

DEPARTMENT OF HEALTH AND HUMAN SERVICES
NATIONAL INSTITUTES OF HEALTH
NATIONAL LIBRARY OF MEDICINE
Bethesda, Maryland

A G E N D A

102nd Meeting of the

BOARD OF REGENTS

February 11-12, 1993

Board Room
Mezzanine of
National Library of Medicine

MEETING OPEN: 3:15 p.m. to 4:00 p.m. on February 11 and from 9:00 a.m. to adjournment on February 12.

MEETING CLOSED: 4:00 to 4:30 p.m. on February 11 for the review of grant applications.

1. CALL TO ORDER AND INTRODUCTORY REMARKS 3:15-3:20 Dr. Lawrence H. Cohn

2. CONSIDERATION OF OCTOBER MINUTES TAB I 3:20- Dr. Lawrence H. Cohn
(Agenda Book)

3. FUTURE MEETING DATES -3:25 Dr. Lawrence H. Cohn

Spring Meeting: May 26-27, 1993 (W-Th)--CONFIRMED
Fall Meeting: Sept. 30-Oct. 1, 1993 (Th-F)--CONFIRMED
Winter Meeting: Jan. 27-28, 1994 (Th-F)--PROPOSED

(Subcommittees meet, when necessary, the day before the full Board.)
(On Feb. 10: Extramural Programs Subcommittee--2:00-3:30 p.m.)

PLEASE NOTE: American Library Assoc.
(Potential conflict with Winter 1994 dates.) Midwinter Meeting,
Denver, 1/22-28/93

4. APPOINTMENT OF NOMINATING COMMITTEE FOR CHAIR 3:25-3:30 Dr. Lawrence H. Cohn

5. REPORT FROM EXTRAMURAL PROGRAMS TAB II 3:30-3:50 Dr. Milton Corn

a. Budget Overview TAB A
b. Update on NLM's Resource TAB B
Grant Program
c. Review of Board Operating TAB C
Procedures (Board action necessary.)

Discussion 3:50-4:00 Ms. Rachael K. Anderson
EP Subcommittee Members
Other Board Members

MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS, FEBRUARY 11, 4:00 P.M.

6. REVIEW OF GRANT APPLICATIONS 4:00-4:30 Dr. Roger R. Dahlen

(Conflict-of-interest instructions in front of workbook for your information and review.)

RESEARCH TAB I

- A. Medical Informatics Tab A
B. Biotechnology Tab B
C. Library and Information Science Tab C

RESOURCE TAB II

- A. Information Systems Tab A
B. Information Access Tab B

ACADEMIC RESEARCH ENHANCEMENT AWARD TAB III

RESEARCH CAREER DEVELOPMENT AWARD TAB IV

CONFERENCE APPLICATION TAB V

SMALL BUSINESS INITIATIVE RESEARCH TAB VI

PUBLICATION APPLICATIONS TAB VII

SUMMARY LIST OF APPLICATIONS NOT RECOMMENDED FOR FURTHER CONSIDERATION TAB VIII

INTERIM ACTIONS TAB IX

R E C E S S * * * * *

Dinner. Uniformed Services University of the
Cocktails. 6:30 p.m. Health Sciences
Dinner. 7:30 p.m. "Small Dining Room"

SPEAKER: Dr. Lawrence H. Cohn
Chairman, Board of Regents, NLM

TITLE: "Paradox of High-Tech Health Care: The Paradigm of Heart Transplant
and Mechanical Assist of the Heart."

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R E C O N V E N E: Friday, 9:00 A.M., Board Room

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| 7. | REMARKS BY THE DEPUTY SURGEON GENERAL, PHS | | 9:15- 9:30 | Dr. Robert Whitney, Jr. |
| 8. | REMARKS BY THE DIRECTOR, NLM | <u>TAB III</u> | 9:30-10:15 | Dr. Donald A. B. Lindberg |
| | a. Budget | | | |
| | b. Personnel | | | |
| | c. Legislation | | | |
| | d. HPCC | | | |
| | e. Training of Librarians | | | |
| | f. NIH Strategic Plan | | | |
| | g. News Release: "NLM Lowers Access Fees" | | | |
| | h. Implementation of Toxicology Planning Panel Recommendations | | | |
| | Discussion | | 10:15-10:30 | Board Members |
| | COFFEE BREAK | | 10:30-10:45 | |
| 9. | IMPAG MEETING | <u>TAB IV</u> | 10:45-11:00 | Dr. Richard K. C. Hsieh |
| | Discussion | | 11:00-11:15 | Board Members |
| 10. | OCCS ACTIVITIES--AN UPDATE | <u>TAB V</u> | 11:15-11:45 | Mr. Harry D. Bennett |
| | Discussion | | 11:45-12:00 | Dr. Robert E. Kahn
Dr. Carol M. Newton
Other Board Members |
| 11. | REMARKS BY THE DIRECTOR, NIH | | 12:00-12:15 | Dr. Bernadine Healy |
| 12. | VIDEOTAPE HIGHLIGHTS OF OCTOBER 22
SATELLITE BROADCAST | <u>TAB VI</u> | 12:15-12:45 | Ms. Betsy Humphreys |
| 13. | ADJOURNMENT | | 12:45 | Dr. Lawrence H. Cohn |

DEPARTMENT OF HEALTH AND HUMAN SERVICES

**NATIONAL INSTITUTES OF HEALTH
NATIONAL LIBRARY OF MEDICINE**

**BOARD OF REGENTS
MINUTES OF THE 102ND MEETING
FEBRUARY 11-12, 1993**

**BOARD ROOM
NATIONAL LIBRARY OF MEDICINE
BETHESDA, MARYLAND**

**DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE**

THE BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINE

**Minutes of Meeting 1/2/
February 11-12, 1993**

The Board of Regents of the National Library of Medicine was convened for its one-hundred-and-second meeting at 3:15 p.m. on Thursday, February 11, 1993, in the Board Room of the National Library of Medicine, Bethesda, Maryland. Dr. Lawrence H. Cohn, Chief of Cardiac Surgery at Brigham and Women's Hospital, chaired the meeting. In accordance with P.L. 92-463 and the Determination of the Director, NIH, as announced in the Federal Register on January 2, 1993, the meeting was open to the public from 3:15 to 4:00 p.m. on February 11 and from 9:00 a.m. to 12:00 noon on February 12. The meeting was closed from 4:00 to 4:15 p.m. on February 11 for the review, discussion, and evaluation of grant applications. A Board roster is enclosed under Attachment A.

Board members present were:

Dr. Lawrence H. Cohn, Chair
Ms. Beverly E. Allen
Ms. Rachael K. Anderson
Dr. Robert J. Joynt
Mr. Joseph H. Howard

Dr. Robert E. Kahn
Lt. Gen. Alcide M. LaNoue (2/11)
Dr. Carol M. Newton
Dr. H. Kenneth Walker

Alternates to ex officio members present were:

Ms. Wendy Carter, representing Dr. James W. Holsinger, Jr.
Col. Emmanuel Cassimatis, representing Lt. Gen. Alcide M. LaNoue.
Capt. David G. Kemp, representing Vice Adm. Donald F. Hagen.
Capt. Kathleen A. McCormick, representing Dr. Antonia C. Novello.
Col. Jacqueline Morgan, representing Lt. Gen. Alexander M. Sloan.
Dr. James O. Mason (2/11), representing Dr. James A. Zimble.
Dr. Nancy E. Gary (2/12), representing Dr. James A. Zimble.

1/ For the record, it is noted that members absent themselves from the meeting when the Board is discussing applications (a) from their respective institutions or (b) in which a conflict of interest might occur. This procedure applies only to individual discussion of an application and not to "en bloc" actions.

2/ The Board of Regents, when considering the extramural programs of NLM, also constitutes and serves as the National Libraries Assistance Advisory Board.

Unable to attend:

Ms. Naomi C. Booker
Dr. Mary E. Clutter
Dr. Lawrence DeNardis
Dr. Richard E. Rowberg
Dr. Jeanne Spurlock

National Library of Medicine staff members attending this meeting included:

Dr. Donald A. B. Lindberg, Director
Mr. Kent A. Smith, Deputy Director
Dr. Harold M. Schoolman, Deputy Director, Research and Education
Dr. Michael Ackerman, Acting Associate Director, SIS
Mr. Harry Bennett, Acting Director, OCCS
Mr. Kenneth Carney, Executive Officer, OD
Ms. Lois Ann Colaianni, Associate Director, LO
Dr. Milton Corn, Acting Associate Director, EP
Dr. George J. Cosmides, Deputy Associate Director, SIS
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP
Mr. Earl Henderson, Deputy Director, LHNCBC
Dr. Richard K. C. Hsieh, Director for International Programs
Ms. Betsy Humphreys, Deputy Associate Director, LO
Mr. Charles R. Kalina, Special Projects Officer, OD
Ms. Susan Levine, Chief, Office of Financial Management, OD
Dr. Daniel R. Masys, Director, Lister Hill National Center for Biomedical Communications
Mr. Robert B. Mehnert, Chief, Office of Inquiries and Publications Management, OD
Dr. Elliot R. Siegel, Associate Director, Health Information Programs Development
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

Others present included:

Dr. Robert Whitney, Deputy Surgeon General, PHS
Dr. John D. Mahoney, Associate Director for Administration, NIH

I. OPENING REMARKS

Dr. Lawrence H. Cohn, Chairman, welcomed the Regents to the 102nd meeting of the Board of Regents of the National Library of Medicine. He introduced new Regent Dr. Robert J. Joynt. He also welcomed new ex officio member Lt. General Alcide M. LaNoue, Surgeon General of the Army, and Dr. James O. Mason, former Assistant Secretary for Health, and now Vice President for Planning and Development at the Uniformed Services University of the Health Sciences. Dr. Mason was attending for Dr. James A. Zimble. Dr. Nancy E. Gary, Dean of USUHS, attended for Dr. Zimble on the second day.

II. CONSIDERATION OF MINUTES OF PREVIOUS MEETING

The Regents approved the minutes of the October 1-2, 1992, meeting.

III. DATES OF FUTURE MEETINGS

The Board will meet next on May 26-27, 1993 (Wednesday and Thursday). The fall 1993 meeting was confirmed for September 30 - October 1. The proposed dates of January 28-29, 1994, were accepted and confirmed.

IV. REPORT FROM EXTRAMURAL PROGRAMS

Dr. Milton Corn, Acting Associate Director for Extramural Programs, discussed the EP budget. He noted that in 1992 EP added the Internet Connections Program, not shown on the budget. The program was a success and will continue in partnership with the National Science Foundation, which has had a connections program in place since 1986. In 1993, HPCC funds of \$400,000 will be made available through an interagency transfer to fund the program at \$30,000 each for 10 to 12 connection grants and at \$50,000 each for one or two multicampus network demonstration grants. The new announcement will be mailed in late February, with awards expected to be made in late September of 1993. In 1992 twenty responses were received, even though the lead time was short. Ten were funded.

Update on NLM's Resource Grant Program

Dr. Corn recounted NLM's experience over the last three years with the latest version of its Library Resource Grant Program. In 1989 the Program was modified to include two types: The Information Access Grant and the Information Systems Grant. The Access Grant emphasizes computer and telecommunications technology and is primarily directed toward small and medium-size hospital libraries. The Information Systems Grant concentrates on more complex aspects of computer technology and is designed for more sophisticated medical centers. In 1990, the first year of the new Resource Grant Program, 23 Access Grant applications were received;

in 1991 there were 34, and 25 in 1992. Of these, 11, 13, and 5 were funded, respectively, with a success rate of 48, 38 and 20 per cent. Success rate is a new term and is arrived at by dividing the funded applications by the total number received. The number of Systems Grant applications received in 1990 were 13, 15 in 1991, and 17 in 1992, with a success rate of 23, 13 and 24 per cent. The geographic distribution of the Access Grants tended to be in the northeast and the northwest. The Systems Grants were distributed more evenly around the country.

