Host Reaction. J. Pediatr. 86:904, 1975.

Kersey, J., and Spector, B.: Immunodeficiency and malignancies. Persons at High Risk for Cancer (J. Fraumeni, ed.), Academic Press, New York, 1975, in press.

Kersey, J.H., Roloff, J., Hokeness, S., Johnson, F.L., Nesbit, M., and Krivit, W.: Retransplantation of Human Bone Marrow: Two Immunosuppressive Drug Regimens. Transplantation 19:475, 1975.

Kersey, J.H. and Booth, G.J.: Cellular Recognition and Activation within the Lymphoid System. Am. J. Clin. Path. 63:629, 1975.

Luckasen, J.R., Gajl-Peczalska, K.J., Zu[illegible]n, J., Kersey, J.H.: Abnormalities of T and B Lymphocytes in Keratosis Folli[illegible]aris. Submitted for publication, 1974.

RHS-398
Rev. 3-70

Kersey, J., Nesbit, M., Hallgren, H., Sabad, A., Yunis, E., Gajl-Peczalska, K.J.: Evidence for Origin of Childhood Acute Lymphoblastic Leukemias and Lymphomas in Thymus-derived Lymphocytes. Cancer, in press.

Hauge, N., Hom, D., Kersey, J.: Cyclic AMP-induced Inhibition of Sheep Erythrocyte Binding to Human T Lymphocytes. Submitted for publication, 1974.

Spector, B.D., Good, R.A., Kersey, J.H.: Cancer in Adults with Primary Immunodeficiency Diseases: Report from the Immunodeficiency-Cancer Registry.

Luckasen, J., White, J., Kersey, J.: Mitogenic Properties of a Calcium Ionophore, A23187. Proc. Nat. Acad. Sci. USA 71:5088, 1974.

Luckasen, J., Sabad, A., Hauge, N., Goldberg, N., Kersey, J.: Modulating Influences of the Cyclic Nucleotides cAMP and cGMP on Antigen Binding of Murine Lymphocytes. Submitted for publication, 1974.

Gajl-Peczalska, K.J., Bloomfield, C.D., Nesbit, M.E., Kersey, J.H.: B Cell Markers on Lymphblasts in Acute Lymphblastic Leukemia. Clin. Exp. Immunol. 17:561, 1974.

Fleisher, T., Luckasen, J., Sabad, A., Gehrtz, R., Kersey, J.: T and B Lymphocyte Subpopulations in Children. Pediatrics 55:162, 1975.

Kersey, J.H.: The Lymphoid System in Immunodeficiency and Malignancy. Proc. of Sixth International Course on Transplantation, Claude Bernard University, Lyon, France, May 21, 1974.

Fleisher, T., Kersey, J.: Immunologic Mechanisms in the Prevention and Therapy of Cancer. Am. J. Dis. Child., 128:739, 1974.

Kersey, J., Nesbit, M., Luckasen, J., Hallgren, H., Sabad, A., Yunis, E., Gajl-Peczalska, K.: Acute Lymphoblastic Leukemic and Lymphoma Cells with Thymus-derived (T) Markers. Mayo Clinic Proc. 49: 584-587, 1974.

Luckasen, J., Sabad, A., Goltz, R., Kersey, J.: T and B Lymphocytes in Atopic Eczema. Arch. Dermatol. 110:375, 1974.

Gajl-Peczalska, K.J., Hallgren, H., Kersey, J.H., Zusman, J., Yunis, E.J.: B Lymphocytes During Aging. Lancet II, 163, 1974.

Barnett, R.E., Scott, R.E., Furcht, L.T., Kersey, J.H.: Evidence that the Mitogenic Lectins Induce Changes in Lymphocyte Membrane Fluidty. Nature 249: 465-466, 1974.

Kersey, J.H., Nesbit, M.E., Gajl-Peczalska, K.J.: The Lymphoid System: Abnormalities in Immunodeficiency and Malignancy. J. Pediatrics 84:789-796, 1974.

Tsakraklides, E., Smith, C., Kersey, J.H., Good, R.A.: Transplantation Antigens (H-2) on Virally and Chemically Transformed BALB/3T3 Fibroblasts in Culture. J. Nat. Cancer Inst. 52:1499-1504, 1974.

Luckasen, J., Sabad, A., Gajl-Peczalska, K.J., Kersey, J.H.: Lymphocytes Beraing Complement Receptors, Surface Immunoglobulins and Sheep Erythrocyte Receptors in Primary Immunodeficiency Diseases. Clin. Exp. Immunol. 16:535-540, 1974.

Kersey, J.H., Hom, D.J., Buttrick, P.: Human T Lymphocyte Receptors for Sheep Erythrocytes: Conditions for Binding Including Inhibition by Cytochalasin B. J. Immunol. 112:862, 1974.

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Khan, Fais M.	Associate Professor	11/1/38
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Multan, Pakistan	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
U of Panjab, Emerson College, Multan	BS	1959	Mathematics
U of Panjab, Government College, Lahore	MS	1959	Physics
U of Minnesota, Minneapolis	Ph.D.	1969	Biophysics

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Oncology--Therapeutic Radiology	Participant

RESEARCH SUPPORT *(See instructions)*

NIH CA-08832	Study of Advanced Malignant Diseases	$444,282.00	9/30/76
NIH CA-13353-01	Vascularity and Reoxygenation in X-Irradiated Tumors	$ 37,832.00	1/31/76
NIH CA-15548-01A1	Radiation Oncology Research and Clinical Center	$376,859.00	6/30/78
NIH CA-16545-01	A Community Cancer Program Based on Radiation Oncology	$ 75,301.00	6/30/77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1974 - Present Associate Professor, Department of Therapeutic Radiology, U of Minnesota.
1969-1974 Assistant, Professor, Dept. of Therapeutic Radiology, U of Minnesota.
1968-1969 Instructor, Therapeutic Radiology, U of Minnesota.
1965-1968 Teaching Assistant in Radiotherapy, U of Minnesota.
1960-1963 Physicist, Institute of Radiotherapy, Mayo Hospital, Lahore, West Pakistan.

Khan, F.M., Moore, V.C., Jones, T.K., Stryker, J.A., and Levitt, S.H.: Dose Distribution Analysis of Moving Strip Technique for Abdominal Irradiation Using 10 MV X-rays. Radiology 112:421-424, 1974.

Levitt, S.H. (Editor), Tapley, N., and Fletcher, G.H. (Co-Editors), Khan, F.M., O'Foghludh. F., and Sampiere, V.: Characteristics of Megavoltage External Beams. Published by University of Minnesota, Department of Therapeutic Radiology, 1973.

Khan, F.M., Moore, V.C., and Levitt, S.H.: Effect of Various Atomic Number Absorbers on Skin Dose for 10 MV X-rays. Radiology, 109:209-212, 1973.

Khan, F.M., Levitt, S.H., Moore, V.D., and Jones, T.K.: Computer and Approximation Methods of Calculating Depth Dose in Irregularly Shaped Field, Radiology, 106: 433-437, 1973.

Khan, F.M., Levitt, S.H., Moore, V.C., and Jones, T.K.: Physical Consideration in "Sanctuary" Radiotherapy of Acute Lymphoblastic Leukemia in Children. Radiology, 105:665-670, 1972.

Khan, F., Moore, V.C., and Sato, S.: Depth Dose and Scatter Analysis of 10MV X-rays. Radiology, 102:165-169, 1972.

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
David T. Kiang	Assistant Professor	11/13/35
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Che-Kiang, China	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Nat'l Defense Medical Center, Taipei	MD	1960	Medicine
Columbia University, New York	MS	1964	Nutrition Biochemistr
University of Minnesota, Minneapolis	PhD	1973	Medicine

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Medical Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

NIH CA-08832	Study of Advanced Malignant Diseases	$444,282.00	9/30/76
NIH CA-05158	Medical Oncology Training Grant	95,125.00	6/30/76
NIH CA-16450	Acute Leukemia Group B	47,057.00	1/31/77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1973-Present	Assistant Professor of Medicine, University of Minnesota, Minneapolis.
1970-1973	Instructor in Medicine, University of Minnesota, Minneapolis.
1968-1970	Oncology Fellow, Department of Medicine, University of Minnesota.
1967-1968	Senior resident in Hematology, Francis Delafield Hospital, New York.
1966-1967	Second year medical resident, Francis Delafield Hospital, New York.
1964-1966	Straight medical intern and first year medical resident, Beckman-Downtown Hospital, New York.

Kennedy, B.J. and Kiang, D.T.: The Effect of Short-term Cyclophosphamide on Estrogen Therapy in Metastatic Breast Cancer. Med. Ped. Oncology (in press) 1975.

Kiang, D.T., Theologides, A., Lindall, A.W., and Kennedy, B.J.: Effect of Mithramycin on Parathyroid Hormone Production in Cancer Patients. IRCS Medical Science 3:612, 1975.

Kiang, D.T. and Kennedy, B.J.: Squamous Cancer, Hypoglycemia and Hyperinsulinism. CA (in press) 1975.

Kennedy, B.J., Hill, J., Bloomfield, C., Kiang, D., Fortuny, I., and Theologides, A.: Combination (COP) Versus Successive Single Agent Chemotherapy (C-O-P) in Lymphocytic Lymphoma. Proc. Amer. Assn. Cancer Res. 16:142, 1975 (Abstract).

Kiang, D.T., Sundberg, R.D., Fortuny, I., Brunning, R.D., Theologides, A., Goldman, A., and Kennedy, B.J.: Multiple Myeloma, Clinical Evolution. Minn. Med., 57:542-548, 1974.

Kiang, D.T., Theologides, A., Fortuny, I., and Kennedy, B.J.: Hormone Therapy for Multiple Myeolma. Lancet II, 147, 1973.

Kiang, D.T., Goldman, A., Fortuny, I., Theologides, A. and Kennedy, B.J.: Prognostic Factors in Multiple Myeloma. Proc. Amer. Assn. Cancer Res. 14:107, 1973 (Abstr.).

Kiang, D.T., Bauer, J.E. and Kennedy, B.J.: Immunoassayable Insulin in Carcinoma of the Cervix Associated with Hypoglycemia. Cancer 31:801, 1973.

Kiang, D.T., Edstrom, R.D. and Kennedy, B.J.: ABH Isoantigens and Their Synthetic and Degradative Enzymes in Human Colonic Carcinoma. Proc. Amer. Assn. Cancer Res. 13:93, 1972 (Abstract).

Kennedy, B.J., and Kiang, D.T.: Hypophysectomy in the Treatment of Advanced Cancer of the Male Breast. Cancer 29:1606, 1972.

Kiang, D.T. and Kennedy, B.J.: Effect of Mithramycin on Bone Metabolism. Clin. Res. 19:493, 1971 (Abstract).

Kiang, D.T. and Kennedy, B.J.: Combination of Cyclophosphamide and Estrogen Therapy in DMBA-induced Rat Mammary Cancer. Cancer 28:1202, 1971.

Kennedy

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Kim, Noe Kyeong	Clinical Associate	3/6/40
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Seoul, Korea	Koria, J-1. July 31, 1976	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
College of Medicine, Seoul National Univ. Seoul, Korea	MD	1964	Medicine
Graduate School, Seoul National University Seoul, Korea	MS	1966	Internal Medicine

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Medical Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Diseases	$444,282.00	9-30-76
NIH CA-05158 Medical Oncology Training Grant	$ 85,125.00	6-30-76
NIH CA-16450 Acute Leukemia Group B	$ 47,057.00	1-31-77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1972-Present	Instructor, Department of Medicine, College of Medicine, Seoul National University (on leave), Seoul, Korea.
1975	Medical Oncology Fellow, University of Minnesota, Minneapolis, Minnesota.
1965-1969	Residency in Internal Medicine, Seoul National University Hospital, Korea.
1964-1965	Rotating Internship, Seoul National University Hospital, Korea.

On the Change of Electrophoretic Patterns of Serum Protein, Glycoprotein and Lipoprotein, and Immunoelectrophoreograms in Patients with Glomerulonephritis and Nephrotic Syndrome. Korean J. Int. Med., 11:41, 1968.

The Study of Immune Globulin G, IgM and IgA level in Typhoid Fever. Korean J. of Int. Med., 16:773, 1973.

Studies on Phytohemaglutinin-induced Transformation of Lymphocytes from Patients with Cancer. Korean J. Int. Med., 17:1, 1974.

Hepatocellular Carcinoma Associated with Erythrocytosis. Korean J. Hemat., 1:65, 1966.

Three Cases of IgA Myeloma. Korean J. Int. Med., 11:55, 1968.

Histiocytic Medullary Reticulosis. Korean J. Hemat., 8:19, 1973.

NAME	TITLE	DATE OF BIRTH (Day, Mo., Yr.)
Kim, Taehwan	Instructor, Therapeutic Radiology	3-19-38
PLACE OF BIRTH (City, State, Country)	RACE OR ETHNIC GROUP (Optional, indicate if you do not wish to provide this information)	SEX
Sariwon, Korea	Korean Immigrant	[X] Male [ ] Female

EDUCATION (Begin with most recent period and include postdoctoral training)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Premedical School, Seoul National Univ.	2-yr.course	1960	
Medical School, Seoul National Univ.	M.D.	1964	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Radiation Oncology Tumor Immunology	Participant

RESEARCH SUPPORT (List most recent first)

NIH CA #08832, Integrated Study of Advanced Malignant Disease, $271,852, $2,541,910 (10/1/71 - 9/30/76), Effort 5%.

HEW 1Pol CA 16548 - Radiation Therapy Research and Clinical Center Grant, $1,161,756 (6/30/75-6/30/78) Effort 5%.

RELEVANT APPOINTMENTS AND PROFESSIONAL EXPERIENCE (Starting with present position, list briefly all positions and professional experiences relevant to area of project. List all academic appointments and positions. Do not exceed 3 pages for each individual.)

Resident in Therapeutic Radiology- University of Minn.Hospitals October,1970-present
Resident in Pathology-Prime George's General Hospital-Cheverly, Md.-July 1,1970-Oct.15,19
Internship-Prime George's General Hospital-Cheverly,Md.-July 1,1969-June 30, 1970
Private Practice, Seoul, Korea- July 1967 - June 1969
Military Physician, Korean Army - July 4,1964 - July 3, 1967

RECENT RELEVANT PUBLICATIONS

1. Kim, T., Nesbit, M.E., D'Angio, G.D., and Levitt, S.H. The Role of Central Nervous System Irradiation in Children with Acute Lymphoblastic Leukemia. Radiology 104: 635-641, September, 1972.

2. Kim, T., Song, C.W., and Levitt, S.H. Effect of Irradiation on Cell-Mediated Cytolysis of Tumor Cells as Measured by ^{125}I Release in Vitro. Submitted to Cancer Research. March, 1974.

3. Song, C.W., Kim, T., and Levitt, S.H. Radiation Effect on The Cytolytic Activity of Thymus-Dependent Lymphocytes. In Preparation.

4. Kim, T.,Nesbit, M.E., and Levitt, S.H. The Role of Irradiation in Treatment of Neuroblastoma. In preparation.

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Krivit, William	Professor	11/28/25
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Jersey City, New Jersey	U.S. Citizen	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Duke University - Premedical		1942-44	Premedical
Tulane University	M.D.	1944-48	
University of Minnesota	Ph.D.	1958	

HONORS

Phi Beta Kappa - Duke University

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pediatric Hematology-Oncology	Co-investigator

RESEARCH SUPPORT *(See instructions)*

USPHS CA11996 - Title: Leukemia Center Platelet Program CCA - Present Yr: $50,210 9/1/74-5/31/77
USPHS HL07145 - Title: Hematology (Training Grant) Present Yr. $36,986, 7/1/75-6/30/80
USPHS CA08832 - Title: Advanced Malignant Diseases - Co-investigator Present Yr. $91,000 (pediatric portion only) 10/1/75-9/30/76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Professor - Department of Pediatrics, University of Minnesota, 1962-present
Visiting Professor (Sabbatical) Medical Biochemical Department, Dr. Bengt Samuelsson, Stockholm, Sweden - 1970-71
Associate Professor - Department of Pediatrics, Univ. of Minn., 1960-62
Assistant Professor - Department of Pediatrics, Univ. of Minn., 1954-58
Instructor - Dept. of Peds., Univ. of Minn., 1954-58
U.S. Air Force Physician - Pediatrician-in-Charge, USAP, 1951-53
Chief Resident - Pediatric Department, Utah School of Medicine, 1950-51
Pediatric Resident - Salt Lake City General Hospital, 1949-50
Intern - Charity Hospital, New Orleans, LA, 1948-49

REFERENCES

1. Sharp, H.L., Nesbit, M.E., White, J.G. and Krivit, W.: Renal and hepatic pathology following initial remission of acute leukemia induced by prednisone. Cancer 20:1395,1967.
2. Sharp, H.L., Nesbit, M.E., D'Angio, G.J., and Krivit, W.: Addition of local radiation after bone marrow remission in acute leukemia in children. Cancer 20:1403-1404, 1967.
3. Wedemeyer, P.P., White, J.G., Nesbit, M.E., Aust, J.B., Leonard, A.S., D'Angio, G.J. and Krivit, W.: Resection of metastases in Wilms' tumor: A report of three cases cured of pulmonary and hepatic metastases. Pediatrics 41:446-451, February 1968.
4. Reilly, G.D., Nesbit, M.E. and Krivit, W.: Cure of three patients who had skeletal metastases in disseminated neuroblastoma. Pediatrics 41:47-51, 1968.

REFERENCES - Dr. William Krivit (cont.)

5. Childrens Cancer Study Group A: Wolff, J.A., Krivit, W., Newton, W.A. and D'Angio, G.J.: Single versus multiple dose dactinomycin therapy of Wilms' tumor. N.E.J.M. 279:290-294, 1968.
6. McCullough, J.J., Korobkin, M.T. and Krivit, W.: Genetics in acute leukemia in childhood. Annals of the N.Y. Acad. Sciences 155:777-783, 1968.
7. Cooper, M.D., Chase, H.P., Lowman, J.T., Krivit, W. and Good, R.A.: Immunologic defects in patients with Wiskott-Aldrich syndrome. Birth Defects, Original Articles Series 4:378, February 1968. National Foundation of the March of Dimes.
8. Levine, A.S., Sharp, H.L., Mitchell, J., Krivit, W. and Nesbit, M.E.: Combination therapy with 6-mercaptopurine and allopurinol during induction and maintenance of acute childhood leukemias. Cancer chemotherapy Reports 53:53-57, 1969.
9. Krivit, W., Gilchrist, G. and Beatty, E.C.: The need for chemotherapy after prolonged complete remission in acute leukemia of childhood. J. Pediat. 76: 138-141, 1970.
10. Humphrey, G.B., Wolfson, J.J. and Krivit, W.: Chylothorax associated with acute leukemia. Am. J. Dis. Child. 120:272, 1970.
11. Helbock, H., Krivit, W. and Nesbit, M.: Patterns of antidiurectic function in diabetes Insipidus caused by histiocytosis X. J. Lab. Clin. Med. 78:2:194-202, 1971.
12. Humphrey, G.B., Nesbit, M.E., Jr., Chary, K.K.N. and Krivit, W.: Impaired lymphocyte transformation in leukemic patients after intensive therapy. Cancer 29:402-406, 1972.
13. Krivit, W.: A new approach for determining red cell life span by incorporating C-14 glucose into glycosphingolipid of membrane. J. Lab. Clin. Med. 78:656-663, October, 1971.
14. Wolff, J.A., D'Angio, G., Hartmann, J., Krivit, W., and Newton, W.A., Jr.: Long-term evaluation of single versus multiple courses of actinomycin D therapy of Wilms' tumor. N.E.J.M. 290:84-86, January, 1974.
15. Coccia, P.F., Krivit, W., and Nesbit, M.E., Jr.: Malignant bone tumors in children. Minnesota Medicine 57:549-552, July, 1974.
16. Yunis, E.J., Krivit, W., Reinsmoen, N., and Amos, D.B.: Inheritance of a recombinant HL-A haplotype and genetics of the HL-1 region in man. Nature 248: 517, April 5, 1974.
17. Geller, G.R., Krivit, W., Zalusky, R., and Zanjani, E.D.: Lack of erythropoietic inhibitory effect of serum from patients with congenital pure red cell aplasia. J. of Peds., 86:2, February, 1975, pp. 198-201.
18. Humphrey, G.B., Parker, D.E., Nesbit, M.E., and Krivit, W.: Relative influence of sequential chemotherapy and radiotherapy on mitogen-induced lymphocyte transformation in patients with acute lymphoblastic leukemia. Medical and Pediatric Oncology (in press)
19. Meuwissen, H.J., Moore, E.C., Strauss, H.S., Taft, E., Britten, A., Roloff, J., Nesbit, M., Kersey, J., and Krivit, W.: Successful retransplantation of bone marrow following failure of initial engraftment in two patients with aplastic anemia. (submitted)
20. Balfanz, J.R., Nesbit, M.E., and Krivit, W.: Overwhelming sepsis following splenectomy for trauma. Journal of Pediatrics (in press).
21. Coccia, P.F., Kersey, J.H., Gajl-Peczalska, K., Krivit, W., and Nesbit, M.E.: Prognostic significance of surface marker analysis in childhood non-Hodgkin's lymphoproliferative malignancies.
22. Vosika, G.J., Krivit, W., Gerrard, J.M., Coccia, P.F., Nesbit, M.E., Coalson, J.J., and Kennedy, B.J.: Oncornavirus-like particles from culture bone marrow cells preceding leukemia and malignant histiocytosis. Proc. Nat. Acad. Sci. USA 72:2804-2808, July, 1975.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Kwong, Roger Waynsan	Clinical Associate	7/27/47
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY** (If non-U.S. citizen, indicate kind of visa and expiration date)	**SEX**
Oakland, California	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota, Minneapolis			
Institute of Technology	B.S.	1969	Chemistry
Medical School	M.D.	1972	Medicine

HONORS Membership in: Phi Lambda Upsilon
Tau Beta Pi
Phi Beta Kappa
Diplomate of American Board of Internal Medicine

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Medical Oncology	Participating Oncologist

RESEARCH SUPPORT *(See instructions)*

	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Disease	$444,282.00	9-30-76
NIH CA-05158 Medical Oncology Training Grant	$ 85,125.00	6-30-76
NIH CA-16450 Acute Leukemia Group B	$ 47,057.00	1-31-77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1975-present Clinical Associate in Medical Oncology, University of Minnesota, Mpls.
1974-1975 Medical Fellow, Department of Internal Medicine, U of Minnesota, Mpls.
1972-1974 Intern and first year Internal Medicine resident, Stanford University Medical Center, Stanford, California.
1971-1972 Medical Student Fellowship in Clinical Cancer, University of Minnesota, Minneapolis.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Joseph Ming Fai, Lee	Research Fellow	July 1, 1946
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
China	Chinese (F-1)	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Fu Jen Catholic University, Taiwan, R.O. China	B.Sc.	1969	Physics
University of Minnesota	M.S.	1976	Biometry
University of Minnesota	Ph.D.	(expected Sept. 1976)	Physics

HONORS

Award for outstanding oversea student 1966. Taiwan R.O. China
Award for outstanding oversea student 1967. Taiwan R.O. China
Award for outstanding oversea student 1968. Taiwan R.O. China
Honor graduate (physics) 1969

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
particle physics and statistical and computer applications in biomedical field	Research Fellow - Radiation Physics

RESEARCH SUPPORT *(See instructions)*

NCI CA 15548 Radiation Oncology Clinical & Research Center, $376,859, $1,161,756, (7/1/75 - 6/30/76). Seymour H. Levitt, Principal Investigator. 100% effort.

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Research fellow in therapeutic Radiology Department, University of Minnesota, Oct 1975 - present.
Research assistant in Physics Department, University of Minnesota, Sept 1971 - June 1975.
Teaching associate in Physics Department, University of Minnesota, Sept 1969 - June 1975.

Experience:
Experience with the 12 GeV ZGS accelerator, ANL.
Fortran programming experience with CDC6600, CDC7400 series large scale computers.
Fortran programming experience with CDC 3100, CDC3300 series medium-scale computers.
Fortran and machine language programming experiences with PDP-9, PC-12 small-scale computers.

HIH 398 (FORMERLY PHS 398)
Rev. [illegible]

U.S. GOVERNMENT PRINTING OFFICE : 1971 [illegible]

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Michael W. Loes	Medical Student	5/1/50
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Detroit, Michigan	U.S. Citizen	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of California, Berkeley	A.B.	1972	Linguistics

HONORS

Graduated with honors for work on phonological computer programming

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Lung cancer and clinical pharmacology	Data collection; data processing

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Senior Medical Student
Clinical training in oncology and clinical pharmacology

M. W. Loes: The LINC 8 Computer. Berkeley Journal of Phonology on Computer Programming, April-May 1972.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Ida M. Martinson	Associate Professor	11/8/36
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Mentor, Minnesota	U.S. Citizen	☐ Male ☒ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota, Mpls, MN	B.S.	1960	Education (nursing)
University of Minnesota, Mpls, MN	M.N.A.	1962	Nursing Administrati
University of Illinois at the Medical Center, Chicago, IL	Ph.D.	1972	Physiology

HONORS

Associate member of the society of the Sigma Xi 1972
Scholarships – SPAN – Japan
B.S. with honors
Sigma Theta Tau 1974

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Dying, Death, Stress – Grief Home Care Biological Models	Principle Investigator

RESEARCH SUPPORT *(See instructions)*

USPHS NU-05020-05 Nurse Scientist

USPHS NU-00475-01 "Faculty Research", $108,000,1975. Total estimated $260,000.

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List or most representative publications. Do not exceed 3 pages for each individual.)*

University of Minnesota joint appointment as Associate Professor in School of Nursing and Lecturer, Department of Physiology.

Publications

Martinson, Ida M. "Everted Rat Intestine as a Model to Demonstrate Regulation of Sodium Absorption", Report of the Ninth Nursing Research Conference, pp. 79-96. San Antonio: American Nurses' Association. 1973.

Martinson, Ida M. and R.C. Ingraham. "The Everted Rat Intestine Used as a Model System to Demonstrate Regulation of Sodium Absorption by Plasma Following Hemorrhage", Proc. Soc. Exp. Biol. Med., 145:21, 1974.

Martinson, Ida M. "Recollections of a Nurse", Eric. Minneapolis: School of Nursing, 1973. (Off-set)

Martinson, Ida M. "A Health Team Challenge", Cadence, pp. 36-39. Jan-Feb., 1975.

Martinson, Ida M. with M. Woehning. "Family Nursing During Death and Dying", (Chap. 36 Contemporary Community Nursing, Barbara Spradley, Ed. Boston: Little, Brown and Company, 1975. pp. 405-411.

RESEARCH AND/OR PROFESSIONAL EXPERIENCE - Continued

Martinson, Ida M. with K. Karni and J. Kersey. "Case Presentation on Leukemia", Allied Health Journal - in press. 1974.

Martinson, Ida M. "A Nurse's Perspective" in Meri. Edited by Wetzel and Martinson. Type Cellar Press. Minneapolis, Minnesota, pp. 33-42.

Martinson, Ida M. "Experience with Home Care" to be published in R.N., January, 1976.

Thorton Junior College, Harvey, Illinois, Nursing Instructor from 1968 to 1969.

Christian Family Service Center, Hong Kong, BBC nursing consultant from 1966 to 1968.

Minneapolis General Hospital, Minneapolis, Minnesota, staff nurse from 1958 to 1961.

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
McCullough, John J.	Associate Professor	4/29/38
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Boston, Massachusetts	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Northwestern University, Evanston, Ill.	BA	1959	
Ohio State University	MD	1963	Medicine

HONORS

Name Outstanding Young Man of America, 1970.

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Laboratory Medicine & Pathology	Participant

RESEARCH SUPPORT *(See instructions)*

NIH CA-08832, Study of Advanced Malignant Diseases $444,282.00 9/30/76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1974 - Present	Director, St. Paul Regional Red Cross Blood Center, St. Paul, Minnesota.
1974-Present	Associate Professor, Department of Laboratory Medicine & Pathology, University of Minnesota, Minneapolis, Minnesota.
1970-1974	Medical Director, St. Paul Regional Red Cross Blood Center, St. Paul, MN.
1970-Present	Director of the Blook Bank, University of Minnesota Hospitals, Minnesota.
1970-1974	Assistant Professor, Department of Laboratory Medicine, University of Minnesota, Minneapolis, MN.
1968-1969	Instructor, Department of Laboratory Medicine, University of Minnesota.
1969-1970	Resident in Medicine, Vanderbilt University Hospital, Nashville, Tennesee.
1968-1969	Chief Resident in Laboratory Medicine, University of Minnesota Hospitals.
1967-1968	Fellow, Department of Laboratory Medicine, University of Minnesota.
1966-1967	U.S. Public Health Service, Assigned to Minnesota Department of Health as Acting Chief Section of Chronic Diseases.
1964-1966	U.S. Public Health Service, Cancer Control Officer Assigned to Minnesota Department of Health.

Hadlock, D.C., Fortuny, I.E., McCullough, J., and Kennedy, B.J.: Continuous Flow Centrifuge Leucapheresis in the Management of Chronic Myelogenous Leukaemia. British Journal of Haematology 29:443, 1975.

McCullough, J.: Granulocyte Transfusion. Seminar on Current Technical Topics. American Association of Blood Banks 27th Annual Meeting, Anaheim, California, November, 1974 p. 95.

Morehead, R.T., Anderson, K., Grunewald, S., Casey, D., and McCullough, J.: A Comparison of Autoanalyzer and Manual Methods for Red Cell Antibody Screening. Transfusion 14:586, 1974.

McCullough, J., Weiblen, B.J. and Quie, P.G.: Chemotactic Activity of Human Granulocytes Preserved in Various Anticoagulants. Journal of Laboratory and Clinical Medicine 84:902, 1974.

Mishler, J.M., Hadlock, D.C., Fortuny, I.E., Nicora, R.W., and McCullough, J.: Increased Efficiency of Leukocyte Collection by the Addition of Hydroxyethyl Starch to the Continuous Flow Centrifuge. Blood 44:571, 1974.

Swanson, J.L., Azar, M., Miller, J., and McCullough, J.: Evidence for Heterogeneity of LW Antigen Revealed in a Family Study. Transfusion 14:470, 1974.

McCullough, J., Burke, M.E., Wood, N., Carter, S.J., Weiblen, B.J. and Yunis, E.J.: Microcapillary Agglutination for the Detection of Leukocyte Antibodies: Evaluation of the Method and Clinical Significance in Transfusion Reactions. Transfusion 14: 425, 1974.

Technical Methods and Procedures of the American Association of Blood Banks revised edition, 1974:159-177. (chapter on Transfusion and Transfusion Practices.)

McCullough, J., Carter, S.J. and Quie, P.G.: Effects of Anticoagulants and Storage on Granulocyte Function in Bank Blood. Blood 43:207-217, 1974.

McCullough, J.: Blood Component Therapy. Geriatrics 29, No. 2:85, 1974.

McCullough, J. and Fortuny, I.E.: Laboratory Evaluation of Normal Donors Undergoing Leukapheresis on the Continuous Flow Centrifuge. Transfusion 13:394, 1973.

Polesky, H.F., McCullough, J., Helgeson, M.A., Nelson, C.: Evaluation of Methods for the Preparation of HL-A Antigen-Poor Blood. Transfusion 13:383, 1973.

McCullough, J. and Weiblen, B.J.: Citrate Phosphate Dextrose Anticoagulant in Blood Transfusion. Minnesota Medicine 56:980-982, 1973.

Crandall, L., Fortuny, I.E., McCullough , J. and Kennedy, B.J.: The Cell Separator. A Continuous Flow Centrifuge for Blood Component Collection. Minnesota Medicine 56, 759, 1973.

Fortuny, I.E., Crandall, L., McCullough , J., Theologides, A. and Kennedy, B.J.: Leukapheresis in the Management of Chronic Leukemia. Minnesota Medicine 56: 675-676, 1973.

McCullough, J., Fortuny, I.E., Kennedy, B.J., Edson, J.R., Branda, R.F., and Jcaob, H.S.: Rapid Plasma Exchange with the Continouous Flow Centrifuge. Transfusion 13:94-99, 1973.

McCullough, J.: Packed Red Blood Cells: Clinical Uses. Minnesota Medicine 56: 290-292, 1973.

Gatti, R.A., Robsinson, W.A., Deinard, A.S., Nesbit, M., McCullough, J.J., Ballow, M. and Good, R.A.: Cyclic Leukocytosis in Chronic Myeologenous Leukemia: New Perspectives on Pathogenesis and Therapy. Blood 41:771-782, 1973.

Edson, J.R., McArthur, J.R., Branda, R.F., McCullough, J., and Chou, S. Successful Management of a Subdural Hematoma in a Hemophiliac with an Anti Factor VIII Antiboyd. Blood 41:113-122, 1973.

McCullough, J., Carter, S.J. and Quie, P.G.: Preservation of Opsonic Activity Against S. aureus and E. coli in Bank Blood. Journ. Lab & Clin. Med. 79: 886-892, 1972.

Lueck, M., Carter, S.J., McCullough, J.: Evaluation of a Hemagglutination Inhibition Method for the Detection of HAA. Amer. Journ. Med. Tech. 38:171-176, 1972.

McCullough, J. and Polesky, H.F.: Hepatitis Associated (Australia) Antigen. Minnesota Medicine 55:55-57, 1972.

McCullough, J., Polesky, H.F., Nelson, C., and HOff, T.: Iatrogenic Hemolysis: A Complication of Blood Warmed by a Microwave Device. Anesthesia & Analgesia 51: 102-106, 1972.

Niosi, P., Lundberg, J., McCullough, J., Park, B.H. and Biggar, D.: Blood Group Antibodies in Human Immune Serum Globulin. New Eng. Journ. Med. 285:1435-1436, 1971.