Board Operating Procedures

As required annually, Dr. Corn presented for review the Board Operating Procedures, "Guidelines for Adjustments by Staff in Time or Amount of Grant Award." The Guidelines were reaffirmed unanimously.

**MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS FEBRUARY 11,
4:00 TO 4:15 P.M.**

V. REVIEW OF PENDING APPLICATIONS

Before proceeding with the consideration of pending applications, Dr. Roger W. Dahlen, Chief Biomedical Information Support Branch, EP, asked Board members to be aware of confidentiality and conflict-of-interest procedures included in the grant applications workbook. He reminded them to sign at the conclusion of the grant applications review the statement noting that they had not participated in the discussion of any applications which presented a conflict of interest.

The Board reviewed 36 applications, requesting \$ 13,362,266 and recommended for further consideration 34 applications in the amount of \$ 10,727,918 for the total requested. Two applications in the amount of \$ 737,763 were not recommended for further consideration. Grant applications recommended for further consideration by the Board are listed in the summary actions (Attachment C). Interim actions taken by Extramural Programs staff since the October meeting were considered by the Board's Extramural Programs Subcommittee and noted and concurred with by the Board of Regents.

MEETING OPEN--FEBRUARY 12, 9:00 A.M TO ADJOURNMENT

VI. APPOINTMENT OF NOMINATING COMMITTEE

Dr. Cohn appointed Dr. James A. Zimble (chair), Ms. Wendy Carter, and Col. Jacqueline Morgan to nominate a Board Chair for 1993-1994. They will report at the next meeting.

VII. REMARKS BY THE DEPUTY SURGEON GENERAL

Dr. Robert Whitney, Jr., Deputy Surgeon General of the PHS, reported that Dr. Novello will continue as Surgeon General until June 1993, when President Clinton's choice, Dr. Jocelyn Elders, will assume the post of Surgeon General. It is planned to expand the Surgeon General's responsibilities with five programs that are at present part of the Office of the Assistant Secretary for Health: women's health, minority health, physical fitness, the national immunization program, and child and maternal health. Dr. Whitney said that Dr. Novello is going to Puerto Rico to kick off the immunization program. Current issues that are of high priority for the Surgeon General are the health of the Hispanic population, smokeless tobacco, and adolescent AIDS.

VIII. REMARKS BY THE NIH ASSOCIATE DIRECTOR FOR ADMINISTRATION

Mr. John D. Mahoney, NIH Associate Director for Administration, used slides to give a 20-year historical perspective on the overall NIH budget. The final 1993 appropriation reflects a two percent decrease from the President's budget, the first time in many years that less has been appropriated than was requested. He showed how NLM fared over the same period: Unlike the early years, in recent years the Library's budget has grown at a rate greater than NIH's. Mr. Mahoney also contrasted the rate of growth of the NIH budget with that of domestic discretionary funding and two other science agencies--NASA and NSF. In the last five years, NIH has lagged behind all three. The total number of NIH research project grants has declined in 1993 because of the decrease in the budget. He observed that one of the reasons the NIH budget has not fared very well in the last few years is that Congress today has less flexibility than it had in the past in adding money to the NIH budget. Also, NASA and NSF have been Presidential priorities over the last few years; their budgets have been correspondingly favored. Mr. Mahoney said that NIH competes for "health dollars," not science dollars. It is difficult to compete for money with programs that address pressing immediate needs. NIH must become more of a priority within the Executive Branch; no longer can it rely on the Congress to "bail it out." Finally, he said NIH must successfully articulate its scientific priorities and the value of the nation's investment in biomedical research.

IX. REPORT FROM THE NLM DIRECTOR

Dr. Lindberg reported briefly on the current state of the NLM 1993 budget. The Library's budget is some \$5 million under the President's request which, in turn, is about \$5 million under the level required to maintain current services. Thus, most NLM programs (including grant programs) are essentially frozen at the 1992 level. There are small increases for Library Operations and for High-Performance Computing and Communications. Dr. Lindberg reported that the Library is within its full-time permanent staff ceiling of 613. He noted that Dr. Charles Lawrence, a senior biostatistician, is a recent addition to the National Center for Biotechnology Information. In the area of legislation, Dr. Lindberg reported that NLM has had several

legislative authorizations, including the NLM Act of 1956 (which has no expiration date), the Medical Library Assistance Act (which requires periodic renewal), and the legislation that established the National Center for Biotechnology Information (which also requires renewal). It may come about in 1993 that the Congress will combine NLM's three legislative authorities into one, requiring periodic renewal. He also described S.1, a bill that would reauthorize the National Institutes of Health. Among other things, S.1 would lift the ban on fetal research and also aggregate all NIH AIDS-related funding (roughly \$1 billion) under an "AIDS tsar." Many NIH scientists and administrators object to this last provision. Another bill, S.4, reintroduces legislation for High-Performance Computing and Communications that had been introduced last year, but was not enacted (the "National Information Infrastructure Act"). Dr. Lindberg has been asked to testify on the bill before the Subcommittee on Telecommunications and Finance of the Committee on Energy and the Environment. Next, the Director briefly described NLM's plans to assemble, under the aegis of the Board of Regents, a long-range planning panel on the education and training of health science librarians. An implementation plan for the planning panel report on toxicology and environmental health, approved by the Regents at their last meeting, is now being prepared and will be presented to the Board at a future meeting.

X. IMPAG MEETING

Dr. Richard K. C. Hsieh, NLM Director for International Programs, reported on the November 1992 meeting of the International MEDLARS Policy Advisory Group at the NLM. The group, made up of the directors of the international MEDLARS centers, meets every two years. Using slides, Dr. Hsieh described the composition of the global MEDLARS effort. There are 17 countries (plus the Pan American Health Organization) with which the NLM has formal MEDLARS collaborative activities. Some centers lease MEDLARS tapes, some come online to NLM, some do both. About 18 percent of total MEDLARS connect-hours were reported by the international centers. They are assigned about 13 percent of all user codes. Commercial compact disks (CD-ROM) with MEDLARS-related data are becoming increasingly popular in other countries, Dr. Hsieh said. In return for MEDLARS access, the international centers provide about eight percent of all MEDLARS indexing input, either by directly indexing their literature or providing funds for contract indexing.

Dr. Hsieh briefly reported highlights from the November meeting, which was chaired by Dr. Lindberg. There were NLM presentations on High-Performance Computing and Communications and the new MEDLARS pricing policy. Related to the latter subject was a discussion of the pronounced impact of CD-ROMs on the services provided by the international centers. The Australian center, for example, is ceasing operation as a tape-leasing center because of increasing CD-ROM use. Other NLM staff presentations were on possible collaborative efforts to identify additional non-U.S. journals as candidates for indexing, the use of DOCLINE for interlibrary loan by the international centers, and the availability of preservation microfilm from NLM. Several topics placed on the agenda by the centers received thorough discussion, including toxicology and environmental health information services, the use of Grateful Med, the impact of Internet, electronic document delivery services, and current

communications R & D. The IMPAG members saw a demonstration of COACH (previously shown to the Regents) and received updates on the Unified Medical Language System, the National Center for Biotechnology Information, and PAHO's BITNIS system that uses e-mail access in Latin American countries for Grateful Med literature searching.

XI. UPDATE ON THE OFFICE OF COMPUTER AND COMMUNICATIONS SYSTEMS

Mr. Harry Bennett, Director, NLM Office of Computer and Communications Systems (OCCS), gave an overview of the functions of that office. OCCS provides support to 72,000 MEDLARS codes (11,000 of which use Grateful Med); DOCLINE is provided to 2,450 user organizations. Right now there are probably 140 MEDLINE users on the system, 85 DOCLINE users, and 150 other users inside and outside NLM using other OCCS-supported products. Some 40 searches per minute are being conducted. Mr. Bennett showed graphs that traced the growth of NLM's system over the years, in terms of hours, disk accesses, and number of searches. Grateful Med now accounts for more than 50 percent of all MEDLINE searches on NLM's system. Approximately every three years NLM has upgraded its computer capacity. Today's IBM 3090-300 mainframe multiprocessor computer (with 256 million bytes of memory and 64 million instructions per second) should take care of the Library's needs for the next three years. Seventy-six percent of total MEDLARS workload is over the value-added networks--SPRINT, COMPUSERVE, and BT-Tymnet; 18 percent is through local connections; the remaining six percent of use is via Internet. OCCS also provides support to 700 user stations on NLM's local area network. This local network, which is now being upgraded to an Ethernet system with fiber cables on the backbone, will also permit upgrading to future higher-capacity systems. There are 21 servers on NLM's local network. Among the services on the local network are: terminal to host connection, file sharing and file transfer among workstations, e-mail, and printer sharing. Mr. Bennett described OCCS's responsibilities in supporting Grateful Med and in developing NLM's new Online Public Access Catalog (OPAC).

Dr. Robert E. Kahn, commenting on Mr. Bennett's presentation, agreed with the OCCS strategy of increasing MEDLARS usage on Internet; similarly, making the new Online Public Access Catalog accessible via Internet is important. He said that the ability to store and retrieve full-text will become increasingly possible and powerful and that NLM will therefore have to deal with graphics, charts, and images. These will require increased bandwidth and NLM should do some pilot experiments to be prepared to accommodate them. Also, NLM should look into how to integrate its facilities into the possible future user-level systems that will be developed at different institutions. Dr. Carol Newton echoed Dr. Kahn's remarks about the importance of Internet access and the need to look into how to accommodate graphics and images.

XII. HIGHLIGHTS OF OCTOBER 22 SATELLITE BROADCAST

Ms. Betsy L. Humphreys, Deputy Associate Director for Library Operations, reported briefly on a 2-part (4 hours total) television broadcast, "Information Stat: Rx for Hospital Quality," sponsored by the NLM that was sent via satellite to hospitals and other institutions around the U.S. on October 22 and November 5. She showed a video sampler taken from the broadcasts.

XIII. ADJOURNMENT

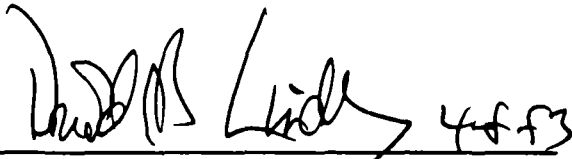
The meeting was adjourned at 12:00 noon, Friday, February 2.

Subcommittee Meetings on Wednesday, February 10:
Extramural Programs Subcommittee--2:00-3:30 P.M.
(Attachment B)


ACTIONS TAKEN BY THE BOARD OF REGENTS

1. Dr. Cohn appointed a nominating committee for Board chair: Dr. James A. Zimble (chair), Ms. Wendy Carter and Col. Jacqueline Morgan.
2. The Board concurred with the recommendations of the Extramural Programs Subcommittee. Grant applications recommended for further consideration are listed in the summary actions (Attachment C).

I hereby certify that, to the best of my knowledge, the foregoing minutes and attachments are accurate and complete.