Giblet, E.R., Klebanoff, S.J., Pencus, S.H., Swanson, J., Park, B.H., and McCullough, J.: Kell Phenotypes in Chronic Granulomatous Disease, A Potential Transfusion Hazard. Lancet 1:1235-1236, 1971.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Charles F. McKhann, M.D.	Professor of Surgery and Microbiology	January 29, 1930
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Boston, Massachusetts U.S.A.	U.S. Citizen	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Harvard University, Cambridge, MA	B.A.	1951	Biology
University of Pennsylvania School of Medicine, Philadelphia, PA	M.D.	1955	Medicine

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Surgical Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

NCI-Contract-NO1-CP-92061, "Immunotherapy Through Inhibition of antibody Production", $46,' 6/14/75-6/13/76 (to terminate), . NCI-Contract-NO1-CB-43946, "Immunotherapy: Ro of Circulating Tumor Antigens", $76,590, 5/1/75-4/30/76, . ACS=Grant-IM-25G, "Manipulation of Lymphoid Cell Population in Tumor Immunity", $52,810, 1/1/75-12/31/75, ACS-Grant-IM-25G, "Manipulation of Lymphoid Cell Population in Tumor Immunity", $59,792, (Pending 1/1/76-12/31/76) . NCI-(National Large Bowel Cancer Program) "Biologi and Clinical Studies of Colon Carcinoma", $64,453, ($34,260 for Dr. McKhann's lab. and clinic studies), 6/1/75-5/31/76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List or most representative publications. Do not exceed 3 pages for each individual.)*

Academic Appointments:	Professor of Surgery and Microbiology, University of Minne Medical School, March 1968.
	Associate In Surgery, Massachusetts General Hospital, 1967
	Associate in Surgery, Harvard Medical School, 1967-1968.
	Andres Sorigano Investigator in Oncology, Mass. General H 1967-1968.
	Instructor in Surgery, Harvard Medical School, 1964-1967.
	Assistant in Surgery, Mass. General Hospital, 1964-1967.
Residency	American Cancer Society Clinical Fellow, Mass. General Ho 1963-1964.
Research Appointments:	Department of Tumor biology, Karolinska Institute, Stockh Sweden, July 1961-Dec. 1962 (Sepcial Research Fellow,
	Naval Medical Research Inst., Bethesda, Maryland, July 19 June 1960.
Assistant Residency:	Massachusetts General Hospital, 1963-1964.
	Massachusetts General, 1963 (Jan. thru June).
	Massachusetts General Hospital, 1960-1961.
	Massachusetts General Hospital, 1956-1958.
Internship:	Massachusetts General Hospital, 1955-1956.

Charles F. McKhann, M.D.
Biographical Information-Continued

Societies

American Association for Advancement of Science
American Association for Cancer Research
American Association of Immunologists
American College of Surgeons
Association for Academic Surgery
Massachusetts Medical Society
New York Academy of Sciences
Society of University Surgeons
Transplantation Society

Bibliography

Burk, M.W., Ristow, S.S. and McKhann, C.F.: The role of antigen load in tumor specific immunity. Surgical Forum (in press).

McKhann, C.F., Burk, M.W. and Ristow, S.S.: Immunotherapy of Cancer: Concepts and Problems. In, Fundamental Aspects of Neoplasia. A.A. Gottlieb, ed., Springer-Verlag (in press).

McKhann, C.F., Ristow, S.S. and Burk, M.W.: Lymphocyte responsiveness in cancer and transplantation. Symposium on Cancer and Transplantation, Roswell Park Memorial Institute, June 1974, Transplantation Proc. (in press).

Gunnarsson, A. and McKhann, C.F.: Immunotherapy of melanoma with BCG: A fatality following intralesional injection. In, Neoplasm Immunity: BCG Vaccination. Proceedings of a Chicago Symposium, Schori Press, 1973. Edited by Ray G. Crispen.

Gunnarsson, A., McKhann, C.F., Simmons, R.L. and Grage, T.B.: Combined surgical and immunotherapeutic approach to metastatic sarcoma - neuraminidase treated tumor cells as tumor vaccine. Minnesota Medicine 57: 558-561, 1974 (July).

Jagarlamoody, S.M. and McKhann, C.F.: Tumor inhibitory effect of antiplasma cell serum. Year Book of Cancer, Vol. 18 (in press).

McKhann, C.F., Ristow, S.S. and Burk, M.W.: Biological activities of cell surface components: Immunosuppressive effects of tumor antigen. In, Immunological Approaches to the Cell Surface, Symposium at Brook Lodge, June 1974 (in press).

Ristow, S.S., Cleveland, P.H., Pier, T.R. and McKhann, C.F.: Purification of tumor specific antigens from a methylcholanthrene induced murine sarcoma as monitored by humoral cytotoxicity. Cancer Research (submitted).

Cleveland, P.J., McKhann, C.F., Ristow, S.S., Johnson, K.A., and Nelson, S.: Studies on the resistance of murine sarcoma cells to humoral cytotoxicity. J. of Immunol. (submitted).

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
James Joseph McMillen	Medical Fellow	November 4, 1945
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Elmira, New York	U.S. Citizen	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Maryland	A.B.	1968	
University of Maryland	M.D.	1974	
Dept. of Medicine, U of M Hospital	Intern	7/74-7/75	
Dept. of Medicine, U of M Hospital	Resident		

HONORS

Alpha Omega Alpha - Junior year, University of Maryland Medical School
Cum Laude - University of Maryland Medical School

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Oncogetal antigens	Primary investigator

RESEARCH SUPPORT *(See instructions)*

None

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

PUBLICATIONS:

1. McMillen, J., J. Delaney, M. Levitt. Intractable Ascites - A New Approach. Minn. Med. (in press).

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Eitan Medini, M.D.	M.D.	February 28, 1941
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Israel	U.S. Citizen	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Hebrew University and Hadassah Medical School Jerusalem, Israel,	M.D.	1968	Internal Medicine Therapeutic Radiology Pathology

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Therapeutic Radiology	

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

PUBLICATIONS:

1) Treatment of Pseudomonas pyocyaneus infections with combination of carbenicillin and Gentamycin. HAREFUAH Journal of the Israel Medical Association Vol. LXXXII No. 7, April 2, 1972.

2) The hemolytic effect of chloramphenicol in patients with erythrocytes deficien in G-6-PD. Thesis for M.D. degree of medical school, Jerusalem, Israel, 1970.

3) Radiation Therapy for pituitary tumors, experience in University of Minnesota 1955-1975 (work in progress).

INTERNSHIP: Rotating internship January 1969 to December 1969
University of Tel-Aviv Tel-Hasomen Hospital

RESIDENCY: Internal Medicine January 1970 to June 1972
University of Tel-Aviv Tel-Hashomen Hospital

Therapeutic Radiology June 1972 to June 1974
Penrose Cancer Hospital, Colorado Springs, Colorado

Pathology, July 1974 to June 1975
Penrose Cancer Hospital, Colorado Springs, Colorado

Therapeutic Radiology July 1975 to June 1976
Veterans Administration Hospital, Minneapolis, MN and
University of Minnesota

STAFF POSITIONS: Therapeutic Radiologist July 1976 - present
Veterans Administration Hospitak Minneapolis, MN

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Kenneth J. Murray	Medical Fellow	11/23/45
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Springfield, Illinois	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Northwestern University, Evanston, Ill.	BS	1967	
Northwestern University Medical School	MD	1970	

HONORS James Scholar, University of Illinois; Omega Beta Pi; American Cancer Society Fellowship; Phi Rho Sigma

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Neurosurgery	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1973-Present	Medical Fellow in Neurosurgery, University of Minnesota.
1973	Neurology Resident (Chief), Northwestern University.
1972-1973	Neuropathology Fellow, Northwestern University.
1971-1972	Neurosurgery Resident, Northwestern University.
1971	Pathology Fellow, Chicago Wesley Memorial Hospital.
1970-1971	Intern, Straight Surgery, Chicago Wesley Memorial Hospital.

Siqueira, E.B. and Murray, K.J.: Calcified Aneurysms of the Vein of Galen: Report of a Presumed Case and Review of the Literature. Neurochirurgia 15:106-112, 1972.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
John Neely	Clinical Associate	11/11/47
PLACE OF BIRTH (City, State, Country)	PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)	SEX
York, Penn.	U.S.	[X] Male [ ] Female

EDUCATION (Begin with baccalaureate training and include postdoctoral)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Juniata College, Huntingdon, PA	B.S.	1968	Biology
Penn. St. Univ. Med. Sch.	M.D.	1973	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pediatric Oncology	Co-Investigator

RESEARCH SUPPORT (See instructions)

RESEARCH AND/OR PROFESSIONAL EXPERIENCE (Starting with present position, list training and experience relevant to area of project. List all most representative publications. Do not exceed 3 pages for each individual.)

Fellow, Dept. of Peds., Univ. of Minn., 1975-present
Resident, Dept. of Peds., Univ. of Minn., 1974-75
Intern, Dept. of Peds., Univ. of Minn., 1973-74
Predoctoral Fellow, Dept. of Pathology, Penn. State, 1970-71.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow this general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Mark E. Nesbit	Professor of Pediatrics	February 12, 1933
PLACE OF BIRTH (City, State, Country)	PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)	SEX
Madison, Wisconsin	U.S. Citizen	☒ Male ☐ Female

EDUCATION (Begin with baccalaureate training and include postdoctoral)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Wisconsin Madison, Wisconsin	B.S.	1955	
George Washington Medical School Washington, D.C.	M.D.	1959	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pediatric Hematology-Oncology	Co-investigator

RESEARCH SUPPORT (See reverse side)

USPHS CA15548 - Co-Investigator, Title of Nesbit Portion: Host Defense of Patients Treated with Radiotherapy and/or Chemotherapy - $67,465 - 7/1/75-6/30/78'

USPHS CA07306 - Principal Investigator - Childrens Cancer Study Group A, Chemotherapy Present Yr. $92,413 - 9/1/74-8/31/79

RESEARCH AND/OR PROFESSIONAL EXPERIENCE (Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)

Professor, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota 1973 - present

Associate Professor, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota 1970-1973

Assistant Professor, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota 1967-70

Medical Fellow Specialist, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota 1964-1967

Pediatric Resident, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota 1963-1965

Post Surgeon and in Charge of Dispensary, U.S. Army Dispensary, St. Louis, Missouri 1961-1963

Pediatric Resident, University of Minnesota, Minneapolis, Minnesota 1960-1961

Pediatric Internship, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota 1959-1960

Societies

Northwest Pediatric Society
American Association of Cancer Research
American Society of Hematology
erican Society of Clinical Oncology
Midwest Society for Pediatric Research
Society of Pediatric Research
American Pediatric Society
Reticuloendothelial Society

Kennedy
REFERENCES - Mark Nesbit

1. Nesbit, M.E., Sharp, H. L. and Krivit, W.: Histiocytosis X. Brennemann-Kelley Practice of Pediatrics, Vol. III, Chapter 23, pp. 1-13.
2. Nesbit, M.E., Kieffer, S., and D'Angio, G. J.: Reconstitution of Vertebral Heights in Histiocytosis X: Long-term Followup. J. Bone and Joint Surg. 51A:1360-1368, 1969.
3. Nesbit, M., and Lowman, J. T.: Hematopoiesis and Serum Iron Changes Following Vincristine Sulfate. Blood 34:633-644, November 1969.
4. Nesbit, M. E., Wolfson, J. J., Kieffer, S. A. and Peterson, H. O.: Orbital Sclerosis in Histiocytosis X. Am. J. Roent. CX:1:123-128, 1971.
5. Nesbit, M. E. and Cich, J. A.: Acute Leukemia in Childhood. Current Therapy 282-286, 1972.
6. Nesbit, M. E.: Bone Tumors in Infants and Children. Pediatrician 1:273-287, (1972/73).
7. Nesbit, M. E., Chard, R., and Bloomfield, C. D.: Combination of Daunorubicin (NSC-82151) and 5-Azacytidine (NSC-102816) for Reinduction of Patients with Acute Non-Lymphocytic Leukemia. Cancer Chemotherapy Reports (submitted)
8. Catti, R., Robinson, W., Deinard, A., Nesbit, M., McCullough, J. J., Ballow, M. and Good, R.: Cyclic Leukocytosis in Chronic Myelogenous Leukemia. Blood. Vol. 41, No. 6 (June) 1973.
9. Roback, S., Weintraub, W. H., Nesbit, M. E., Spanos, P. K., Burke, B., and Leonard, A. S.: Diagnostic Open Lung Biopsy in the Critically Ill Child. Pediatric, Vol. 52, pp. 605-608, October, 1973.
10. Karon, M., Sieger, L., Leimbrock, S., Finklestein, J., Nesbit, M.: 5-Azacytidine: A New Agent for the Treatment of Acute Leukemia. Blood, Vol. 42, No. 3 (Sept) 1973
11. Smith, D. G., Nesbit, M. E., D'Angio, G. J. and Levitt, S. H.: Histiocytosis X: Role of Radiation Therapy in Management with Special Reference to Dose Levels Employed. Radiology 106:419-422, February, 1973.
12. Humphrey, G. B., Nesbit, M. E., Brunning, R. D.: The Prognostic Value of the Periodic Acid-Schiff (PAS) Reaction in Acute Leukemia. American Journal of Clinical Pathology, Vol. 61, pp. 393-397, March 1974.
13. Zusman, J., Brown, D. H., and Nesbit, M.E.: Hyperphosphatemia, Hyperphosphaturia and Hypocalcemia in Acute Lymphoblastic Leukemia. New England Journal of Medicine, Vol. 289, No. 25:1335-1340.
14. Kersey, J., Sabad, A., Gajl-Peczalski, K., Hallgren, H., Yunis, E., and Nesbit, M.: Acute Lymphoblastic Leukemic Cells with T (thymus-derived) Lymphocyte Markers. Sciences, Vol. 182:1355-1356.
15. Kersey, J., Nesbit, M. and Gajl-Peczalski, K.: The Lymphoid System: Abnormalities in Immunodeficiencies and Malignancy. Journal of Pediatrics, Vol. 84:789-796, 1974.
16. Gajl-Peczalska, K .J., Bloomfield, C. D., Nesbit, M. E., and Kersey, J. H.: B Cell Markers on Lymphoblasts in Acute Lymphoblastic Leukemia. Clinical and Experimental Immunology (1974) 17, 561-569.
17. Coccia, P. F., Krivit, W. and Nesbit, M. E.: Malignant Bone Tumors in Children: Recent Advances in the Treatment. Minnesota Medicine, Vol. 57, 549-552, July, 1974
18. Kersey, J. H., Nesbit, M. E., Luckasen, J. R., Hallgren, H. M., Sabad, A., Yunis, E. and Gajl-Peczalska, K.: Acute Lymphoblastic Leukemia and Lymphoma Cells with Thymus-Derived (T) Markers. Mayo Clin. Proc., August 1974, Vol. 49, p. 584.
19. Heyn, R. M., Joo, P., Karon, M., Nesbit, M., Shore, N., Breslow, N., Weiner, J., Reed, A., and Hammond, D.: BCG in the Treatment of Acute Lymphocytic Leukemia. Blood, Vol. 46 No. 3 (Sept.) 1975.
20. Heyn, R., Nesbit, M., Joo, P., Karon, M., Borges, W., Hammond. D., Breslow, N.: Effect of BCG in the Duration of the First Remission in Children with Acute Lymphoid Leukemia. In: Neoplasm Immunity: BCG Vaccination (Edited by Ray G. Crispen), Chica; Illinois, Institute for Tuberculosis Research, Univ. of Illinois, pp. 15-23, 1973.
21. McKenna, R. W., Bloomfield, C. D., Dick, F., Nesbit, M. and Brunning, R. D.: Acute Monoblastic Leukemia: Diagnosis and Treatment of Ten Cases. (in press)
22. Vosika, G. J., Krivit, W., Gerrard, J. M., Coccia, P. F., Nesbit, M. E., Coalson, J. J. and Kennedy, B. J.: Oncornavirus-like Particles from Cultured Bone Marrow Cell Proceding Leukemia and Malignant Histiocytosis. Proc. of National Academy of Science (in press).

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Peterson, Bruce A.	Clinical Associate	10/19/45
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Warren, Minnesota	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota	B.A.	1967	Chemistry
University of Minnesota	M.D.	1971	Medicine

HONORS

American Cancer Society Clinical Fellow - 1975-1976

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Medical Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

	CURRENT AMT.	TO
American Cancer Society Clinical Fellowship	$ 4,800.00	6-30-76
NIH CA-08832 Study of Advanced Malignant Disease	$444,282.00	9-30-76
NIH CA-05158 Medical Oncology Training Grant	$ 85,125.00	6-30-76
NIH CA-16450 Acute Leukemia Group B	$ 47,057.00	1-31-77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List most representative publications. Do not exceed 3 pages for each individual.)*

1974-present	Medical Oncology Fellow, University of Minnesota
1972-1974	Resident in Internal Medicine, University of Minnesota
1971-1972	Intern, University of Vermont, Burlington, Vermont.

Peterson, B., and Kennedy, B.J.: DUration of DNA Inhibition of Hydroxyurea, Proc. Amer. Assoc. Cancer Reserach 11:63, 1970.

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Norma Kathryn Chipperfield Ramsay	Clinical Associate	November 1, 1944
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Yukton, Saskatchewan Canada	Canadian	☐ Male ☒ Female

EDUCATION (Begin with baccalaureate training and include postdoctoral)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Manitoba, Winnipeg, Canada			
University of Manitoba, Winnipeg, Canada	M.D.	1968	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pediatric Hematology-Oncology	Co-investigator

RESEARCH SUPPORT (See instructions)

Graduate School - U of Minnesota - Title: Effectiveness of Lithium Carbonate on Granulopoiesis - $5,000 - 7/1/75-6/30/76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE (Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)

Pediatric Hematology-Oncology Fellow, Department of Pediatrics, University of Minnesota Minneapolis, Minnesota - 1974-present

Pediatric Hematology-Oncology Fellow, Emory University, Atlanta, Georgia - 1973-1974

Pediatric Resident, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota - 1971-1973

Pediatric Internship, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota - January 1971 - June 1971

Student Health Service, University of Minnesota, Minneapolis, Minnesota - December 1970 - July 1974

Rotating Internship, Winnipeg General Hospital, Winnipeg, Manitoba - 1968-1969

References

Moo-Penn, W., Jue, D., George, B., Ramsay, N. and Schmidt, R. M.: Hemoglobin Hope. American Journal of Clinical Pathology 63:87, 1975.

SECTION II -- PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Carol A. Reese	Instructor	
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
	U.S. Citizen	☐ Male ☒ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota, Mpls, MN	BSN	1965	Nursing
University of Minnesota, Mpls, MN	MS	1974	

HONORS

Sigma Theta Tau

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Grief; Death and Dying	Co-project Director

RESEARCH SUPPORT *(See instructions)*

Faculty Research Grant No. 1E 02NU00475-01HEW PSH - 20%, one quarter

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Publications

Manasse, Henri and Carol Reese. "Social and Psychological Aspects of Terminal Care; An Interdisciplinary Course for Pharmacy and Nursing Students", American Journal of Pharmaceutical Education, Vol. 40, Aug. 1975.

Reese, Carol. "Support Systems - A Necessity for Health Care Personnel", Chapter in Ida Martinson's book to be published (In progress)

Research

"Perceptions of Needs - a Descriptive Study" Related to the Needs of Nurses Working with Dying Children (In progress)

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Depine, John E.	Assistant Professor	12/26/44
PLACE OF BIRTH (City, State, Country)	PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)	SEX
Rock Island, Illinois	U.S.	☒ Male ☐ Female

EDUCATION (Begin with baccalaureate training and include postdoctoral)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Univ. of Wisconsin, Madison	B.S.	1966	Chemistry
Univ. of S. Dak., Vermillion	B.S.	1969	Medicine
Univ. of Minn.	M.D.	1971	Medicine

HONORS
Minnesota Undergrad. Res. Award, 1971
Mead-Johnson Grand Award for Res. by Resident-SAMA-UTMB, 1974
Minnesota Heart Fellow, 1975.

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
	Co-Investigator

RESEARCH SUPPORT (See instructions)

RESEARCH AND/OR PROFESSIONAL EXPERIENCE (Starting with present position, list training and experience relevant to area of project. List all most representative publications. Do not exceed 3 pages for each individual.)

Research Assistant Professor, Dept. of Intern. Med., Univ. of Minn., 1975-present
Research Instructor, Dept. of Intern. Med., Univ. of Minn., 1974-75
Research Fellow, Dept. of Intern. Med., Univ. of Minn., 1973-74
Resident, Intern. Med., Univ. of Minn., 1972-73
Intern, Dept. of Intern. Med., Univ. of Minn., 1971-72

John E. Repine, M.D.

Publications

1. Repine, J.E., White, J.G., Clawson, C.C., and Holmes, B.M.: The influence of phorbol mysistate acetate on oxygen consumption by polymorphonuclear leukocytes. J. Lab. Clin. Med. 83:911-920, 1974.

2. Repine, J.E., White, J.G., Clawson, C.C. and Holmes, B.M.: Effects of phorbol myristate acetate on the metabolism and ultrastructure of neutrophils in chronic granulomatous disease. J. Clin. Invest. 54:83-90, 1974.

3. Repine, J.E., White, J.G., Clawson, C.C., and Holmes, B.M.: The influence of phorbol mysistate acetate on the metabolism of neutrophils from carriers of sex-linked chronic granulomatous disease. J. Lab. Clin. Med. 85:82-86, 1975.

4. Repine, J.E., Clawson, C.C., White, J.G., and Holmes, B.M.: The spectrum of function of neutrophils from carriers of sex-linked chronic granulomatous disease. J. Peds (In press).

5. Friend, P.A., Repine, J.E., Clawson, C.C., and Michael, A.M.: Deficiency of the second component of complement with chronic vasculitis. Ann. Int. Med. (In press).

6. Clawson, C.C. and Repine, J.E.: Quantitation of the maximal bactericidal capacity of human neutrophils. J. Lab. Clin. Med. (In press).

7. Repine, J.E., Clawson, C.C. and Brunning, R.D.: Primary LAP deficiency in Adult with recurrent infections. Brit. J. Haematol. (In press).

8. Clawson, C.C., Repine, J.E., and White, J.G.: Chediak-Higashi syndrome: quantitative defect in bactericidal capacity. Blood 38:814, 1971. (Abstract).

9. Clawson, C.C., Repine, J.E., and White, J.G.: Quantitation of bactericidal capacity in normal and abnormal neutrophils. Ped. Res. 6:367, 1972 (Abstract).

10. Repine, J.E., Clawson, C.C., Burchell, H.B., and White, J.G.: Neutrophil function in untreated infection. Clin. Res.XXIII, 417A, 1974.(Abstract).

11. Repine, J.E., Clawson, C.C., Brunning, R.D.: Primary leukocyte alkaline phosphatase deficiency in an adult with repeated infections. Clin. Res. XXIII, 417A, 1974. (Abstract).

12. Clawson, C.C., and Repine, J.E.: Products of platelet aggregation and release as a chemotactic factor for human leukocytes. Vth Congress of the International Society on Thrombosis and Haemostasis, 1975 (Abstract).

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Sandra S. Ristow, Ph.D.	Post Doctoral Research Fellow	October 22, 1941
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Eau Claire, Wisconsin	U.S. Citizen	☐ Male ☒ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Wisconsin State University	B.S.	1963	Chemistry
Iowa State University, Ames, Iowa			NSF Summer Fellow
University of Minnesota, Minneapolis, MN	Ph.D.	1972	Biochemistry

HONORS

B.S. - Summa Cum Laude
Elected to Iota Sigma Pi, Phi Lambda Upsilon, Sigma Xi
Received Cyrus Barnum Award for outstanding teaching of medical students.

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Surgical Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Post Doctoral Research Fellow, Department of Surgery, University of Minnesota,. 1972.
Graduate Student, Department of Biochemistry, University of Minnesota, 1968-1972
Associate Scientist, Department of Neurology, University of Minnesota, 1965-1968.
Chemist I - Archer-Daniels-Medland Corporation, Minneapolis, MN, 1963-1965.

Publications

Ristow, S.S. and Wetlaufer, D.B.: Formation of three dimensional structure in lysozyme: Evidence for a non-random route. Fed. Proc. 30: 1287, 1971.
Ristow, S.S.: Nucleation in lysozyme folding. Ph.D. Thesis, University of Minnesota, 1972.
Wetlaufer, D.B. and Ristow, S.S.: Acquisition of three dimensional structure in proteins. Ann. Rev. Biochem. 42: 135-158, 1973.
Ristow, S.S. and Wetlaufer, D.B.: Evidence for nucleation in the folding of reduced hen egg lysozyme. Biochem. and Biophys. Res. Comm. 50: 544-550, 1973.
Burk, M.W., Yu, S., Ristow, S., McKhann, C.F. and Holmes-Gray, B,: Refractoriness of lymph node cells from tumor bearing animals. Fed. Proc. 33: 769, 1974.
Burk, M.W., Yu, S., Ristow, S. and McKhann, C.F.: Refractoriness of lymph node cells from tumor bearing animals. XIth Internatl. Cancer Congress, Florence, 1974 (abstract)

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Juan Rosai	Professor	8/20/40
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Poppi, Arezzo, Italy	Argentina	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Colegio Nacional No. 9 "Justo Jose de Urquiza", Buenos Aires, Argentina	BS	1956	
Facultad de Medicina, Universidad de Buenos Aires, Argentina	MD	1961	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pathology	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1974-Present	Professor of Pathology, Univesrity of Minnesota.
1974-Present	Director of Anatomic Pathology, Univesrity of Minnesota
1973-1974	Associate Professor of Pathology, Washington University School of Med.
1970-1973	Assistant Professor of Pathology, Washington University School of Med.
1968-1974	Assistant Pathologist, Barnes Hospital Division of Surgical Pathology.
1967-1970	Instructor of Pathology, Washington University School of Medicine.
1967-1968	Assistant Pathologist, John Cochran Veterans Administration Hospital.
1966-1967	2nd Year Asst. Resident in Pathology, Washington University School of Med.
1965-1966	1st Year Asst. Resident in Pathology, Washington University School of Med.
1964-1965	2nd Year Resident in Pathology, Hospital Regional, Mar del Plata, Arg.
1963-1964	1st Year Resident in Pathology, Hospital Regional, Mar del Plata, Arg.
1962-1963	Rotating Intern, Hospital Regional, Mar del Plata, Argentina.

Roasi, J., Levine, G., Weber, W.R., and Higa, E.: Carcinoid Tumors and oat cell carcinomas ("Apudomas") of the thymus. Pathol. Annu. (in press, 1976).

Kuo, T.T., Sayers, C.P., and Roasi, J.: Masson's "Vegetant intravascular hemangioendothelioma"; a clinicopathological study of fifteen cases located in the skin and soft tissues. Cancer (submitted to).

Levine, G.D., Rosai, J., Bearman, R., and Polliack, A.: The fine structure of thymoma, with emphasis on its differential diagnosis: a study of ten cases. Am. J. Pathol. (in press).

Levine, G.D., and Rosai, J.: Clinical, histologic and ultrastructural study of a spindle-cell variant of thymic carcinoic, with emphasis on its distinction from spindle cell thymoma. Arch. Path. (in press).

Rosai, J., and Dehner, L.P.: Nodular mesothelial hyperplasia within hernia sacs. A benign reactive condition simulating a neoplastic process. Cancer, 35:165-175, 1975.

Rosai, J., Sumner, H.W., Kostianovsky, M., and Perez-Mesa, C.: Angiosarcoma of skin. Clinicopathologic and fine structural study. Hum. Pathol. (in press).

Leichter, S.S., Pagliara, A.S., Greider, M.H., Pohl, S., Rosai, J., and Kipnis, D.M.: Uncontrolled diabetes mellitus and hyperglucagonemia associated with an islet cell carcinoma. Am. J. Med., 58:285-293, 1975.

Anderson, C.B., Ward, S.P., Lee, J.D., and Rosai, J.: Extra-adrenal retroperitoneal paraganglioma. Histochemical and fine structural observations. Am. Surgeon, 40:636,642, 1974.

Kuo, T., and Rosai, J.: Granulomatous inflammation in splenectomy specimens. Clinicopathologic analysis of 21 cases. Am. J. Clin. Pathol. 98:261-268, 1974.

Tillack, T.W., Rosai, J., and Vervynck, D.J.: Immunological studies of glycoproteins isolated from cell membranes of human lung carcinomas. J. Natl. Cancer Inst., 52:1059-1067, 1974.

Rosai, J., and Akerman, L.R.: Intravenous atypical vascular proliferation. A cutaneous lesion simulating a malignant blood vessel tumor. Arch. Dermatol. 109:714-717, 1974.

Greider, M.H., Rosai, J., and McGuigan, J.E.: The human pancreatic islet cells and their tumors. II. Ulcerogenic and diarrheogenic tumors. Cancer 33:1423-1443, 1974.

Ewing, S.L., and Rosai, J.: Basophilic (mucoid) degeneration of skeletal muscle. Arch. Pathol. 97:60-62, 1974.

Kuo, T., Anderson, C.B. and Rosai, J.: Normal paraganglia in the human gallbladder. Arch. Pathol. 97:46-47, 1974.

Kuo, T., Rosai, J., and Tillack, T.W.: Immunological studies of membrane glycoproteins isolated from human breast carcinomas. Int. J. Cancer 12:532-542, 1973.

Higa, E., Rosai, J., Pizzimbono, C.A., and Wise, L.: Mucosal hyperplasia, mucinous cystadenoma and mucinous cystadenocarcinoma of appendix. A re-evaluation of appendiceal "mucocele." Cancer 32:1525-1541, 1973.

Costa, J., Rosai, J., and Philpott, G.W.: Pigmentation of a human "amelanotic" melanoma in organ culture. A funding of diagnostic revelance. Arch. Pathol. 95:371-373, 1973.

Roasi, J., and Dorfman, R.F.: Sinus histiocytosis with massive lymphadenopathy: A pseudolymphomatous benign disorder. Analysis of 34 cases. Cancer 30:1174-1188, 1972.

Rosai, J., Tillack, T.W., and Marchesi, V.T.: Membrane antigens of human colonic carcinoma and normal colonic mucosa: Results obtianed with a new isolation method. Int. J. Cancer 10:357-367. 1972.

Rosai, J., and Lascano, E.F.: On the chemical nature of basophilic (mucoid) degeneration of the myocardium. Am. Heart J. 84:4190420, 1972.

Liao, K.T., Rosai, J., and Daneshbod, K.: Malignant histiocytosis with cutaneous involvement and eosinophilia. Am. J. Clin. Path. 57:438-448, 1972.

Rosai, J., Higa, E., and Davie, J.: Mediastinal endocrine neoplasm in patients with multiple endocrine adenomatosis. A previously unrecognized association. Cancer 29:1075-1083, 1972.

Rosai, J., and Higa, E.: Mediastinal endocrine neoplasm, of probable thymic origin, related to carcinoic tumor. Clinicopathologic study of 8 cases. Cancer, 29: 1061-1974, 1972.

Ackerman, L.V. and Rosai, J.: The Pathology of Tumors. CA 21:162-173, 220-226; 270-281;368-378; 1971. CA 22:40-54, 1972.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Samuel Schwartz	Research Professor	April 13, 1916

PLACE OF BIRTH *(City, State, Country)*	PRESENT NATIONALITY *(If non-U.S. citizen, indicate kind of visa and expiration date)*	SEX
Minneapolis, Minnesota U.S.A.	American	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota	B.S.	1938	
University of Minnesota	M.D.	1943	

HONORS

Commonwealth Fund Fellow, 1947-49 (Carlsberg Lab, Copenhagen, and Karolinska Institute, Stockholm). Visiting Professor, Hebrew University, Israel, 1960-61, Research Career Awardee, USPHS 1963 to present. Honorary member, Phi Zeta (Vet. Med.).

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
1) Metabolism of porphyrins, bile pigment & hemoproteins, 2) radiobiology, 3) cancer.	Participant

RESEARCH SUPPORT *(See instructions)*

1) Research Career Award, No. 5K06GM14086-13.
2) "Metabolic Studies of Congenital Bovine Porphyria." No. 5R01AM02096-17. Current renewal, 1975-'79. ($22,782, for 1975-'76 ?; amount uncertain.)
3) "Increased Responsiveness of tumors to x-ray treatment following injection of copper hematoporphyrin." Minn. Med. Fnd'n. No. 5MF-154-75 ($3,750), 1/1/75-12/31/75.

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Major field of research since freshman year at this University in 1934 has dealt with the metabolism of porphyrins and bile pigments. Over 130 papers have been published in this area.

Major interest currently relates to the functional effects associated with abnormalities in porphyrin metabolism in various tissues and with the development and application of methods for the quantitative analysis of the metabolism of non-hemoglobin hemes and of factors which control or influence this metabolism. Double isotope labelling (δ-aminolevulinic acid-C^{14} and glycine-N^{15}) in a variety of experimental designs are permitting greater insights into biological turnover rates and pigment derivatives of hemoproteins (also other combinations of C^{14} and H^{3}).

Earlier studies dealt with the following areas:

1. Original studies of experimental porphyria (using "Sedormid"), and its relation to various heme, lipid, and other abnormalities.
2. Studies of human and bovine porphyria.
3. Radiobiology (effects of radiation on red cell metabolism, on porphyrins, on uric acid excretion, on liver function, etc.).
4. Use of porphyrins as modifiers of radiosensitivity.
5. Methodological developments (quantitative analysis of urobilinogen, uranium, porphyrins in blood and excreta, etc.).

☆ U. S. GOVERNMENT PRINTING OFFICE : 1974 O-544-253/2034

Partial list of Publications, S. Schwartz (Total 130 publications).

Schwartz, S., J. Berelkovski, B. Stephenson, P. Edmondson, and J. Johnson. The Metabolic Fate of Cytochrome c-^{14}C in Dogs. Submitted to Life Sciences.

Schwartz, S. Studies of Non-proto Hemes. J.E. Fogarty Internat'l. Symposium on "Chemistry and Physiology of Bile Pigments" (4/28-4/30/75), To be published.

Hug, S., S. Schwartz, P. Edmondson, H. Freyholtz, W. Nelson, S. Griglio, H. Bazin, and F. Halberg. Circadian Rhythmic Urinary Porphyrin Excretion by Adult LOU/M/Wsl and Sprague Dawley rats. Chronobiologia, In press.

Schwartz, S., L.W. Johnson, N. O'Connor, B.D. Stephenson, A.S. Anderson, and J. Johnson. Turnover of Erythrocyte Protoporphyrin, with special Reference to Bovine Porphyria and to Iron Deficiency. Ann. Clin. Res. (Helsinki), In press.

Schwartz, S., P. Edmondson, B. Stephenson, D. Sarkar, and H. Freyholtz. Direct Spectrofluorophotometric Determination of Porphyrin in Diluted Urine. Ann. Clin. Res. (Helsinki), in press.

Schwartz, S., B. Stephenson, D. Sarkar, H. Freyholtz, and W. Runge. Development and Implications of Experimental Renal Porphyria: Heme Synthetase, ALA Dehydratase, and Porphyrins in Liver, Kidney, and Harderian Glands of Hamsters given DDC, Estrogen, and/or Cobalt. In Porphyrins in Human Diseases, M. Doss (Ed.), S. Karger, New York. In press.

Ahlquist, D.A., and S. Schwartz. Use of Leuco-dyes in the Quantitative Microdetermination of Hemoglobin and Other Heme Compounds. Clin. Chem., 21:362-369, 1975.

Schwartz, S., B.D. Stephenson, D.H. Sarkar, and M.G. Bracho. Red, White, and Blue Eggs as Models of Porphyrin and Heme Metabolism. Ann. N.Y. Acad. Sci., 244: 570-590, 1975.

Schwartz, S., B.D. Stephenson, D. Sarkar, I. Bossenmaier, R.A. Cardinal, M. Weimer, W.R. Swaim, and P.D. Berk. Isotopic Studies of Porphyrin and Heme Metabolism: Bonanzas and Pitfalls. Ann N.Y. Acad. Sci., 241:360-379, 1974.

Engel, R.R., M. Bracho, S. Schwartz, and F.L. Rodkey. Carboxyhemoglobin and Fecal Urobilinogen in Bovine Erythropoietic Porphyria. Am. J. Vet. Res., 34:743-746, 1973.

Trodahl, J.N., S. Schwartz, and R.J. Gorlin. The pigmentation of Dental Tissues in Erythropoietic (Congenital) Porphyria. J. Oral. Path., 1:159-171, 1972.

Schwartz, S., and M. Bracho. Quantitative Studies of Urobilinogen Excretion in Normal Holstein-Friesian Cattle. Am. J. Vet. Res., 33:2481-2488, 1972.

Engel, R.R., J.M. Marsen, S.S. Chapman, and S. Schwartz. Carbon Monoxide Production from Heme Compounds by Bacteria. J. Bacter., 112:1310-1315, 1972.

Johnson, L.W., and S. Schwartz. Relation of Porphyrin Content to Red Cell Age: Analysis by Fractional Hemolysis. Proc. Soc. Exp. Biol. & Med., 139:191-197, 1972.

Johnson, L.W., and S. Schwartz. Differential Lysis of Bovine and Canine Erythrocytes in Saline Versus Saponin: Relation to Cell Age. Proc. Soc. Exp. Biol. & Med., 138:871-875, 1971.

Greenberg, A.M., I. Bossenmaier, and S. Schwartz. Green Jaundice: A Study of Serum Biliverdin, Mesobiliverdin, and Other Green Pigments. Am. J. Dig. Dis., 16:873-880, 1971.

Thomson, J.M., Y. Maruyama, S. Schwartz, and E. Hahn. Effect of Chemotherapy and/or Head Irradiation on Survival of Mice with Intracranial Glioma. Radiology, 101: 187-194, 1971.

Schwartz, S., J.A. Johnson, B.D. Stephenson, A.S. Anderson, P.R. Edmondson, and R.M. Fusaro. Erythropoietic Defects in Protoporphyria: A Study of Factors Involved in Labelling of Porphyrins and Bile Pigments from ALA-^{3}H and Glycine-^{14}C. J. Lab. & Clin. Med., 78:411-434, 1971.

Deaton, B.H., S. Schwartz, and R.M. Fusaro. Erythropoietic Protoporphyria. V. Photoparesthesia--photopruritus and Photocausalgia. Am. J. Dis. Child., 121:518-519, 1971.

Johnson, L.W. and S. Schwartz. Isotopic Studies of Erythrocyte Survival in Normal and Porphyric Cattle. Influence of Light Exposure, Blood Withdrawal, and Splenectromy. Am. J. Vet. Res., 31:2167-2177, 1970.

Partial list of Publications, S. Schwartz (Total 130 publications).

Schwartz, S., J. Berelkovski, B. Stephenson, P. Edmondson, and J. Johnson. The Metabolic Fate of Cytochrome c-^{14}C in Dogs. Submitted to Life Sciences.

Schwartz, S. Studies of Non-proto Hemes. J.E. Fogarty Internat'l. Symposium on "Chemistry and Physiology of Bile Pigments" (4/28-4/30/75), To be published.

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Schwartz, S., L.W. Johnson, N. O'Connor, B.D. Stephenson, A.S. Anderson, and J. Johnson. Turnover of Erythrocyte Protoporphyrin, with special Reference to Bovine Porphyria and to Iron Deficiency. Ann. Clin. Res. (Helsinki), In press.

Schwartz, S., P. Edmondson, B. Stephenson, D. Sarkar, and H. Freyholtz. Direct Spectrofluorophotometric Determination of Porphyrin in Diluted Urine. Ann. Clin. Res. (Helsinki), in press.

Schwartz, S., B. Stephenson, D. Sarkar, H. Freyholtz, and W. Runge. Development and Implications of Experimental Renal Porphyria: Heme Synthetase, ALA Dehydratase, and Porphyrins in Liver, Kidney, and Harderian Glands of Hamsters given DDC, Estrogen, and/or Cobalt. In Porphyrins in Human Diseases, M. Doss (Ed.), S. Karger, New York. In press.

Ahlquist, D.A., and S. Schwartz. Use of Leuco-dyes in the Quantitative Microdetermination of Hemoglobin and Other Heme Compounds. Clin. Chem., 21:362-369, 1975.

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Schwartz, S., B.D. Stephenson, D. Sarkar, I. Bossenmaier, R.A. Cardinal, M. Weimer, W.R. Swaim, and P.D. Berk. Isotopic Studies of Porphyrin and Heme Metabolism: Bonanzas and Pitfalls. Ann N.Y. Acad. Sci., 241:360-379, 1974.

Engel, R.R., M. Bracho, S. Schwartz, and F.L. Rodkey. Carboxyhemoglobin and Fecal Urobilinogen in Bovine Erythropoietic Porphyria. Am. J. Vet. Res., 34:743-746, 1973.

Trodahl, J.N., S. Schwartz, and R.J. Gorlin. The pigmentation of Dental Tissues in Erythropoietic (Congenital) Porphyria. J. Oral. Path., 1:159-171, 1972.

Schwartz, S., and M. Bracho. Quantitative Studies of Urobilinogen Excretion in Normal Holstein-Friesian Cattle. Am. J. Vet. Res., 33:2481-2488, 1972.

Engel, R.R., J.M. Marsen, S.S. Chapman, and S. Schwartz. Carbon Monoxide Production from Heme Compounds by Bacteria. J. Bacter., 112:1310-1315, 1972.

Johnson, L.W., and S. Schwartz. Relation of Porphyrin Content to Red Cell Age: Analysis by Fractional Hemolysis. Proc. Soc. Exp. Biol. & Med., 139:191-197, 1972.

Johnson, L.W., and S. Schwartz. Differential Lysis of Bovine and Canine Erythrocytes in Saline Versus Saponin: Relation to Cell Age. Proc. Soc. Exp. Biol. & Med., 138:871-875, 1971.

Greenberg, A.M., I. Bossenmaier, and S. Schwartz. Green Jaundice: A Study of Serum Biliverdin, Mesobiliverdin, and Other Green Pigments. Am. J. Dig. Dis., 16:873-880, 1971.

Thomson, J.M., Y. Maruyama, S. Schwartz, and E. Hahn. Effect of Chemotherapy and/or Head Irradiation on Survival of Mice with Intracranial Glioma. Radiology, 101: 187-194, 1971.

Schwartz, S., J.A. Johnson, B.D. Stephenson, A.S. Anderson, P.R. Edmondson, and R.M. Fusaro. Erythropoietic Defects in Protoporphyria: A Study of Factors Involved in Labelling of Porphyrins and Bile Pigments from ALA-^{3}H and Glycine-^{14}C. J. Lab. & Clin. Med., 78:411-434, 1971.

Deaton, B.H., S. Schwartz, and R.M. Fusaro. Erythropoietic Protoporphyria. V. Photoparesthesia--photopruritus and Photocausalgia. Am. J. Dis. Child., 121:518-519, 1971.

Johnson, L.W. and S. Schwartz. Isotopic Studies of Erythrocyte Survival in Normal and Porphyric Cattle. Influence of Light Exposure, Blood Withdrawal, and Splenectromy. Am. J. Vet. Res., 31:2167-2177, 1970.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Edward L. Seljeskog, M.D.	Associate Professor	8/24/34
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Minneapolis, Minnesota	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota	BA	1956	
University of Minnesota	BS	1957	
University of Minnesota	MD	1959	
University of Minnesota	PhD	1971	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Neurosurgery	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1972-Present Associate Professor, Dept. of Neurosurgery, University of Minnesota.
1971-1972 Assistant Professor, Dept. of Neurosurgery, University of Minnesota.
1968-Present Head, Division of Neurosurgery, Hennepin County General Hospital.
1968-1971 Instructor, Division of Neurosurgery, University of Minnesota.
1959-1960 Intern, At. Paul Ramsey County Hospital.

Seljeskog, E.L. and Chou, S.N.: Neurosurgical Aspects of Spin Injury, ed. Riley, L.M. and Long, D.M., Spinal Injuries. in preparation.

Seljeskog, E.L., Chou, S.N. and French, L.A.: Experiences with Arteriovenous Fistulae of the Extracranial Vertebral Artery, J. of Neurosurg. in press.

Seljeskog, Edward L.: The Spectrum of the Hangmans Fracture, J. of Neurosurg. in press.

Seljeskog, E.L., Chou, S.N. and French, L.A.: Experiences with Arteriovenous Fistulae of the Extracranial Vertebral ARtery, ACTA NEUROCHIRUGICA. 31:270-271, 1975.

Chou, S.N., Ausman, J.I., Erickson, D.L., Seljeskog, E.L. and Rockswold, G.L.: Microneurosurgery at the University of Minnesota Hospitals, Minnesota Med., 57:584-586, 1974.

Erickson, D.L., Seljeskog, E.L., and Chou, S.N.: Suction Irrigation Treatment of Craniotomy Infections, J. of Neurosurg. 41:265-267, 1974.

Long, D.M., Seljeskog, E.L., Chou, S.N., and French, L.A.: Giant Arteriovenous Malformations of Infancy and Childhood, J. of Neurosurg. 40:304-312, 1974.

Chou, S.N. and Seljeskog, E.L.: Alternative Approaches to the Thoracic Spine, ed. Wilkins, R.H., Clinical Neurosurgery, Vol. 20, Baltimore, Williams & Wilkins, 1973.

Seljeskog, E.L.: Carotid-Cavernous Fistula, Minnesota Med. 56:929-939, 1973.
French, L.A. and Seljeskog, E.L.: Arteriovenous Malformations of the Brain, ed. Youmans, J., Neurological Surgery, Philadelphia, W.B. Saunders, 1973, pp. 827-836.
Rockswold, G.L., and Seljeskog, E.L.: Spontaneous Subarachnoid Hemorrhage, Minnesota Med . 55:805-806, 1972.
Seljeskog, E.L., Chou, S.N.: The Capricious Odontoid Fracture, Minnesota Med. 54:241-248, 1971.
Erickson, D.L., Long, D.M., Seljeskog, E.L., Chou, S.N., and French, L.A.: Carotid Endarterectomy for Stroke, Minnesota Med. 53:607-610, 1970.
French. L.A., Chou, S.N., Long, D.M., and Seljeskog, E.L.: Clinical Management of Cerebellar Neoplasms. eds. Fields, W.S. and Willis, W.D., The Cerebellum in Health and Disease, St. Louis, W.H. Green, 1970, pp. 502-522.
French, L.A., and Seljeskog, E.L.: Central Nervous System Tumors in Children, The Amer. Acad. of Pediatrics Manual, 1969.
Long, D.M., Seljeskog, E.L., Chou, S.N., and French, L.A.: Acute Neurologic Deterioration Following Lumbar Puncture, Minnesota Med. 52:247-250, 1969.
Seljeskog, E.L., Roger, H.M., and French, L.A.: Arteriovenous Malformation Involving the Inferior Sagittal Sinus in an Infant, J. Neurosurg. 29:623-628, 1968.
Chou, S.N., Story, J.L., Seljeskog, E.L., and French, L.A.: Further Experiences with Arteriovenous Fistulae of the Vertebral Vessels in the Neck, Surgery 62:779-788, 1967.
Spink, W.W., Reddin, J., Zak, S.J., Peterson, M., Starzecki, B., and Seljeskog, E.L.: Correlation of Plasma Catecholamine Levels with Hemodynamic Changes in Canine Endotoxin Shock, J. Clin. Invest. 45:78-85, 1966.
Groover, M.E., Seljeskog, E.L., Haglin, J.J., and Hitchcock, C.R.: The Relationship of Coronary Disease to Myocardial Infarction in the Baboon, ed. Vagtborg, H., The Baboon in Medical Research, Austin, University of Texas Press, 1965, pp. 543-556.
Seljeskog, E.L., Hitchcock, C.R., and Groover, M.E.: Coronary Artery Studies in the Dog and Baboon, ed. Vagtborg, H., The Baboon in Medical Research, Austin, University of Texas Press, 1965, pp. 557-566.
Hitchcock, C.R., Kiser, J.C., Telander, R.L., Seljeskog, E.L., and Bascom, J.F.: Experiences with Extracorporeal Cooling and Storage of the Baboon Kidney, ed. Vagtborg, H., The Baboon in Medical Research, Austin, University of Texas Press, 1965, pp. 567-583.
Hitchcock, C.R., Kiser, J.C., Telander, R.L. and Seljeskog, E.L.: Baboon Renal Grafts, JAMA 19:934-937, 1964.
Groover, M.E., Seljeskog, E.L., Haglin, J.J., and Hitchcock, C.R.: Myocardial Infarction without Demonstrable Atherosclerosis, Angiology14:40[illegible]-416, 1963.
Seljeskog, E.L., Haglin, J.A., and Hitchcock, C.R.: Isosorbide Dinitrate During Acute Coronary Occlusion, JAMA 183:210-213, 1963.
Seljeskog, E.L., Nicoloff, D.M., and Hitchcock, C.R.: Positive Assessment of Tumor Response in Patients with Abdominal Visceral Metastases, Surgical Forum XII: 428-430, 1961.
Van Pilsum, J.F. and Seljeskog, E.L.: Long Term Endogenous Creatinine Clearance, Proc. Soc. Exp. Biol. & Medicine 97:270-272, 1958.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Christos Semoglou	Clinical Associate	11/25/40
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Drama, Greece	Greek	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Aristotelian University of Thessaloniki, Greece	MD	1966	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Surgical Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1975-1976 Resident in Surgery, 2nd year. Albert Einstein College of Medicine.
1970-1975 Resident in Surgery: University Hospital, Salonika, Greece.
1968-1970 General Practice, Greece.
1966-1968 Army Physician: 407 Military Hospital, Chania-Crete, Greece.

Lazaridis, D., Natsikas, N., Smparounis, H., Semoglou, C.: The Management of Portal Hypertention by Direct or Indirect Mesocaval Shunt (in print).

Kasiounis, A., Kouphas, J., Semoglou, C., Toumpouras, M., Lazaridis, D.: Two Cases of Bronchogenic Cyst. Galenus 14:71-86, 1972.

Smparounis, H., Natsikas, N., Semoglou C., Lazaridis, D. Richter's Hernia. Greek Medicine 40:631-641, 1971.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Simmons, Richard L.	Professor of Surgery and Micro.	2/23/34
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Boston, Massachusetts	U.S.A.	[x] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Harvard College, Cambridge, Massachusetts	AB	1955	
Boston University, School of Medicine, Boston, Massachusetts	MD	1959	

HONORS College: Magna cum Laude, Phi Beta Kappa; Boston University School of Medicine: Summa cum Laude, Alpha Omega Alpha, Foundation, American Association of Obstetricians and Gynecologists 1962; Mead Johnson Award of the American College of Surgeons, 1963-1967; Markle Scholar in Academic Surgery 1969-1974

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Transplantation and Tumor Immunology	Participant

RESEARCH SUPPORT *(See instructions)*

		CURRENT AMT.	TO
NIH CA-11605-05	Immunologic Reactivity in Special Circumstances	$100,000.00	5-30-77
NCI-G-72-3885	Immunotherapy of Cancer in Man	$102,449.00	1-31-76
NIH A-112754	Organ Replacement using Grafts Modified in Vitro	$ 65,000.00	5-31-80

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1973-Present	Professor of Surgery and Microbiology, University of Minnesota School of Medicine, Minneapolis, Minnesota.
1970-1972	Associate Professor of Surgery and Microbiology, University of Minnesota.
1968-1970	Assistant Professor of Surgery and Microbiology, University of Minnesota.
1967-1968	Chief, United States Army Surgical Research Team, Vietnam.
1966-1968	Investigator, Department of Experimental Surgery, Walter Reed Army Institute of Research, Washington, D.C.
1966	Instructor of Surgery, Columbia University College of Physicians and Surgs.
1965	Assistant in Surgery, Columbia University College of Physicians and Surgeon
1962-1964	Assistant Resident in Surgery, Presbyterian Hospital, New York, New York.
1960-1962	Visiting Fellow, Columbia University College of Physicians and Surgeons.
1959-1960	Intern in Surgery, Presbyterian Hospital, New York.

Simmons, R.L., Rios, A., Toledo-Pereyra, L.H., and Steinmuller, D.: Modifying the Immunogenicity of Cell Membrane Antigens: Tumors and Transplants. Amer. J. Clin. Pathol., 63:714, 1975.

Simmons, R.L., and Rios, A.: Cell surface modification in the treatment of experimental cancer: Neuraminidase or concanavalinA. Cancer 34:1541, 1974.

Simmons, R.L., and Rios, A.: Neuraminidase and concanavalin A in the experimental immunotherapy of cancer, in Boors, L.T., Jr., Tilghman, R.C., and Bassett, E.G., The Role of Immunological Factors in Viral and Oncogenic Processes (7th International Symposium). Baltimore, Johns Hopkins University Press, 1974, pp. 75-84.

Rios, A., and Simmons, R.L.: Experimental Cancer Immunotherapy Using a Neuraminidase Treated Non-viable Frozen Tumor Vaccine. Surgery, 75:503, 1974.

Rios, A., and Simmons, R.L.: Active-specific immunotherapy of minimal residual tumors: Excision plus neuraminidase treated tumor cells. Int. J. Cancer, 13:71, 1974.

Simmons, R.L., and Rios, A.: Comparative and combined effect of BCG and neuraminidase in experimental immunotherapy. Natl. Cancer Inst. Monogr. 39:57, 1973.

Simmons, R.L., and Rios, A.: Differential effect of neuraminidase on the immunogenicity of viral associated and private antigens of mammary carcinomas. J. Immunol., 111:1820, 1973.

Rios, A., and Simmons, R.L.: Immunospecific regression of various syngeneic mouse tumors in response to neuraminidase-treated tumor cells. J.N.C.I., 51:637, 1973.

Simmons, R.L., and Rios, A.: Immunospecific regression of methylcholanthrene fibrosarcoma using neuraminidase: IV. Chemotherapeutic agents reverse the effects of tumor immunotherapy. Bulletin of the Bell Museum of Pathology, 3:28, 1973.

Simmons, R.L., Rios, A., and Ray, P.K.: Regression of established methylcholanthrene tumors by intratumor injections of Vibrio cholerae neuraminidase. J. Surg. Oncology, 4:298, 1972.

Simmons, R.L., and Rios, A.: Immunospecific regression of methylcholanthrene fibrosarcoma using neuraminidase. III. Synergistic effect of BCG and neuraminidase treated tumor cells. Ann. Surg., 176:188, 1972.

Simmons, R.L., Rios, A., and Kersey, J.H.: Regression of spontaneous mammary carcinomas using direct injections of neuraminidase and BCG. J. Surg. Res., 12:57, 1972.

Simmons, R.L., and Rios, A.: Immunotherapy of Cancer: Immunospecific rejection of tumors in recipients of neuraminidase-treated tumor cells plus BCG. Science, 174:591, 1971.

Simmons, R.L., and Rios, A.: Combined use of BCG and neuraminidase in experimental tumor immunotherapy. Surg. Forum, XXII:99, 1971.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Norman E. Sladek	Associate Professor	8/20/39
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY** (If non-U.S. citizen, indicate kind of visa and expiration date)	**SEX**
Montgomery, Minnesota	U.S.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Univ. of Minn.	B.S.	1962	Pharmacy
Univ. of Minn.	Ph.D.	1966	Pharmacology (Major) Biochemistry (Minor)

HONORS

Lehn & Fink Gold Medal Award; awarded by Lehn & Fink Products, Corp.
Bristol Labs Award, awarded by Bristol Laboratories, Inc.
Minn. State Pharmaceutical Assoc. Scholarship; awarded by Minn. State Pharmaceutical Assoc.

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
	Co-Investigator

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all most representative publications. Do not exceed 3 pages for each individual.)*

Associate Professor of Pharmacology, Univ. of Minn., 1974-present
Assistant Professor of Pharmacology, Univ. of Minn., 1972-74
National Institutes of Health Postdoctoral Fellow, McArdle Laboratory for Cancer Research, Univ. of Minn. - 1966-68
National Institutes of Health Predoctoral Fellow, Dept. of Pharm., Univ. of Minn., 1963-66
American Foundation for Pharmaceutical Education Predoctoral Fellow, Dept. of Pharm., Univ. of Minn. 1962-63
Minnesota State Pharaceutical Association Scholar, College of Pharmacy, Univ. of Minn. - 1961-62
Samuel W. Melendy Memorial Fellow, College of Pharmacy, Univ. of Minn. - 1958-61

PUBLICATIONS

Full Publications

Evidence for a new P-450 hemoprotein in hepatic microsomes from methylcholanthrene treated rats. N. E. Sladek and G. J. Mannering, Biochem. Biophys. Res. Comm., 24, 668-674, 1966.

Formation of a new P-450 hemoprotein after treatment of rats with polycyclic hydrocarbons. G. J. Mannering, N. E. Sladek, C. J. Parli, and D. W. Shoeman, IN Microsomes and Drug Oxidations, Academic Press, New York, pp. 303-330, 1969.

A possible role of the endoplasmic reticulum in the regulation of genetic expression. H. C. Pitot, N. Sladek, W. Ragland, R. Murray, G. Moyer, and H. Soling, IN Microsomes and Drug Oxidations, Academic Press, New York, pp. 59-79, 1969.

Induction of drug metabolism. I. Differences in the mechanism by which polycyclic hydrocarbons and phenobarbital produce their inductive effects on microsomal N-demethylating systems. N. E. Sladek and G. J. Mannering, Mol. Pharmacol., 5, 174-185, 1969.

Induction of drug metabolism. II. Qualitative differences in the microsomal N-demethylating systems stimulated by polycyclic hydrocarbons and by phenobarbital. N. E. Sladek and G. J. Mannering, Mol. Pharmacol., 5, 186-199, 1969.

Studies on the mechanism of template stability: Cytoplasmic DNA-like RNA in hepatocellular carcinomas. N. E. Sladek and H. C. Pitot, Cancer Res., 30, 1593-1604, 1970.

Interaction between duck hepatitis virus and DDT in ducks. W. L. Ragland, M. Friend, D. O. Trainer, and N. E. Sladek, Res. Commun. Chem. Path. Pharmacol., 2, 235-244, 1971.

Metabolism of cyclophosphamide by rat hepatic microsomes. N. E. Sladek, Cancer Res., 31, 901-908, 1971.

Therpeutic efficacy of cyclophosphamide as a function of its metabolism. N. E. Sladek, Cancer Res., 32, 535-542, 1972.

Therapeutic efficacy of cyclophosphamide as a function of inhibition of its metabolism. N. E. Sladek, Cancer Res., 32 1848-1854, 1972.

Evidence for an aldehyde possessing alkylating activity as the primary metabolite of cyclophsophamide. N. E. Sladek, Cancer Res., 33, 651-658, 1973.

Bioassay and relative cytotoxic potency of cyclophosphamide metabolites generated *in vitro* and *in vivo*. N. E. Sladek, Cancer Res., 33, 1150-1159, 1973.

Sex-dependent differences in drug metabolism in the rat. IV. Effect of morphine administration. N. E. Sladek, M. D. Chaplin, and G. J. Mannering, Drug Metab. Disp., 2, 293-300, 1974.

Potentiation of the cytotoxic action of melphalan and "activated" cyclophosphamide against tumor cells growing *in vitro* by centrophenoxine. Submitted to Cancer Research, 1975.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Smith, Clark M. II	Pediatric Resident	6/26/47
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Madison, Wisconsin	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota, Minneapolis		1965-1967	
University of California at Los Angeles		1967-1968	
University of Minnesota, Minneapolis		1968-1969	
U of Minnesota Medical School	MD	1973	

HONORS

AOA - 1971-1972; 1972-1973
Research Fellowship - January to June, 1973
Hematology Training Grant, 1975

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Pediatric Oncology	Pariticipant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1974-1975 Resident, Department of Pediatrics, University of Minnesota, Minneapolis.
1973-1974 Intern, Pediatrics, University of Minnesota, Minneapolis.

SECTION B -- PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Smith, David G.	Assistant Professor	8/30/36
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Minneapolis, Minnesota	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota, Minneapolis	BA	1958	Psychology-Premed
University of Minnesota, Minneapolis	MD	1962	Medicine
Santa Clara County Hospital	Intern	1963	Medicine
University of Minnesota, Minneapolis			

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Therapeutic Radiology	Participant

RESEARCH SUPPORT *(See instructions)*

	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Diseases	$444,282.00	9-30-76
NIH CA-13353-01 Vascularity and Reoxygenation in X-irradiated Tumors	$ 37,872.00	1-31-76
Junior Faculty Clinical Fellow-American Cancer Society, 3rd year.		
NIH CA-01A1 Radiation Oncology Research and Clinical Center	$376,859.00	6-30-78
NIH CA-16545-01 A Community Cancer Program Based on Radiation Oncology	$ 75,301.00	6-30-77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List or most representative publications. Do not exceed 3 pages for each individual.)*

1970-1974 Work in progress: Evaluation of pre-operative irradiation and surgery in advanced head and neck cancer; patients drawn from Veterans Admin. Hospital, Minneapolis, Minnesota and University Hospital.

Smith, David G: A Radiotherapeutic Approach to the Patient with Cancer in the Cervical Nodes and an Unknown Primary Lesion. Controversies in Surgery, Delaney and Varco, eds. (to be published).

Adams, G., Duvall, A.J.III, Smith, D.G., Pollak, K.: Malignant Tumors of the Paranasal Sinuses. Minnesota Medicine, 57:562-568, July, 1974.

Smith, D.G., Jones, T.K., Levitt, S.H.: Hodgkin's Disease: Historical Perspective and Current Radiotherapeutic Management at University of Minnesota. Accepted for publication in Minnesota Medicine.

Smith, D.G., and Levitt, S.H.: Radiation Carcinogenesis: An Unusual Familial Occurrence of Neoplasia Following Irradiation in Childhood for Benign Disease. Accepted for publication in Cancer.

Smith, D.G., Nesbit, M.E.Jr., D'Angio, G.T., Levitt, S.H.: Histiocytosis X: Role of Radiation Therapy in Management with Special Reference to Dose Levels Employed. Radiology, 106:419-420, February 1973.

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Song, Chang Won	Associate Professor	4/10/32
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Chun Chon City, Korea	Korean (Permanent Visa) Citizenship pending	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Seoul National University	B.S.	1957	Chemistry
Korean University	M.S.	1959	Biochemistry
University of Iowa	Ph.D.	1964	Radiation Biology

HONORS

U. S. - 1959-1960

Visiting Scientist, Ministry of Science and Technology, Korea, 1972.

Visiting Professor, Radiology Department, Yonsei University, Korea, 1972

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Radiation Effect on Vascularity of Organs and Tumor Immunology	Investigator in Tumor Vascular Studies Radiation-Immune Reaction Radiotherapy-Immunotherapy

RESEARCH SUPPORT *(See instructions)*

NCI 1Pol Ca 15548, Radiation Therapy Research and Clinical Center. $1,161,756 (7/1/75-7/1/78). 28% effort.

NIH CA #08832, Integrated Study of Advanced Malignant Diseases. $271,852, $2,541,910 (10/1/71-9/30/76). 28% effort.

NCI CA 13353 Vascularity and Reoxygenation in X-irradiated Tumors, $115,882 (2/1/73-1/31/76) 15 % effort.

(Continued on other page)

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Associate Professor, Department of Therapeutic Radiology, University of Minnesota, July 1974 - present.

Assistant Professor, Department of Therapeutic Radiology, University of Minnesota, November 1970- June 1974.

Assistant Professor, Division of Radiation Therapy, Medical College of Virginia, Richmond May 1969 - October 1970.

Assistant Member, Radiation Biologist, Research Laboratories, Albert Einstein Medical Center, Philadelphia, June 1964 - April 1969.

Research Assistant, Radiation Research Laboratory, University of Iowa, Iowa City, September 1960 - May 1964.

RECENT RELEVANT PUBLICATIONS

Song, C.W., and Levitt, S.H.: Quantitative Study of Vascularity in Walker Carcinoma 256. Cancer Research, 31: 587-589, 1971.

Song, C.W., and Levitt, S.H.: Vascular Changes in Walker 256 Carcinoma of Rats Following X-Irradiation. Radiology 100: 397-407 (1971).

* Song, C.W., Payne, J.T., and Levitt, S.H.: Vascularity and Blood Flow in the X-Irradiated Walker Carcinoma 256 of Rats. Radiology, 104: 693-697 (1972).

Song, C.W., and Levitt, S.H.: Different Schedules of Dose Fractionation and Vascularity in Tumors. Radiation Res., 51: 465 (1974)

Feola, J.M., Song, C.W., Khan, F.M., and Levitt, S.H.: Lethal Response of C57BL Mice to 10 MeV X-Rays and To ^{60}Co Gamma Rays. Radiation Res., 51: 463 (1972)

Song (Continued)

Wong, H.H., Song, C.W., and Levitt, S.H.: Early Changes in the Functional Vasculature of Walker Carcinoma 256 Following Irradiation. Radiology, 108: 429-434 (1973).

Song, C.W., and Levitt, S.H.: Effect of Irradiation on PHA Induced Transformation and Replication of Lymphocytes. Radiation Res., 55: 586 (1973).

* Song, C.W., and Levitt, S.H.: Combined Effect of X-Irradiation and Cell-Mediated Immune Reactions to Tumor Cells in Vitro. 111, 713 Radiology (1973).

* Song, C.W., Sung, J.H., Clement, J.J., and Levitt, S.H.: Vascular changes in neuroblastoma of mice following X-irradiation. Cancer Res., 34: 2344-2350 (1974).

* Kim, T.W., Song, C.W., and Levitt, S.H.: Effect of irradiation on cell-mediated cytolysis of tumor cells. Europ. J. Cancer, 11: 589-591 (1975).

Song, C.W., and Levitt, S.H.: The Lymphocyte Response to Phytohaemagglutinin after In Vitro Irradiation. Br. J. of Radiol., 48: 504 (1975).

Research Support (Continued)

USPHS 05S 000029-10 PES-12 Health Professions Computation Grant. $20,346 (7/1/75 - 7/1/76). 14% effort.

PDT-17 American Cancer Society. $15,882 (7/1/75 - 6/30/77) 5% effort.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Sundberg, R. Dorothy	Professor	7-20-15
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Chicago, Illinois	U.S.A.	[ ] Male [X] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota, Minneapolis	BS	1937	Medical Technology
University of Minnesota, Minneapolis	MA	1939	Anat (Hematology)
University of Minnesota, Minneapolis	Ph.D.	1943	Anat (Hematology)
University of Minnesota, Minneapolis	MD	1953	Medicine

HONORS

Lucretia Wilder Award for Research in Anatomy, 1943

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Laboratory Medicine/Hemopathology	Participant

RESEARCH SUPPORT *(See instructions)*	CURRENT AMT.	TO
NIH CA-08932 Study of Advanced Malignant Diseases	$444,282.00	9-30-76

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List 5 or most representative publications. Do not exceed 3 pages for each individual.)*

1974-Present Co-Director, Hematology Laboratories, University of Minnesota Hospitals.
1945-1974 Director, Hematology Laboratories, University of Minnesota Hospitals.
1945-present Hematologist, University of Minnesota Hospitals.

Peterson, L.C., Bloomfield, C.D., Sundberg, R.D., Gajl-Peczalska, K.J. and Brunning, R.D.: Morphology of Chronic Lymphcytic Leukemia and its Relationship to Survival. Am. J. Med. 59, 1975.

Kiang, D.T., Sundberg, R.D., Fortuny, I.E., Brunning, R.D., Theologides, A., Goldman, A. and Kennedy, B.J.: Multiple Myeloma. Minn. Med. 57:542-548, 1974.

Sundberg, R.D.: Myeloid Metaplasia. In Polycythemia, Ed. by H. Klein, Charles C. Thomas, Springfield, Illinois, 1973, (pp. 112-180).

Hoilund, L.J., Sundberg, R.D., Herbst, G.H., and Parkin, J.D.: Essential Fatty Acid Deficiency in the Rat I Clinical Syndrome Histopathology and Hematopathology. Lab. Invest. 23:58-70, 1970.

Sundberg, R.D.: Acquired Hemolytic Anemia. Am. J. Med. Tech. 35:273-285, 1969.

Sundberg, R.D.: Anatomy 165 - Hematology Laboratory Outline. Revised 1966-67. pp. 73. Mimeographed, University of Minnesota.

Sundberg, R.D., Hoilund, L.J. and Herbst, G.H.: Hypogammaglobulinemia in Essential Fatty Acid Deficiency in Rats. Anat. Rec. 151:421, 1965 (abstract).

Nelson, D.A., Herbst, G.H., Sundberg, R.D. and Hoilund, L.J.: Find Structure of Pigment Macrophages in Chronic Myelogenous Leukemia. Gerald T. Evans, M.D.C.M., Ph.D. Silver Anniversary Symposium, Nov. 20-21, 1964 (abstract).

Sundberg, R.D., Nelson, D.A., Hoilund, L.J., Herbst, G.H., and Beecher, N.B.: Cell-Debris and Blue Pigment Macrophages in Chronic Myelogenous Leukemia. Gerald T. Evans, M.D.C.M., Ph.D. Silver Anniversary Symposium, Nov. 20-21, 1964 (abstract).

Sundberg, R.D., et al.: Cell Debris and Blue Pigment Macrophages in Chronic Myelogenous Leukemia. Abstracts X Congress of International Society of Hematology A:37, 1964.

Berendsohn, S., Lowman, J., Sundberg, R.D. and Watson, C.J.: Idiopathic Dyserythropoietic Jaundice. Blood 24:1-18, 1964.

Sundberg, R. Dorothy, Hoilund, L.J., Herbst, G.H., Beecher, N.B. and Nelson, D.A.: Phagocytes in Chronic Myelogenous Leukemia. The Anatomical Record 148:341-342, 1964

Conn, Rex B., Jr. and Sundberg, R.D.: Amyloid Disease of Bone Marrow: Diagnosis by Sternal Aspiration Biopsy. Am. J. Path. 38:61-71, 1961.

Sundberg, R.D.: Lymphocytes. Origin, Structure and Interrelationships. The Lymphocyte and Lymphocytic Tissue. Ed. J. W. Rebuck. Paul B. Hoeber, In., New York, 1960.

Sundberg, R.D. and Hoilund, L.J.: Vascular Lesions in Hemosiderotic Rabbits. Anat. Rec 133(2):433, 1959.

Wells, L.J. and Sundberg, R.D.: Hal Downey. Anat. Rec. 134(2):272-275, 1959.

Sundberg, R.D., Hoilund, L.J. and O'Brien, W.A.: Anemia and Hemochromatosis. U of Minn. Med. Bull. 30(10):307-330, 1959.