Donald A. B. Lindberg, M.D. (Date)
Executive Secretary



Lawrence H. Cohn, M. D. (Date)
Chair

BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINE

CHAIRMAN

COHN, Lawrence H., M.D. (8/3/93)
 Chief of Cardiac Surgery
 Department of Surgery
 Brigham and Women's Hospital
 75 Francis Street 617-734-8183
 Boston, MA 02115 FAX 617-732-6559

ALLEN, Beverly E. (8/3/95)
 Director, Multi-Media Center
 Morehouse School of Medicine
 720 Westview Drive S.W.
 Atlanta, GA 30310-1495 404-752-1530
FAX 404-755-7318

ANDERSON, Rachael K. (8/3/94)
 Director
 Health Sciences Center Library
 University of Arizona
 1501 N. Campbell Avenue
 Tucson, AZ 85724 602-626-6121
FAX 602-626-2922

BOOKER, Naomi C. (8/3/96)
 Chair and President
 Marketing and Management
 Innovations, Inc.
 Village of Cross Keys/Suite 314
 Quadrangle East/2 Hamill Road
 Baltimore, MD 21210 410-433-0400
FAX 410-433-0478

DeNARDIS, Lawrence J., Ph.D. (8/3/94)
 President
 University of New Haven
 300 Orange Avenue
 West Haven, CT 06516 203-932-7276
FAX 203-937-0756

JOYNT, Robert J., M.D., Ph.D. (8/3/96)
 Vice President and Vice Provost
 for Health Affairs
 University of Rochester
 School of Medicine and Dentistry
 601 Elmwood Avenue 716-275-3407
 Rochester, NY 14642 FAX 716-256-1131

KAHN, Robert E., Ph.D. (8/3/94)
 President
 Corporation for National
 Research Initiatives
 1895 Preston White Drive
 Suite 100
 Reston, VA 22091 703-620-8990
FAX 703-620-0913

NEWTON, Carol M., M.D., Ph.D. (8/3/96)
 Professor
 Department of Biomathematics
 School of Medicine
 University of California
 10833 Le Conte Avenue
 Los Angeles, CA 90024-1766 310-825-5800
FAX 310-825-8685

SPURLOCK, Jeanne, M.D. (8/3/93)
 1628-B Beekman Place, N.W.
 Washington, DC 20005 202-332-7222

WALKER, H. Kenneth, M.D. (8/3/95)
 Professor of Medicine
 Emory University School of Medicine
 69 Butler Street
 Atlanta, GA 30303 404-616-3420
FAX 404-525-2957

EX OFFICIO MEMBERS**Primary****Alternate**

BILLINGTON, James H., D. Phil.
 Librarian of Congress
 Library of Congress
 10 First Street, S.E.
 Washington, DC 20540

202-707-5205
FAX 202-707-1714

ROWBERG, Richard E., Ph.D.
 Chief
 Science Policy Research Division
 Congressional Research Service
 Library of Congress
 101 Independence Avenue, S.E.
 Madison Bldg., Rm. 413
 Washington, DC 20540

202-707-7040
FAX 202-707-7000

CLUTTER, Mary E., Ph.D.
 Asst. Director for Biological Sciences
 National Science Foundation
 1800 G Street, N.W., Room 506
 Washington, DC 20550

202-357-9854
FAX 202-357-7059

HOLSINGER, James W., Jr., M.D.
 Under Secretary for Health
 Department of Veterans Affairs
 810 Vermont Avenue, N.W. (10)
 Washington, DC 20420

Delivery Address:

801 I Street N.W., Room 710
 Washington, DC 20001

202-535-7010
FAX 202-535-7630

CARTER, Wendy, M.L.S.
 Asst. for Library Programs
 Dept. of Veterans Affairs
 810 Vermont Avenue, N.W. (142D)
 Washington, DC 20420

Delivery Address:

801 I Street, N.W., Room 454
 Washington, DC 20001

202-535-7337
FAX 202-535-7539

HOWARD, Joseph H.
 Director, National Agricultural Library
 U.S. Department of Agriculture
 10301 Baltimore Boulevard
 Beltsville, MD 20705

301-504-5248
FAX 301-504-7042

LANOUE, Alcide M., Lt. Gen., MC, USA
 The Surgeon General
 Department of the Army
 5111 Leesburg Pike
 Falls Church, VA 22041-3258

703-756-0000
FAX 703-0025

CASSIMATIS, Emmanuel G., Col., MC, USA
 Chief
 Graduate Medical Education Branch
 U.S. Army Health Professional Support
 Agency (SGPS-EDM)
 5109 Leesburg Pike
 Falls Church, VA 22041-3258

703-756-8036
FAX 703-756-8044

NOVELLO, Antonia C., M.D., M.P.H.
Surgeon General, PHS
200 Independence Avenue, S.W.
Washington, DC 20201
202-690-6467
FAX 202-690-5810

McCORMICK, Kathleen A., R.N., Ph.D.
Director, Office of the Forum
for Quality and Effectiveness
in Health Care, Suite 401
2101 East Jefferson St., Suite 401
Rockville, MD 20852
301-227-6671
FAX 301-227-8332

SLOAN, Alexander M., Lt. Gen., USAF, MC
Surgeon General
Department of the Air Force
Bolling Air Force Base
Washington, DC 20332-6188
202-767-4343
FAX 202-767-6208

MORGAN, Jacqueline, Col., USAF, MC
Chief, Professional Services, Professional
Affairs and Quality Assurance (SGP)
Department of the Air Force
Bolling Air Force Base
Washington, DC 20332-6188
202-767-1849
FAX 202-404-8089

ZIMBLE, James A., M.D.
Pres., Uniformed Services University
of the Health Sciences
F. Edward Hebert School of Medicine
4301 Jones Bridge Road
Bethesda, MD 20814-4799
301-295-3013
FAX 301-295-3542

HAGEN, Donald F., Vice Adm., MC, USN
Surgeon General
Bureau of Medicine and Surgery
Department of the Navy
Washington, DC 20265-1280
202-653-1144
FAX 202-653-1280

KEMP, David G., Capt., MC, USN
Commanding Officer, Naval Health
Sciences, Education and Training Command
Department of the Navy
Bethesda, MD 20814-5022
301-295-0293
FAX 301-295-2374

EXECUTIVE SECRETARY

LINDBERG, Donald A. B., M.D.
Director
National Library of Medicine
8600 Rockville Pike
Bethesda, MD 20894
301-496-6221
FAX 301-496-4450

BOARD OF REGENTS
EXTRAMURAL PROGRAMS SUBCOMMITTEE MEETING

February 10, 1993

2:00 to 3:30 p.m.

ATTENDEES

Subcommittee Members Present:

Ms. Rachael K. Anderson, Chair
Ms. Beverly E. Allen
Ms. Wendy Carter
Dr. Kathleen A. McCormick
Dr. H. Kenneth Walker

Subcommittee Member Absent:

Dr. Robert J. Joynt

NLM Staff Present:

Dr. Milton Corn, Acting Associate Director, EP
Mrs. Ruth Bortz, Grants Specialist, EP
Mrs. Shelly Carow, Grants Management Specialist, EP
Mr. Peter A. Clepper, Program Officer, EP
Mrs. Karin K. Colton, Committee Management Specialist, EP
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP
Ms. Andrea Epstein, Grants Assistant, EP
Mrs. Frances Johnson, Program Officer, EP
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

**APPLICATIONS APPROVED BY COUNCIL
(ARRANGED NUMERICALLY BY PROGRAM)**

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE COUNCIL DATE: JAN/FEB 1992

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED	
1 G07 LM05488-01		01	74,135
	LDHCNCA - ENHANCING THE NETWORK WITH BASIC TECHNOLOGY		
1 G07 lm05494-01		01	11,920
	ELLIS HOSPITAL ONLINE PUBLIC ACCESS CATALOG		
1 G07 LM05504-01		01	127,236
	ARIZONA COMMUNITY HEALTH CENTERS ACCESS TO INFORMATION		
1 G07 LM05519-01		01	163,120
	INFORM - INFORMATION FOR RURAL MEDICINE		
1 G07 LM05531-01		01	126,800
	TECHNOLOGY FOR IMMEDIATE ACCESS TO HEALTH INFORMATION		
1 G08 LM05498-01		01	168,741
	THE VIRTUAL MEDICAL LIBRARY SYSTEM	02	173,075
		03	132,670
1 G08 LM05523-01		01	55,976
	IMPROVING INFORMATION ACCESS IN COMMUNITY CLINICAL SITES	02	30,482
		03	31,541

APPLICATIONS APPROVED BY COUNCIL
(ARRANGED NUMERICALLY BY PROGRAM)

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE COUNCIL DATE: JAN/FEB 1992

APPLICATION NUMBER	PROJECT TITLE		AMOUNTS RECOMMENDED
2 R01 LM04605-06A1		06A1	130,299
RETRIEVAL FROM FULL-TEXT MEDICAL		07	124,958
DATABASES		08	131,046
		09	136,756
2 R01 LM05007-04		04	173,448
INDEXING OF ELECTRONIC MEDICAL IMAGE		05	183,584
DATABASES		06	196,568
2 R01 LM05202-03		03	147,653
CAN SIMULATION TEACH RECOGNITION OF		04	153,925
SECONDARY DIAGNOSES			
1 R01 LM05467-01		01	22,704
HENRY E SIGERIST AND THE MAKING OF			
MEDICAL HISTORY			
1 R01 LM05472-01		01	188,158
PRACTICAL DECISION ANALYSIS WITH LARGE		02	182,912
KNOWLEDGE BASES		03	191,167
1 R01 LM05485-01		01	24,675
VERNACULAR BODIES		02	23,683
		03	23,770
1 R01 LM05491-01		01	25,000
MIDWIVES, PHYSICIANS & THE PROFESSIONALIZATION			
OF CHILD			
1 R01 LM05495-01		01	160,740
MEDICAL LANGUAGE PROCESSING IN THE CLINICAL		02	160,487
SETTING		03	168,148
1 R01 LM05500-01		01	493,390
A MULTI-JOURNAL RANDOMIZED TRIAL OF		02	533,395
BLINDED PEER REVIEW		03	179,055
1 R01 LM05522-01		01	156,544
A SYNTACTIC PATTERN RECOGNITION SYSTEM		02	136,421
FOR SEQUENCE DATA		03	143,243
1 R01 LM05527-01		01	49,986
DETECTION OF PUBLICATION BIAS IN		02	44,247
META-ANALYSIS			

**APPLICATIONS APPROVED BY COUNCIL
(ARRANGED NUMERICALLY BY PROGRAM)**

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE COUNCIL DATE: JAN/FEB 1992

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED	
1 R13 LM05518-01	CONFERENCE ON INTELLIGENCE SYSTEMS FOR MOLECULAR BIOLOGY	01	10,000
1 R15 LM05526-01	PREDICTING LOW BIRTHWEIGHT USING APPLIED INTELLIGENCE	01	34,742
		02	39,881
1 R29 LM05524-01	CLASSIFICATION NEURAL NETWORKS FOR GENOME RESEARCH	01	67,406
		02	66,982
		03	69,350
		04	71,812
		05	74,372
2 R44 LM05343-02	ADVANCED PROBABILITY AND STATISTICS FUNCTIONS	02	167,140
		03	170,815
1 K04 LM00095-01	THE DISSEMINATION OF MEDICAL INFORMATION	01	60,000
		02	60,500
		03	61,000
		04	61,500
		05	62,000

APPLICATIONS APPROVED BY COUNCIL
(ARRANGED NUMERICALLY BY PROGRAM)
(DUAL ASSIGNMENTS)

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE COUNCIL DATE: JAN/FEB 1992