Sundberg, R.D. and Segal, E.L.: Granulomatous Reticulo-endotheliosis with Emphasis on Diagnosis from Dry Film Material. Proceedings of the VIth International Congress of the International Society of Hematology. Ed. Publications Committee. Grune & Stratton, New York, 1958, pp. 219-220.

Maclean, L.E. and Sundberg, R.D.: Incidence of Megaloblastic Anemia after Total Gastrectomy. New Eng. J. Med. 254:885-893, 1956.

Sundberg, R.D.: Differential Diagnosis of Lymphcytosis and Leukemia. Minn. Med. 39:226-227, 1956.

Sundberg, R.D.: Differential Diagnosis of Anermias which Present Peripheral Leuko-erythroblastotic Reaction. Am. J. Med. Tech. 22:34-47, 1956.

Sundberg, R.D. and Segal, E.L.: Granulomatous Reticulo-endotheliosis with Emphasis on Diagnosis from Dry Film Material. VIth International Congress of the International Society of Hematology, Official Program (Abstract 160, 193-194), Boston, 1956.

Sundberg, R.D.: Metastatic Malignant Melanoma of the Bone Marrow. Anat. Rec. 124(2): 368, 1956.

Schmid, R., Schwartz, S. and Sundberg, R.D.: Erythropoietic (Congenital) Porphyria; A Rare Abnormality of the Normoblasts. Blood 10:416-428, 1955.

Sundberg, R.D. and Broman, H.: The Application of the Prussian Blue Stain to Previously Stained Films of Blood and Bone Marrow. Blood 10:160-166, 1955.

Sundberg, R.D. and Hodgson, R.E.: Osteoblasts and Osteoclasts in Films of Bone Marrow. Rev. Belg. de Path. et de Med. Exper. 24:251-255, 1955.

Sundberg, R.D.: Granulomata in Sections of Aspirated Bone Marrow. Rev. Belg. de Path. et de Med. Exper. 24:256-260, 1955.

Sundberg, R.D.: Lymphcytes and Plasma Cells. Annals N.Y. Acad. Sci. 59:671-698, 1955.

Sundberg, R.D., Schaar, F.E., Stephens, M.F.S., and Denboer, D.: Tissue Mast Cells in Human Umbilical Cord, and the Anticoagulant Activity of Dried Extracts of Cords and Placentae. Anat. Rec. 118:35-56, 1954.

Sundberg, R.D., Schaar, F. and May, C.D.: Experimental Nutritional Megaloblastic Anemia. II. Hematology. Blood 7:1143-1181, 1952.

May, C.D., Sundberg, R.D., Schaar, F., Lowe, C.U. and Salmon, R.J.: Experimental Nutritional Megaloblastic Anemia; Relation of Ascorbic Acid and Pteroylglutamic Acid. I. Nutritional Data and Manifestations of Animals. Am. J. Dis. Child. 82:282-309, 1951.

May, C.D., Sundberg, R.D. and Schaar, F.: Comparison of Effects of Folic and Folinic Acis in Experimental Megaloblstic Anemia. J. Lab. and Clin. Med. 36:963, 1950.

Sundberg, R.D.: Aspiration Biopsy of Bone Marrow. Bull. U. of Minn. Hosp. and Minn. Med. Foundation 21:471-505, 1950.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3 beginning with the Program Director. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Sung, Joo Ho, M.D.	Professor of Neurology, Pathology and Therapeutic Radiology	2-18-27

CITIZENSHIP (See Instructions)
U.S. CITIZEN OR U.S. NATIONAL ☒ Yes ☐ No (If "No") PERMANENT RESIDENT ☐ Yes ☐ No

SEX ☒ Male ☐ Female

EDUCATION (Begin with baccalaureate training and include postdoctoral)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Severance Union Medical College Seoul, Korea		1948	Pre-Medical
Yonsie University College of Medicine Seoul, Korea	M.D.	1952	Medicine

HONORS

Citation, Academy of Neurology, May 1, 1970

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROGRAM
Neuronal Lysosomal Alterations in Various Disease States, Radiation Pathology	Teacher and Research Supervisor

RESEARCH AND TRAINING SUPPORT (See Instructions)

NIH Radiation Oncology Research and Clinical Center, $731,974 proposed for first 12 mos., $2,000,037 (1/1/75-12/31/77). Seymour H. Levitt, Principal Investigator. 15% effort.

RESEARCH AND OR PROFESSIONAL EXPERIENCE (Starting with present position, list training and experience relevant to area of proposed program. List most representative publications relevant to training program.)

Professor in Neurology and Pathology, University of Minnesota, Minneapolis, Minnesota, 1971-present
Professor in Neurology, University of Minnesota, Minneapolis, Minnesota, 1969-present
Associate Professor in Neurology, University of Minnesota, Minneapolis, Minnesota, July, 1966 - June, 1969
Assistant Professor in Neurology, University of Minnesota, Minneapolis, Minnesota, January, 1962 - June, 1966
Assistant Professor in Neuropathology, Columbia University, College of Physicians and Surgeons, New York, July, 1961 - January, 1962
Fellow (Associate) in Neuropathology, Columbia University College of Physicians and Surgeons, New York, July, 1959 - June, 1961
Fellow (Instructor) in Neuropathology, Columbia University College of Physicians and Surgeons, New York, July, 1957 - June, 1959
Resident in Pathology, Newark Beth Israel Hospital, Newark, New Jersey, August 1954-June, 1957

PHS-6025

PUBLICATIONS

Sung, Joo Ho

Hayano, M., Sung, J.H., Mastri, A.R. and Hill, E.G. Striated Muscle in the Pineal Gland of Swine. J. Neuropath. & Exp. Neurol., 1976 (in press).

Sung, J.H., Hayano, M. Mastri, A.R. and Okagaki, T. A Case of Human Rabies and Ultrastructure of the Negri Body. J. Neuropath. & Exp. Neurol., 1976 (in press)

Hayano, M., Sung, J.H. and Mastri, A.R. "Paramyxovirus-like" Intranuclear Inclusions Occurring in the Nervous System in Diverse Unrelated Conditions, J. Neuropath. & Exp. Neurol., 35:287-294, 1976.

Hayano, M., Sung, J.H., Song, C.W. and Clement, J.J. Intracisternal A and Bar-Shaped Particles in Murine Neuroblastoma C1300, J. Neuropath. & Exp. Neurol. 1976 (in press).

Sung, J.H., Hayano, M., Mastri, A.R., and Desnick, R. Neuropathology of Fabry's Disease, Proc. Internatl. Long. Neuropath. Budapest, 1974.

Song, C.W., Sung, J.H., Clement, J.J. and Levitt, S.H. Vascular Changes in Neuroblastoma of Mice Following X-irradiation. Cancer Res., 34:2344-2350, 1974.

Kriel, R.L., Cliffer, K.D., Berry, J., Sung, J.H., and Bland, C.S. Investigation of a Family With Hypertrophic Neuropathy Resembling Roussy-Levy Syndrome. Neurology, 24: 801-809, 1974.

Mastri, A.R., and Sung, J.H.: Diffuse Rosenthal Fiber Formation in the Adult. J. Neuropath. and Exp. Neurol., 32: 424, 1973.

Sung, J.H., Mastri, A.R., and Segal, E.L.: Melanotic Medulloblastoma of the Cerebellum. J. Neuropath. & Exp. Neurol., 32: 437, 1973.

Chang, K.Y., Kin, Y.B., and Sung, J.H.: Histological Changes of Lymph Nodes and Spleen during the "True" Primary Immune Response in Germ-Free Colostrum-Deprived Piglets. New Med. J. (Korea), 14: 71, 1971.

Kennedy, W.R., Sung, J.H., Berry, J.F., and Mastri, A.R.: Hypertrophic Neuropathy with Primary Failure of Peripheral Myelination.

Okada, K., Ayala, G.F., and Sung, J.H.: Ultrastructure of Penicillin-induced Epileptogenic Lesion of the Cerebral Cortex in Cats. J. Neuropath. Exp. Neurol. in press.

Sung, J.H., and Okada, K.: Neuropathological Changes in Mink with Chediak-Higashi Disease: A Light and Electron Mirroscopic Study. J. Neuropath. Exp. Neurol. 30: 33, 1971.

Sung, J.H., and Okada, K.: Alterations of Lysosomes in Neurons in Chediak-Higashi Disease in Man and Mink. Proc. 6th Internatl. Cong. Neuropath. Paris, France, Aug. 31 - Sept. 4, 1970, p. 1062.

Sung, J.H., Myers, J.P., Stadlan, E.M., Cowen, D., and Wolf, A.: Neuropathological Changes in Chediak-Higashi Disease. J. Neuropath. & Neurol. 28: 86, 1969.

Klassen, A.C., Sung, J.H., and Stadlan, E.M.: Histological Changes in Cerebral Arteries Associated with Age. J. Neuropath. & Exp. Neurol., 27: 1968.

Sung, J.H., and Stadlan, E.M.: Neuropathological Aspects of Chediak-Higashi Disease, University of Minnesota Med. Bulletin 34: 215, 1968.

Kennedy, W.R., Alter, M., and Sung, J.H.: Progressive Proximal Spinal and Bulbar Muscular Atrophy of Late Onset: A Sex-Lined Recessive Trait. Neurology, 18: 671, 1968.

Sung, J.H., Cowen, D., and Wolf, A.: X-Radiation Injury of the Brain and Spinal Cord in Man. VIII Symposium Neuroradiologicum, Paris, September, 1967.

Sung, J.H., and Stadlan, E.M.: Neuroaxonal Dystrophy in Congenital Biliary Atresia. J. Neuropath. Exp. Neurol., 24: 341, 1966.

Duvoisin, R.C., Stadlan, E.M., Sung, J.H., Yahr, M.D., Wolf. A.: Parkinsonism/ Clinico/Pathological Correlation. Proc. Internatl. Cong. Neurol., Vienna, Austria, 1965.

Sung, J.H.: Neuroaxonal Dystrophy in Aging. Proc. Internatl. Cong. Neuropath., Zurich, Switzerland, September, 1965.

Sung, J.H.: Neuroaxonal Dystrophy in Mucoviscidosis. J. Neuropath. Exp. Neurol., 23: 567, 1964.

Sung, J.H., Marcus, E.M., Purpura, D.P., and Wolf, A: Behavioral and Electro-encephalographic Responses to GABA and Histological Changes of Brain Following X-irradiation of Head of Rabbits. J. Neuropath. Exp. Neurol., 22: 347, 1963.

Menkes, J.H., Alter, M., Steigleder, G.K., Weakley, D.R., and Sung, J.H.: A Sex-lined Recessive Disorder with Retardation of Growth, Pecular Hair, and Focal Cerebral and Cerebellar Degeneration. Pediatrics, 29: 764, 1962.

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Tanaka, Norimoto	Research Fellow	February 11, 1931
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Japan	Japan J-1 (Expire March 8, 1980)	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
St. Paul's University (Rikkyo University)	B. Sc.	1953	The Faculty of Science
Hiroshima University	Ph.D.	1974	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
relationship between reoxygenation kinetics of hypoxic cells and vascular systen in the animal solid tumor	Research Fellow - Tumor Vascular

RESEARCH SUPPORT *(See instructions)*

NCI CA 15548 Radiation Oncology Clinical & Research Center $376,859, $1,161,756, (7/1/75 - 6/30/76). Seymour H. Levitt, Principal Investigator. 100% effort.

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Assistant, The Department of Radiology, Kyoto Prefectural University of Medicine, December 16, 1968 - present.

Assistant, The Department of Biology. Premedical course of Kyoto Prefectural University of Medicine, May 15, 1955 - December 15, 1968.

Publications by Norimoto Tanaka Ph.D

1. The effects of X-rays on secondary formation of gills in Branchiura sowerbyi. Zoological Magazine;72(10).289-292. 1963.
2. Effects of X-irradiation on secondary gill formation and tail regeneration in Branchiura sowerbyi (I). Nippon Acta Radilogica ; 23(11).1313-1325. 1964.
3. The effect of fractionated X-rays and γ-rays irradiation on tadpol of amphibia. (I) Rana nigromaculata. Nippon Acta Radiologic ; 26(7).910-913. 1966.
4. The effect of fractionated X-rays and γ-rays on the tadpole of amphibia (II) On the Rhacophorus arborea. Nippon Acta Radiologica; 26(7).914-921. 1966.
5. The effects of X-rays on the secondary gill formation and the tail regeneration in Branchiura sowerbyi (II) The protective effect of chlorobuthanol against X-irradiation on Tail regeneration in Branchiura sowerbyi. Nippon Acta Radiologica; 26(7).922-926.1966
6. The protective effects of some narcotic substances against X-irradiation in aquatic animals
   (1) Effects of Chlorobuthanol in larvae of Rhacophorus
   (2) Protective effects of ethyl alcohol
   (3) Effects of urethane and changes in concentration of chlobuthanol solution against X-irradiation in larvae of Rhacophorus

   Nippon Acta Radiologica;26(8),32-46. 1966.
7. The effects of X-irradiation on the treated amphibian larvae in 2.4-dinitrophenol and azide. Nippon Acta Radiologica;26(10), 1384-1387. 1967.
8. The influence of anemia to radiation effect in transplanted tumour -- Studies on the Fructose Sarcoma --. Nippon Acta Radiologica; 29(1),49-54. 1969
9. Hypoxic cell population in human tumor and its implication to radiotherapy; Jounal of Radiation Research; 11(1),14-19. 1970
10. Mouse survival time after single administration of 5-fluorouracil. GANN;61. 291-294. 1970.
11. Unexpected sensitivity of tumor cells to cyclophosphamide in one-day-old solid Ehrlich ascites tumors; GANN;61.353-358.1970

12. Modification of radiosensitivity of Ehrlich ascites carcinoma cells in vivo. Part. I. Some basic experiments on the role of lethally irradiated tumor cells. Journal of Radiation Research;11(2).61-69. 1970.

13. Modification of radiosensitity of Ehrlich ascites carcinoma cells in vivo. Part. II. Sensitizing ability of sulfhydryl-binding agents to hypoxic tumor cells. Nippon Acta Radiologica;30(10) 6-11. 1970.

14. Radioprotective effect of glutathion on mouse intestinal death. Nippon Acta Radiologica; 32(3). 234-236. 1972.

15 Possibility of using an alkylating agent in radiotherapy of mammary crcinoma in C3H/He mice. GANN; 63(4),491-494. 1972.

16. Sensitizing ability and toxicity of iodoacetamide in radiotherapy of a C3H mouse mammary carcinoma. The British Journal of Cancer ; 28(2). 190-193. 1973.

17. Radiosensitivity of Ehrlich ascites tumor cells in different growth phases and its enhancement by iodoacetamide. Journal of Radiation Reseach; 14(3).236-247. 1973.

18. The radiotherapy of carcinoma of the esophagus. Nippon Acta Radiologica; 25(11).855-862. 1973.

19. Combined effect of radiation and bleomycin on mouse intestinal epithelial cells. Nippon Acta Radiologica; 34(1). 50-57. 1974.

20. Tumor control and regrowth probability after a single radiation of experimental animal tumors. Journal of the National Cancer Institute; 53(2),517-525.1974

21. Radioprotective effect of glutathione on C3H mouse mammary carcinoma; Journal of Radiation Reseach; 16. 9. 1975.

22. The effect of X-irradiation on the vascularization of experimental animal tumors. Nippon Acta Radiologica; 35(3) 158-167. 1975

23. Observation on plasminogen tissue activator of gastrointestinal mucosa after X-irradiation -- Studies on the relationship between protein-losing gastroenteropathy and tissue activator. Journal of Medical Enzymology; 1(4) 152-158. 1975.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages as needed but follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Theologides, Athanasios	Professor of Medicine	2/5/31
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Ptolemais, Greece	U.S.A.	XX Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Aristoteles University Medical School	M.D.	1955	Medicine
Aristoteles University Medical School Thessaloniki, Greece	"Doctorat"	1965	
U of Minnesota Medical School	Ph.D.	1967	Medicine

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Medical Oncology	Participant

RESEARCH SUPPORT *(See instructions)*

	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Disease	$444,282.00	9-30-76
NIH CA-05158 Medical Oncology Training Grant	$ 85,125.00	6-30-76
NIH CA-16450 Acute Leukemia Group B	$ 47,057.00	1-31-77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List or most representative publications. Do not exceed 3 pages for each individual.)*

1974-Present	Professor of Medicine, University of Minnesota, Minneapolis, MN
1970-1974	Associate Professor of Medicine, University of Minnesota, Minneapolis, M
1967-1970	Assistant Professor of Medicine, University of Minnesota, Minneapolis, M
1962-1967	Instructor in Internal Medicine, University of Minnesota, Minneapolis, M
1958-1962	Fellow (Resident) in Medicine, University of Minnesota, Minneapolis, MN
1957-1958	Residency in Medicine, St. Joseph's Hospital, St. Paul, Minnesota

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Fortuny, I.E., Theologides, A., Kennedy, B.J.: Hepatic Arterial Infusions for Liver Metastases from Colon Cancer: Comparison of Mitomycin C (NSC-26980) and 5-fluorouracil (NSC-19893). Cancer Chemotherapy Reports 59:401-404, 1975.

Theologides, A.: Observations on Two Transplanted Tumors Growing Synchronously in Mice. Proceedings Fifth Perugia Quadrennial International Conference on Cancer on "Multiple Primary Malignant Tumors" 635-645, 1975.

Kiang, D.T., Sundberg, R.D., Fortuny, I.E., Brunning, R.D., Theologides, A., Goldman, A., and Kennedy, B.J.: Multiple Myeloma Clinical Evolution. Minnesota Medicine 57:542-548, 1974.

Scott, D. and Theologides, A.: Hepatoma, Erythrocytosis and Increased Serum Erythropo Developing in Longstanding Hemachromatosis. American Journal of Gastroenterology 61:206-211, 1974.

Deinard, A.S., Fortuny, I.E., Theologides, A., Anderson, G.L., Boen, J., and Kennedy, B.J.: Studies on the Neutropenia of Cancer Chemotherapy. Cancer 33:1210-1218, 197

Theologides, A., Lindall, A.W. and Novelli, E.: Growth Hormone After Transsphenoidal Hypophysectomy. Journal of the American Medical Association. 227:1258, 1974.

Theologides, A.: The Anorexia-Cachexia Syndrome - A New Hypothesis. Annals of the New York Academy of Sciences. 230:14-22, 1974.

Theologides, A.: More Time with the Patient. Minnesota Medicine 57:107-108, 1974.

Fortuny, I.E. and Theologides, A.: Late Toxic Effects of Cytotoxic Drugs. Minnesota Medicine 57:19-21, 1974.

Theologides, A.: How Useful Are 5-FU and Related Substances in the Treatment of Adenocarcinoma? in "Controversy in Internal Medicine II" Ingelfinger, F.J., Ebert, R.V., Finland, M., Relman, A.S., Editors W.B. Saunders Company, Philadelphi PA., p. 30, 1974.

Bloomfield, C. and Theologides, A.: Acute Granulocytic Leukemia in Elderly Patients. Journal of the American Medical Association 226:1190-1193, 1973.

Kennedy, B.J., Theologides, A., Fortuny, I., Bloomfield, C., and Kelly, R.T.: Advance Cancer: New Concepts of Medical Therapy. Geriatrics 28:51-72, November, 1973.

Kiang, D.T., Theologides, A., Fortuny, I. and Kennedy, B.J.: Hormone Therapy for Malignant Myeloma. Lancet II: 147-148, 1973.

Fortuny, I.E., Crandall, L., McCullough, J., Theologides, A. and Kennedy, B.J.: Leukapheresis in the Management of Chronic Leukemia. Minnesota Medicine 56:674-67 1973.

Theologides, A. and Zaki, G.F.: Mitotic Index in the Regnerating Liver of Tumor-Bearing Mice in "Liver Regeneration - Collected Works". MSS Information Corporati New York. Vol. I, 189-195, 1973.

Bloomfield, C.D., Brunning, R.D., Theologides, A. and Kennedy, B.J.: Daunorubicin-Prednisone Remission Induction with Hydroxyurea Maintenance in Acute Non-Lymphocyt Leukemia. Cancer 31:931-938, 1973.

Fortuny, I.E., Weiss, R., Theologides, A. and Kennedy, B.J.: Cytosine Arabinoside in Herpes Zoster. Lancet I:38, 1973.

Dick, F.R., Fortuny, I., Theologides, A., Greally, J., Wood, N. and Yunis, E.J.: HL-A and Lymphoid Malignancies. Cancer Research 32:2608-2611, 1972.

Theologides, A.: The Internist in Academic Medicine. Minnesota Medicine 55:743-744,

Fortuny, I.E., Theologides, A., and Kennedy, B.J.: Single, Combed and Sequential Use of Uracil Mustard and Prednisone in the Treatment of Lymphoreticular Tumors. Minnesota Medicine 55:715-716, 1972.

Fortuny, I.E., Theologides, A., and Kennedy, B.J.: Cancer of the Liver. Intro-arterial Infusion. Minnesota Medicine 55:197-199, 1972.

Kennedy, B.J., and Theologides, A.: Controls in Cancer Chemotherapy. Annals of Internal Medicine 76:321-322, 1972.

Theologides, A.: Pathogenesis of Cachexia in Cancer. A Review and a Hypothesis. Cancer 29:484-488, 1972.

Theologides, A. and Lee, J.C.: Tumor to Tumor Metastasis. Journal of the American Medical Association 219:384, 1972.

Theologides, A.: Unfavorable Signs in Patients with Chronic Myelocytic Leukemia. Annals of Internal Medicine 76:95-99, 1972.

Theologides, A., Fortuny, I.E., and Kennedy, B.J.: Medical Oncology. Lancet II: 819-820, 1971.

Kennedy, B.J., and Theologides, A.: Pulmonary Infiltrate. Initial Manifestation of Toxoplasmosis. Minnesota Medicine 54:321-325, 1971.

Greally, J.F., Theologides, A., and Kennedy, B.J.: Apparent Chemotherapeutic Cure of Malignant Lymphoma. Cancer 27:887-893, 1971.

Theologides, A.: Oncology Service in a Teaching Hospital. Journal of Chronic Disease 23:601-603, 1971.

Theologides, A.: La Toxoplasmose et Le Coeur. La Revue de Medecine 12:483-486, 1971.

Lindstrom, F.D., Williams, R.C., Jr., and Theologides, A.: Urinary Immunoglobulins in Patients with Cancer. Scandinavian Journal of Haematology 7:383-388, 1970.

Theologides, A.: Opportunistic Infections in Neoplastic Diseases. Geriatrics, 25: 126-134, October, 1970.

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Trowbridge, Randall C.	Clinical Associate	5/13/46
PLACE OF BIRTH *(City, State, Country)* San Francisco, Calif.	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)* U.S.A.	**SEX** ☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of California, Berkeley, CA	A.B.	1969	Biochemistry
Baylor College of Medicine, Houston TX	M.D.	1972	Medicine

HONORS

Diplomate of American Board of Internal Medicine

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Medical Oncology	Clinical Associate

RESEARCH SUPPORT *(See instructions)*

	CURRENT AMT.	TO
American Cancer Society Clinical Fellowship	$ 4,800.00	6-30-76
NIH CA08832 Study of Advanced Malignant Disease	$444,282.00	9-30-76
NIH CA-05158 Medical Oncology Training Grant	$ 85,125.00	6-30-76
NIH CA-16450 Acute Leukemia Group B	$ 47,057.00	1-31-77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1975-Present Fellow in Medical Oncology, University of Minnesota, Minneapolis, MN.
1973-1975 Resident in Medicine, Baylor College of Medicine, Houston, Texas.
1972-1973 Internship in Medicine, Baylor College of Medicine, Houston, Texas.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Vosika, Gerald J.	Assistant Professor	7/9/42
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Minneapolis, Minnesota U.S.A.	U.S.A.	[X] Male [ ] Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota	B.S.	1964	
University of Minnesota	M.D.	1967	

HONORS

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Medical Oncology: Virology	Participant

RESEARCH SUPPORT *(See instructions)*

	CURRENT AMT.	TO
NIH CA-08832 Study of Advanced Malignant Disease	$444,282.00	9-30-76
NIH CA-05158 Medical Oncology Training Grant	$ 85,125.00	6-30-76
NIH CA-16450 Acute Leukemia Group B	$ 47,057.00	1-31-77

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List or most representative publications. Do not exceed 3 pages for each individual.)*

1975-present	Assistant Professor of medicine, University of Minnesota
1973-1975	Instructor of Medicine, University of Minnesota
1971-1973	Medical Oncology Fellow, University of Minnesota
1969-1971	Resident, Internal Medicine, University of Minnesota
1968-1969	Resident, Surgery, University of Minnesota
1967-1968	Intern, Robert B. Green Hospital, San Antonio, Texas

F. D. Guttmann, Vosika, G.J., and Aust, J.B.: Homograft Tolerance in Adult Mice. Surgical Forum XII 105-106, 1961.

Guttman, R.D., Vosika, G.J., and Ausut, J.B.: Acceptance of Allogenic Tumor and Skin Grafts in backcross Progeny of Homograft Tolerant Males. J. Nat. Ca. Inst. 33:1-5, 19

Tamimi, T., Vosika, G.J. and Aust, J.B.: Effect of Large Doses of Subcellular Fraction on Skin Graft Survival in Mice. Proc. Soc. Exp.Biol. Med. 121:1133-35, 1966.

Vosika, G.J., Krivit, W., Gerrard, J.M., Coccia, P.F., Nesbit, M.E., Coalson, J.J., and Kennedy, B.J.: Oncornavirus-like Particles from Cultured Bone Marrow Cells Preceding Leukemia and Malignant Histiocytosis. Proc. Nat. Acad. Sci. U.S.A., in press July 1975.

Bloomfield, C.D., Weiss, R.D., Fortuny, I., Vosika, G., and Kennedy, B.J.: Combined Chemothrapy with Cyclophosphamide, Vinblastine, Procarbazine and Prednisone (CVPP) for Patients with Advanced Hosgkin's Disease. An Alternative to "MOPP" Cancer 1975 (in press)

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
James G. White, M.D.	Professor	8/28/29
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Duluth, Minnesota	U.S.A.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
St. Thomas College, St. Paul, Mn.	B.S.	1951	
University of Minnesota, Mpls, Mn.	M.D.	1955	Medicine

HONORS Dunphy Award, St. Thomas College, 1951; Maud E. Warwick Scholarship, 1952-55; Minnesota Medical Foundation Scholarship, 1951-52; Ski-U-Mah Award; Janue Nugent Cochems Prize, 1964; Mead Johnson Award, 1973; Elwood A. Sharp Award, 1974.

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Structural physiology and pathology of blood platelets	Principle Investigator

RESEARCH SUPPORT *(See instructions)*

USPHS HL-11880 Structural Physiology and Pathology of Blood Platelets. 2/1/72-1/31/77, present year $63445 (Principal Invest.) 15%; USPHS program project grant HL-06314 Immunologic Mechanisms in Cardiovascular Disease. 6/1/74-5/31/78, present year $31,734 (co-invest) 55% USPHS CA-11996 Leukemia Center (Platelet) Program CCA. 9/1/74-5/31/77, present year $50,210 (Co-invest) 5%; USPHS CA-08832 Integrated Cancer Grant (Divided between 4 depts. at the Univ) (Collaborative Invest) partial support for supplies $2,000) 10/1/66-9/30/76; USPHS GM-22167 Albinism. 6/30/75-8/31/80 partial support (co-invest) $10,000; American Heart Association Platelet participation in host resistance to infection 7/1/74-6/30/77(Co-invest); USPHS HL-1683 Hemoglobin & Red Cell System in Hemoglobinopathies 6/1/74-5/31/79(Co-invest) present year$64,0C

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

Professor of Pediatrics, Laboratory Medicine & Pathology, University of Minnesota, Mpls, Mn.	1973-present
Professor of Pediatrics, University of Minnesota, Mpls, Mn.	1970-present
Associate Professor Pediatrics, University of Minnesota, Mpls, Mn.	1966-70
Assistant Professor Pediatrics, University of Minnesota, Mpls, Mn.	1963-66
Medical Fellow Specialis, University of Minnesota, Mpls, Mn.	1961-63
Pediatric Chief Resident, University of Minnesota, Mpls, Mn.	1960-61
Pediatric Residency, University of Minnesota, Mpls, Mn.	1959-60
Pediatric Internship, University of Minnesota, Mpls, Mn.	1958-59
Pediatrics and ENT, U.S. Army F. Mead, M.D.	1956-58
Rotating Internship, Detroit Receiving Hospital, Detroit, Michigan	1955-56

Bibliography - Selected titles, not complete

1. White, J.G.: Chemical ultrastructure of human platelets. In: Physiology of Hemostasis and Thrombosis (Johnson, S.A. and Seegers, W.A., Eds), Springfield, Charles C. Thomas Co., 1967.
2. White, J.G. and Clawson, C.C.: Blood cells and blood vessels. In: The Ultrastructure of Normal and Abnormal Skin (Zelickson, A.S., Ed), New York, Lea and Feiger Co., 1967.
3. White, J.G. and Krivit, W.: An ultrastructural basis for the shape changes induced in platelets by chilling. Blood 30:625, 1967.

4. White, J.G.: Fine structural alterations induced in platelets by adenosine diphosphate. Blood 31:604-622, 1968.
5. White, J.G.: Effects of colchicine and vinca alkaloids on human platelets. I. Influence on platelet microtubules and contractile function. Am.J. Path. 53: 281-291, 1968.
6. Davis, R.B. and White, J.G.: Localization of 5-hydroxytryptamine in blood platelets: A radioautographic and ultrastructural study. Brit. J. Haemat. 15:93-99, 1968.
7. White, J.G.: Tubular elements in platelet granules. Blood 32:148, 1968.
8. White, J.G.: The dense bodies of human platelets: Origin of serotonin storage particles from platelet granules. Am. J. Path. 53:791, 1968.
9. White, J.G.: The dense bodies of human platelets: Inherent electron opacity of serotonin storage particles. Blood 33:598 - 606, 1969.
10. Statland, B., Heagan, B. and White, J.G.: Uptake of calcium by platelet relaxing factor. Nature 223:521, 1969.
11. White, J.G.: The submembrane filaments of blood platelets. Am. J. Path. 56: 267, 1969.
12. White, J.G. and Davis, R.B.: Alterations of platelet ultrastructure in patients with carcinoid syndrome. Am. J. Path. 56:519-531, 1969.
13. White, J.G.: A search for the platelet secretory pathway using electron dense tracers. Am. J. Path. 58:31-49, 1970.
14. White, J.G.: The origin and function of platelet dense bodies. Series Haemat. 3:17-46, 1970.
15. White, J.G.: Platelet Morphology. In: The Circulating Platelet (Johnson, S.A. Ed) New York, Academic Press, Inc. 1971, pp 45-121, 1970.
16. White, J.G.: The ultrastructural cytochemistry and physiology of blood platelets. In: The Platelet (Mostafi, F.K. and Brinkhous, K.M., Eds) William and Wilkins, Baltimore, Md, pp. 83-115, 1971.
17. White, J.G.: Platelet microtubules and microfilaments: Effects of cytochalasin B on structure and function. In: Platelet Aggregation (Caen, J.,Ed) Paris, Masson and Cie, pp. 15-52, 1971 (228 pp).
18. White, J.G., Edson, J.R., Desnick, S.J., and Witkop, C.J.: Studies of platelets in a variant of the Hermansky-Pudlak syndrome. Am. J. Path. 63:319-332, 1971.
19. White, J.G.: Serotonin storage organelles in human megakaryocytes. Am. J. Path. 63:403-410, 1971.
20. White, J.G.: Platelet morphology and function. In: Principles of hematology McGraw-Hill, pp. 1023-1039, 1972.
21. White, J.G.: Interaction of membrane systems in blood platelets. Am. J. Path. 66:295-312, 1972.
22. White, J.G. and Witkop, C.J.: Effects of normal and aspirin platelets on defective secondary aggregation in the Hermansky-Pudlak syndrome: A test for storage pool deficient platelets. Am. J. Path. 65:57-66, 1972.
23. White, J.G. and Estensen, R.D.: Degranulation of discoid platelets. Am. J. Path. 68:389-402, 1972.
24. White, J.G.: Effects of cationic polypeptides on thrombasthenic and afibrinogenemic blood platelets. Am. J. Path. 68:447-458, 1972.
25. White, J.G.: Ultrastructural defects in congenital disorders of platelet function. In: New York Acad. Sci. Symp.: Platelets and their role in hemostasis. (Weiss, H.J., Ed) 201:205-233, 1972.
26. White, J.G.: Uptake of latex particles by blood platelets: Phagocytosis or sequestration? Am. J. Path. 69:439-452, 1972.
27. White, J.G.: Identification of platelet secretion in the elctron microscope. Series Haemat. 6:429-459, 1973.
28. White, J.G. and Conard, W.J.: The fine structure of freeze-fractured blood platelets. Am. J. Path. 70:45-56, 1973.

29. White, J.G., Goldberg, N.D. Estensen, R.D., Haddox, M.K. and Rao, G.H.R.: Rapid increase in platelet cyclic 3'5'-guanosine monophosphate (cGMP) levels in association with irreversible aggregation, degranulation and secretion. J. Clin. Invest. 52:89A, 1973.
30. White, J.G. and Estensen, R.D.: Cytochemical electron microscopic studies of the action of phorbol myristate acetate on platelets. Am. J. Path. 74:453-566, 1974.
31. Fong, J.S.C., White, J.G. and Good, R.A.: Inhibition of endotoxic lipopolysaccaride mediated platelet aggregation by cobra venom anticomplementary factor. Blood 44:339-409, 1974.
32. White, J.G.: Physico-chemical dissection of platelet structural physiology. In: Platelets: Production, Function, Transfusion and Stroage. (Baldini, M. and Ebbe, S, Eds), pp. 235-252, 1974.
33. Rao, G.H.R., White, J.G., Jachimowicz, A.A., and Witkop, C.J.: Nucleotide profiles of normal and abnormal platelets by high pressure liquid chromatography. J. Lab. & Clin. Med. 84:839-850, 1974.
34. White, J.G., Rao, G.H.R.,and Gerrard, J.M.: Effects of the ionophore, A23187 on blood platelets. I. Influence on aggregation and secretion.
35. Gerrard, J.M., White, J.G., Rao, G.H.R., Krivit, W, and Witkop, C.J.: Labile aggregation stimulating substance (LASS): The factor from storage pool deficient platelets correcting defective aggregation and release of aspirin treated normal platelets. Brit. J. Haematol. 29:657-665, 1975.
36. Gerrard, J.M. and White, J.G.: The influence of prostaglandin endoperoxides on platelet ultrastructure. Am J. Path. 80:189-202, 1975.
37. Rao, G.H.R., White, J.G., Jachimowicz, A.A. and Witkop, C.J.: An improved method for the extraction of endogenous platelet serotonin. J. Lab. Clin. Med. (In press), 1976.
38. Clawson, C.C., Rao, G.H.R., and White, J.G.: Platelet interaction with bacteria. IV. Stimulation of the release reaction. Am. J. Path. 81:411-420, 1975.
39. Gerrard, J.M., White, J.G., and Rao, G.H.R.: Localization of platelet prostaglandin production in the platelet dense tubular system. Am.J. Path. (In press).
40. Gerrard, J.M., and White, J.G.: Calcium and platelet activation: Exploring the opposing infuences of cyclic AMP and A23187 using radioautography. Am. J. Path. (In press), 1976.
41. White, J.G. and Gerrard, J.M.: Ultrastructural features of abnormal blood platelets. Am. J. Path. (In press), 1976.
42. Glass, D.B., Gerrard, J.M., Townsend, D., White, J.G., and Goldberg, N.D.: Prostaglandin endoperoxide involvement in the elevation of guanosine 3',5' -cyclic monophosphate levels during platelet aggregation. P.N.A.S. (In press), 1976.