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 CA59915-01	DECISION ANALYTIC EVALUATION OF RADIATION THERAPY PLANS	01 116,433
		02 120,334
		03 125,070
1 R01 CA60246-01	TELEMAMMOGRAPHY SYSTEM DEVELOPMENT	01 192,577
		02 129,195
		03 135,816
1 R01 CA60259-01	JPEG DATA COMPRESSION - A COMPREHENSIVE ASSESSMENT	01 182,970
		02 182,154
		03 203,854
		04 201,868
2 R01 DA04376-07	COMPREHENSIVE DATABASE OF DRUG DISCRIMINATION RESEARCH	07 20,983
		08 20,548
		09 22,261
1 R01 HG00846-01	DEVELOPMENT OF A COMPUTER SERVER FOR GENOME ANALYSIS	01 100,150
		02 92,700
		03 101,300
1 R01 HS07323-01A1	SEVERITY MODELING USING NATURAL LANGUAGE PROCESSING	01A1 130,214
		02 131,182
		03 135,830
1 R01 HS07324-01A1	PUBLIC AWARENESS OF RECENT MEDICAL ADVANCES	01A1 201,135
		02 303,680
		03 109,795
1 R01 HS07727-01	DIAGNOSTIC ACCURACY OF DATA-DERIVED PROBABILISTIC MODELS	01 88,988
		02 78,748
		03 82,686
1 R01 HS07745-01	INTERFACING DIAGNOSTIC TOOLS TO AN HIS	01 291,586
		02 171,903
1 R01 HS07750-01	MASS MEDIA DISSEMINATION OF HEALTH INFORMATION	01 80,123
		02 78,664
1 R01 NS31840-01	SEQUENTIAL AND SIMULTANEOUS VIEWING OF NEUROIMAGES	01 125,553
		02 152,181
		03 158,269

DEPARTMENT OF HEALTH AND HUMAN SERVICES
NATIONAL INSTITUTES OF HEALTH
NATIONAL LIBRARY OF MEDICINE
Bethesda, Maryland

A G E N D A

103rd Meeting of the

BOARD OF REGENTS

9:00 a.m., May 26-27, 1993

Board Room
Mezzanine of
National Library of Medicine

MEETING OPEN: 9:00 a.m. to 4:30 p.m. on May 26 and from 9:00 a.m. to adjournment
on May 27.

MEETING CLOSED: 4:30 to 4:45 p.m. on May 26 for the review of grant applications.

1. CALL TO ORDER AND INTRODUCTORY REMARKS 9:00-9:10 Dr. Lawrence H. Cohn
2. REMARKS FROM THE OFFICE OF THE SURGEON GENERAL, PHS 9:10-9:35 Dr. Kathleen A. McCormick
3. CONSIDERATION OF FEBRUARY MINUTES TAB I 9:35- Dr. Lawrence H. Cohn
4. FUTURE MEETING DATES -9:40 Dr. Lawrence H. Cohn

Fall Meeting: Sept. 30-Oct. 1, 1993 (Th-F)--CONFIRMED

Winter Meeting: January 27-28, 1994 (Th-F)--CONFIRMED

Spring Meeting: May 25-26, 1994 (W-Th)--PROPOSED

(Subcommittees meet, when necessary, the day before the full Board.)
(On May 25: Extramural Programs Subcommittee--2:00-3:30 p.m.)

PLEASE NOTE:

(Potential conflicts
with May 1994 dates.)

Medical Library Association Annual
Meeting, 5/13-19, San Antonio
AMIA Annual Meeting, 5/4-8, San Francisco

5. REMARKS BY THE DIRECTOR, NLM TAB II 9:40-10:30 Dr. Donald A. B. Lindberg
 - a. Budget
 - b. Personnel
 - c. Legislation
 - d. HPCC (Broad Agency Announcement)
 - e. NIH HIV/AIDS Information Services Conference
 - f. Planning Panel on Training of Health Science Librarians
 - g. Human Brain Project

Discussion 10:30-10:45 Board Members

- | | | | |
|---|----------------|-------------|---|
| COFFEE BREAK | | 10:45-11:00 | |
| 6. VISIBLE HUMAN PROJECT | <u>TAB III</u> | 11:00-11:45 | Dr. Michael Ackerman
Dr. Victor M. Spitzer
Dr. David G. Whitlock |
| Discussion | | 11:45-12:00 | Dr. Donald P. Jenkins
Dr. Donald W. King
and Board Members |
| LUNCHEON CATERED IN CONFERENCE ROOM "B"
(Photograph of Board Members in front of Library.) | | 12:00- 1:15 | |
| 7. THE FRANK B. ROGERS' AWARD | | 1:15-1:20 | Dr. Donald A. B. Lindberg |
| 8. NLM DIRECTOR'S AWARD | | 1:20-1:25 | Dr. Donald A. B. Lindberg |
| 9. THE DEPARTMENT OF VETERANS AFFAIRS' COMPUTERIZED PATIENT RECORD | <u>TAB IV</u> | 1:25-2:15 | Ms. Wendy Carter
Dr. Robert Kolodner
Mr. Daniel L. Maloney |
| Discussion | | 2:15-2:30 | Dr. H. Kenneth Walker
Other Board Members |
| 10. OUTREACH ACTIVITIES: | <u>TAB V</u> | 2:30-2:40 | Dr. Elliot Siegel |
| "Linkage Project"--The Southern Institute on Children and Families, Columbia, S.C. | | 2:40-3:15 | Ms. Sarah C. Shuptrine |
| Discussion | | 3:15-3:30 | Dr. Lois E. DeBakey
Ms. Beverly E. Allen
Other Board Members |
| COFFEE BREAK | | 3:30-3:45 | |
| 11. REPORT FROM EXTRAMURAL PROGRAMS | <u>TAB VI</u> | 3:45-4:15 | Dr. Milton Corn |
| a. Budget and Funding Plans | <u>Tab A</u> | | |
| b. Review of Publication Grant Program | <u>Tab B</u> | | |
| c. Human Brain Project: Programmatic Aspects | <u>Tab C</u> | | |
| d. Proposed Cooperative Agreement Program for the Electronic Medical Record | <u>Tab D</u> | | |
| Discussion | | 4:15-4:30 | Ms. Rachael K. Anderson
EP Subcommittee Members
Other Board Members |

MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS, MAY 26, 4:30 P.M.

12. REVIEW OF GRANT APPLICATIONS

4:30-4:45 Dr. Roger W. Dahlen

(Conflict-of-interest instructions in front of workbook for your information and review.)

RESEARCH TAB I

- A. Medical Informatics Tab A
- B. Biotechnology Tab B
- C. Library and Information Science Tab C
- D. HPCC Applications Tab D

RESOURCE TAB II

- A. Information Systems Tab A
- B. Information Access Tab B

RESEARCH CAREER DEVELOPMENT AWARD TAB III

SMALL BUSINESS INITIATIVE RESEARCH TAB IV

PUBLICATIONS APPLICATIONS TAB V

SUMMARY LIST OF APPLICATIONS NOT RECOMMENDED FOR FURTHER CONSIDERATION TAB VI

INTERIM ACTIONS TAB VII

R E C E S S * * * * *

DINNER. Uniformed Services University of the Health Sciences

Cocktails. 6:30 p.m. "Courtyard"

Dinner. 7:30 p.m. "Small Dining Room"

SPEAKER: Mr. Thomas G. West, Author

TITLE: "A Return To Visual Thinking--New Technologies, Old Talents, Reversed Expectations."

R E C O N V E N E : Thursday, 9:00 a.m., Board Room

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13.	NLM ONLINE PUBLIC ACCESS CATALOG	<u>TAB VII</u>	9:00- 9:15	Ms. Eve-Marie Lacroix Ms. Joyce Backus Mr. Joseph Hutchins
	Discussion		9:15- 9:30	Ms. Wendy Carter Other Board Members
14.	GUIDELINES FOR NCBI SOFTWARE AND DATABASE DEVELOPMENT	<u>TAB VIII</u>	9:30- 9:45	Dr. David Lipman
	Discussion		9:45-10:00	Board Members
	COFFEE BREAK		10:00-10:15	
15.	HEALTH SERVICES RESEARCH INITIATIVE	<u>TAB IX</u>	10:15-10:30	Ms. Betsy Humphreys
	Discussion		10:30-10:40	Dr. Robert E. Joynt Other Board Members
16.	REPORT OF NOMINATING COMMITTEE		10:40-10:45	Dr. James A. Zimble
17.	INTELLECTUAL PROPERTY RIGHTS		10:45-11:05	Dr. Robert E. Kahn
	Discussion		11:05-11:15	Board Members
18.	DOCVIEW: DOCUMENT IMAGES VIA INTERNET	<u>TAB X</u>	11:15-11:45	Dr. George Thoma
	Discussion		11:45-12:00	Dr. Carol M. Newton Other Board Members
19.	ADJOURNMENT		12:00	Dr. Lawrence H. Cohn

DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

NATIONAL LIBRARY OF MEDICINE

BOARD OF REGENTS

MINUTES OF THE 103RD MEETING

MAY 26-27, 1993

BOARD ROOM

NATIONAL LIBRARY OF MEDICINE

BETHESDA, MARYLAND

**DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE**

THE BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINE

**Minutes of Meeting 1/2/
May 26-27, 1993**

The Board of Regents of the National Library of Medicine was convened for its one-hundred-and-third meeting at 9:00 a.m. on Wednesday May 26, 1993, in the Board Room of the National Library of Medicine, Bethesda, Maryland. Dr. Lawrence H. Cohn, Chief of Cardiac Surgery at Brigham and Women's Hospital, chaired the meeting. In accordance with P.L. 92-463 and the Determination of the Director, NIH, as announced in the Federal Register on April 16, 1993, the meeting was open to the public from 9:00 a.m. to 4:30 p.m. on May 26 and from 9:00 to 11:55 a.m. on May 27. The meeting was closed from 4:30 to 4:45 p.m. on May 26 for the review, discussion, and evaluation of grant applications. A Board roster is enclosed under Attachment A.

Board members present were:

Dr. Lawrence H. Cohn, Chair	Dr. Robert J. Joynt
Ms. Beverly E. Allen	Dr. Robert E. Kahn
Ms. Rachael K. Anderson	Dr. Carol M. Newton
Ms. Naomi C. Booker	Dr. H. Kenneth Walker
Dr. Lawrence J. DeNardis	Dr. James A. Zimble
Dr. James W. Holsinger, Jr. (5/26)	

Alternates to ex officio members present were:

Ms. Wendy Carter, representing Dr. James W. Holsinger, Jr.
Col. Emmanuel Cassimatis, representing Lt. Gen. Alcide M. LaNoue.
Capt. David G. Kemp, representing Vice Adm. Donald F. Hagen.
Capt. Kathleen A. McCormick, representing Dr. Antonia C. Novello.
Col. Jacqueline Morgan, representing Lt. Gen. Alexander M. Sloan.
Dr. Richard E. Rowberg, representing James H. Billington.

Unable to attend:

Dr. Mary E. Clutter
Mr. Joseph H. Howard
Dr. Jeanne Spurlock

1/ For the record, it is noted that members absent themselves from the meeting when the Board is discussing applications (a) from their respective institutions or (b) in which a conflict of interest might occur. This procedure applies only to individual discussion of an application and not to "en bloc" actions.

2/ The Board of Regents, when considering the extramural programs of NLM, also constitutes and serves as the National Libraries Assistance Advisory Board.

National Library of Medicine staff members attending this meeting included:

Dr. Donald A. B. Lindberg, Director
Mr. Kent A. Smith, Deputy Director
Dr. Harold M. Schoolman, Deputy Director, Research and Education
Dr. Michael Ackerman, Acting Associate Director, SIS
Mr. Harry D. Bennett, Acting Director, OCCS
Mr. Kenneth Carney, Executive Officer, OD
Ms. Marjorie Cahn, Head, Office of Health Services Research Information, LO
Ms. Lois Ann Colaianni, Associate Director, LO
Dr. Milton Corn, Acting Associate Director, EP
Dr. George J. Cosmides, Deputy Associate Director, SIS
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP
Mr. Earl Henderson, Deputy Director, LHNCBC
Dr. Richard K. C. Hsieh, Director for International Programs
Ms. Betsy Humphreys, Deputy Associate Director, LO
Mr. Charles R. Kalina, Special Projects Officer, HPCC
Dr. Lawrence Kingsland III, Chief, Computer Science Branch, LHNCBC
Mr. Sheldon Kotzin, Chief, Bibliographic Services Division, LO
Ms. Eve-Marie Lacroix, Chief, Public Services Division, LO
Dr. David Lipman, Director, Lister Hill National Center for Biotechnology Information
Dr. Daniel R. Masys, Director, Lister Hill National Center for Biomedical Communications
Mr. Robert B. Mehnert, Chief, Office of Inquiries and Publications Management, OD
Dr. Elliot R. Siegel, Associate Director, Health Information Programs Development
Dr. George Thoma, Chief, Communications Engineering Branch, LHNCBC
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

Others present included:

Dr. Donald P. Jenkins, Director, The Borden Institute, Office of the Surgeon General, U.S. Army, D.C.
Dr. Donald W. King, Executive Director, American Registry of Pathology, D.C.
Dr. Robert Kolodner, Chief, Medical Informatics, Veterans Affairs Medical Center, Dallas
Mr. Daniel L. Maloney, Acting Staff Director, Medical Information Resources Management, Department of Veterans Affairs, D.C.
Ms. Sarah C. Shuptrine, President, The Southern Institute on Children and Families, Columbia, S.C.
Dr. Victor M. Spitzer, Asst. Professor, Dept. of Cellular and Structural Biology & Radiology, Denver
Mr. Thomas G. West, Author, D.C.

I. OPENING REMARKS

Dr. Lawrence H. Cohn, Chairman, welcomed the Regents and guests to the 103rd meeting of the Board of Regents of the National Library of Medicine.

II. REPORT FROM THE SURGEON GENERAL'S OFFICE

Dr. Kathleen A. McCormick, Director of the Office of the Forum for Quality and Effectiveness in Health Care, represented the Office of the PHS Surgeon General. She reported that, as Surgeon General Novello nears the end of her appointment, she has several priority items. Immunizing every American child by the age of two is one high priority: Dollars spent on this will greatly improve health and reduce future suffering. The Surgeon General has also delivered a "report card to the Nation" on curbing alcohol abuse; many important issues remain, such as underage drinking, improving alcohol labeling, and misleading advertisements. Last year's conference on Latino health matters has resulted in new local initiatives on health care in Miami, New York, Chicago, San Antonio, and Los Angeles. The Surgeon General has also been working with professional baseball to curb chewing tobacco use. She will issue her final AIDS report later this summer. The new Surgeon General, Dr. Jocelyn Elders, has not yet been confirmed.

III. CONSIDERATION OF MINUTES OF PREVIOUS MEETING

The Regents approved the minutes of the February 11-12, 1993, meeting.

IV. DATES OF FUTURE MEETINGS

The Board will meet next on September 30-October 1, 1993. The next winter meeting will be January 27-28, 1994. The proposed dates of May 25-26, 1994, were accepted and confirmed for the meeting next spring.

V. HEALTH SERVICES RESEARCH INITIATIVE

Ms. Betsy L. Humphreys, NLM Deputy Associate Director for Library Operations, said that health services research studies the relationships among need, demand, supply, use, quality, and outcome of health services. This definition encompasses technology assessment and the development of practice guidelines. The aim of health services research is to evaluate the structure, process, output, and outcome of health care. Although health services research has always been a core subject for NLM, the Library has, in general, been more successful in covering the clinical and research literature (and in serving clinicians and scientists). One reason

for this is that much health services research is published in technical reports rather than in the journal and book literature; another is that many health services researchers are affiliated with schools of economics and public administration which are less likely to be linked to services offered by NLM and to the National Network of Libraries of Medicine (NN/LM). When he arrived at NLM in 1984, Dr. Lindberg was interested in improving NLM's health services research information services. At his instigation, NLM staff began working with the Council on Health Care Technology, Institute of Medicine, to ensure that its planned information dissemination activities would build upon, rather than duplicate, services already available from NLM and the NN/LM. In 1988-89, the Council studied the coverage of health technology assessment in NLM's Medical Subject Headings vocabulary, the NLM collection, the Library's indexing and cataloging services, and other related vocabularies that might be incorporated into the Unified Medical Language System. The resulting 1989 report included a number of recommendations that NLM began to implement. In late 1989, NLM also received a specific legislative mandate (through the law establishing the Agency for Health Care Policy and Research (AHCPR) and abolishing the IOM's Council on Health Care Technology) to improve the organization and dissemination of health services research information. The law required that AHCPR fund the establishment of a center for health technology information at the NLM. Since NLM's authorizing legislation was not modified to reflect this responsibility, the Library did not receive a direct appropriation to carry out these duties. What has been accomplished between FY 1990 and the present has been funded through interagency transfers of funds from the AHCPR.

Since 1990, the Library has made substantial progress in developing an enhanced health services research information program and has helped the AHCPR in its effort to develop clinical practice guidelines. From 1990 to 1992, NLM provided direct literature support to the Agency for its guideline panels; today NLM plays a consultative role in helping the panels identify and retrieve appropriate literature. NLM's first step to enhance its existing services was to establish the Office of Health Services Research Information to coordinate all efforts in this area. The Office is headed by Ms. Marjorie Cahn. Major efforts were made to improve the acquisition of technical report literature and the MeSH vocabulary. Not only were many terms added to MeSH, but the hierarchical structure of the vocabulary was enhanced to provide better organization of health services research concepts. Indexing of related literature was expanded and improved to permit easier retrieval of clinical practice guidelines, clinical trials, and meta-analysis. The coverage of the DIRLINE database (directory of information resources) was also improved. A number of special publications were produced: a reference guide for health services researchers, a bibliography (back to 1985) to identify critical practice guidelines published before NLM began tagging them explicitly in 1991, and a bibliography on the technique of meta-analysis. NLM also began to develop prototypes of new databases. One of these is a prototype full-text information retrieval system that emphasizes access to practice guidelines. A second new database is a bibliographic service called HSTAR (Health Services and Technology Assessment Research) that is now being tested. Like AIDSLINE, HSTAR assembles data from other NLM databases (but also adds unique references). Another prototype database, in an early stage of development, is a research-in-progress file that will include federal and private research projects. NLM has also engaged in health services research outreach by

exhibiting and demonstrations at meetings. There has also been substantial progress in expanding the UMLS to make it more useful in health services research and in computer-based patient record systems.

The Institute of Medicine, funded by AHCPR, did a study on the needs of the producers and users of health services research information and recommended services that NLM might offer to meet those needs. The IOM report, delivered to NLM in late 1991, emphasized the need to improve the infrastructure for delivering health services research information, including new services, enhancement of existing services, training of medical librarians in this field, and a greatly expanded outreach effort targeting groups not well covered by NLM's current outreach program. In 1992, NLM prepared a five-year strategic plan based on the IOM's recommendations; unfortunately there are not yet sufficient resources to implement its recommendations fully. The current NIH revitalization bill contains provisions that would convert the present operation (NLM's Office of Health Services Research Information) to the National Information Center on Health Services Research and Health Care Technology. This legislative authorization would permit a direct appropriation to NLM for health services research activities, although it requires continued interagency cooperation between NLM and AHCPR. The 1994 President's budget includes \$8 million for NLM for health services research information activities, an increase of more than \$7 million from the funds NLM received from AHCPR in 1993. This increase would allow NLM to implement fully the recommendations of the IOM study and make it possible to engage in other activities related to health services research information.

Following Ms. Humphreys' presentation, Dr. Robert E. Joynt, member of the Board of Regents, commented that health services research is assuming increased importance with the current national debate on how health care services should be provided. The NLM is on the right track in responding to the challenge to enhance the information services available to those in this field. Mr. Kent Smith noted that health services research is an important part of one of the major "investment" programs--health care--in the President's budget. If funds are forthcoming, this will be a major initiative of the Library. Dr. Richard Rowberg asked whether there was a plan to evaluate the effectiveness, in terms of quality of care and cost containment, of getting health services research information to doctors and hospitals. Dr. Kathleen McCormick said that the AHCPR would be evaluating the effectiveness of guidelines using grant and contract support. Dr. James A. Zimble commented that the Department of Defense, especially through ARPA's mandate to assist in the transition from military to civilian roles and applications, could be considered a potential partner in this. Ms. Humphreys noted that there is a convergence of various related projects, for example, the development of a computer-based patient record, the High Performance Computing and Communications initiative, and the UMLS; fortunately a number of different agencies, including ARPA, are cosponsoring related efforts under the aegis of the HPC program. Dr. McCormick commented that AHCPR is grateful to the NLM for its help and the help of members of the National Network of Libraries of Medicine. She said that having clinical practice guidelines in the form of a book limits their usefulness; the computerized text retrieval system NLM recently developed for AHCPR is being used by the chairs of guideline panels and shows potential for further refinement and application. NLM has

also provided assistance in converting one guideline into the criteria form of knowledge representation in the CTX expert systems shell.

VI. NLM ONLINE PUBLIC ACCESS CATALOG

Ms. Eve-Marie Lacroix, Chief of NLM's Public Services Division, described the Library's new online public access catalog that is now providing patrons with access to CATLINE, AVLINE and SERLINE. Although it was not designed for files like CATLINE and AVLINE, for the past several years Grateful Med has been used to provide access to these files. Most onsite patrons are not regular users, so any interface program had to take that into account. NLM staff determined that available commercial systems were not adaptable, so a new online catalog was developed by staff of Library Operations and the Office of Computer and Communications Systems. The online catalog interface has been named "Locator," and it gives access to CATLINE (book records), AVLINE (audiovisual records), and SERLINE (serial title records). The interface also allows access to Grateful Med so patrons may also search DIRLINE (directory of organizations) and REFLINE (references to journal articles). Locator was introduced in February, 1993, and patron reaction has been overwhelmingly positive. A slightly modified version of Locator has been made available for access via the Internet. The address is login: locator.nlm.nih.gov. Following Ms. Lacroix's description, she and a colleague, Joyce Backus, demonstrated Locator to the Regents. Using slides, Ms. Backus then gave an overview of how the system is configured.

Ms. Wendy Carter, commenting on the presentations and demonstration, said that she has used the Internet version of Locator and found it to be a straightforward system. She had no trouble in finding what she was looking for. It was particularly useful not to have to remember the two-letter mnemonic designations in CATLINE and AVLINE--the system expands them to full field names. Also, Locator gives the user the feel of accessing just one system; the user is not aware of logging out of one database and into another. This seamlessness will lead the unsophisticated user to be more adventurous in searching. Ms. Carter suggested that it would be useful for the user to find how many copies of a title were in the NLM and whether they were on the shelf, out on loan, at the bindery, etc. Although there is considerable free-text capability in Locator, some assistance with subject searching would be helpful.