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
I. Dodd Wilson	Head, Section of Gastroenterology	July 10, 1936
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
St. Peter, Minnesota	U.S. Citizen	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
Dartmouth College	A.B.	1958	
Harvard Medical School	M.D.	1961	Medicine
Dept. of Medicine, U of M Hospitals	Intern	7/61-6/62	
Dept. of Medicine, U of M Hospitals	Fellow	7/62-6/63	Internal Medicine
	"	7/65-12/66	

HONORS American Gastroenterological Association; Central Society for Clinical Research; Dean's Medal, Dartmouth Medical School (top standing in class); Summa Cum Laude, Dartmouth College; Graduated with highest distinction in major field, Dartmouth College; Daland Fellow of the American Philosophical Society, July 1966 to 1969

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Gastrointestinal immunology	Part. [illegible]

RESEARCH SUPPORT *(See instructions)* Arthritis Foundation, 1975-1976, $2,000 "Circulating Immune Complexes in Chronic Inflammatory Bowel Disease", 5% effort. Minnesota Medical Foundation, 1975-1976, $10,000, "Research in Gastroenterology", 30% effort. N.I.H. NO1-Am-32216 sub. acct. #12, "Treatment Center for the Dissolution of Gallstones" current year, $139,252, total, $466,739, 1975-1978, 5% effort. National Foundation for Ileitis and Colitis, "Immune Complexes in Inflammatory Bowel Disease" 1976-1977, first year $23,557, total $48,533.

(continued)

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

February, 1972 to present: Director, Section of Gastroenterology, University of Minnesota Medical School.

July, 1971 to present: Associate Professor of Medicine, Department of Medicine, University of Minnesota Medical School.

July, 1968 to June, 1971: Assistant Professor of Medicine, Department of Medicine, University of Minnesota Medical School.

January, 1967 to June, 1968: Instructor, Department of Medicine, University of Minnesota Medical School.

PUBLICATIONS:

1. Wilson, I.D., R.C. Williams, Jr., and L. Tobian. Renal tubular acidosis. Three cases with immunoglobulin abnormalities in patients and their kindreds. Am. J. Med. 43:356-370, 1967.

2. Carey, J.B., Jr., I.D. Wilson, F.G. Zaki, and R.F. Hanson. The metabolsim of bile acids with special reference to liver injury. Medicine 45: 461-470, 1966.

(continued)

U. S. GOVERNMENT PRINTING OFFICE : 1971 O - 451-736

BIOGRAPHICAL SKETCH CONTINUED.

I. Dodd Wilson, continued

3. Wilson, I.D., G.R. Onstad, R.C. Williams, Jr., and J.B. Carey, Jr. Selective immunoglobulin A deficiency in two patients with alcoholic cirrhosis. Gastroenterology 54:253-259, 1968.

4. Wilson, I.D., R.B. McHugh, and R.C. Williams, Jr. Clustering of serum immunoglobulin concentrations within sibling groups. J. Lab. Clin. Med. 72:149-156, 1968.

5. Wilson, I.D., G.R. Onstad, and R.C. Williams, Jr. Serum Immunoglobulin concentrations in patients with alcoholic liver disease. Gastroenterology 57:59-67, 1969.

6. Eggert, R.C., I.D. Wilson and R.A. Good. Agammaglobulinemia and regional enteritis. Ann. Int. Med. 71:581-585, 1969.

7. Wilson, I.D. and R.C. Williams, Jr. Two distinct groups of immunoglobulin A(IgA) revealed by peptic digestion. J. Clin. Invest. 48:2409-2416, 1969.

8. Wilson, I.D., R.D. Soltis, and R.C. Williams, Jr. Naturally occurring human antibodies to pepsin-digested IgA. Blood 36:390-398, 1970.

9. Wilson, I.D. Studies on the products of peptic digestion of IgA. Immunology 20:327-339, 1971.

10. Parent, K., J. Barrett and I.D. Wilson. Investigation of the pathogenic mechanisms in regional enteritis with in vitro lymphocyte cultures. Gastroenterology 61:431-439, 1971.

11. Parent, K., and I.D. Wilson. Mycobacteriophage in Crohn's disease. Gut 12:1019-1020, 1971.

12. Wilson, I.D. Human serum antibodies specific for secretory IgA. Immunology 22:1001-1011, 1972.

13. Wilson, I.D. Studies on the opsonic activity of human secretory IgA using an in vitro phagocytosis system. J. Immunol. 108:726-730, 1972.

14. Strickland, R.B., S. Korsmeyer, R.D. Soltis, I.D. Wilson and R.C. Williams, Jr. Peripheral blood T and B lymphocytes in chronic inflammatory bowel disease. Gastroenterology 67:569-577, 1974.

15. Soltis, R.D. and I.D. Wilson. Serum IgM concentrations after intestinal resection in chronic inflammatory bowel diseases. Gastroenterology, 69:885-892, 1975.

16. Korsmeyer, S.J., R.C. Williams, Jr., I.D. Wilson and R.G. Strickland. Familial occurrence of lymphocytotoxic antibody in inflammatory bowel disease. New Eng. J. Med., in press.

BIOGRAPHICAL SKETCH CONTINUED.

I. Dodd Wilson, continued

17. Erlandsen, S.L., C.B. Rodning, J.A. Parsons, E.A. Lewis, and I.D. Wilson. Immunocytochemical identification and localization of immunoglobulin A within Paneth cells of the rat small intestine. Submitted for publication.

18. Rodning, C.B., I.D. Wilson and S.L. Erlandsen. Immunocytochemical localization of immunoglobulins within human small intestinal Paneth cells. Submitted for publication.

RESEARCH AND TRAINING SUPPORT continued

U.S. Army # DAAA-15-75-C-0167, "Mechanism of Organophosphorous Vaccination" 1975-1976 $39,535. This grant is Dr. Stan Erlandsen's here at the University of Minnesota, Dr. Wilson received approximately $6,100 from this grant. Dr. Wilson's effort: 10%.

Dr. Wilson plans to apply for a United States Public Health Service grant early this spring to run 3 years. Proposed title, Immunologic Study of Paneth Cell Function. Amount of money to be requested has not been determined.

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE *(Mo., Day, Yr.)*
Solomon J. Zak	Assistant Professor	11/30/29
PLACE OF BIRTH *(City, State, Country)*	**PRESENT NATIONALITY** *(If non-U.S. citizen, indicate kind of visa and expiration date)*	**SEX**
Havana, Cuba	U.S.A	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
University of Minnesota, Minneapolis	BA	1950	Experimental Psych.
University of Minnesota, Minneapolis	BS & MD	1957	

HONORS

Bordon Award Undergraduate Research, 1957
Andrews Prize, 1957

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Laboratory Medicine	Participant

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

1971-Present	Assistant Professor, University of Minnesota, Minneapolis, MN.
1963-1966	Instructor, University of Minnesota, Minneapolis, MN.
1963	Fellow, Massachusetts General Hospital, Boston, Mass.
1962-1963	Chief Resident, Medicine and Metabolism, Mt. Sinai Hospital, Los Angeles.
1958-1961	University of Minnesota, Straight Medicine, Arthritis and Rheumatism Fellow.
1957-1958	Intern (Straight Medicine) University of Minnesota, Minneapolis.
1954-1959	Sr. Research Advisor, University of Minnesota, Minneapolis.

Jones, R.T., Kilmartin, J. and Zak, S.: Oxygen Equilibrium Studies in Hemoglobin Andrew-Minneapolis $\alpha_2^A\beta_2^{144}$Lys→Asn. (in press).

Zak, S., McCormack, M.K., Geller, G., Tukey, D., Krivit, W., Jones, R., Brimhall, B.: Hemoglobin Malmö: A Third Reported Family. (Submitted to Blood).

McCormack, M.K., Geller, G., Zak, S., Tukey, D., Krivit, W.: Complex Alpha Thalassemia: A Cause of Normoblastermia in the Newborn. (Submitted to Journal of Pediatrics).

Zak, S.J., Geller, G.R., Finkel, B., Tukey, D.P., McCormack, M.K., and Krivit, W.: Bis N-Maleimidomethyl Ether: An Antisickling Reagent. PNAS 72:10, 1975.

Zak, S., McCormack, M., Tukey, D., Geller, G., and Krivit, W.: Effectiveness of Maleimide Derivatives on Inhibition of Sickling in Vitro. Central Society abstract, 1975.

Zak, S.J., Brimhall, B., Jones, R.T., Kaplan, M.E.: Hemoglobin Andrew Minneapolis $\alpha_2^A\beta_2^{144}$Lys→Asn: A new high-oxygen affinity mutant human hemoglobin. Blood 44: 543, 1974.

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Leskowitz, S., Jones, V.E., Zak, S.J.: Immunochemical Studies of Antigenic Specificity in Delayed Hypersensitivity. Immunization with monovalent low molecular weight conjugates. J. Exper. Med. 123:2, 1966.

Spink, W.W., Reddin, J., Zak, S.J., Peterson, M., Starzecka, B., Seljeskog, E.: Correlation of Plasma Catecholamine Levels with Hemodynamic Changes in Canine Endotoxin Shock. J. Clin. Invest. 45:78, 1966.

Zak, S.J., and Leskowitz, S.: Observations on Hapten Specificity in Delayed Hypersensitivity. J. Clin. Invest. 44:115, 1965.

Good, R.A., Zak, S.J., Condie, R.M., and Bridges, R.A.: Clinical Investigation of Patients with Agammaglobulinemia and Hypogammaglobulinemia. Ped. Clin. N. Am. 1(2): 397, 1960.

Bridges, R.A., Condie, R.M., Zak, S.J., and Good, R.A.: The cellulose basis for antibody Formation: Development During the Neonatal Period. J. Lab. Clin. Med. 53:331, 1959.

Zak, S.J., Good, R.A.: Immunochemical Studies of the Human Serum Gamma Globulins. J. Clin. Invest. 38:579, 1959.

Good, R.A., Bridges, R.A., Zak, S.J., Pappenheimer, A.M., Jr.; Delayed Hypersensitivity in Agammaglobulineami. Henry Ford Symposium in Mechanisms of Hypersensitivity. Little, Brown & Co., 1959.

Good, R.A., Zak, S.J., Jensen, D.R. and Pappenheimer, A.M., Jr.: Delayed allergy in Agammaglobulinemia. J. Clin. Invest. 36:894, 1957.

McLean, L.D., Zak, S.J., Varco, R.L., and Good, R.A.: The Role of the Thymus in Antibody Production: An Experimental Study of the Immune Response in Thymectomized Rabbits. Transplantation Bulletin 4:21, 1957.

Smith, R.T., Good, R.A., and Zak, S.J.: Sequelae of Prednisone Treatment of Acute Rheumatic Fever. Am. J. Dis. Child. 93:77, 1957.

Good, R.A., Varco, R.L., Aust, J.B., and Zak, S.J.: Transplantation Studies in Patients with Agammaglobulinemia. Ann. N.Y. Acad. Sci. 64:882, 1957.

McLean, L.D., Zak, S.J., Varco, R.L. and Good, R.A.: Thymic Tumor and Acquired Agammaglobulinemia - A Clinical and Experimental Study of the Immune Response. Surgery 40:1010, 1956.

Good, R.A., Zak, S.J.: Disturbances of Gamma Globulin Synthesis as Experiments of Nature. Pediatrics 18:109, 1956.

Zak, S.J., Good, R.H. and Good, R.A.: A Technique for One Stage Bilateral Adrenalectomy in the Rabbit. Nature 179:100, 1956.

Condie, R.M., Zak, S.J., Good, R.A.: The Effect of Meningococcal Endotoxin on the Immune Response. Proc. Soc. Exp. Bil. and Med. 90:335, 1955.

B2. ESTIMATED ANNUAL OPERATING COSTS AND PROBABLE SOURCES OF FUNDING

TABLE B-2. FUNDING ANALYSIS - FY 76-77

GRANTS AND CONTRACTS	
Vascularity and Reoxygenation	$ 7,842
Radiation Oncology Research and Clinical Center	418,617
Community Cancer Program Based on Radiation Oncology	52,060
ACS Treatment of Tumor with Combination Radiotherapy/ Immunotherapy	44,358
Use of 5-Thio-D-Glucose in Combination with Radiotherapy	4,500
Children's Cancer Study Group A - Chemotherapy	24,998
Host Defense of Patients treated with Radiotherapy and/or Chemotherapy	65,099
Leukemia Center Platelet Program CCA	40,784
Immunologic Mechanisms in Cardiovascular Disease	33,003
American Cancer Society - Institutional Research	40,000
American Heart Association - Platelet Participation in Least Resistance to Infection	19,690
Minnesota Medical Foundation - Preventional and/or Treatment of Sickling Phenomenon of Sickle Cells	5,462
National Heart, Lung and Blood Institute - Hemoglobin and Red Cell System in Hemoglobinopathies	40,199
Graduate School, University of Minnesota - Evaluation of the Factors Responsible for Lithium Induced Leucocytosis	3,000
Graduate School, University of Minnesota - The Prognostic Significance of Blast Cells Surface Membrane Markers for T-Lymphocyte and B-Lymphocyte Characteristics	3,500
Study of Advanced Malignant Diseases	444,282
Cancer and Leukemia Group B - Minnesota Medical Oncology	102,267
ALGB Consortium Agreement	5,000
Clinical Cancer Education Program	149,092
Studies and Investigations on Endocrine Therapy plus Chemotherapy in Patients with Breast Cancer	87,500
Classification on Non-Hodgkin's Lymphomas	48,974
Phase I Study of M.Phlei in Advanced Lung Cancer, Hypernephroma, and Malignant Melanoma	50,358
Whirlpool Foundation	10,000
Minnesota Medical Foundation - Medical Oncology Fund	10,000
Masonic Hospital - Medical Oncology Fund	81,900
Masonic Hospital - Masonic Professorship	38,850
Department of Medicine - Medical Oncology Research	10,000
CLINICAL SERVICES	
University of Minnesota Hospitals (Radiation Therapy)	$404,402
PATIENT REVENUE (Masonic Clinic)	$ 61,200
UNIVERSITY OF MINNESOTA MEDICAL SCHOOL SUPPORT	$109,766
UNIVERSITY HOSPITAL/MEDICAL SCHOOL CONTRACT	$ 69,077
DEAN'S COMMITMENT - OPERATIONS AND MAINTENANCE FUND	$ 3,831
DEAN'S COMMITMENT - CAPITATION GRANT	$ 20,346

B3. NUMBERS AND SPATIAL UTILIZATION OF CANCER RESEARCH PERSONNEL, PRESENTLY AND TWO YEARS AFTER COMPLETION OF UNIT D.

TABLE B-3. TABULATION OF ACTUAL NUMBERS OF PRESENT CANCER RESEARCH PERSONNEL TOGETHER WITH SPACE OCCUPIED BY EACH TYPE OF PERSONNEL, AND AN ESTIMATE OF WHAT THESE SAME STATISTICS WILL BE WITHIN TWO YEARS AFTER COMPLETION OF THE FACILITY

	PRESENT		WITHIN 2 YEARS	
	No. of People	Net Sq Ft	No. of People	Net Sq Ft
Professional	37	12,203	54	22,803
Technicians	49.5	8,448	66	17,244
Research Secretaries	26.5	3,690	33	4,854
Animal Caretakers	1	1,000	1	1,000
Graduate Students	10	1,543	19	3,839
Other	30	4,849	42	6,003

B4. LIST OF ACTIVE AND PENDING RESEARCH PROJECTS PERTINENT TO CANCER.

Source of Funds:	National Cancer Institute		
Title of Project:	Study of Advanced Malignant Diseases		
Principal Investigator(s):	B.J. Kennedy, M.D.		
Grant and/or Contract No.:	CA-08832	Amount of Support Per Year:	
Active or Pending:	Active		$444,282

Source of Funds:	National Cancer Institute		
Title of Project:	Biohazard and Injury Control in Lab		
Principal Investigator(s):	Donald Vesley, Ph.D.		
Grant and/or Contract No.:	CP 61033	Amount of Support Per Year:	
Active or Pending:	Active		$77,728

Source of Funds:	National Cancer Institute		
Title of Project:	Radiation Oncology Clinical and Research Center		
Principal Investigator(s):	Seymour H. Levitt, M.D.		
Grant and/or Contract No.:	CA-15548	Amount of Support Per Year:	
Active or Pending:	Active		$480,009

Source of Funds:	National Cancer Institute		
Title of Project:	Occult Blood-Colon Cancer Study		
Principal Investigator(s):	Victor Gilbertsen, M.D.		
Grant and/or Contract No.:	CB-53862	Amount of Support Per Year:	
Active or Pending:	Active		$498,890

Source of Funds:	Health Resources Administration, Division of Nursing
Title of Project:	Faculty Research
Principal Investigator(s):	Ida Martinson, Ph.D.
Grant and/or Contract No.:	NU-00475
Amount of Support Per Year:	$108,000
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Immunological Reactivity in Special Circumstances
Principal Investigator(s):	Richard L. Simmons, M.D.
Grant and/or Contract No.:	CA 11605
Amount of Support Per Year:	$147,968
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Children's Cancer Study Group A - Chemotherapy
Principal Investigator(s):	Mark Nesbit, M.D.
Grant and/or Contract No.:	CA 07306
Amount of Support Per Year:	$24,998 (3 mo.)
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Immunotherapy of Cancer in Man
Principal Investigator(s):	Richard L. Simmons, M.D.; C.F. McKhann, M.D. T Grage, M.D.
Grant and/or Contract No.:	CB 23885
Amount of Support Per Year:	$90,000
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Studies and Investigations on Endocrine Therapy Plus Chemotherapy in Patients with Breast Cancer
Principal Investigator(s):	David T. Kiang, M.D.
Grant and/or Contract No.:	CB 64000
Amount of Support Per Year:	$87,500
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Immunotherapy: Role of Circulating Tumor Antigens
Principal Investigator(s):	Charles F. McKhann, M.D.
Grant and/or Contract No.:	CB 43946
Amount of Support Per Year:	$90,779
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Clinical Cancer Education Program
Principal Investigator(s):	B.J. Kennedy, M.D.
Grant and/or Contract No.:	CA-19527
Amount of Support Per Year:	$149,092
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Cancer and Leukemia Group B - Minnesota Medical Oncology
Principal Investigator(s):	B.J. Kennedy, M.D.
Grant and/or Contract No.:	CA-16450
Amount of Support Per Year:	$102,267
Active or Pending:	Active

Source of Funds: National Cancer Institute	
Title of Project: Cancer and Leukemia Group B - Minnesota Cancer Control	
Principal Investigator(s): B.J. Kennedy, M.D.	
Grant and/or Contract No.: 416007513-A5	Amount of Support Per Year:
Active or Pending: Pending	$173,400

Source of Funds: National Cancer Institute	
Title of Project: Multisite Cancer Screening Study	
Principal Investigator(s): Richard McHugh, Ph.D.	
Grant and/or Contract No.:	Amount of Support Per Year:
Active or Pending: Active	$69,000

Source of Funds: Heart, Lung and Blood Institute	
Title of Project: Structural Physiology and Pathology of Blood Platelets	
Principal Investigator(s): James G. White, M.D.	
Grant and/or Contract No.: HL 11880	Amount of Support Per Year:
Active or Pending: Active	$67,782

Source of Funds: National Cancer Institute	
Title of Project: Host Defense of Patients Treated with Radiotherapy and/or Chemotherapy	
Principal Investigator(s): Mark Nesbit, M.D. and Seymour Levitt, M.D.	
Grant and/or Contract No.: CA 15548	Amount of Support Per Year:
Active or Pending: Active	$65,099

Source of Funds:	National Institute of Allergy and Infections Diseases
Title of Project:	Organ Replacement Using Grafts Modified *In Vitro*
Principal Investigator(s):	Richard L. Simmons, M.D.
Grant and/or Contract No.:	AI-12754
Amount of Support *Per Year*:	$65,781
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Biological and Clinical Studies of Colon Carcinoma
Principal Investigator(s):	Charles F. McKhann, M.D.
Grant and/or Contract No.:	CA 17774
Amount of Support *Per Year*:	$86,358
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Classification of Non-Hodgkin's Lymphomas
Principal Investigator(s):	Clara Bloomfield, M.D.
Grant and/or Contract No.:	CM-67113
Amount of Support *Per Year*:	$48,974
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Vascularity and Reoxygenation in X-Irradiated Tumors
Principal Investigator(s):	Chang W. Song, Ph.D.
Grant and/or Contract No.:	CA 13353
Amount of Support *Per Year*:	$7,842
Active or Pending:	Active

Source of Funds: National Cancer Institute	
Title of Project: Vascularity and Reoxygenation in X-Irradiated Tumors	
Principal Investigator(s): Chang W. Song, Ph.D.	
Grant and/or Contract No.: CA 13353	Amount of Support Per Year:
Active or Pending: Pending	$59,185

Source of Funds: National Cancer Institute	
Title of Project: Leukemia Center Platelet Program CCA	
Principal Investigator(s): William Krivit, M.D.	
Grant and/or Contract No.: CA 11996	Amount of Support Per Year:
Active or Pending: Active	$40,784

Source of Funds: American Cancer Society	
Title of Project: Treatment of Tumor with Combination of Radiotherapy and Immunotherapy	
Principal Investigator(s): Chang W. Song, Ph.D.	
Grant and/or Contract No.: 0713-5805	Amount of Support Per Year:
Active or Pending: Active	$44,358

Source of Funds: National Cancer Institute	
Title of Project: Elucidation of Polyamine Conjugates	
Principal Investigator(s): Mahmoud Abdel-Monem, Ph.D.	
Grant and/or Contract No.:	Amount of Support Per Year:
Active or Pending: Pending	$41,220

Source of Funds:	National Cancer Institute
Title of Project:	Immunological Studies of Differentiation of Human Lymphoid Malignancies of B-Cell Origin
Principal Investigator(s):	K. Gajl-Peczalska
Grant and/or Contract No.:	CA-17034
Amount of Support Per Year:	$43,211
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Cyclophosphamide-Biotransformation and Cytotoxic Action
Principal Investigator(s):	Norman E. Sladek, Ph.D.
Grant and/or Contract No.:	CA-70383
Amount of Support Per Year:	$25,000
Active or Pending:	Active

Source of Funds:	American Heart Association
Title of Project:	Platelet Participation in Least Resistance to Infection
Principal Investigator(s):	C.C. Clawson, M.D.
Grant and/or Contract No.:	74 1059
Amount of Support Per Year:	$19,690
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Central Oncology Group
Principal Investigator(s):	Theodor Grage, M.D.
Grant and/or Contract No.:	CA 12271
Amount of Support Per Year:	$15,087
Active or Pending:	Active

Source of Funds:	American Cancer Society
Title of Project:	Clinical Fellowship
Principal Investigator(s):	Daniel Frenning, M.D.
Grant and/or Contract No.:	Amount of Support Per Year:
Active or Pending: Active	$4,800

Source of Funds:	National Institutes of Health
Title of Project:	Anorexia
Principal Investigator(s):	Athanasios Theologides, M.D., Ph.D.
Grant and/or Contract No.: CP-65779-56	Amount of Support Per Year:
Active or Pending: Pending	$47,067

Source of Funds:	Minnesota Medical Foundation
Title of Project:	Use of 5-thio-D-glucose in Combination with Radiotherapy
Principal Investigator(s):	Chang W. Song, Ph.D.
Grant and/or Contract No.: N.A.	Amount of Support Per Year:
Active or Pending: Active	$4,500

Source of Funds:	National Cancer Institue
Title of Project:	Phase I Study of M.phlei in Advanced Lung Cancer, Hypernephroma, and Malignant Melanoma
Principal Investigator(s):	Gerald Vosika, M.D.
Grant and/or Contract No.: CB-64002	Amount of Support Per Year:
Active or Pending: Active	$50,358

Source of Funds:	National Cancer Institute
Title of Project:	Lymphoid Cell Interactions in Malignancy
Principal Investigator(s):	Charles F. McKhann, M.D.
Grant and/or Contract No.:	CA 19510
Amount of Support Per Year:	$72,180
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Cancer Chemotherapy with a Totally Implantable Pump
Principal Investigator(s):	Theodor Grage, M.D.
Grant and/or Contract No.:	
Amount of Support Per Year:	$90,124
Active or Pending:	Pending

Source of Funds:	American Cancer Society
Title of Project:	Enhanced Selective Toxicity of 6-Thiopurines through Combination with Methylxanthines
Principal Investigator(s):	Norman E. Sladek, Ph.D.
Grant and/or Contract No.:	
Amount of Support Per Year:	$36,425
Active or Pending:	Pending

Source of Funds:	National Cancer Institute
Title of Project:	Home Care for Children with Cancer
Principal Investigator(s):	Ida Martinson, Ph.D.
Grant and/or Contract No.:	CA 19490
Amount of Support Per Year:	$95,061
Active or Pending:	Active

Source of Funds:	National Institute of Arthritis, Metabolism and Digestive Diseases
Title of Project:	Research Training in Digestive and Liver Diseases
Principal Investigator(s):	I. Dodd Wilson, M.D.
Grant and/or Contract No.:	AM07177
Amount of Support Per Year:	$83,290
Active or Pending:	Active

Source of Funds:	National Institutes of Health
Title of Project:	Immunologic Aspects of Peneth Cell Function
Principal Investigator(s):	I. Dodd Wilson, M.D.
Grant and/or Contract No.:	
Amount of Support Per Year:	$87,637
Active or Pending:	Pending

Source of Funds:	National Cancer Institute
Title of Project:	Metabolism of Steroids by Human Breast Cancer
Principal Investigator(s):	Yusuf Abul-Hajj
Grant and/or Contract No.:	
Amount of Support Per Year:	$32,483
Active or Pending:	Pending

Source of Funds:	National Institutes of Health
Title of Project:	Steroid Metabolism and Stress
Principal Investigator(s):	Yusuf Abul-Hajj
Grant and/or Contract No.:	
Amount of Support Per Year:	$24,350
Active or Pending:	Pending

Source of Funds:	National Cancer Institute
Title of Project:	RNA-Directed DNA Polymerase and 705 RNA of Oncornaviruses
Principal Investigator(s):	Anthony J. Faras, Ph.D.
Grant and/or Contract No.:	CA 18303
Amount of Support Per Year:	$59,662
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Mechanism of Oncornavirus Provirac DNA Synthesis
Principal Investigator(s):	Anthony J. Faras, Ph.D.
Grant and/or Contract No.:	CA 20011
Amount of Support Per Year:	$34,045
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Regulation of Avian Oncornavirus Genes in Mammalian Cells
Principal Investigator(s):	Anthony J. Faras, Ph.D.
Grant and/or Contract No.:	
Amount of Support Per Year:	$32,117
Active or Pending:	Pending

Source of Funds:	Department of Health, Education & Welfare
Title of Project:	Radiation Oncology Training
Principal Investigator(s):	S.H. Levitt, M.D.
Grant and/or Contract No.:	
Amount of Support Per Year:	$60,233 (Average 5 years)
Active or Pending:	Pending

Source of Funds:	Whirlpool Foundation
Title of Project:	Medical Oncology Research
Principal Investigator(s):	B.J. Kennedy, M.D.
Grant and/or Contract No.:	N/A
Amount of Support Per Year:	$10,000
Active or Pending:	Active

Source of Funds:	Minnesota Medical Foundation
Title of Project:	Medical Oncology Fund
Principal Investigator(s):	B.J. Kennedy, M.D.
Grant and/or Contract No.:	N/A
Amount of Support Per Year:	$10,000
Active or Pending:	Active

Source of Funds:	Masonic Hospital Fu nd, Inc.
Title of Project:	Medical Oncology
Principal Investigator(s):	B.J. Kennedy, M.D.
Grant and/or Contract No.:	N/A
Amount of Support Per Year:	$81,900
Active or Pending:	Active

Source of Funds:	Masonic Hospital Fund, Inc.
Title of Project:	Masonic Professorship
Principal Investigator(s):	B.J. Kennedy, M.D.
Grant and/or Contract No.:	N/A
Amount of Support Per Year:	$38,850
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Consortium Agreement
Principal Investigator(s):	B.J. Kennedy, M.D.
Grant and/or Contract No.:	CA 16118
Amount of Support Per Year:	$5,000
Active or Pending:	Active

Source of Funds:	National Heart, Lung and Blood Institute
Title of Project:	Hemoglobin and Red Cell System in Hemoglobinopathies
Principal Investigator(s):	Ellis Benson, M.D. and William Krivit, M.D.
Grant and/or Contract No.:	HL 16833
Amount of Support Per Year:	$40,199
Active or Pending:	Active

Source of Funds:	National Heart, Lung and Blood Institute
Title of Project:	Immunologic Mechanisms in Cardiovascular Diseases
Principal Investigator(s):	James G. White, M.D.
Grant and/or Contract No.:	HL 06314
Amount of Support Per Year:	$33,003
Active or Pending:	Active

Source of Funds:	National Heart, Lung and Blood Institute
Title of Project:	Minnesota Medical Foundation Prevention and/or Treatment of Sickling Phenomena of Sickle Cells
Principal Investigator(s):	Clark Smith, M.D.
Grant and/or Contract No.:	MMF-MRF-6-76
Amount of Support Per Year:	$5,462
Active or Pending:	Active

Source of Funds:	Graduate School, University of Minnesota
Title of Project:	Evaluation of the Factors Responsible for Lithium Induced Leucocytosis
Principal Investigator(s):	Norma K.C. Ramsay, M.D.
Grant and/or Contract No.:	N/A
Amount of Support Per Year:	$3,000
Active or Pending:	Active

Source of Funds:	Graduate School, University of Minnesota
Title of Project:	The Prognostic Significance of Blast Cell Surface Membrane Markers for T-Lymphocyte and B-Lymphocyte Characteristics
Principal Investigator(s):	Peter Coccia, M.D.
Grant and/or Contract No.:	N/A
Amount of Support Per Year:	$3,500
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Lymphocyte Surface Glycoproteins
Principal Investigator(s):	Roland Edstrom, M.D.
Grant and/or Contract No.:	CA 14351
Amount of Support Per Year:	$31,246
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Foreign Body Tumorigenesis, Ph.D.
Principal Investigator(s):	Gerhard Brand
Grant and/or Contract No.:	CA 10712
Amount of Support Per Year:	$68,860
Active or Pending:	Active

Source of Funds: American Cancer Society	
Title of Project: Institutional Research Grant	
Principal Investigator(s): Carlyle Clawson, M.D.	
Grant and/or Contract No.: 0685-5815	Amount of Support Per Year:
Active or Pending: Active	$40,000

Source of Funds: American Cancer Society	
Title of Project: CYC GMP Control-Prolif and Cell Fund	
Principal Investigator(s): Nelson Goldberg, Ph.D.	
Grant and/or Contract No.: 0694-5821	Amount of Support Per Year:
Active or Pending: Active	$50,000

Source of Funds: American Cancer Society	
Title of Project: Physiochem ASP OP METAB of CAR	
Principal Investigator(s): Patrick Hanna, Ph.D.	
Grant and/or Contract No.: 0694-5822	Amount of Support Per Year:
Active or Pending: Active	$108,750

Source of Funds: American Cancer Society	
Title of Project: Lymphoid Cell Populations	
Principal Investigator(s): Charles McKhann, M.D.	
Grant and/or Contract No.: 0697-5834	Amount of Support Per Year:
Active or Pending: Active	$74,740

Source of Funds: National Cancer Institute	
Title of Project: Cancer Mortality Study	
Principal Investigator(s): Leonard Schuman, M.D.	
Grant and/or Contract No.: CP 33325	Amount of Support Per Year:
Active or Pending: Active	$22,557

Source of Funds: National Cancer Institute	
Title of Project: Transcrip. Reg. - Eukaryotic Gene	
Principal Investigator(s): Anthony Faras, Ph.D.	
Grant and/or Contract No.: CP 61055	Amount of Support Per Year:
Active or Pending: Active	$62,999

Source of Funds: National Cancer Institute	
Title of Project: Leukemia Chemother. and Neutpl. Dysf.	
Principal Investigator(s): Phillip Craddock, M.D.	
Grant and/or Contract No.: CA 15627	Amount of Support Per Year:
Active or Pending: Active	$23,283

Source of Funds: National Cancer Institute	
Title of Project: Aminonucleoside-Chemotheranpic Agent	
Principal Investigator(s): Robert Vince, M.D.	
Grant and/or Contract No.: CA 16623	Amount of Support Per Year:
Active or Pending: Active	$60,832

Source of Funds:	Private
Title of Project:	Development of New Techniques from Human Plasma
Principal Investigator(s):	Richard M. Condie, Ph.D.
Grant and/or Contract No.:	Not applicable
Amount of Support Per Year:	$293,629
Active or Pending:	Active

Source of Funds:	National Cancer Institute
Title of Project:	Exploratory Studies in Cancer Research
Principal Investigator(s):	Seymour H. Levitt, M.D.
Grant and/or Contract No.:	CA-16545
Amount of Support Per Year:	$52,060
Active or Pending:	Active

B5. USE OF VACATED SPACE

B5.1 All cancer programs presently operating in existing space will continue in those locations with the exception of Radiation Therapy, Radiobiology and the Masonic Clinic.

B5.1.1 The Masonic Clinic, severely overcrowded at present, will occupy a portion of the upper level of the new facility. This oncology research clinic is the entry point for all new ambulatory patitents. The clinic is and will continue to be staffed by physicians representing various disciplines. The new facility will provide the space for this clinic to improve its present operations and to introduce new concepts in multidisciplined patient management.

The Masonic Clinic currently occupies space in the basement of the Masonic Memorial Hospital. As this space is vacated, the following cancer programs will occupy the vacated area:

.1 Satellite Pharmacy

A satellite pharmacy will be installed which will provide control of research medications to the Masonic Memorial Hospital and the Masonic Clinics. The research requirements of the Masonic Hospital result in a unit that provides the greatest use of the pharmacy of the entire University Hosptials. A Research Pharmacist will be employed to aid in the control of cooperative group medications, research medications, dispensing of research drugs, patients education, etc. A space equal to approximately 280 square feet will be provided for this new facility.