VII. INTELLECTUAL PROPERTY RIGHTS

Dr. Robert E. Kahn, member of the Board of Regents, said that his organization has been working for some years on the development of digital libraries. Perhaps the most critical issue they have faced is the problem of how to protect intellectual property rights, even more than developing the technology or capturing the data. Dr. Kahn briefly described how copyright and patent protection evolved and what they encompass. It is difficult to apply these traditional concepts to modern technology. For example: Property rights in photographs and motion pictures (a series of photographs) are unclear in some countries; whether a work in digital form

that is processable by a machine is inherently a different kind of work from one that is on paper is still being debated. One protected work may have a number of separate rights embedded within it. In the case of a film, for example, there are the rights of the author of the original book, rights of the screenwriter, the actors, the composers of the music, lyricists, performers of the music, etc. One question is what happens to these rights when the work in question is moved across a network? Is it making a copy of work? Is it a public performance? In the realm of science, knowledge itself is not protectable, Dr. Kahn said. There may be rights in providing routes of access to knowledge, however. Recently, the United States switched from membership in the Universal Copyright Convention (administered by UNESCO) to the Berne Convention. This has brought the issue of "moral rights" into the picture, that is, the creator has certain rights beyond the realm of normal copyright. In the current environment of easy information distribution, those who prepare information in print form for profit are very uneasy about how readily and rapidly that information can be electronically disseminated beyond their control. There is also a noticeable desire on the part of those who produce the information to acquire the mechanisms of distribution.

With that as background, Dr. Kahn used transparencies to describe a proposed copyright management testbed on the Internet. Elements of this testbed include deposit of a document, registration and automated filing, rights permissions and recordations, and a validation process. Using a schematic diagram, he showed the interrelation of system components and how information flowed within the testbed system. The main issues addressed in the system are issues of access--who can have access, what can be accessed, what terms and conditions apply, how are payments handled, and what protection mechanisms are available. The goals of the testbed are to explore architectural models for managing intellectual property in a network environment, developing techniques for handling rights and permissions, demonstrating integrated distributed systems for automated management of copyright, hands-on experience in this area, and working with interested parties to arrive at a common understanding of the problems and opportunities. Dr. Kahn said that the testbed effort is being funded jointly by the Library of Congress and the Advanced Research Projects Agency. The testbed network should be operating by the end of 1994 as a pilot project in the Library of Congress.

VIII. GUIDELINES FOR NCBI SOFTWARE AND DATABASE DEVELOPMENT

Dr. David Lipman, Director of NLM's National Center for Biotechnology Information, reported that, after a series of meetings with representatives of private companies, NCBI is forming a commercial software developers' interest group. The group will be a means of keeping the private sector informed of NCBI's projects. One company has already announced a product developed on top of NCBI's Entrez CD-ROM; several other companies are exploring similar projects. In all, much progress has been made in developing amicable relations with the private sector, Dr. Lipman said. He has heard from a number of biotechnology and pharmaceutical companies who are satisfied users of NCBI products. Several who are heavy users have proposed installing high-speed lines to have secure access to the systems.

IX. DEPARTMENT OF VETERANS AFFAIRS' COMPUTERIZED PATIENT RECORD

Ms. Wendy Carter, Assistant for Library Programs, Department of Veterans Affairs, introduced Mr. Daniel L. Maloney and Dr. Robert Kolodner. Mr. Maloney is Acting Staff Director of the VA's Medical Information Resources Management Office and Director of the VA's Washington, D.C., Information Systems Center (ISC). The Washington ISC is the lead site for connectivity for the VA's Electronic Mail, Clinical Workstation and Integrated Medical Imaging projects. Dr. Kolodner is Chief of Medical Informatics at the Dallas VA Medical Center and Assistant Professor of Psychiatry at the University of Texas Southwest Medical Center. He is Chairman of the VA's Clinical Applications Requirement Group that identifies elements that must be included in the VA Decentralized Hospital Computing Program. Both Mr. Maloney and Dr. Kolodner have served on the White House Health Care Reform Task Force.

Dr. Kolodner gave a brief overview of the VA medical service--its patients, research, and facilities. Mr. Maloney said that there are extensive automation and networking links among the VA Medical Centers. There are about 85,000 users nationwide of the VA's system, called the Decentralized Hospital Computer Program (DHCP), sending messages, programs, files, and patient data. There are interconnections and gateways with other networked systems and with Internet. There is also extensive electronic teleconferencing capability. A suite of approximately 80 programs is available to all 171 of the Medical Centers, with such capabilities as patient registration, scheduling, purchasing, library services, and a host of others. The users are directly involved with software development, Mr. Maloney said. Next, Dr. Kolodner described the work of the interdisciplinary groups that are responsible for continuing applications requirements and software design. The vision statement for the group concerned with clinical applications (Dr. Kolodner chairs this group) states that the VA will develop an automated patient-based clinical information system to enhance high-quality health care. The system will include an automated patient record and provide clinical personnel with comprehensive information to support clinical and management decision-making, education, and research. The guiding principle for the clinical part of DHCP is that it be designed for the front-line clinician. The data collected are incorporated into a single integrated patient record and the data collected from the nursing module is available for decision support for physicians, pharmacists, dieticians, etc. The DHCP also allows information to be incorporated from outside the system: If a veteran moves from one facility to another, laboratory data, for example, can be moved over and integrated into the decision support processes at the new institution. Dr. Kolodner described the current issues facing his clinical applications group, including those to improve imaging services, the storing of test results, pharmacy services (inpatient and outpatient), physician progress notes, etc. Using a terminal, Dr. Kolodner and Mr. Maloney logged on to several DHCP sites and demonstrated the system to the Board. Included in the demonstration was a connection to the Clinical Term File that uses NLM's Unified Medical Language System.

Following the presentations and demonstration, Dr. H. Kenneth Walker, member of the Board of Regents, commented that the VA's accomplishments in developing the DHCP are impressive. Having an instantly accessible, legible, and searchable patient record is of great benefit. It is clear that there will soon be gigantic databases as such information is gathered from health

facilities around the Nation; they will be of inestimable use, for example, in conducting outcomes research, calculating health costs, and obtaining profiles of health providers and health facilities. Dr. Cohn asked how near voice recognition technology was to application in such a system as the VA's. Dr. Kolodner said that some commercially available voice recognition systems were already being used, for example, to transfer physician-dictated notes into a machine-readable file. In response to a question about costs, Dr. Kolodner said that the VA system has resulted in no reliable figures yet, but that one study showed that computerized outpatient records saved several hundred dollars per patient. There was a discussion of the confidentiality measures installed in the VA's system, including several levels of passwords and a system to verify signatures. In response to a question from Dr. Carol Newton, Dr. Kolodner said that about two-thirds of the 12,000 VA physicians are using the system for data retrieval; almost all house staff use it.

X. OUTREACH ACTIVITIES

Dr. Elliot Siegel, NLM Associate Director for Health Information Programs Development, reminded the Board that outreach to rural and underserved health professionals remains among NLM's highest priorities. The Lower Mississippi Delta area, one of the most impoverished and underserved areas in the nation, is the target for special attention. Dr. Charles Walker, who was on the NLM staff until his death about a year ago, had identified this seven-state region as an appropriate area for NLM's outreach activities. One of our first efforts was to identify leaders and potential collaborators in the area so that the beneficial effect of our programs would be maximized. In this regard, Dr. Siegel introduced Ms. Sarah C. Shuptrine, who is President of a health policy group called The Southern Institute on Children and Families located in Columbia, South Carolina. Working with Ms. Shuptrine and the RML directors at the Texas Academy of Medicine (Region 5) and the University of Maryland (Region 2), NLM has embarked on the "Linkage Project." Dr. Siegel will visit the capitals of six southern states to present information about NLM and its information services. Ms. Shuptrine makes advance arrangements in a hotel and invites leaders from the local health policy and health-care communities; Dr. Siegel talks about how online access to information can be useful in their professional lives. The meetings have been organized around the theme of women's and children's health. Grateful Med searches and other materials are distributed as handouts. Dr. Siegel said that he and Ms. Shuptrine attempt to identify the information needs of local programs and ongoing initiatives which NLM can assist by adding an information component. The focus is on identifying opportunities for collaboration that can help leverage NLM's outreach resources.

Following Dr. Siegel's remarks, Ms. Shuptrine described briefly the goals of The Southern Institute on Children and Families, a three-year-old nonprofit public policy organization. The Institute focuses on disadvantaged children and identifies problems and issues that are common to the southern states. That region has the highest rates of infant mortality, the highest rates of women who deliver without receiving prenatal care, a disproportionate share of uninsured children, and the highest rate of children under three who are served in public hospitals. It is

appropriate that NLM has chosen the southern region as one focus of its outreach. The outreach meetings that she and Dr. Siegel have arranged focus on health professionals who serve minority and other underserved populations, and also on policymakers. Three sessions have been conducted so far--in South Carolina, Arkansas, and Texas. Three more, to be held in Louisiana, Mississippi, and Tennessee, will be conducted by the end of July. The invitation lists for these sessions are broad: rural and minority physicians, the commissioner and relevant staff of the state health department, and representatives of trade groups such as hospital, nursing, and pharmacy associations. The federally funded comprehensive Community Health Centers and Area Health Education Centers are also contacted. A typical program begins with an introduction by Ms. Shuptrine, the state health commissioner speaks about the importance of information access, and Dr. Siegel speaks about the NLM outreach effort and how NLM information services can be applied in local situations. NLM's "Pathways" videotape is also shown. There follows a live demonstration of Grateful Med; in several instances a local physician conducted the demonstration. A representative of the Regional Medical Library is also on hand and helps in conducting the Grateful Med search. Such search topics as childhood asthma and motivational factors affecting prenatal care are selected. Following the demonstration there is a discussion session that seeks to identify opportunities for collaboration. Although there will be a final report on all six meeting, due in November, Ms. Shuptrine had several observations based on the first three. (1) There will be no shortage of collaborative outreach opportunities that arise from the meetings. (2) The Community Health Centers can be enthusiastic and key players in this outreach effort. (3) NLM, working with the Regional Medical Libraries, must follow up with local and state policymakers to ensure that positive actions take place. The final report will identify a range of opportunities for further action and the resources necessary to carry out these outreach activities, she said.

After Ms. Shuptrine's presentation, Board member Beverly Allen commented that an outreach model is being established by NLM that will be very helpful in the future in other areas, for example, in disadvantaged urban areas. Dr. Siegel read from a letter from Dr. Lois DeBakey, consultant to the Board of Regents, who was scheduled to comment on this outreach program but who was unable to be at the meeting. Dr. DeBakey, in her letter, briefly summarized the Library's recent outreach efforts. She commended NLM's targeting children's and women's health issues in underserved areas and suggested that concentrating on these issues would have long-term benefits both for the status of the public's health and for holding down the rising costs of health care. In response to a question from Rachael Anderson about evaluating the program's long-term effectiveness, Dr. Siegel replied that in the case of the Linkage Project, the primary goal is to identify projects for future collaboration. If NLM were to identify a half dozen or so meaningful projects, whose successful completion would make a difference in underserved areas, the Linkage Project will have served its basic purpose. In six months or so, he said, NLM should not only know about such potential collaborative projects, but should (as results become available from our in-house evaluation study of NLM's projects to date) also have valuable information about what types of outreach projects have the most beneficial payoff.

XI. REPORT FROM EXTRAMURAL PROGRAMS

Dr. Milton Corn, Acting Associate Director for Extramural Programs, introduced Dr. Michael Carmel, Director of Regional Library Services, South West Thames Regional Health Authority, United Kingdom. Dr. Carmel is a Fulbright Research Fellow and is in the U.S. to look at information management and related technology for health care. He will spend a good deal of time at NLM and at various IAIMS sites.

Budget

Under the Resource Grants, both access and information systems, no funds are left in FY 1993. For the individual Training Fellowships \$148,000 are available for the remainder of the fiscal year. Under the PHS 301 authority, NLM will be able to fund \$549,000 in the Biotechnology category and \$450,000 in Bioethics. All other categories are out of money. Those applications that the Board concurs with and that cannot be funded this year, will be kept active for at least two years, remaining in competition and eligible for funding.