.2 Cancer Education Program

To develop the Cancer Education Program for medical students, teaching space and offices for the Education Secretary and the Director of Education will be provided. This will be the focus for a Cancer Outreach Program that will encompass nutrition, family counseling and nursing.

.3 Research Charting

The tabulation of clinical research data requires space for the nurse-oncologist to record the course of patients under treatment with new research programs. The Study of Advanced Malignant Disease, Cancer and Leukemia Group B, Cancer and Leukemia Group A Programs will have a common charting area for the research nurses.

.4 Nutrition in Cancer

The role of nutrition in cancer has been recognized as one of the future areas of research and progress. Under the direction of Dr. Athanasios Theologides, an office for a Research Dietician will be added to the current program.

.5 Family Counseling Research

Family and group counseling has been recognized as one of the new areas of patient care. A research program has been developed for purposes of evaluating the effectiveness of such programs. Office space for a Master Social Worker and a meeting area for the group sessions will be provided.

B5.1.2 As has been shown earlier, the Department of Therapeutic Radiology is suffering under grossly inadequate and fragmented space. The new facility will bring together the necessary functions of this department in a reasonable manner, thereby improving its ability to conduct the basic and clinical research programs with which it is charged. In addition, the proximity of the new facilities to the other aspects of the Masonic Cancer Center will enable an even broader multi-disciplinary effort and provide greater comfort and care for their patients. The space vacated by Radiation Therapy will continue to be used in cancer related activities. Radiation Physics will expand its activities utilizing the present treatment spaces and some offices and support spaces. Nuclear Medicine will also utilize a portion of the vacated space for their cancer related activities.

.1 The research activity of radiobiology conducted at the present facilities will be continued. In addition, the X-ray machine presently located in the Mayo Building will be relocated in this area. At the present time, the X-ray machine for radiobiology is located in the Mayo Building, very remote from the laboratory. Only the office for the Director of Radiobiology will be relocated. This office will be used by a radiobiologist who will be doing research at the present facilities.

B6. GRANT INTERRELATIONSHIPS

This construction grant is being submitted independently of any other grant proposal.

B7. RESULTS OF GRANT DECISION

B7.1 Approval

B7.1.1 As has previously been shown, the on-going research programs have stretched the capacity of the existing facilities to extremes. While signif-ficant contributions have been made by the programs represented in this grant, they are at present severely limited in their ability to expand and grow. In order to attract new and capable researchers and staff, it is necessary to provide adequate facilities, equipment and an environment conducive to thought and growth. The same criteria is necessary to retain and stimulate those involved in the present programs. Without additional facilities, it is unreasonable to expect that quality research efforts will be able to be maintained at even the present levels, much less, that these efforts will be expanded into new and significant areas.

B7.1.2 Approval of this application will allow the growth and expansion of the on-going research projects, as well as stimulate new and additional programs in an institution, and among a group of investigators, who have proved themselves capabable of making significant contributions to the Nation's cancer research efforts.

B7.1.3 Deferral of this application will prevent immediate action on expanding the on-going research efforts. Conditions of overcrowding, both for researchers and patients, are so bad that undertaking new and addtional programs will be difficult. Since it is inherent in the nature of good researchers to seek out new areas, no doubt requests for new projects will be forthcoming. It is unlikely, however, that excellence in these efforts will be attained under the present conditions.

B7.1.4 Disapproval of this application will result in the prolonged use of overcrowded and outdated facilities. Alternative solutions to these problems were sought prior to the decision to apply for this grant. Since no other solution is available, disapproval would mean that researchers, staff and patients will have to continue under the conditions that now exist. Each day the problems become worse and, at some point, it can be expected that research efforts and patient care will begin to deteriorate. As mentioned in the previous paragraph, research projects will continue but their effectiveness will be severely restricted.

APPENDIX C
DESCRIPTION OF FACILITY
MASONIC CANCER CENTER

C1. DESCRIPTION OF FACILITY

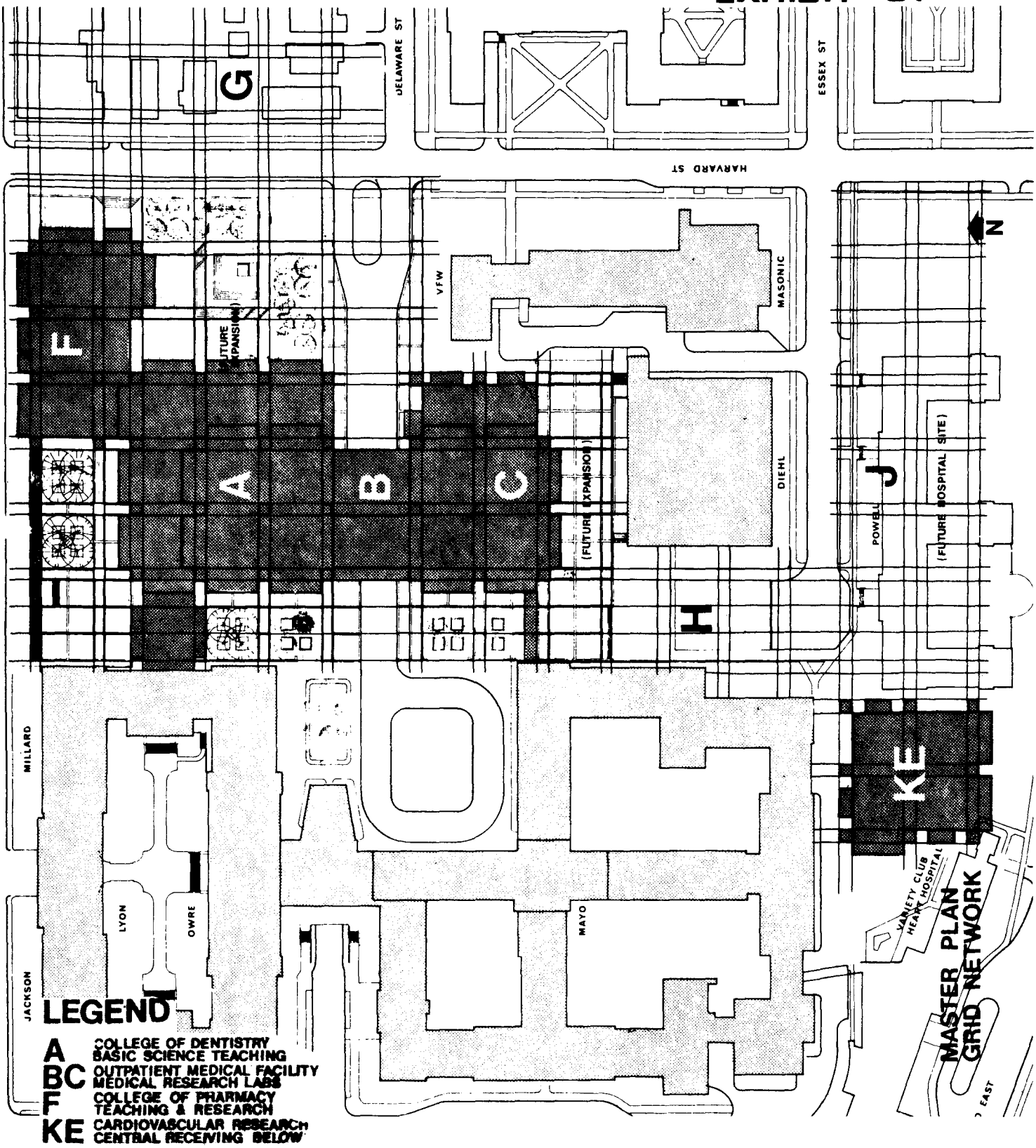
C1.1 Site Location

The site of the proposed new facility is located within the Health Sciences complex on the Minneapolis campus of the University of Minnesota directly contiguous with the present Masonic Memorial Hospital. It is within an area of existing and proposed University Hospitals and is shown on the approved Master Plan as an area for medical facilities. (See Master Plan, Exhibit C-1.) The site is bounded by Harvard Street on the east, by Diehl and Powell Halls on the west, by the Masonic Memorial Hospital on the north, and extends to the south under Essex Street into land presently occupied by a 3-story apartment building. The dimensions of the site are 138 feet east to west by 180 feet north to south. While construction of the building will require the temporary closing and excavation of Essex Street, the completed facility will leave the site largely unchanged, with Essex Street returned to its present configurations. The proposed site is shown on Exhibit C-2.

C1.2 Facilities Program

C1.2.1 This project is essential to provide adequate facilities to support both new and ongoing programs in basic and clinical research, as well as, training of medical professionals, public education programs, and continuing education programs for health professionals in the area of cancer. It is designed to continue the development of the Masonic Cancer Center into a cohesive center dedicated to improving the health of the community, specifically in the area of cancer, to upgrade patient care throughout the state, region and nation by coordinating ongoing research programs and developing new interdisciplinary research into the cause, prevention, treatment and cure of cancer. The new Masonic Cancer Center building will be a two-level underground structure of approximately 20,920 net square feet (53,008 s.f. gross). It will be connected to all levels of the Masonic Memorial Hospital by stairs and elevators.

EXHIBIT C1



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A COLLEGE OF DENTISTRY BASIC SCIENCE TEACHING
BC OUTPATIENT MEDICAL FACILITY MEDICAL RESEARCH LABS
F COLLEGE OF PHARMACY TEACHING & RESEARCH
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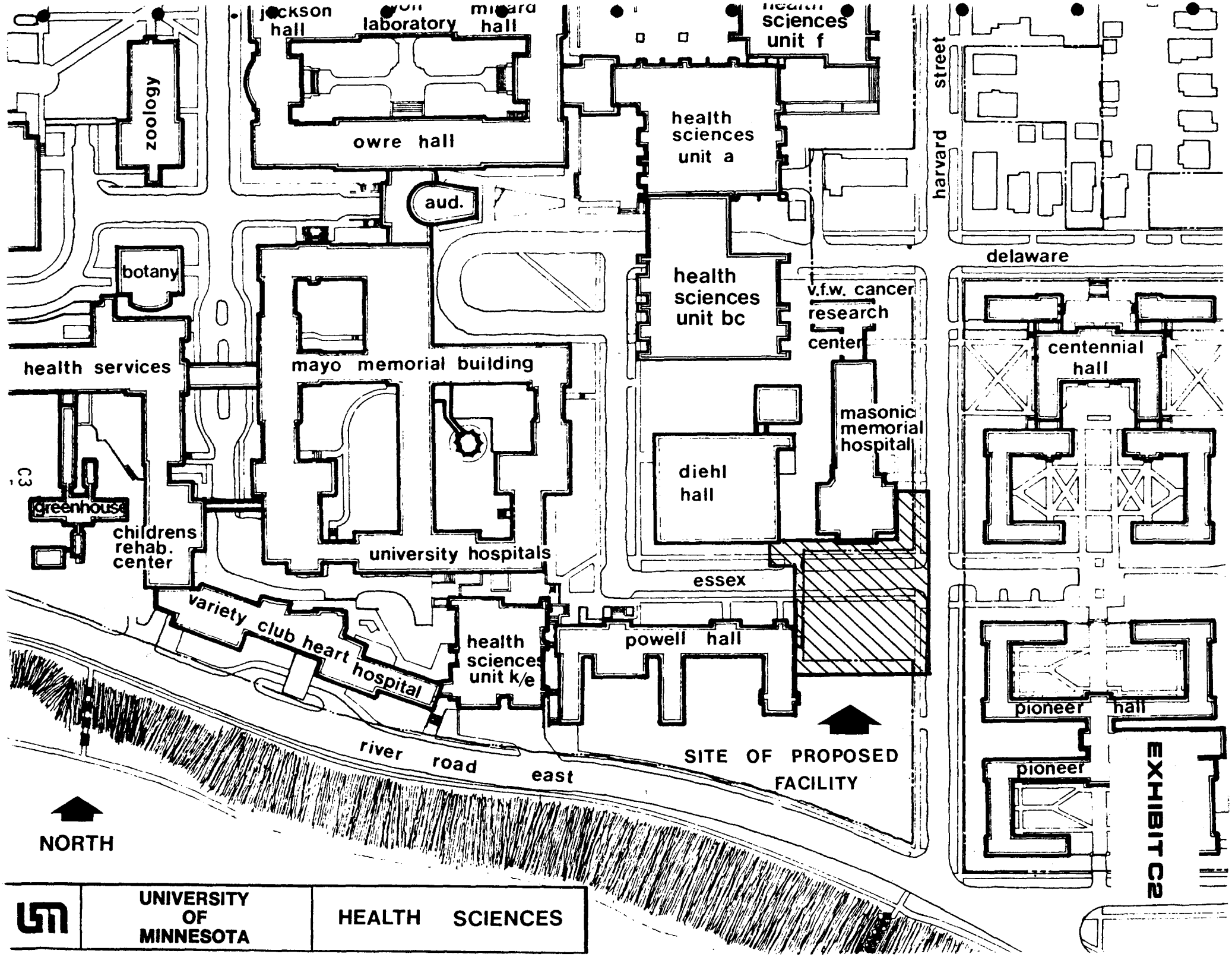
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health services
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centennial hall
masonic memorial hospital
diehl hall
greenhouse
childrens rehab. center
university hospitals
essex
variety club heart hospital
health sciences unit k/e
powell hall
pioneer hall
pioneer
river road east
SITE OF PROPOSED FACILITY
NORTH
UNIVERSITY OF MINNESOTA
HEALTH SCIENCES
EXHIBIT C2

C3

The building extends under Essex Street and will be totally below grade, except for the new elevator tower on the north side of Essex Street, stairway exits, air intakes, and skylights projecting above grade on the south side of the street.

C1.2.2 Upper Level

The upper of the two underground levels will accommodate the Oncology Clinic and the Radiation Biology research laboratories. The Oncology Clinic will consist of examination rooms with support facilities for blood sampling and testing, chemotherapy infusions and injections, and staff conference and work space. Patient waiting areas will be subdivided to allow staff descretion in inter-patient contacts.

The Radiation Biology portion of this level will consist of five laboratories for research work: an Isotope Lab, two Tissue Culture Labs, a Histopathology Lab, and a Radiochemistry and Immunology Lab. Research animals will be introduced to the building through an underground tunnel connection to the existing animal facilities in Diehl Hall and held for use on a daily basis.

C1.2.3 Lower Level

On the lower level will be the clinical research facilities and administrative offices of the Department of Therapeutic Radiology. Four radiation treatment rooms will be provided, grouped in pairs with a central control station. Treatment Rooms will be provided for a High Energy Linear Accelerator (25 MeV), a Medium Energy Linear Accelerator (13 MeV), a Low Energy Linear Accelerator (4 MeV), and a Cobalt-60 radiation therapy unit. The latter will be housed in a room designed and shielded for future conversion to a fast neutron generator. Additional space will be provided for the future housing of the generator and a radioisotope laboratory.

The plan provides for a clear and discreet separation of outpatients and inpatients to the maximum extent possible. Two elevators from the ground level entrance lobby lead directly to the outpatient reception and waiting area. Outpatients are then directed to dressing booths for gowning, and then to waiting spaces for gowned patients, with adults separated form children.

A separate inpatient elevator transports litter patients from the upper floors of the Masonic Memorial Hospital directly to the lower level, where they are conducted to a screened litter holding area. A central nursing station, with visual control of the gowned outpatient waiting areas and the inpatient holding area, will direct patient traffic from that point to the two simulation rooms, the exam rooms, and the four radiation therapy treatment rooms.

The west side of the lower level is devoted to the administrative functions of the Department of Therapeutic Radiology and offices for the staff doctors. A nearby stairway provides ready access for the staff to the exam rooms of the Interdisciplinary Clinic on the Upper Level above. The treatment planning, computer, and clinical dosimetry functions from a suite on the north side of the lower level in combination with offices for the Radiation Physics staff.

C1.2.4 Pedestrian and Vehicle Access

The entrance to the new facility provides an opportunity to identify, at the University, a focus for cancer research, education and care. Although cancer activities make up a large part of the University's medical program, no physical unit, identifiable to the public, has clearly defined the location of a cancer facility. The Masonic Cancer Center entrance structure will, therefore, identify that a cohesive cancer group exists at the University of Minnesota. Located near the corner of Harvard and Essex Streets, it will allow vehicular access to patient dropoff points on both streets. Connections to the Health Services parking ramp are provided by a University sponsored shuttle bus system.

C1.3 Environmental Impact

An environmental assessment based on DHEW Initial Criteria, Environmental Analysis, Inventory of Environmental Impacts is attached to this appendix.

C1.4 Design Analysis

C1.4.1 Architectural

C1.4.1.1 Master Plan

Since 1968 the long range Master Plan for the Health Sciences Complex of the University has designated the site south of Masonic Memorial Hospital underneath Essex Street as the proposed location of a cancer research facility. The accompanying schematic plans illustrate the implementation and development of that Master Plan concept. The proposed location is ideal because of its connection to the Masonic Memorial Hospital (where the majority of cancer patients in the University Hospitals are accommodated), its connection to the present research facilities in Diehl Hall, and its future relationship to the University Hospital Proposed Bed Replacement Facility. The Masonic Cancer Center will thus be located in a pivotal position for access by inpatients from all inpatient facilities, by outpatients with ready vehicular access and shuttle bus connections to the parking ramp, and by the clinical and research staffs. Since the building extends under a portion of the Proposed Bed Replacement Facility the building structure in that area will be designed to support the added loads that the future structure will impose.

C1.4.1.2 Future Expansion and Flexibility

The floor elevation of the Upper Level is designed to align with the service and distribution floor level already established in the completed buildings of the new Health Sciences complex and planned for the Proposed Bed Replacement Facility. Expansion of the facilities on both levels will thus be feasible either prior to or in conjunction with the construction of the Proposed Bed Facility.

C1.4.1.3 Circulation

A new bank of three elevators, contigious with the south end of the Masonic Memorial Hospital, will connect the four upper floors of that building, its basement, and the two underground levels of the new Cancer facility. One of the three will be restricted for inpatient use, while the other two will be utilized by outpatients. Key controlled operation will ensure that this separation is maintained.

At present time there is a patient and service tunnel crossing under Essex Street connecting Powell Hall with the basement of the Masonic Memorial Hospital. That tunnel connection will be relocated along the west perimeter of the Masonic Cancer Center to avoid the problems of through traffic.

C1.4.1.4 Biohazard Control and Containment

The research laboratories on the upper level that are used for oncogenic virus research will be provided with means of controlling biohazards in conformance with all applicable state and federal requirements. Negative pressure entrance air locks will be provided for all containment areas. Pass-through autoclaves will be provided to decontaminate all contaminated materials leaving the containment area.

Walls in containment areas will be sealed around fixtures, ducts and piping and inside conduits. Doors will be vermin proofed. Casework will be of tight construction to minimize harboring vermin. Ultra-violet lights will be provided as required with a floor intensity of ten microwatts per square centimeter.

Containment areas will maintain a negative pressure of 0.33 to 0.10 inches of water guage relative to adjacent areas. Hepa filters will be provided in the path of the air supply to tissue culture areas and on exhaust air as required. Exhaust ducts will have sealed joints. Manometers to gauge pressure differentials will be provided and filters will be readily accessible for decontamination prior to removal.

Vacuum breakers will be provided on laboratory water outlets and no piped vacuum will be allowed within the containment areas; water aspirators will be provided instead. Foot operated potable drinking water fountains will be provided within the containment area. Contaminated waste will be treated as required before disposing to the city sewer system.

C1.4.2 Structural System

The structural bays will be designed to be compatible with that already established for the University Hospital Proposed Bed Replacement Facility. Exterior walls will be of reinforced cast-in-place concrete. The lower floor will be slab-on-grade, the intermediate a two-way reinforced concrete slab and the "roof" a one-way reinforced concrete slab. Intermediate supports will

be columns of reinforced concrete, terminating at major beams at the "roof" level to support the additional loads and minimize the vibration imposed by Essex Street above.

The facility will be located to minimize the necessity of underpinning adjacent structures. The elevator tower linking the facility to Masonic Memorial Hospital will be of reinforced cast-in-place concrete below grade and of steel construction above, bridging the elevators to the Hospital at each level. Provisions will also be made to receive a future bridge link at each level from the University Hospital Proposed Bed Replacement Facility giving all inpatients direct access to the Masonic Cancer Center.

C1.4.3 Mechanical System

C1.4.3.1 Utility Distribution

.1 Heating Media

Steam will be supplied to the Masonic Cancer Center through a connection to the existing campus distribution system at the northeast corner of the Masonic Memorial Hospital. Steam flow meters will be installed to record the facility's steam consumption.

.2 Chilled Water

Chilled Water will be supplied to the facility through a new chiller, a primary chilled water pump, secondary pumps, and piping located in the Upper Level mechanical equipment room. A new 300 ton cooling tower will be provided in the elevator tower penthouse.

.3 Site Utilities

Due to the location of the new facility under Essex Street, existing sewer, storm, water and gas systems will by necessity be interrupted and relocated. The existing capacity of each, however, is sufficient to serve the new facility through connections immediately adjacent to the site.

C1.4.3.2 Heating, Ventilating and Air Conditioning

.1 Ventilation System

The ventilation system will consist of central built-up air handling units supplying the facility through low velocity duct distribution containing terminal reheat coils and discharging into ceiling located air diffusers.

Toilets, custodial rooms, mechanical spaces, laboratories and animal facilities will all be exhausted. All of these spaces will be in balance, supply to exhaust, except where odors are a problem. These areas will be negative as compared to adjacent areas with make-up air supplied to adjoining corridors and received to these spaces. The remaining spaces will be in balance with supply and return air systems.

.2 Fume Hoods

All laboratories with fume hoods will be 100% exhausted. General fume hoods, with "air-foil" inlet designs, will be exhausted at a rate to produce 100 FPM over the face of the hood. Radio-isotope hoods will be exhausted at a rate to produce a velocity of 150 FPM. Radio-isotope hood ducts will be routed around counting rooms or other areas where interference could be a problem. Radio-isotope hoods will require absolute filters at the hoods. Hoods for use with infectious materials will have an absolute filter at the hood fan discharge.

Hood exhaust will be by individual fan or by grouping hoods depending on location and type. Galbestos or type 316 stainless steel will be used for hood exhaust ductwork. Exhaust fans will be located in a roof penthouse on the elevator tower to create negative pressure in the exhaust ductwork.

.3 Controls

A pneumatic automatic control system will be provided for the control of all air temperature and humidity conditions. Room humidity will be controlled on a zone basis. Except in special isolated cases, a zone will consist of all rooms supplied by a single air handling unit. Room temperature will be controlled on an individual basis. A room thermostat will control a valve regulating the water flow to the reheat coil serving the room.

To accommodate planned future central control and surveillance of the mechanical systems of this facility, all features and devices necessary for remote central control shall be provided.

.4 Acoustics and Vibration

Acoustical and thermal insulation will be provided on ducts and piping as required. Special foundation and support designs will be provided for all fans, pumps, compressors, etc., to reduce vibration to a minimum.

.5 Design Criteria

.5.1 Temperature and Humidity

Winter: Outdoor - -19°F, Northwest prevailing wind at 15mph.
Indoor - All occupied areas 68°F (except in special areas), approximately 30% relative humidity.

Summer: Outdoor - 89°F Dry bulb
75°F Wet bulb
Indoor - All occupied areas 78°F $\pm$ 2°F, approximately 50% relative humidity.

The above criteria are in compliance with the new Minnesota Energy Conservation Code requirements.

.5.2 Air Changes

All air change requirements of the Code will be met. The animal holding rooms will comply with the air change rates as required by the National Institutes of Health.

C1.4.3.3 Plumbing

.1 General

Plumbing systems will be installed in accordance with all applicable codes. The systems will be arranged and constructed to be readily expanded and/or modified to meet program requirements. The following risers and/or services will be provided:

a. Waste stack (acid)
b. Vent stack (acid)
c. Domestic cold water
d. Domestic hot water
e. Domestic circulating hot water
f. Laboratory cold water
g. Laboratory hot water
h. Laboratory circulating hot water
i. Gas

j. Compressed air (laboratory)
k. Vacuum (laboratory)
l. Distilled water
m. Standpipe, hose cabinets and sprinklers
n. Oxygen
o. Nitrogen
p. Nitrous oxide
q. Downspouts

Tees with shut-off valves or wyes will be provided on the risers for each service at every floor to facilitate future remodelling.

.2 Scope of Work

a. A sanitary drainage system will be provided with a connection to the existing system.
b. A storm drainage system will be provided with a connection to the existing system.
c. An acid resistant drainage system will tie into the sanitary sewer after proper dilution.
d. Domestic water piping systems (hot, cold and circulation) will be provided, including connections to the existing cold water main. A domestic hot water heating system will be installed.
e. A non-potable water supply system for the laboratories will be installed incorporating a central barometric loop. The system will include cold water and circulating hot water. A laboratory hot water heating system will be also installed.
f. Natural gas will connect to the existing Minnesota Gas Company main adjacent to the site.
g. Compressed air (laboratory) will connect to the existing central compressed air system.
h. Vacuum (laboratory) will connect to the existing central vacuum system.

i. A fire standpipe system including fire department connections and hose cabinets will be provided. A sprinkler system will be installed in all areas required by Code.

j. An oxygen piping system will be provided as required with connections to an existing tank manifold.

k. Nitrogen piping will be provided as required with connections to a new tank manifold.

l. Nitrous oxide piping will be provided as required with connections to a new tank manifold.

.3 Installation

The piping systems serving laboratory equipment shall have risers running vertically in mechanical shafts supplied with horizontal mains located above a suspended ceiling.

The hot water systems shall be completely recirculating systems with reversed return where possible to eliminate the need for balancing various branches.

Each service or drain not extended to connecting locations shall be provided with capped or valved connection at each vertical shaft.

.4 Electrical System

a. Existing Electrical Utilities

The University buys power from the local utility, Northern States Power, and owns and maintains an underground 13.8 KV electrical distribution system on the campus. The construction of the Masonic Cancer Center will required the rerouting of the primary service in Essex Street to the south side of Powell Hall.

b. Primary Electrical Services

Underground primary service for the new facility will be provided from an existing manhole in Harvard Street on the east side of

the proposed site. Two primary feeders will be provided to improve service reliability. Feeders for this project are identified by the Owner as Cam 20X and 15Y. Primary switches and two transformers will be located in a vault adjacent to the mechanical space. Transformers will be substation type 3 phase, fan cooled, askarel filled units, connected in a double ended manner, sized to provide 100% back-up upon failure of one unit.

c. Secondary Electrical System

Principal secondary voltage will be 277/480 volts, 3 phase, 4 wire wye for lighting and motors. A 120/208 volt, 3 phase, 4 wire wye system from dry type transformers will be provided for receptacles and medical equipment.

d. Communication Systems

1. Public telephone systems will be provided to Offices and Lab spaces.
2. Closed circuit TV and intercom systems will be provided between radiation therapy spaces and control rooms.

e. Lighting

All but radiation therapy areas will have recessed fluorescent lighting at levels to comply with the Minnesota State Energy Code requirements.

Radiation therapy areas will be served by incandescent lighting on a dimming system as required by the clinical program.

f. Fire Alarm System

A complete audible alarm, zone annunciated, double supervised, fire alarm system will be provided with automatic and manual alarm initiating devices as required by Codes.

g. Emergency Electric Power

An emergency generator with an automatic control system will be provided for egress lighting in corridors and appropriate spaces. The generator will provide emergency power to elevators (selective operation of one elevator at a time) and critical equipment such as lab refrigerators, incubators, etc.

May 3, 1976

Dr. Richard Varco
Chairman, Hospital Planning Committee
Box 495-Mayo

Dear Doctor Varco:

A planning committee was appointed to develop the construction grant request for Unit D. Unit D was originally proposed in 1966 as part of the long-range planning for the Health Sciences Center.

Tom Jones and I met with you early in the development of this planning and it was at your suggestion that a feasibility study was undertaken. This was a wise decision and it has considerably aided our planning.

I wanted to report to you the current status of this committee. A deadline of June 1st for submission of the construction grant is being aimed for.

Terminology: The Masonic Cancer Center is a term employed to designate Unit D, the Masonic Memorial Hospital and the Veteran's of Foreign Wars Cancer Research Center.

Funding: Funding will be from the National Cancer Institute's construction funds, the Masons of Minnesota and other private sources.

Project Description: "This project is designed to continue the development of the Masonic Cancer Center into a cohesive center dedicated to improving the health of the community, specifically in the area of cancer, to upgrade patient care throughout the state and region by coordinating ongoing research programs and developing new interdisciplinary research into the cause, prevention, treatment and cure of cancer. This will be accomplished by providing adequate facilities to support basic and clinical research as well as training of medical professionals, public education programs and continuing education programs for health professionals in the area of cancer.

The proposed facility is a three story underground building with an above ground four story elevator tower

connected directly to the existing Masonic Memorial Hospital. There will be approximately 25,000 net square feet of area comprised of research and administrative offices, radiation therapy facilities, chemotherapy facilities, educational facilities, research laboratories and support facilities. This building will be fully integrated into the master plan for the development of the University of Minnesota."

Location: Attached is a map of the University campus showing the location of Unit D.

Groups involved in Feasibility Study: The Architect's Collaborative, Inc., the planning committee (Drs. Kennedy, Levitt, Krivit, Mr. Tom Jones and Ms. Cherie Perlmutter) and members of the Health Sciences Planning administration.

Results to Date of the Feasibility Study: The Committee and architects have established the fact that Unit D could be built beneath the ground south of the Masonic Memorial Hospital. To meet the required space needs, it will extend west beneath the street adjacent to Diehl Hall. There are no facilities beneath the ground upon which there would be any significant impact. The Historical Society has approved such a construction and find that it does not interfere with any historical component of land or buildings.

Justification: There is no question that the Department of Therapeutic Radiology needs improved facilities and clinic space. It is operating under adverse conditions at the present time and its patient load clearly demonstrates a need for improved facilities. The Masonic Clinic, containing four examination rooms, currently has approximately 9,800 patient visits per year. The patients are waiting in the hall and the facility is inadequate. The Masonic Clinic was not included in the planning for the outpatient facility, Unit B/C. An expanded clinic would provide space for participation by Medical Oncology, Pediatric Oncology, Surgical Oncology, Radiation Therapy, and Gynecologic Oncology.

One of the questions relative to Unit D was whether it could provide sufficient space to meet the entire needs of Radiation Therapy. Initially there was some question whether all of the needs could be met. This was solved by extending the building westward next to Diehl Hall. In the future, if further needs for Therapeutic Radiology do occur, it is feasible for expansion southward into the lower level of Unit J. Hence, in planning Unit J, consideration of any needs for Therapeutic Radiology can be made at that time.

The main problem with the Unit D is that the Masonic Memorial Hospital is not on the same construction level as

Unit B/C of the future Unit J. Therefore, half-floor elevator access and special stairs will have to be built so that the Masonic Memorial Hospital and Unit D can be connected in a rational manner. The architects say this is possible.

Conclusion: The Unit D planning committee concluded that Unit D was a reasonable concept to meet the needs of Therapeutic Radiology and the Masonic Clinic. Furthermore, it provides additional cancer education facilities that would be able to be used by interdisciplinary groups. It provides an opportunity to develop and encourage interdisciplinary oncologic activities resulting in improved patient care. The committee, therefore, recommends further planning for Unit D.

To develop the necessary program for a grant application of this sort, JRB Associates, Inc. has been contracted to aid in the development of plans and application for federal funding.

Sincerely yours,

B. J. Kennedy, M.D.
Professor of Medicine
Director of Medical Oncology

BJK:jn
Enclosure
Dictated but not read.

UNIVERSITY OF MINNESOTA
TWIN CITIES

Department of Surgery
Medical School
Mayo Memorial Building
Minneapolis, Minnesota 55455

4 May 1976

B. J. Kennedy, M.D.
Professor of Medicine
Director of Medical Oncology
P.O. Box 286 Mayo

Dear B. J.:

Thank you for the letter of 3 May 1976. After scanning your note it does seem to me that some problems still remain. None of these need to be insurmountable, if certain events progress satisfactorily.

However, I feel it is a mistake to identify that area as a Cancer Center. Moreover, it is unlikely that the Veterans of Foreign Cancer Research Hospital would care to be taken over, in title at least, as the Masonic Memorial Hospital.

Above all, however, I urge that you continue to keep in the closest working communication with Tom Jones so that there can be a maximization of the development in a thoroughly coordinated fashion with the plans as they evolve for clinical facilities in the Powell Hall and Frankfurter Apartment site.

Thank you again for informing me of the state of these developments for your interests in certain aspects of oncology.

Cordially,

Richard L. Varco, M.D.
Department of Surgery

RLV:pl

UNIVERSITY OF MINNESOTA
TWIN CITIES

University Hospitals
Minneapolis, Minnesota 55455

June 30, 1975

B.J. Kennedy, M.D.
Professor of Medicine, Director of Medical Oncology
and Professor of Oncology
Box 286
University Hospitals

Dear Dr. Kennedy:

At its meeting of June 27, 1975 the Ambulatory Care Space Allocation Committee discussed your proposal for expansion of Masonic Clinic.

On the basis of information available, the committee feels that your proposal for expanding the Clinic in its present location is programmatically justified. However, we do note that the physical location is less than optimal for clinic activities and feel that some consideration be given to either accomodating the clinic in future stages of Unit B-C, or elsewhere in Masonic Hospital. If these investigations are not productive, expansion in your present location is probably physically justified as well.

We assume that the Hospital and yourself will initiate investigations on possible remodeling and operating costs and proceed, in conjunction with the appropriate parties, accordingly.

If you have any questions or the Committee can be of any assistance, please feel free to contact me.

Sincerely,

Glenn Gullickson, M.D.
Chairman
Ambulatory Care Space Allocation Committee

GG:jb

HEALTH SCIENCES

C2. PLANNING PROCESS

C2.1 University of Minnesota Facility Planning Process

The University's normal planning process applicable to this project is outlined in Figure C-1. Attached to this section are copies of some of the documents generated during this process.

C2.2 Planning Directives

C2.2.1 The following planning directives were given to the architects relative to this facility. Since the architects are currently involved in a major construction effort for the Health Sciences Center, it was not necessary to go into details relative to general character, style, major design features, etc. In fact, the architects have previously established a master plan grid network which governs all new projects within the Health Sciences Center.

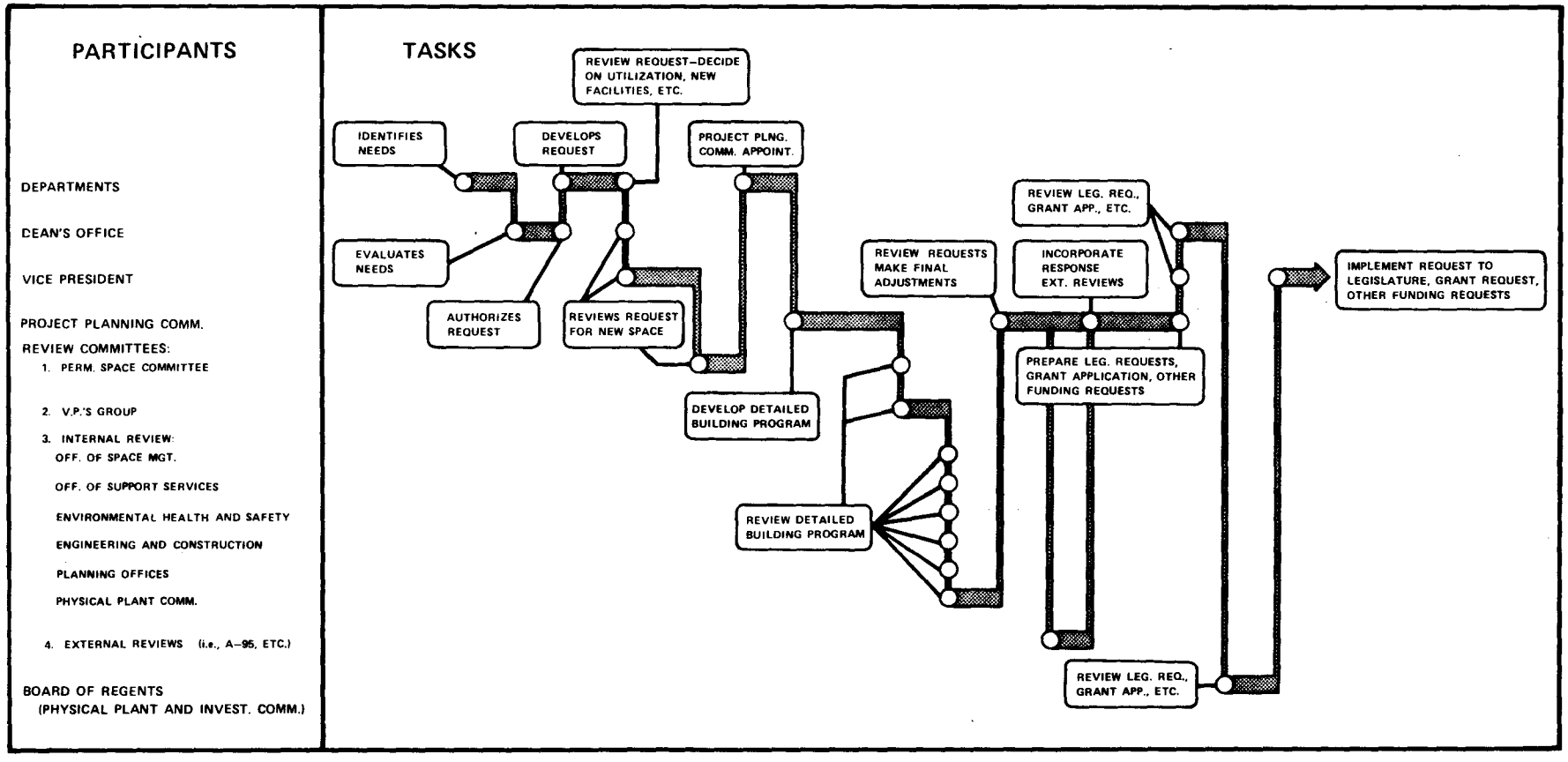
C2.2.2 In accordance with the long range master plan for the Health Sciences Complex of the University, the expansion of the Masonic Cancer Center Complex is to be located at the south end of Masonic Memorial Hospital extending south beneath Essex Street. The new facility is to connect directly to Masonic Memorial, where the majority of cancer inpatients are housed, and allow a future link to the University Hospital's proposed replacement bed facility where the remainder of the hospital's patients will eventually be located. A link to the animal facilities in Diehl Hall should also be provided for the laboratory research staff.

C2.2.3 The underground location of the new facility assures a minimal impact on the site environs. Those elements that do extend above grade should be compatible in both appearance and location with existing structures and the proposed replacement bed facility.

Direct connection to existing utilities in Essex Street may be made and some relocation of these utilities will be required to accommodate the structure.

C2.2.4 The facility's location will make it central to inpatient and out-patient access. Inpatients via the hospital links described above and out-

FIGURE C-1. FACILITY PLANNING PROCESS



patients by private vehicle dropoff points at Masonic Memorial, a bus shuttle service to parking facilities and public bus routes on University Avenue two blocks away.

C2.2.5 The entrance to this facility should be combined with that to the Masonic Memorial Hospital, thus providing a single control and identity point for the entire Masonic Cancer Center.

C2.2.6 The internal organization of the building should provide discreet separation between incompatible research activities (i.e., clinical and animal research) and inpatient and outpatient circulation. The circulation between clinical, treatment and office areas should be established for ease of movement by the facility's staff without interference with patient or research areas.

C2.2.7 Finally, provision should be made to allow future expansion of the new facility without compromise to the interrelationships established above.

C3. PROPOSED FACILITY SCHEMATICS AND AREA TABULATION

C3.1 Schematic plans and section are shown on Exhibits C-3 through C-6. Table C-1 provides a primary breakdown of gross and net assignable square feet by floor. Table C-2 provides a more detailed breakdown by program.

C3.2 Area and National Resource

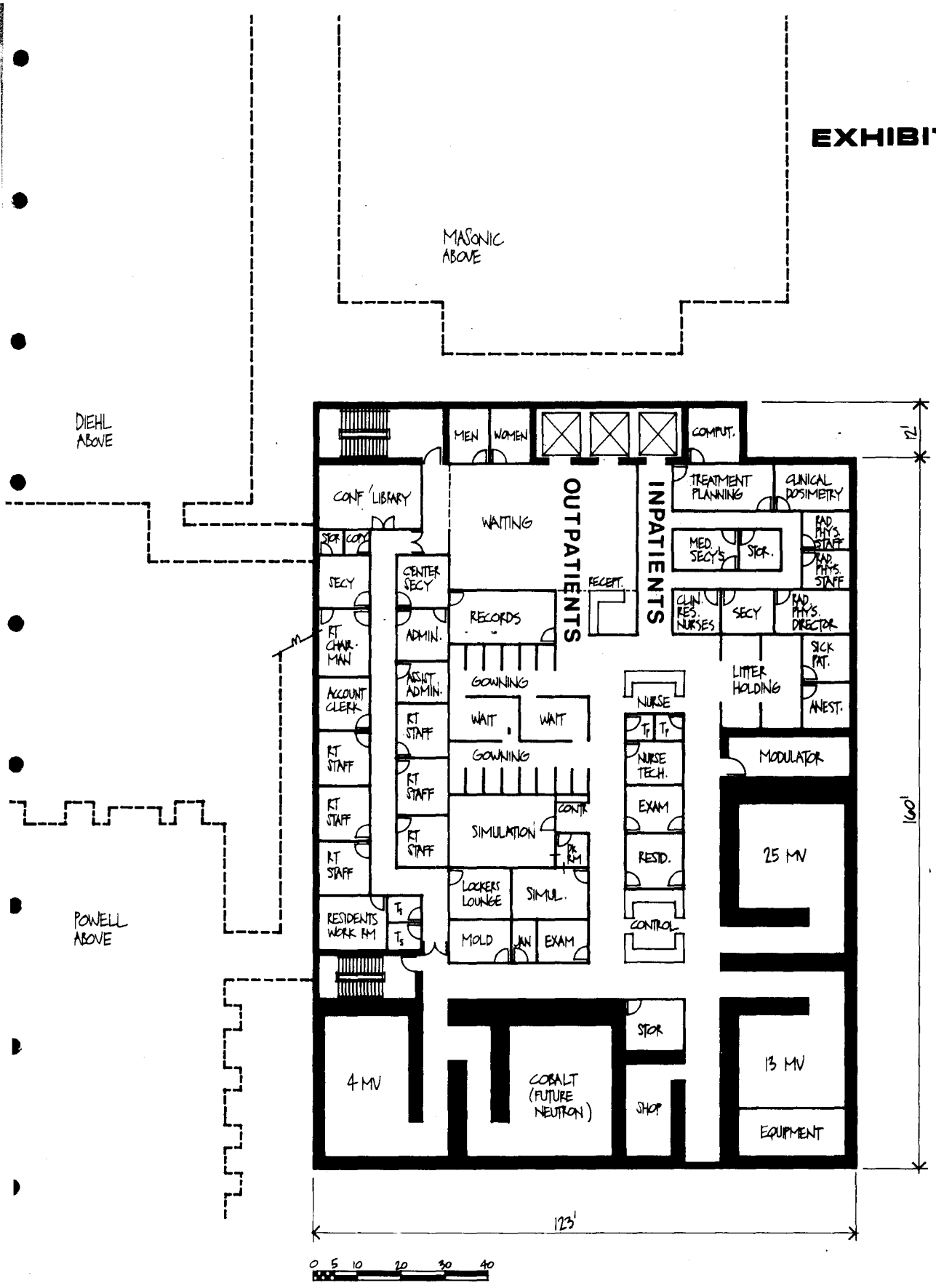
Upon completion, the Masonic Cancer Center will be an area and national resource promoting and supporting other cancer and health research activities by conducting tests, providing a broad base of clinical material, providing education and training, and conducting extensive outreach programs. The new facility will expand and enhance the ongoing multi-disciplinary/ multi-modial approaches to patient management. The Center will become an area focus for the diagnosis and management of patients with malignant diseases. These patients will act as a stimulus and resource for further development of basic and clinical research in oncology.

Further evidence of the Masonic Cancer Center's role as an area and national resource are the awards by the National Cancer Institute establishing the Special Cancer Center for the Study of Advanced Malignant Diseases and the Radiation Oncology Research and Clinical Center. Both these Centers are described in detail in earlier sections of this application.

C3.3 Unmet Needs of Area

Approximately 2 million people live within the metropolitan area of Minneapolis. Table A-1 in Appendix A shows the role of the University Hospitals in the cancer problem within this population as reflected by the Third National Cancer Survey. Since this survey huge advances have been made in the cause, detection, and treatments for cancer. Still large numbers of cancers go undetected until little can be done and, once detected, outdated methods of care are prescribed. The Masonic Cancer Center will provide a long needed identity within the community where the latest developments in education, research and health services relating to cancer will be available. It would provide a focus for cancer education at the University of Minnesota. The cancer education program incorporates the Medical School Cancer Education Program, the Public Health Department, American Cancer Society, and professional medical societies. The University is also

EXHIBIT C3



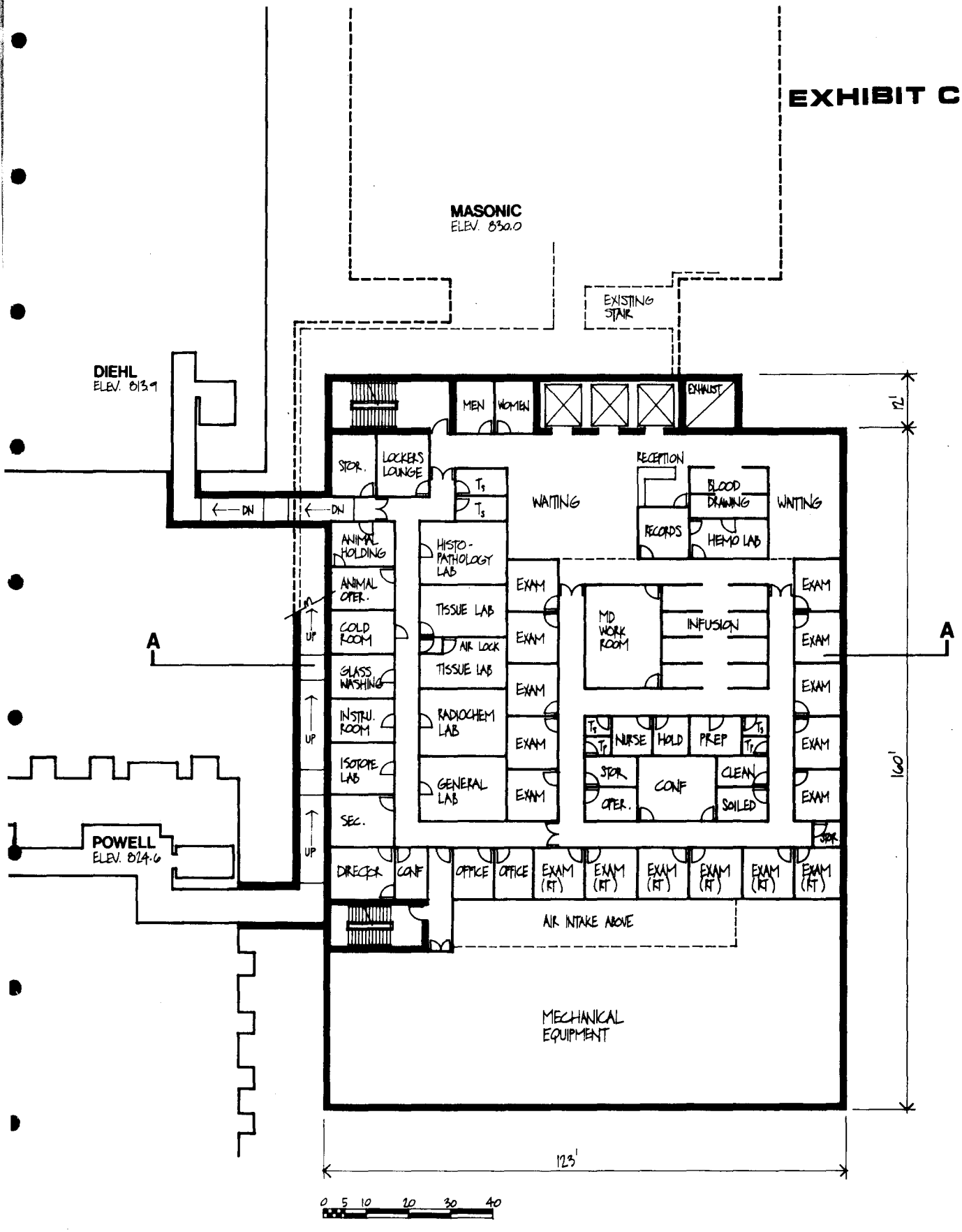
LOWER LEVEL ELEV. 800·0

MASONIC CANCER CENTER

UNIVERSITY OF MINNESOTA
HEALTH SCIENCES EXPANSION
MINNEAPOLIS, MINNESOTA C24

SEPTEMBER 76 **THE ARCHITECTS COLLABORATIVE, INC. CAMBRIDGE, MASS.**

EXHIBIT C4



UPPER LEVEL ELEV. 817·4

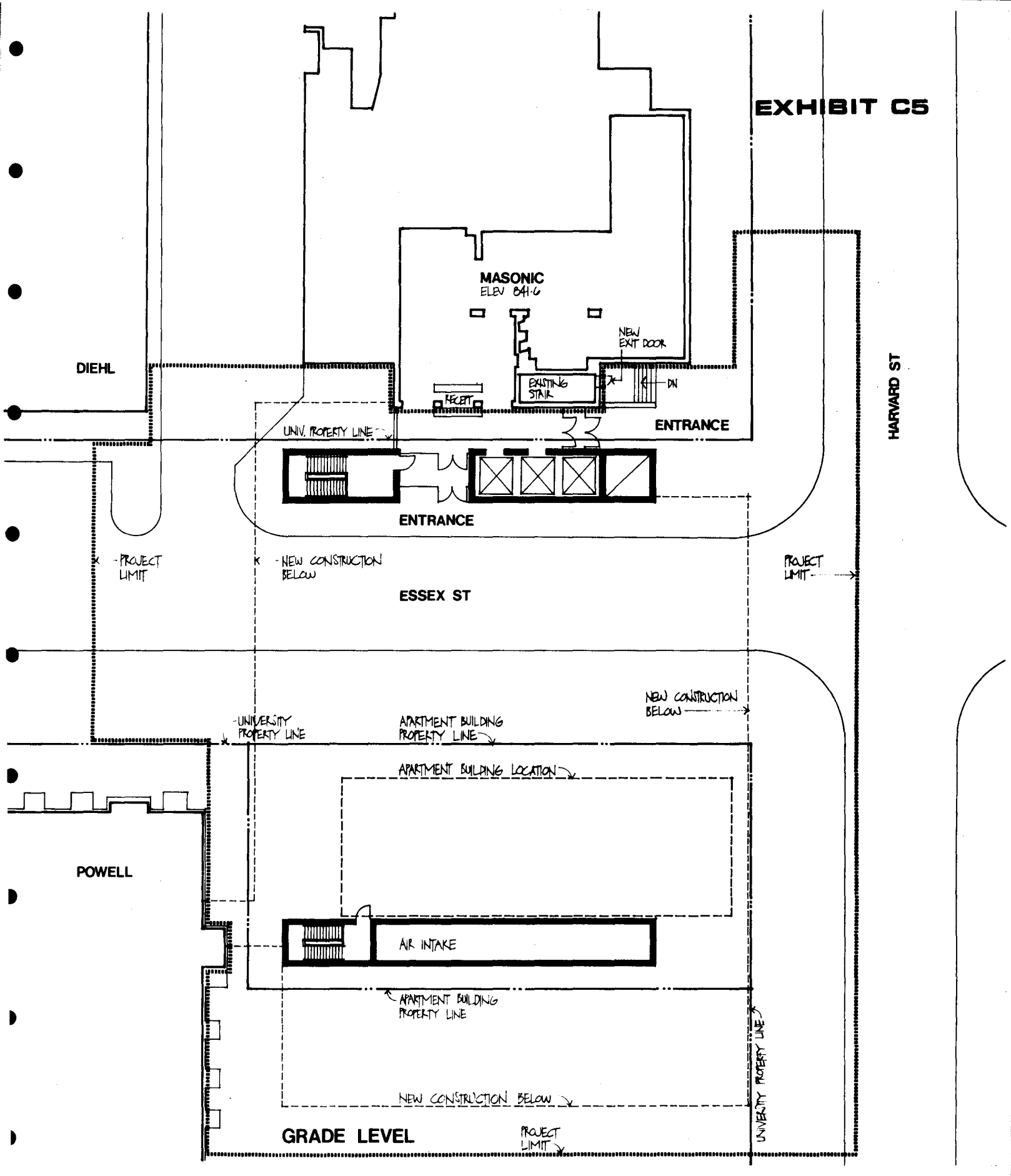
MASONIC CANCER CENTER

UNIVERSITY OF MINNESOTA
HEALTH SCIENCES EXPANSION
MINNEAPOLIS, MINNESOTA

C25

SEPTEMBER 76

THE ARCHITECTS COLLABORATIVE, INC. CAMBRIDGE, MASS.



MASONIC CANCER CENTER

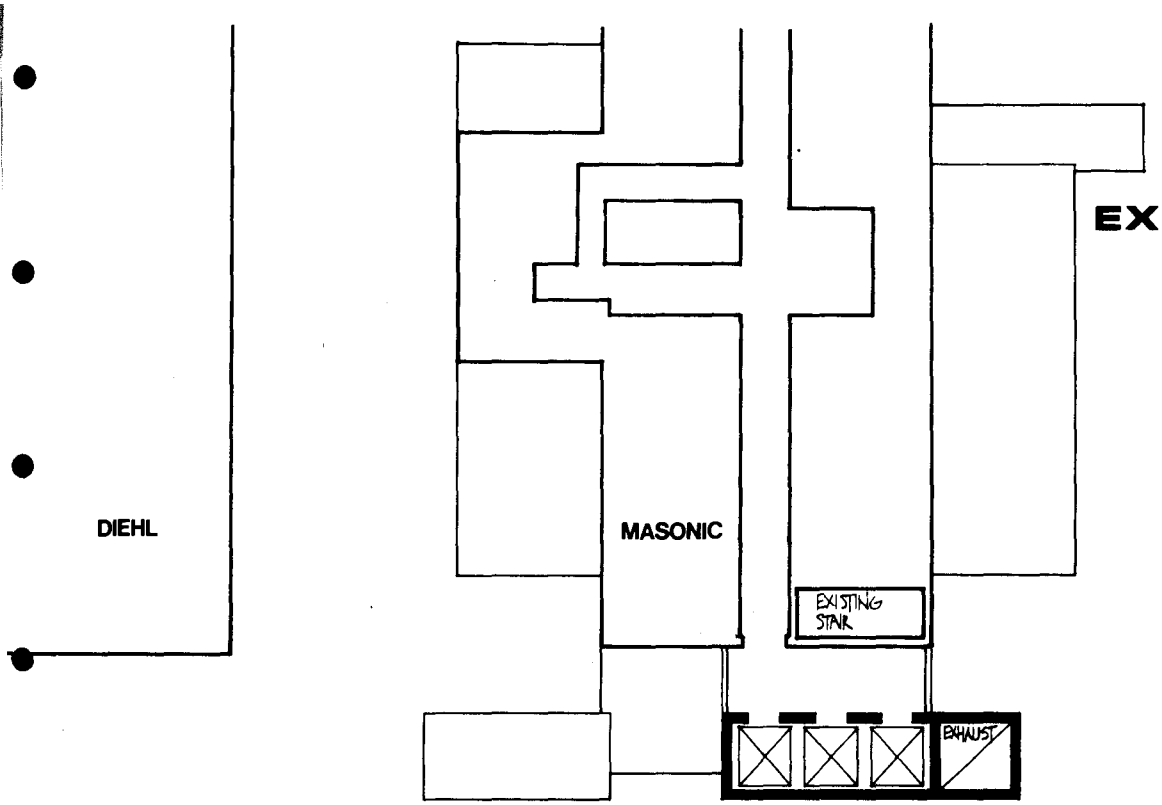
UNIVERSITY OF MINNESOTA
HEALTH SCIENCES EXPANSION
MINNEAPOLIS, MINNESOTA

C26

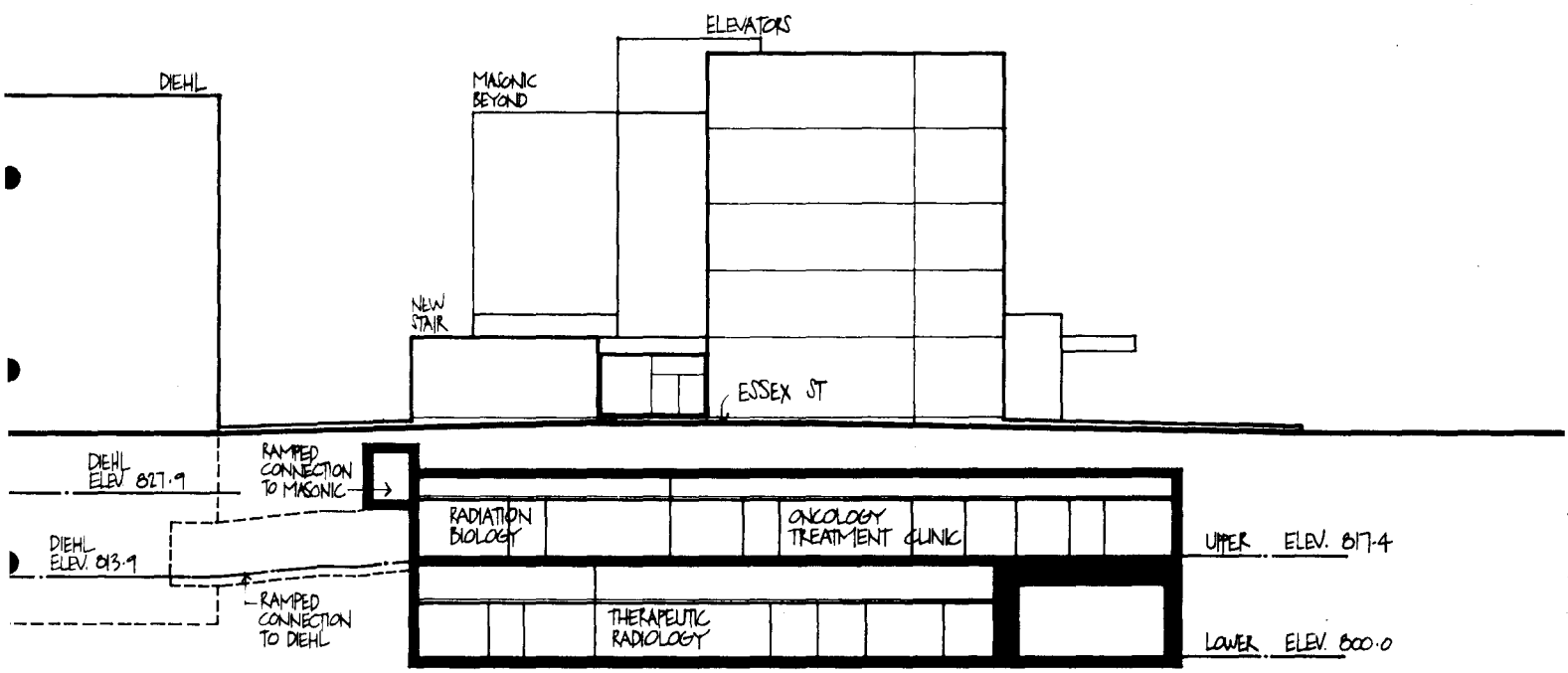
SEPTEMBER 76

THE ARCHITECTS COLLABORATIVE, INC. CAMBRIDGE, MASS.

EXHIBIT C6



ELEVATOR TOWER



SECTION A·A

MASONIC CANCER CENTER

UNIVERSITY OF MINNESOTA
HEALTH SCIENCES EXPANSION
MINNEAPOLIS, MINNESOTA

C27

SEPTEMBER 76

THE ARCHITECTS COLLABORATIVE, INC. CAMBRIDGE, MASS.

TABLE C-1 AREA TABULATION

	NET ASSIGNABLE SF	GROSS SF
TOTAL PROJECT	20,920	53,008
1. LOWER LEVEL		
1.1 Therapeutic Radiology, Clinical Research	7,318	15,253
1.2 Therapeutic Radiology, Support	1,407	1,676
1.3 Radiation Physics	477	536
1.4 Therapeutic Radiology, Administration	2,554	3,600
SUBTOTAL	11,756	21,065
2. UPPER LEVEL		
2.1 Oncology Research Clinic	5,642	9,976
2.2 Radiation Biology	3,522	5,181
2.3 Mechanical	—	5,908
2.4 Ramps	—	2,684
SUBTOTAL	9,164	23,749
3. GRADE LEVEL		
3.1 Elevators and Entrance	—	1,350
3.2 Egress Stairs	—	756
3.3 Mechanical	—	1,108
SUBTOTAL	—	3,214
4. ELEVATOR TOWER		
4.1 Elevators and Lobbies	—	3,200
4.2 Mechanical (Incl. Penthouse)	—	1,780
SUBTOTAL	—	4,980
TOTAL	20,920	53,008

TABLE C-2 AREA TABULATION

1.1 THERAPEUTIC RADIOLOGY, CLINICAL RESEARCH

PROGRAM SPACE	NET ASSIGNABLE SF
Patient Waiting	480
Reception/Appointments/Switchboard	120
15 Dressing Cubicles w/ Lockers	336
Adult Gowned Waiting	176
Child Gowned Waiting	176
Litter Holding (Inpatients)	252
Sick Patient Holding Room	121
Anesthesia Room (Children)	121
Nurses Station	140
2 Patient Toilets	72
Office, Head Nurse/Technologist	140
2 Exam Rooms	260
Residents Room	168
Control Area	224
Simulator-Tomograph Room	384
Simulator Room	216
Darkroom	64
Mold Room	140
Janitor's Closet	60
Storage	168
(Future Radioisotope Lab)	
4 MV LINAC (608 plus Maze)	824
13 MV LINAC (768 plus Maze)	972
25 MV LINAC (576 plus Maze)	780
Cobalt 60 (720 plus Maze)	924
(Future Neutron Generator Room)	
SUBTOTAL	7,318

TABLE C-2 (CONTINUED) AREA TABULATION

1.2 THERAPEUTIC RADIOLOGY, SUPPORT

PROGRAM SPACE	NET ASSIGNABLE SF
Patient Records	288
Dosimetry	187
Treatment Planning	253
Computer Room	144
Office, 2 Clinical Research Nurses	110
Office, 3 Medical Secretaries	135
Storage Room	90
Shop	200
(Future Generator Room)	
SUBTOTAL	1,407

1.3 RADIATION PHYSICS

PROGRAM SPACE	NET ASSIGNABLE SF
Director's Office	170
Secretary's Office	120
2 Staff Offices	187
SUBTOTAL	477

1.4 THERAPEUTIC RADIOLOGY, ADMINISTRATION

PROGRAM SPACE	NET ASSIGNABLE SF
Department Chairman's Office	168
Secretary's Offic e	144
6 Staff Offices	864
Administrator's Office	144
Assistant Administrator's Office	120
Center Secretary's Office	144
Account's Clerk's Office	144
Conference/Library	322
Photocopy Room	36
Storage	36
Staff Toilets	72
Resident's Work Room	192
Staff Lounge/Locker Room	168
SUBTOTAL	2,554

TABLE C-2 (CONTINUED) AREA TABULATION

2.1 ONCOLOGY RESEARCH CLINIC

PROGRAM SPACE	NET ASSIGNABLE SF
2 Patient Waiting Areas	806
Reception/Appointments	120
Patient Records	144
Injections & Blood Drawing	216
Hemotology Lab	180
10 Exam Rooms (Oncology)	1,380
6 Exam Rooms (Radiation Therapy)	792
M.D. Work Room	432
Infusions	456
Nurse's Office	90
Patient Holding Room	90
Preparation Room	108
2 Patient Toilets	60
2 Staff Toilets	60
2 Storage Rooms	132
Operating Room (Biopsies, Bone Marrow)	96
Conference/Work Room	288
Clean Utility	96
Soiled Utility	96
SUBTOTAL	5,642

2.2 RADIATION BIOLOGY

PROGRAM SPACE	NET ASSIGNABLE SF
Director's Office	180
Secretary's Office	180
Conferences	120
2 Staff Offices	240
Isotope Lab	180
Instrument Room	180
Glass Wash	150
Cold Room	150
Animal O.R.	150
Animal Holding	160
Storage	140
Lounge/Locker	168
2 Staff Toilets	144
Histopathology Lab	300
2 Tissue Labs	480
Radiochemical/Immunology Lab	300
General Lab	300
SUBTOTAL	3,522
TOTAL NET ASSIGNABLE SF	20,920

an active participant in the Minnesota State Cancer Council which represents many of the groups interested in the problems of cancer.

The University is an area in which research develops. Facilities are needed to extend this development to more effectively demonstrate the products of research, and to aid in the application of research principles in the care of the patient with cancer.

ATTACHMENT 1

ENVIRONMENTAL ANALYSIS

INVENTORY OF ENVIRONMENTAL IMPACTS

PROPOSED CONSTRUCTION GRANT FOR

Masonic Cancer Center

vs. DHEW INITIAL CRITERIA

I. USE OF NATURAL RESOURCES

This set of criteria is concerned with the use and accessibility of non-renewable natural resources such as land, minerals, and fuels. The criteria is also concerned with flow resources (water and air) which are constantly renewed but in which short-term or local shortages might occur.

CRITERIA	IMPACT YES	IMPACT NO	DESCRIPTION OF ENVIRONMENTAL IMPACT
(1) Requires a change in the traditional use of the land parcel (by rezoning, etc.)?	☐	☒	Present Zoning: R-6, see attached letter Present Use of Site: Side yards and street Proposed Zoning: R-6
(2) Causes a change in the use of other land by related development of stores, roads or site changes?	☐	☒	

	YES	NO
Project will generate new stores?	☐	☒
Project will cause new roads?	☐	☒
Project will cause new parking?	☐	☒

	YES	NO	
(3) Requires the use of the land for purposes which are unsuitable to its physical characteristics?	☐	☒	Soil borings ~~have~~/have not been completed. Proposed facility will/~~will not~~ have foundations similar to other facilities in the area. The facility ~~is~~/is not in a flood plain.
(4) Includes the use of wetlands (swamps, marches, etc.)?	☐	☒	
(5) Blocks access to known mineral deposits?	☐	☒	(Sand, gravel, clay, stone or other common building materials aren't considered mineral deposits.)
(6) Causes more than a 1% increase in fuel or mineral consumed annually within the state?	☐	☒	Estimated annual fuel requirements: 79,000 gallons of fuel or 11,620,000 cubic feet of natural gas or 460 tons of coal or 2,390,000 KWHRS of electricity. Expected source of these fuels: coal
(7) Causes an identifiable decrease in the volume of water in a lake, river, water table, reservoir, etc.?	☐	☒	If yes, describe.

	YES	NO	
(8) Causes a change in the traditional use of a body of water?	☐	☒	If yes, describe
(9) Will be in compliance with local and state land use planning?	☒	☐	

II. POLLUTION

This set of criteria is concerned with the processes which generate pollution. These include the introduction of pollutants into the environment, changes in the flow of energy through the environment, and changes in the composition of environments through the augmentation or deletion of substances which are naturally present. The criteria are also directly concerned with the production and one-time use of materials and the proper disposal of wastes.

CRITERIA	IMPACT YES	IMPACT NO	DESCRIPTION OF ENVIRONMENTAL IMPACT
(1) Creates an identifiable increase in ambient air pollution levels from a new emission source?	☐	☒	* Annual emissions (to be calculated by NCI Staff)
From increased use of existing sources?	☐	☒	Particulates = tons/year Sulfur Oxides = tons/year Carbon Monoxides = tons/year Hydro-carbons = tons/year Aldehydes = tons/year

	YES	NO	
(2) Creates an identifiable increase in ambient air pollution levels through a major increase in the number of or use of automobiles, trucks, etc.	☐	☒	Number of new employees? 61
(3) Will exhausts from fume hoods exceed City or State Health Standards?	☐	☒	If yes, describe.
(4) Involves dredging or swamp drainage?	☐	☒	If yes, describe.
(5) Involves the construction of a waste treatment plant?	☐	☒	If yes, describe capacity and location.
(6) Involves the discharge of untreated human waste directly into a lake, river, etc.?	☐	☒	If yes, describe.
(7) Involves the discharge of laboratory wastes or biohazard wastes directly into a lake, river, etc.?	☐	☒	If yes, describe.
(8) Overloads an existing waste treatment plant due to new loads (volume, chemicals, toxicity, etc.)?	☐	☒	Please obtain a connection permit or other approval from local sewer authority. (see attached letter)

		YES	NO	
(9)	Causes soil erosion (after completion of construction phase)?	☐	☒	If yes, describe.
(10)	Allows seepage of contaminants into the water table?	☐	☒	If yes, describe.
(11)	Allows foreign substances (such as salt) to leach into the soil?	☐	☒	If yes, describe.
(12)	Increases the stress placed upon an identified earthquake fault?	☐	☒	If yes, please include a statement from a structural engineer.
(13)	Decreases the percolation on over one acre of land?	☐	☒	If yes, explain.
(14)	Causes storm water runoff onto land owned by others?	☐	☒	If yes, explain.
(15)	Creates an identifiable change in aquatic life by discharge of hot water?	☐	☒	If yes, explain.
(16)	Creates noises considered offensive to a human population?	☐	☒	Facility ~~will~~/will not emit noises in excess of local noise standards.