NLM Publication Grant Program

Dr. Corn gave a brief review of the program. The size of the Publication Grants, he noted, are usually very small and, therefore, approved by the Board en bloc. Although the support is limited, the community depends on it. The program has changed slightly over the years. It is authorized by the Medical Library Assistance Act and supports the publication of a large array of scientific documents. The emphasis in the last few years has been on scholarly research studies in the history of medicine. The total annual budget is approximately \$350,000, with an average award in the range of \$30,000. The duration is up to three years, and the success rate is better than for most of the Library's other grant programs. An average of about 40% of the applicants have received support through this program, and most have resulted in a published book. Dr. Lindberg pointed out that this program has supported many different types of publications over the years, in addition to history-of-medicine publications. An example in the sixties was the very important publication of a set of artist's drawings of protein molecules, a very expensive project, but of great importance at the time, when computer graphics had not yet been developed.

The Human Brain Project

Dr. Corn reported on this multiagency project which will concentrate on "mapping the brain and its functions." The project's "Phase I--Feasibility Studies" has been announced. NIH's National Institute of Mental Health is the lead organization, one of ten, including NASA, NSF and DOD, that will take part in the project. NLM has been invited to participate, and medical informatics will play an important role. While no new money has been made available for the project, each organization will pick and choose those applications it is interested in funding. Actual funds will have to be taken from other program areas. The application receipt date is June 15, and the

review is scheduled for August, with awards to be made in September. While NIMH will administer the review, each participating organization will be asked to recommend reviewers to this special review committee.

Proposed Cooperative Agreement for the Electronic Medical Record

NLM is charged with bringing HPCC technology to the health-care field, Dr. Corn explained. One of the areas in the congressional legislation is concerned with the computerized patient record, directing the Library to address "technology for storing, accessing, and transmitting patients' medical records while protecting the accuracy and privacy of those records." NLM is considering implementing this part, Dr. Corn said, through the cooperative agreement mechanism, rather than the conventional grant mechanism. A cooperative agreement gives NLM greater ability to ensure practicability and intercompatibility than is normally possible with the standard grant mechanism. The cooperative agreement proposal is being presented to the Board of Regents for "concept review." Before NLM can announce this type of program, Board approval of the concept is necessary. Slides illustrating the elements of a cooperative agreement and the research topics of interest were shown.

Dr. Newton encouraged the diversity approach and was very much in favor of having NLM handle the program, emphasizing that NLM has always had flexibility and the end user in mind. Ms. Anderson noted that the EP Subcommittee was pleased that these new programs would allow NLM's extramural programs to move into areas of greater participation and collaboration with other institutes and groups and sees it as a very positive direction for NLM and an opportunity to leverage NLM's limited funding into projects that could have the potential for much broader impact.

Ms. Anderson, on behalf of the Extramural Programs Subcommittee and as discussed at their meeting the preceding day, moved that the Board approve the concept for the electronic medical record systems through cooperative agreements. The Board unanimously approved the concept.

MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS MAY 26, 1993, 4:15 TO 4:45 P.M.

XII. REVIEW OF PENDING APPLICATIONS

Before proceeding with the consideration of pending applications, Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP, asked Board members to be aware of confidentiality and conflict-of-interest procedures included in the grant application workbook. He reminded them to sign at the conclusion of the grant applications review the statement noting that they had not participated in the discussion of any applications which presented a conflict of interest.

The Board reviewed 55 applications, requesting \$14,612,907 and recommended for further consideration 51 applications in the amount of \$12,679,580 for the total requested. Four applications in the amount of \$959,488 were not recommended for further consideration. Grant application recommended for further consideration by the Board are listed in the summary action (Attachment C). Interim actions taken by Extramural Programs staff since the February meeting were considered by the Board's Extramural Programs Subcommittee and noted and concurred with by the Board of Regents.

MEETING OPEN--MAY 27, 1993, 9:00 A.M. TO ADJOURNMENT

XIII. AWARDS

Dr. Lindberg presented the 1993 Frank B. Rogers' Award to Nancy Wright, head of the Indexing Section, Library Operations. The Rogers' Award is presented annually to recognize significant contributions to the Library's fundamental operational programs. Ms. Wright was cited for her exceptional leadership and management skills resulting in a significantly increased volume of indexing and sequence analysis, and improved accuracy and timeliness in processing the journal literature.

Dr. Lindberg next presented the 1993 NLM Director's Honor Award to two employees. The first was presented to Ms. Pat Carson of the Coordination Office for High Performance Computing and Communications. She was honored for her foresight, commitment, and achievement in the advancement of the High Performance Computing and Communications program. The second Director's Award was presented to Dr. Lawrence Kingsland III, Chief of the Lister Hill Center's Computer Science Branch. Dr. Kingsland was cited for sustained excellence in developing expert systems and applications for health care and information retrieval.

XIV. REPORT FROM THE NLM DIRECTOR

Dr. Lindberg and the members of the Board of Regents congratulated Board Chairman Lawrence H. Cohn on receiving an honorary degree from the University of Paris. The Director reported that NLM's 1993 appropriation of \$103,600,000 was to be supplemented by \$9,400,000 for implementing High Performance Computing and Communications projects. The addition was included in the President's stimulus package, which was not passed. The White House still holds out hopes for the HPCC-related parts of the bill, Dr. Lindberg said. The NLM fiscal year 1994 request is \$133,349,000; this figure includes the \$9,400,000 that was not appropriated in 1993 and an additional \$21,500,000 for HPCC. The President's 1994 budget, as presented at recent appropriation hearings, shows significant increases for NLM for HPCC, AIDS, minority health, and breast cancer research. There was discussion about the desirability of pooling these increases and apportioning them among all NIH institutes. Fortunately, Dr. Lindberg said, the

HPCC money is earmarked by the Office of Management and Budget and may not be used for anything else. In the area of personnel, the Director said that the Library's ceiling for full-time permanent positions has been reduced from 599 to 586. He introduced to the Regents a new postdoctoral intramural research fellow in the National Center for Biotechnology Information, Dr. Hitomi Ohkawa. As to authorizing legislation, the House and Senate have filed a joint conference report on the NIH Revitalization Act. This act would combine NLM's various legislative authorizations (NLM Act, Medical Library Assistance Act, and National Center for Biotechnology Information legislation) into one three-year authorization that would require periodic renewal. The proposed legislation would also establish an information center for health services research, a new grant program for developing educational technologies, and a clearinghouse on information related to women's health research. Dr. Lindberg brought the Regents up to date on current pending HPCC-related legislation and reported that the Library is soliciting proposals under a "Broad Agency Announcement" for applications of advanced computer and networking technology for health care. Finally, Dr. Lindberg reported on two upcoming meetings to be held at the Library: NLM/NIH AIDS Information Services Conference (June 28-30) and the June 15 meeting of a steering committee to establish a Planning Panel on Education and Training of Health Science Librarians.

After his presentation, Dr. Lindberg thanked Dr. Cohn for his leadership of the Board of Regents over the past year and presented to him a symbolic gavel and a copy of the *Selected Papers of J. S. Billings*. Dr. Cohn responded by saying that he has enjoyed his tenure as member of the NLM Board of Regents; he originally considered the Library a national treasure, he now considers it a world treasure. NLM does as much to stimulate good feeling among nations as almost anything else.

XV. VISIBLE HUMAN PROJECT

Dr. Michael Ackerman, Acting Associate Director for Specialized Information Services, briefly reviewed the background and events leading to the Visible Human Project. (Two presentations on this subject have been made previously to the Regents: January 18-19, 1990 and October 23-24, 1991.) The goal of the project is to build a digital image library containing volumetric data representing the complete normal adult human male and female consisting of digitized photographic images from cryosectioning and digital images derived from computerized tomography and magnetic resonance imaging. Two human cadavers would be the source of the data. The contract award was made to Dr. David G. Whitlock and Dr. Victor M. Spitzer of the University of Colorado in August 1991. The principal investigators presented their plans to the Board of Regents in October 1991.

Following Dr. Ackerman's introduction of the topic, Dr. Victor M. Spitzer used slides to bring the Regents up to date on progress in the Visible Human project. The current Phase I activity, which is being carried out at the University of Colorado, involves acquiring the cadavers and the data--CT, MRI, and photography. [Phase II is to digitize the photography; Phase III is to classify the anatomical objects in each cross-section.] Dr. Spitzer described the problems

associated with locating candidate male and female cadavers (from which final selection will be made), and the steps he and his colleagues take to determine how nearly they approach "perfect condition." He listed the various criteria for selection of the cadavers--size, build, medical history, etc. Dr. Spitzer showed photographs of the specially constructed facilities in which the photography will be done and the special equipment designed to perform the cryosectioning. He described, step by step, how the cryosectioning will be done. As of today, he said, three male cadavers have been identified; no suitable female cadaver has yet been located. Applications for the resulting image data file are envisioned in the areas of simulation, education, training, and modeling. Using a videodisc, Dr. Spitzer showed sample anatomical images, taken from another project at the University of Colorado.

Commenting on the Visible Human Project, Dr. Donald P. Jenkins, Office of the Army Surgeon General, noted the extreme difficulty of locating appropriate subjects. Using slides, he described an interagency Joint Biomedical Program project on which he is working at the Advanced Research Projects Agency (DOD). The large-scale project (about \$100,000,000 a year for five years) concerns the development of virtual reality simulations for education. Those working in this program are very interested in using the data collected by the Visible Human Project. One example would be to use data from the Visible Human Project for battlefield trauma simulation in training combat medics, reducing or eliminating the need to use animals in this training. He cautioned, however, that virtual reality simulations will never replace the dissection of cadavers in medical training. Despite the problems that Drs. Spitzer and Whitlock are encountering, they are successfully overcoming them. It is vitally important to go ahead with the Visible Human Project.

Also commenting on the Visible Human Project was Dr. Donald W. King. Dr. King is Executive Director of the American Registry of Pathology and he chaired the NLM Planning Panel on Electronic Imaging. He said that although he had some initial skepticism about the Visible Human Project, considering it mainly as a possible educational tool, he was very impressed by Dr. Spitzer's presentation and the progress being made. Dr. King suggested that an advisory group might be formed to investigate the possible uses of the data resulting from the project. In addition to the obvious uses in training and simulation, could the envisioned system, in addition to presenting data on normal humans, somehow trace the development of disease? An advisory group of experts might be able to expand the horizons with further potential uses.

XVI. ELECTION OF BOARD CHAIR

Dr. James Zimble, who headed the committee to nominate a new chair for the Board of Regents, placed in nomination the name of Rachael K. Anderson, Director of the University of Arizona Health Sciences Center Library. Ms. Anderson was elected unanimously.

XVII. ADJOURNMENT

The meeting was adjourned at 11:55 a.m., Thursday, May 27.

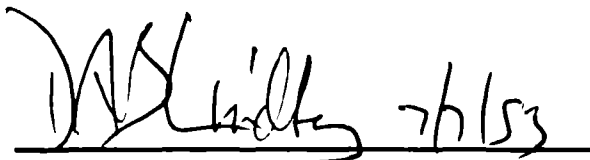
Subcommittee Meeting on Tuesday, June 25:

Extramural Programss Subcommittee--2:00-3:20 p.m.
(Attachment B)

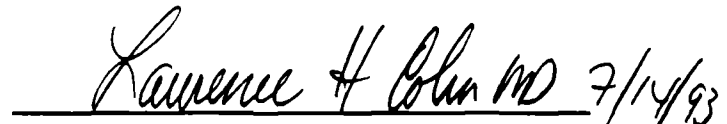
ACTIONS TAKEN BY THE BOARD OF REGENTS

1. The Board approved the concept to manage electronic medical record systems through cooperative agreements.
2. The Board unanimously elected Ms. Rachael K. Anderson as Chair for the coming year.
3. The Board concurred with the recommendations of the Extramural Programs Subcommittee. Grant applications recommended for further consideration are listed in the summary actions. (Attachment B).