		YES	NO	
(17)	Creates sounds which cause changes in behavior patterns of animals?	☐	☒	Is facility near wildlife sanctuary? No. Are outdoor animal facilities included? N/A
(18)	Introduces major new unshielded radiation sources?	☐	☒	Facility will/~~will not~~ contain x-ray machines. Facility will/~~will not~~ meet AEC Standards. (Explain) All areas in which radiation is produced will be protected in accordance with the standards of the National Council on Radiation Protection and Measurement
(19)	Causes shock waves and/or vibration (after construction phase)?	☐	☒	If yes, describe.
(20)	Changes the direction and velocity of wind so as to affect the local population (i.e., high-rise building)?	☐	☒	If yes, describe.
(21)	Causes a new, large volume of production of non-recycled items?	☐	☒	If yes, describe.
(22)	Involves the non-recycling of recyclable items such as laboratory glassware, animal cages and office paper?	☐	☒	If yes, describe. If no, project includes: __X__ glassware washing machines, and _____ cage washing machines.

	YES	NO	
(23) Generates solid wastes which cannot be properly disposed of by existing facilities?	☐	☒	If yes, describe. If no, describe proposed methods and disposal sites. See attachment.
(24) Disposes of solid wastes in polluting land-fills, wells, caves, etc.?	☐	☒	If yes, describe.
(25) Requires storage of wastes pending technology for safe disposal?	☐	☒	If yes, describe.
(26) Waste handling, transportation, or disposal methods are in compliance with federal, state or local requirements?	☒	☐	Describe proposed methods. See attachment.

C40

III. POPULATIONS

This section of the initial criteria addresses changes in human, animal, and plant populations.

* NOTE: In this part of the criteria, the effected area is defined as being greater than 160 acres in size.

CRITERIA	IMPACT YES	IMPACT NO	DESCRIPTION OF ENVIRONMENTAL IMPACT
(1) Will bring about a 5% change in the density of the local population?	☐	☒	Estimated local population: 2,000,000 Number of new employees: 61

	YES	NO	
(2) Will population shifts cause transportation, health, education and/or welfare service to be altered?	☐	☒	If yes, describe.
(3) Will cause a change to social service needs due to a change in population's age pattern (new schools, etc.)?	☐	☒	If yes, describe.
(4) Will bring about a 5% change to the transient population?	☐	☒	If yes, describe. (Include estimated number of visitors, patients, and students).
(5) Will involve genetic engineering directed at the human population?	☐	☒	If yes, describe.
(6) Is in compliance with local, state or federal standards pertaining to population densities or conservation of plants and animals?	☒	☐	If no, describe. Also, describe any approvals needed or already obtained.

IV. HUMAN SERVICES

As society has evolved, traditional self-sufficient human communities have given way to dense populations which are dependent upon the development and application of technology. Man's highly complex, technological environments are maintained by a variety of services, ranging from the provision of the basic necessities of food and water to a complex system of economic exchange. Those services are largely interdependent and form a web almost as complex as that of nature.

* NOTE: In this section, the human environment being impacted upon is defined as less than 160 acres in size.

C42

CRITERIA	IMPACT YES	IMPACT NO	DESCRIPTION OF ENVIRONMENTAL IMPACT
(1) Disrupts the food supply for 48 hours?	☐	☒	If yes, explain.
(2) Disrupts the water supply for over 48 hours?	☐	☒	If yes, explain.
(3) Disrupts the electrical power for 48 hours?	☐	☒	If yes, explain.
(4) Disrupts the heating supply (natural gas, heating oil) for over 48 hours?	☐	☒	If yes, explain.

		YES	NO	
(5)	Deprives the population of housing for over 48 hours?	☐	☒	If yes, explain.
(6)	Disrupts the removal of sewage for more than 12 hours?	☐	☒	If yes, explain.
(7)	Disrupts the removal of solid waste (trash) for more than seven (7) days?	☐	☒	If yes, explain.
(8)	Renders the existing health services inadequate to respond in case of a disaster?	☐	☒	If yes, explain.
(9)	Disrupts the telephone, telegraph, radio or mail service for over two (2) weeks?	☐	☒	If yes, describe.
(10)	Deprives the population of transit service for more than two (2) weeks?	☐	☒	If yes, explain.
(11)	Uses more than 5% of remaining electrical capacity?	☐	☒	Estimated daily usage is 6,550 KWHRS. Please obtain an approval letter from local utility or plant engineer. (attached)

		YES	NO	
(12)	Uses more than 5% of remaining water?	☐	☒	Estimated daily usage is 18,000 gallons. Please obtain an approval letter from local utility or plant engineer. (attached)
(13)	Uses more than 5% of the available capacity of the sewage treatment system (branch lines, mains, plants)?	☐	☒	Estimated daily flow is 18,000 gallons. Please obtain approval letter from local authority. (attached)
(14)	Uses more than 5% of the available capacity of trash disposal system (collection, incinerator plant, landfill)?	☐	☒	Also, clearly explain proposed handling and disposal of chemical wastes, biohazardous wastes, syringes and other special wastes. See attachment.
(15)	Uses more than 5% of the available heating fuel (gas, coal or heating oil)?	☐	☒	(Annual quantities are already described). Explain which of these fuels, if any, are in short supply. System can use any common fuel.
(16)	Creates a 5% decrease in the food delivery system by removal of retail food stores, etc.?	☐	☒	If yes, explain.
(17)	Creates a 5% decrease in the area's domestic housing by demolition, closing, etc.?	☐	☒	If yes, explain. Will any housing be demolished, closed, etc.? Yes

		YES	NO	
(18)	Reduces accessibility to the area's routine health services by altering point of service delivery?	☐	☒	If yes, explain.
(19)	Increases the patient load of the area's routine health care services by more than 5%?	☐	☒	If yes, explain.
(20)	Changes the availability of social services by opening or closing facilities?	☐	☒	If yes, explain.
(21)	Increases the number of social services recipients by more than 5% (by unemployment)?	☐	☒	If yes, explain.
(22)	Creates a change of more than 5% in the use of existing transit systems (bus, train, etc.)?	☐	☒	If yes, explain. (Relate to extent of new employment).
(23)	Closes existing bus stops or train stations?	☐	☒	If yes, explain.
(24)	Increase the annual volume of telephone, telegraph, or mail by more than 5%?	☐	☒	If yes, explain. (Relate to new employment or change in location of employees).

	YES	NO	
(25) Dissolves sources of employment for 10% of the population?	☐	☒	If yes, describe.
(26) Changes school enrollment by more than 5%?	☐	☒	If yes, describe.

V. HUMAN VALUES

The fifth set of criteria is directed towards human values concerning the quality of the environment which are generally agreed upon to the extent that they are stated in statutes, standards or regulations.

C46

CRITERIA	IMPACT YES	IMPACT NO	DESCRIPTION OF ENVIRONMENTAL IMPACT
(1) Historic Places: Affects any historical, architectural, or archeological cultural property?	☐	☒	(1) Historical Preservation: Obtain clearance letter from State Office. Attached. (2) Architectural, Archeological and Cultural: Obtain clearance from local government or local society. Attached.
(2) Endangered Species: Affects any endangered species?	☐	☒	If yes, describe.
(3) Visual, Odors, Noise: Would violate local, state or Federal standards on these items?	☐	☒	If yes, describe.

UNIVERSITY OF MINNESOTA
TWIN CITIES

Space Programming and Management Division
Physical Planning
348 ~~N363~~ Elliott Hall
Minneapolis, Minnesota 55455
(612) 373-~~2926~~ 7540

May 14, 1976

Mr. Jack Peek
JRB Associates
P. O. Box 1393
1200 Prospect Street
La Jolla, California 92038

Dear Mr. Peek:

Mr. Fred H. Laughter of your firm visited me last week about Unit D of the University's Health Sciences complex, which is proposed to be constructed underground westerly of the intersection of Harvard and Essex Streets Southeast.

This is to inform you that the above area is located in a portion of the campus included in an R6 zoning district under the Minneapolis Zoning Ordinance.

Mr. Jerome Fitzgerald, an attorney for the City of Minneapolis, advises me, however, that the City's zoning ordinance does not apply to property owned by the State of Minnesota or by the University of Minnesota. The University has constructed many academic buildings in the R6 zoning district.

Very truly yours,

Vernon L. Ausen
Coordinator, Property Acquisition
Physical Planning

VLA/MEO

CC: R. Joel Tierney
Paul Maupin

UNIVERSITY OF MINNESOTA
TWIN CITIES

Engineering and Construction Division
Physical Planning Office
26 Folwell Hall
Minneapolis, Minnesota 55455

RECEIVED
MAY 13 1976
UNIV. OF MINN.
HEALTH SCIENCE
PLANNING OFFICE

May 10, 1976

Mr. Paul J. Maupin
Health Sciences Coordinator
Health Sciences
4104 Powell Hall
Minneapolis Campus

Re: The Health Sciences Building
Unit D

Dear Mr. Maupin:

It is my understanding that Unit D Building for Health Sciences is being submitted for a fund request. It is my responsibility to give a statement as to the capability of the University distribution system to provide adequate services for this building. The storm and sanitary sewers have a capacity to accommodate Unit D Building. The water distribution system is also adequate to provide water services for the Unit D Building. Dave Kerkow will be giving you the statement in regard to electrical capacity.

Yours truly,

O. J. Nelson

O. J. Nelson, P.E.
Assistant Supervising Engineer

OJN:mn

cc: Paul E. Kopietz
Howard W. Heck

UNIVERSITY OF MINNESOTA
TWIN CITIES

Engineering and Construction Division
Physical Planning Office
26 Folwell Hall
Minneapolis, Minnesota 55455

May 19, 1976

Mr. Paul Maupin
Health Sciences Coordinator
University of Minnesota
Room 4104, Powell Hall
Minneapolis Campus

Subject: Availability of Electric Service for
Unit "D": Masonic Cancer Center
Health Sciences
Minneapolis Campus

Dear Paul:

The proposed location for Unit D has been reviewed by this office and we affirm that primary electric service at a voltage of 13,800 volts is available from the University of Minnesota Campus Distribution Center in the vicinity of the proposed facility. This is a three-phase, four-wire, grounded system.

If you have any further questions regarding this service, please contact me.

Very truly yours,

David B. Kerkow

David B. Kerkow
Assistant Supervising Engineer

DBK:IEJ

cc: Paul Kopietz
O. J. Nelson
Ken Erpelding

UNIVERSITY OF MINNESOTA
TWIN CITIES

Engineering and Construction Division
Physical Planning Office
26 Folwell Hall
Minneapolis, Minnesota 55455

May 19, 1976

Mr. Paul Maupin
Health Sciences Coordinator
University of Minnesota
Room 4104, Powell Hall
Minneapolis Campus

Subject: Availability of Electric Service for
Unit "D": Masonic Cancer Center
Health Sciences
Minneapolis Campus

Dear Paul:

The proposed location for Unit D has been reviewed by this office and we affirm that primary electric service at a voltage of 13,800 volts is available from the University of Minnesota Campus Distribution Center in the vicinity of the proposed facility. This is a three-phase, four-wire, grounded system.

If you have any further questions regarding this service, please contact me.

Very truly yours,

David B. Kerkow
Assistant Supervising Engineer

DBK:IEJ

cc: Paul Kopietz
O. J. Nelson
Ken Erpelding

MINNESOTA HISTORICAL SOCIETY
690 Cedar Street, St. Paul, Minnesota 55101 • 612-296-2747

28 April 1976

Mr. Tom Kyle
4107 Powell Hall
University of Minnesota
Minneapolis, Minnesota 55455

Dear Mr. Kyle:

RE: Therapeutic Oncology Center
Harvard and Essex Streets
University of Minnesota
Minneapolis, Minnesota

The project described above has been reviewed pursuant to responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the National Advisory Council on Historic Preservation (36CFR800).

This review reveals the location of no sites of historic, architectural, cultural, or archaeological significance within the area of the proposed project. There are no sites in the area which are on the National Register or eligible for inclusion on the National Register, and, therefore, none which may be affected by your proposal.

Sincerely,

Russell W. Fridley
State Historic Preservation Officer

RWF/fr

EIS # 557

ENVIRONMENTAL ANALYSIS ATTACHMENT

SECTION II Pollution
Criteria 23 & 26

SECTION IV Human Services
Criteria 14

The University of Minnesota has an active resource recovery program, spearheaded by the Physical Plant Department. First emphasis is on reuse of items, where medically and economically feasible, and secondly,on reclaiming materials for use in the production of raw products. These efforts currently include reclaiming of glass, waste chemicals, and corrugated paper. Corrugated materials from the project will be collected along with corrugated materials from other parts of the campus.

Where it is not feasible to recycle because of character of the waste, difficulty in separation or lack of market in the community, other waste treatment and disposal practices will be followed.

It is the policy of the University to incinerate the bulk of solid wastes from medical care and research facilities. The more popular and economical method of solid waste disposal would be to deliver it all to a sanitary landfill, and operate only a pathological incinerator, however, it is realized that disposing of unnecessarily large amounts of material by landfill will in the long run have a greater adverse effect on the environment. Also, if the wastes were deposited directly in a landfill, the heat capacity of the wastes used to aid in the destruction of animal carcasses, would be lost. Presently, hot gases from the primary chamber of the incinerator passes over the animal hearth, the heat being used to incinerate the carcasses.

The present incinerator does not incorporate heat recovery. However, the University is currently involved in the planning of a community thermal processing and heat recovery plant. This project, which is being coordinated by the Hennepin County Department of Public Works, is in the design stage. The University and other area institutions with medical care facility wastes are actively involved in the planning of this project to assure that adequate facilities are provided for handling the special wastes from medical care and research facilities. This will include all wastes from the University Health Sciences Complex. Eventually a portion of the steam used to heat University buildings will be supplied by the thermal energy recovery plant.

The present University incineration plant consists of two nominally rated 50 ton per day movable grate incinerators. The incinerators are equipped with over-fire and under-fire air,

primary and secondary combustion chambers, and temperature sensors located in the secondary combustion chamber. A smoke indicator is located at the top of the 200 ft. stack. Presently, one of the two incinerators is operated six hours per day, five days per week, alternating units to allow for cool-down and clean-out of the unit. The incinerators are currently receiving 18 cubic yards per day from the Health Sciences Complex and 20 cubic yards per day of waste from campus buildings. Some of the solid waste from other campus buildings is now going directly to the transfer station, and from the transfer station to a Minnesota Pollution Control Agency licensed sanitary landfill.

There is a sufficient capacity for burning all animal carcasses during the period of time the incinerator is in operation. Since there will be no increase in capacity of animal quarters in the Health Sciences Complex resulting from this construction, there will be no change in the need for burning capacity of animal carcasses. If the present schedule of burning is maintained, shifting from burning of general campus waste to burning of medical facility waste will be helpful for the destruction of animal carcasses because medical/ research facility wastes have a higher heat (BTU) content.

Wastes that are considered infectious or physically hazardous are separately collected in appropriately marked containers.

The University of Minnesota has a policy of preventing discharge of flammable and toxic waste to the sewers, including radioactive waste. A convenient service is provided within the Health Sciences Complex for routine collection of these wastes. The purpose of this collection system is to minimize impact on the water environment by preventing discharge directly to the sanitary sewer system.

Solvents and toxic wastes are disposed of using the best technology presently available. The procedures for collection, storage, transport, and disposal are critically reviewed on a frequent basis because of recent changes in procedures for management at the national, state, and local levels. For example, at the local level the University's Department of Environmental Health and Safety and Physical Plant have been actively involved with the development of a recent report on "Hazardous Waste Generation, Twin Cities Metropolitan Area" which was prepared for the Metropolitan Inter-County Council for Minnesota Pollution Control Agency. The University provided input for the study, both in terms of the University's experience with the problem of hazardous waste management, and to assure that community systems be developed to accommodate the types of wastes generated at academic institutions, research facilities, and health care facilities throughout the Twin Cities Metropolitan Area.

Waste chemicals are placed in special vessels provided by the Department of Environmental Health and Safety (DEHS) for holding until pick-up. Waste chemicals are collected by DEHS and stored in specially designed rooms within the Health Sciences Complex (rooms designed with special ventilation, waste holding tanks to prevent discharge or spills to sewer, and fire-proof construction) before being removed from the building for transport to the site of ultimate disposal. Waste solvents and chemicals (where feasible) will be disposed of in a Minnesota Pollution Control Agency licensed incinerator operated by Pollution Controls, Incorporated. Some of the waste chemicals and shock sensitive materials (after being detonated) are buried at a carefully monitored burial site at the University's Rosemount Research Center at Rosemount, Minnesota. Seven wells and several section lysimeters have been installed at the site to routinely monitor ground water quality. To date, there has been no indication of contamination of ground water (water table at approximately 60 feet) resulting from the analysis of water samples taken from water table wells. Future plans for management of toxic wastes to further minimize the impact on the soil environment, include storage and reprocessing of chemicals for recycling either within the University or a larger community system. Materials from this new facilty will enter this recycling system.

Radioactive waste is collected by Department of Physical Plant Maintenance and Operations under the supervision of the Radiation Protection Program, DEHS, to provide assistance and to insure uniformity in the safe handling and disposal of potentially hazardous radioactive materials. Special metal containers which are painted yellow and are appropriately marked with the universal three-bladed radiation caution symbol, are provided for persons who have been approved by the University to possess and use radioactive materials.

Radioactive waste containers are stored as close to the work area as possible to allow for convenient disposal of radioactive waste, and to minimize the possibility for spillage in transfer of waste to the containers. These containers must be stored in the laboratory and never in halls, corridors, stairwells, or other uncontrolled areas.

Upon notification to the health physicist, waste is collected as soon as possible for temporary storage and ultimate disposal by an Atomic Energy Commission (AEC) approved contractor. Radioactive wastes are frequently removed from the University Health Sciences area to a temporary storage facility in an isolated area at the University of Minnesota Rosemount Research Center. This facility is a brick building, 36 feet long by 19 feet wide, by 50 feet high, protected by a Cyclone fence, and posted in accordance with Title 10, Part 20, Section 20.203 of the Federal Regulations. All procedures for storage, transport and disposal of radioactive waste are reviewed and monitored by the Department of Environmental Health and Safety health physicists.

Some radioactive waste enters the environment through normal washing procedures and from incineration of low level radioactive materials. In terms of impact on the environment from the release of radioactive waste, the Health Sciences Complex presently uses a fraction of a percent of available dillution capacity in sewage based on discharge limits established by the Atomic Energy Commission. The air-borne release from the University incinerator is between 10% and 20% of the Maximum Permissible Concentration for Air, using the conservative assumption that all radioactive material incinerated goes out with the stack effluent. The ash from the University incinerator contains between 20% and 80% of the Maximum Permissible Concentration for Water, using the conservative assumption that all radioactive material incinerated remains in the ash. The ash is buried at a Minnesota Pollution Control Agency licensed sanitary landfill in compliance with Atomic Energy Commission Regulations for Burial of Solid Radioactive Waste. The University Health Physicists carefully monitor for change in quantities of radioactive waste, to determine that concentrations of radioisotopes are not allowed to exceed the level as specified by "AEC Regulations for Control of Radiation Exposure to Individuals in the General Public."

The other possible impact of the discharge of radioactive materials would be by air exhausted from radioisotope hoods. University policy is to separate air intakes from air exhausts by a distance of 100 feet. In radioisotope laboratories there is also a policy to provide for filtration of air from radioisotope hoods where necessary, and disposal of filters in accordance with radioactive waste disposal procedures.

291-6359
00 Metro Square Building, 7th Street and Robert Street, Saint Paul, Minnesota 55101 Area 612, XXXXXX

June 8, 1976

C.T. Johnson
Assistant Vice President and Treasurer
University of Minnesota
302 Morrill Hall
Minneapolis, Minnesota 55455

RE: University of Minnesota Hospitals
Masonic Cancer Center, HEW Grant Application
Metropolitan Council Referral File No. 3474

Dear Mr. Johnson:

At its meeting of May 27, 1976, the Metropolitan Council considered your notification of intent to apply for federal funds to replace and expand the scope of services of the radiation therapy center and advanced cancer clinic of the Masonic Cancer Center. It is our understanding that this will involve the construction of a 3-level underground structure of approximately 55,000 square feet at an estimated $8,000,000, of which $6,000,000 is requested in federal funds. The Council voted to forward to you the following comments on this project:

1. The Metropolitan Council has received and is aware of the intent of the University of Minnesota Hospitals to apply for Federal funds for replacement of facilities and services of Unit D of the Masonic Cancer Center.

2. It is the opinion of the Metropolitan Council and its Health Board that this is a major project at the University of Minnesota Hospitals, which has great potential impact on the delivery of specific cancer care services in the Metropolitan Area, the state, and possibly the several states of the Upper Midwest Region.

3. The nature and estimated cost of this proposal indicates a substantial change, expansion and extension of scope of services.

4. The estimated cost of this proposal is $8,000,000.

5. Based on the cost of this proposal and the substantial change in services, this project, if funded, will require review under the Minnesota Certificate of Need Act and Section 1122 of P.L. 92-603.

Therefore, the Metropolitan Council will submit specific comments and recommendations as required under A-95 to the appropriate funding agency in the Department of Health, Education and Welfare only following the official review of an application required under the State's Certificate of Need Act and Section 1122 of P.L. 92-603.

Thank you.

Sincerely,

METROPOLITAN COUNCIL

John Boland
Chairman

JB:jg
cc: Paul Riddle,

UNIVERSITY OF MINNESOTA
TWIN CITIES

Department of Laboratory Medicine and Pathology
Medical School
Box 198 Mayo Memorial Building
Minneapolis, Minnesota 55455
(612) 373-8623

May 13, 1976

B.J. Kennedy, M.D.
Professor, Department of Medicine
Box 286

RE: Health Sciences Center Unit D

Dear Dr. Kennedy:

I am writing this letter as an expression of my support for the proposal to construct new facilities which will be used for the Department of Therapeutic Radiology and others involved in the diagnosis and treatment of cancer at the University of Minnesota. It is quite apparent to all of us working with cancer-related patients that the present facilities for ambulatory care of patients with malignant diseases are inadequate and that improvements in this regard are very much needed.

Please be assured that the staff in the Division of Hematopathology of the Department of Laboratory Medicine enthusiastically support the proposed construction grant for Unit D. It should further the interdisciplinary approach to the diagnosis and treatment of cancer at this institution.

Sincerely,

Richard D. Brunning

Richard Brunning, M.D.
Professor
Department of Laboratory Medicine
and Pathology

RDB/nlv

UNIVERSITY OF MINNESOTA
TWIN CITIES

Department of Pediatrics
Medical School
Box 284 Mayo Memorial Building
Minneapolis, Minnesota 55455
(612) 373-4314

May 11, 1976

B. J. Kennedy, M.D.
Professor of Medicine
Box 286-University Hospitals
Minneapolis, Minnesota 55455

RE: Unit D

Dear Doctor Kennedy:

I have been participating with you and Dr. Levitt on this committee for several months. The Unit D is a necessary requisite for the growth of our excellence in Cancer treatment and research. Not only do we need the radiation therapy resources, but we also need this facility for patient care. The increasing use of chemotherapy in multi-modal treatment of all childrens cancer problems requires a facility which can be practical and available for physicians and patients alike.

Therefore, building "D" has our most full support.

Yours truly,

William Krivit

William Krivit, M.D., Ph.D.
Professor of Pediatrics

WK:skp

UNIVERSITY OF MINNESOTA
TWIN CITIES

Hematology-Oncology Division
Department of Pediatrics
Medical School
Box 484, Mayo Memorial Hospital
Minneapolis, Minnesota 55455
(612) 373-4318

May 10, 1976

B.J. Kennedy, M.D.
Professor of Medicine
Box 286, Mayo

RE: Unit D

Dear Dr. Kennedy:

This letter is in regard to the construction grant that is being prepared for the development of Unit D at the University of Minnesota Health Sciences Center.

This building will be an important and necessary improvement for the facilities of the Department of Therapeutic Radiology and furthermore it will upgrade the facilities necessary to support our increasing ambulatory population. In Pediatrics, with the impressive increase in survival and disease free periods that most of our patients achieve, one major emphasis now concerns ambulatory patients.

I certainly support this proposal and expect to be majorly involved in the research and education that can be carried out in this new facility.

Sincerely yours,

Mark E. Nesbit, Jr., M.D.
Professor of Pediatrics and
Therapeutic Radiology

MEN/lsh

UNIVERSITY OF MINNESOTA
TWIN CITIES

Box 90 Mayo
Department of Surgery
Medical School
Mayo Memorial Building
Minneapolis, Minnesota 55455

May 10, 1976

Theodor B. Grage, M.D.
Office: 373-4308
Home: 869-4955
A. C. 612

B.J. Kennedy, M.D.
Box 286
Mayo

Re: Unit D

Dear Dr. Kennedy:

I understand that we are in the process of preparing a construction grant to develop Unit "D" at the University of Minnesota Health Sciences Center. The new structure is proposed to be located adjacent to the existing Masonic Memorial Hospital and the future "J" Hospital Building and will provide an appropriate access to our patients with malignant diseases.

The proposed facility would substantially upgrade the facilities for the Department of Therapeutic Radiology and provide additional improvement in the ambulatory care of patients with cancer. This proposal has my strong endorsement. Our Staff and I will continue to provide support for the research and education that will be carried out in this new facility.

With Best wishes.

Cordially yours,

Theo. Grage

Theodor B. Grage, M.D.
Associate Professor of Surgery

TBG/bp

UNIVERSITY OF MINNESOTA
TWIN CITIES

Department of Urologic Surgery
Medical School
A-595 Mayo Memorial Building, Box 394
Minneapolis, Minnesota 55455
(612) 373-8780 or 331-2261

May 7, 1976

B. J. Kennedy, M. D.
Professor of Medicine
Box 286-University Hospitals

RE: Unit D

Dear Doctor Kennedy:

I understand that a construction grant is being prepared to provide for the development of Unit D at the University of Minnesota Health Sciences Center. The location of the proposed building, adjacent to the existing Masonic Memorial Hospital and the future "J" Hospital Building, provides an appropriate access to the facilities for patients with cancer.

The proposed building would improve the facilities of the Department of Therapeutic Radiology and would therefore improve the ambulatory care of patients with cancer; thus, I heartily endorse this proposal. My staff and I will provide our continuing support of the research and education programs that will be carried out in this new facility.

Sincerely yours,

Elwin E. Fraley, M. D.
Professor and Chairman

EEF:mll

UNIVERSITY OF MINNESOTA
TWIN CITIES

Department of Laboratory Medicine and Pathology
Medical School
Box 609 Mayo Memorial Building
Minneapolis, Minnesota 55455

May 4, 1976

Dr. B.J. Kennedy
Mayo Box 286

Re: Unit D

Dear B.J.:

It was brought to my attention that a construction grant is being considered for the development of Unit D in the Health Sciences Center. If I am not mistaken, the plan is for this building to be located in close proximity to the existing Masonic Hospital and the future J Building. It seems to me that this is a very logical arrangement which will centralize the most important facilities of cancer therapy.

It seems obvious that this project will result in an improvement of the facilities of the Department of Therapeutic Radiology and, as a logical extension, result in an improvement in the ambulatory care of cancer patients. Therefore, I fully endorse this proposal and assure you that the Division of Surgical Pathology will participate fully in the research and teaching activities to be carried out in this new facility.

Sincerely yours,

Juan Rosai, M.D.
Professor of Laboratory Medicine
and Pathology
Director of Anatomic Pathology

JR/mfb

UNIVERSITY OF MINNESOTA
TWIN CITIES

Department of Surgery
Medical School
Mayo Memorial Building
Minneapolis, Minnesota 55455

May 5, 1976

B.J. Kennedy, M.D.
Professor of Medicine
Box #286 - Mayo

RE: Unit D

Dear Doctor Kennedy:

Pursuant to our conversation concerning the construction of Unit D two weeks ago, I want to express my unqualified support for its location and the preliminary plans to its development. There is no question that this will assist the development of oncology at the University of Minnesota and of the role of surgery in oncology in particular. We are enthusiastic about the multispeciality clinic providing ready access to consultants within any primary clinic. I think these plans bode well for the oncology program at the University of Minnesota and education programs associated with it. You have my unqualified support in your efforts.

Sincerely,

Richard L. Simmons, M.D.
Professor of Surgery and Microbiology

RLS/klz

UNIVERSITY OF MINNESOTA
TWIN CITIES

Department of Obstetrics and Gynecology
Medical School
Box 395 Mayo Memorial Building
Minneapolis, Minnesota 55455

May 15, 1976

B. J. Kennedy, M.D.
Director-Medical Oncology
Department of Medicine

Dear B.J.:

I understand a construction grant application is being prepared for development of a building to be known as "Unit D" which will be adjacent to the existing Masonic Memorial Hospital.

You have my endorsement of this proposal, since the building would improve care of ambulatory patients with cancer, and provide facilities for continued research and medical education in this field.

Sincerely yours,

Curtis J. Lund, M.D.
Professor Emeritus
Obstetrics and Gynecology

CJL:emo

UNIVERSITY OF MINNESOTA
TWIN CITIES

Division of Nuclear Medicine
Department of Radiology
University Hospitals
Box 382, Mayo Memorial Building
Minneapolis, Minnesota 55455

May 18, 1976

B. J. Kennedy, M.D.
Professor of Medicine
Box 286-University Hospitals

Dear B.J.:

I am pleased to hear that plans are moving forward for the development of Unit D for our Health Sciences Center. I understand that this unit will be located adjacent to the existing Masonic Memorial Hospital and the future "J" Hospital Building, which will provide appropriate access to the facilities for patients with cancer. I would assume that Unit D will have adequate facilities for Therapeutic Radiology, an adequate clinic, as well as research space for Oncology.

I fully expect that cancer patients will continue to be evaluated by techniques of Nuclear Medicine. As I understand it, there will be an appropriate connection between Unit D and the diagnostic facilities of Radiology and Nuclear Medicine. I do indeed feel that this is very important and trust that you concur with this feeling.

Sincerely yours,

Merle K. Loken, M.D., Ph.D.
Professor of Radiology
Director, Division of
Nuclear Medicine

MKL/gr

UNIVERSITY OF MINNESOTA
TWIN CITIES

Department of Obstetrics and Gynecology
Medical School
Box 395 Mayo Memorial Building
Minneapolis, Minnesota 55455

May 17, 1976

B. J. Kennedy, M.D.
Professor of Medicine
Director of Medical Oncology
Box 286, Mayo Memorial Bldg.

Dear B.J.:

I have been informed that a building, designed as Unit D, is being developed at the Health Sciences Center to improve the facilities of the Department of Therapeutic Radiology, and for the care of ambulatory cancer patients.

I endorse this proposal which will provide improved facilities for cancer research and education.

Sincerely yours,

Konald A. Prem

Konald A. Prem, M.D.
Professor and Head
Obstetrics and Gynecology
Director, Gynecologic Oncology

KAP:emo

UNIVERSITY OF MINNESOTA

Office of the Assistant Vice President and Treasurer
302 Morrill Hall
Minneapolis, Minnesota 55455

April 30, 1976

State Planning Agency
100 Capitol Square Building
550 Cedar Street
St. Paul, Minnesota 55101

Attention: Mr. Thomas N. Harren, State Clearinghouse

Dear Mr. Harren:

In accordance with the procedure established under OMB Circular A-95, enclosed please find copy of notification form indicating the University's intent to apply for Federal construction funds for the following project:

Unit D - Masonic Cancer Center

Sincerely,

Assistant Vice President
and Treasurer

C. T. Johnson/pj

Attachment

...on the back of this form. Print or type.

DO NOT USE	State Clearinghouse No. 1-8	Card Type 9	State of Minnesota NOTIFICATION OF INTENT TO APPLY FOR FEDERAL AID

10-11 01	Applicant Project Name 12-71 Masonic Cancer Center			
	Applicant Agency 12-45 University of Minnesota	Division 46-79 University of Minnesota		
03	Applicant Address (Street) 12-45 Morrill Hall	City 46-59 Minneapolis, Minnesota		Zip Code 76-80 55455
04	Contact Person 12-45 C. T. Johnson, Assistant Vice President	Area Code 46-48	Phone 49-55	Ext. 56-59

05 12-71 Project Description - Nature, Purpose and Beneficiaries (Use 6 lines if needed)
(See Attachment) The proposed facility is a three story underground building with an
06 12-71
above ground four story elevator tower connected directly to the existing Masonic
07 12-71
Hospital. There will be approximately 55,000 gross square feet of area comprised
08 12-71
of research and administrative offices, radiation therapy facilities, chemotherapy
09 12-71
facilities, educational facilities, research labs and support facilities. This building
10 12-71
will be fully integrated into the master plan for the development of the U of M.

11	Project Location City 12-45	Project Location County 46-79

	FEDERAL FUNDS		MINNESOTA MATCHING FUNDS		OTHER	TOTAL
	(A) Grant 12-19	(B) Other 20-27	(C) State 28-35	(D) Local 36-43	(E) Funds 44-51	(F) Funds 52-60
12	$6,000,000 (estimated)				$2,000,000 (estimated) Private Donations	

13	Type of Other Federal Funds (B) 12-45	Type of Other Funds (E) 46-79
14	Federal Program Title 12-66 Cancer Construction	Federal Catalog No. 67-71 13.392
15	Federal Agency Name 12-45 DHEW. National Institutes of Health	Federal Sub-Agency 46-79 National Cancer Institute

TYPE OF APPLICANT (CHECK (X) ONLY ONE BOX)

State	Inter State	County	City	School District	Special District	Community Action	Sponsored Organization	Other
[X] 12	[ ] 13	[ ] 14	[ ] 15	[ ] 16	[ ] 17	[ ] 18	[ ] 19	[ ] 20

17 TYPE OF ACTION (CHECK (X) BOXES WHICH APPLY)

New	[X] 21	Supplemental	[ ] 23	Increase Duration	[ ] 24	Increased Dollars	[ ] 27
Continuation	[ ] 22	Cancellation	[ ] 26	Decrease Duration	[ ] 25	Decrease Dollars	[ ] 28

Is State Plan Required?	Has Regional Agency been Notified?	Is Project under A-95 Jurisdiction?	DO NOT USE Environmental Impact Statement
Yes [ ] 29 No [X] 30	Yes [X] 31 No [ ] 32	Yes [X] 35 No [ ] 36	Yes [ ] 37 No [ ] 38

Estimated Date Applicant Expects To Submit Formal Application June 1, 1976 (Date)

State Fund Code

Signature C. T. Johnson Date 11-30-76

Clinton T. Johnson, Assistant Vice President, Business Administration & Treasurer

SUBMIT TWO (2) COPIES OF COMPLETED FORM TO:

State Planning Agency
Capitol Square Building
550 Cedar Street
St. Paul, Minnesota 55101

COMMENTS

Fig. 1 (p. 2 of 3)