I hereby certify that, to the best of my knowledge, the foregoing minutes and attachments are accurate and complete.



 Donald A. B. Lindberg, M.D. (Date)
 Executive Secretary



 Lawrence H. Cohn, M. D. (Date)
 Chair

BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINE

CHAIRMAN

COHN, Lawrence H., M.D. (8/3/93)
 Chief of Cardiac Surgery
 Department of Surgery
 Brigham and Women's Hospital
 75 Francis Street
 Boston, MA 02115
617-734-8183
FAX 617-732-6559

ALLEN, Beverly E. (8/3/95)
 Director, Multi-Media Center
 Morehouse School of Medicine
 720 Westview Drive S.W.
 Atlanta, GA 30310-1495
404-752-1530
FAX 404-755-7318

ANDERSON, Rachael K. (8/3/94)
 Director
 Health Sciences Center Library
 University of Arizona
 1501 N. Campbell Avenue
 Tucson, AZ 85724
602-626-6121
FAX 602-626-2922

BOOKER, Naomi C. (8/3/96)
 Chair and President
 Marketing and Management
 Innovations, Inc.
 Village of Cross Keys/Suite 314
 Quadrangle East/2 Hamill Road
 Baltimore, MD 21210
410-433-0400
FAX 410-433-0478

DeNARDIS, Lawrence J., Ph.D. (8/3/94)
 President
 University of New Haven
 300 Orange Avenue
 West Haven, CT 06516
203-932-7276
FAX 203-937-0756

JOYNT, Robert J., M.D., Ph.D. (8/3/96)
 Vice President and Vice Provost
 for Health Affairs
 University of Rochester
 School of Medicine and Dentistry
 601 Elmwood Avenue
 Rochester, NY 14642
716-275-3407
FAX 716-256-1131

KAHN, Robert E., Ph.D. (8/3/94)
 President
 Corporation for National
 Research Initiatives
 1895 Preston White Drive
 Suite 100
 Reston, VA 22091
703-620-8990
FAX 703-620-0913

NEWTON, Carol M., M.D., Ph.D. (8/3/96)
 Professor
 Department of Biomathematics
 School of Medicine
 University of California
 10833 Le Conte Avenue
 Los Angeles, CA 90024-1766
310-825-5800
FAX 310-825-8685

SPURLOCK, Jeanne, M.D. (8/3/93)
 1628-B Beekman Place, N.W.
 Washington, DC 20005
202-332-7222

WALKER, H. Kenneth, M.D. (8/3/95)
 Professor of Medicine
 Emory University School of Medicine
 69 Butler Street
 Atlanta, GA 30303
404-616-3420
FAX 404-525-2957

EX OFFICIO MEMBERS**Primary**

BILLINGTON, James H., D. Phil.
 Librarian of Congress
 Library of Congress
 10 First Street, S.E.
 Washington, DC 20540
202-707-5205
FAX 202-707-1714

CLUTTER, Mary E., Ph.D.
 Acting Deputy Director
 National Science Foundation
 1800 G Street, N.W., Room 506
 Washington, DC 20550
202-357-9854
FAX 202-357-7059

HAGEN, Donald F., Vice Adm., MC, USN
 Surgeon General
 Bureau of Medicine and Surgery
 Department of the Navy
 Washington, DC 20265-1280
202-653-1144
FAX 202-653-1280

HOLSINGER, James W., Jr., M.D.
 Under Secretary for Health
 Department of Veterans Affairs
 810 Vermont Avenue, N.W. (10)
 Washington, DC 20420
Delivery Address:
 801 I Street N.W., Room 710
 Washington, DC 20001
202-535-7010
FAX 202-535-7630

HOWARD, Joseph H.
 Director, National Agricultural Library
 U.S. Department of Agriculture
 10301 Baltimore Boulevard
 Beltsville, MD 20705
301-504-5248
FAX 301-504-7042

LANOUE, Alcide M., Lt. Gen., MC, USA
 The Surgeon General
 Department of the Army
 5111 Leesburg Pike
 Falls Church, VA 22041-3258
703-756-0000
FAX 703-0025

Alternate

ROWBERG, Richard E., Ph.D.
 Chief
 Science Policy Research Division
 Congressional Research Service
 Library of Congress
 101 Independence Avenue, S.E.
 Madison Bldg., Rm. 413
 Washington, DC 20540
202-707-7040
FAX 202-707-7000

KEMP, David G., Capt., MC, USN
 Commanding Officer, Naval Health
 Sciences, Education and Training Command
 Department of the Navy
 Bethesda, MD 20814-5022
301-295-0293
FAX 301-295-2374

CARTER, Wendy, M.L.S.
 Asst. for Library Programs
 Dept. of Veterans Affairs
 810 Vermont Avenue, N.W. (142D)
 Washington, DC 20420
Delivery Address:
 801 I Street, N.W., Room 454
 Washington, DC 20001
202-535-7337
FAX 202-535-7539

CASSIMATIS, Emmanuel G., Col., MC, USA
 Chief
 Graduate Medical Education Branch
 U.S. Army Health Professional Support
 Agency (SGPS-EDM)
 5109 Leesburg Pike
 Falls Church, VA 22041-3258
703-756-8036
FAX 703-756-8044

BOARD OF REGENTS
EXTRAMURAL PROGRAMS SUBCOMMITTEE MEETING

May 25, 1993

2:00 to 3:20 p.m.

ATTENDEES

Subcommittee Members Present:

Ms. Rachael K. Anderson, Chair
Ms. Beverly E. Allen
Ms. Wendy Carter
Dr. Robert J. Joynt
Dr. Kathleen A. McCormick
Dr. H. Kenneth Walker

NLM Staff Present:

Mrs. Ruth Bortz, Grants Specialist, EP
Mr. Brian R. Campbell, Grants Management/Administrative Officer, EP
Mrs. Shelly Carow, Grants Management Specialist, EP
Mr. Peter A. Clepper, Program Officer, EP
Mrs. Karin K. Colton, Committee Management Specialist, EP
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP
Ms. Andrea Epstein, Grants Assistant, EP, EP
Mrs. Rose Marie Holston, Program Analyst
Mrs. Frances Johnson, Program Officer, EP
Ms. Ellen Meltzer, Grants Management Specialist, EP
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

APPLICATIONS APPROVED BY COUNCIL
 (ARRANGED NUMERICALLY BY PROGRAM)
 PROG. CLASS:

COUNCIL DATE: MAY 1993

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 G07 LM05447-01A1	RURAL HEALTH PROJECTS, INC. MED-FAX NETWORK	01A1 11,948 02 116,535
1 G07 LM05532-01	MULTIPLE USER ACCESS TO ONLINE UNION BOOK CATALOG	01 58,580
1 G07 LM05533-01	LAUREL HIGHLANDS INFORMATION ACCESS PROJECT	01 67,034
1 G07 LM05534-01	MENTAL HEALTH ACCESS NETWORK AND INFORMATION CONSORTIUM	01 89,154
1 G07 LM05536-01	TOXLINE DATASEARCH	01 11,125
1 G07 LM05546-01	INFORMATION ACCESS GRANT	01 11,814
1 G07 LM05553-01	LIBRARY ACCESS IMPROVEMENT	01 7,114

APPLICATIONS APPROVED BY COUNCIL
 (ARRANGED NUMERICALLY BY PROGRAM)
 PROG. CLASS:

COUNCIL DATE: MAY 1993

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
2 G08 LM05160-03A1	MACHINE-READABLE CATALOGING OF MEDICAL ARTIFACTS	03A1 93,633 04 97,982
1 G08 LM05547-01	NATIONAL ELECTRONIC ACCESS TO COUNTWAY SERIALS HOLDINGS	01 136,874 02 81,724
1 G08 LM05551-01	ECONOMIC FACTORS IN ON-DEMAND DOCUMENT DELIVERY SYSTEMS	01 149,748 02 149,999 03 149,632

APPLICATIONS APPROVED BY COUNCIL
 (ARRANGED NUMERICALLY BY PROGRAM)
 PROG. CLASS:

COUNCIL DATE: MAY 1993

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
2 R01 LM04692-06A1	KNOWLEDGE-BASED SYSTEM FOR CARDIAC IMAGE INTERPRETATION	06A1 182,634 07 188,580 08 196,247
1 R01 LM05296-01A1	A CLINICAL GENETICIST'S WORKSTATION	01A1 195,358 02 202,458 03 207,935
1 R01 LM05470-01A1	PIETIST MEDICATIONS & MEDICAL CARE IN THE MIDDLE COLONIE	01A1 24,980 02 24,999
1 R01 LM05505-01A1	IAIMS & NEMSC IMAGE LIBRARY NETWORK	01A1 130,882 02 132,905 03 139,851
1 R01 LM05516-01A1	DUALS SECONDARY REVIEW: HL SPATIALLY ORIENTED DATABASE FOR DIGITAL BRAIN IMAGES	01A1 161,759 02 177,998 03 123,269
1 R01 LM05539-01	SCIENTIFIC PSYCHOTHERAPY IN AMERICA, 1860-1910	01 25,000 02 25,000
1 R01 LM05542-01	VITALISM IN MONTPELLIER, 1750-1850	01 17,936
1 R01 LM05543-01	DUALS SECONDARY REVIEW: GM NEURAL NETWORK-BASED MANAGEMENT OF CLINICAL DATA IN THE	01 160,153 02 165,571 03 167,505

APPLICATIONS APPROVED BY COUNCIL
(ARRANGED NUMERICALLY BY PROGRAM)
PROG. CLASS:

COUNCIL DATE: MAY 1993

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 LM05549-01	THE LEAGUE OF NATIONS HEALTH ORGANIZATION	01 25,000 02 25,000
1 R01 LM05554-01	A NOVEL USER INTERFACE FOR PHYSICIAN ORDER-ENTRY	01 353,330 02 386,956 03 365,494 04 423,148
1 R01 LM05560-01	COMPUTATIONAL APPROACHES TO CYTOGENETIC DATA	01 89,876 02 87,149 03 91,641
1 R01 LM05563-01	THE DEVELOPMENT OF AMERICAN CHILD PSYCHIATRY, 1900-1940	01 24,382

APPLICATIONS APPROVED BY COUNCIL
 (ARRANGED NUMERICALLY BY PROGRAM)
 PROG. CLASS:

COUNCIL DATE: MAY 1993

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R29 LM05291-01A2	STRUCTURING MEDICAL KNOWLEDGE FOR PROBABILISTIC INFERENC	01A2 74,689
		02 63,723
		03 66,909
		04 70,254
		05 73,767
1 R29 LM05552-01	KNOWLEDGE PROCESSING FOR CLINICAL PRACTICE GUIDELINES	01 68,800
		02 66,336
		03 68,990
		04 70,663
		05 75,166

APPLICATIONS APPROVED BY COUNCIL
 (ARRANGED NUMERICALLY BY PROGRAM)
 PROG. CLASS: NATIONAL LIBRARY OF MEDICINE

COUNCIL DATE: MAY 1993

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R43 LM05461-01A1	COMPILING AND DOCUMENTING THE CPS ON COMPACT DISC	01A1 21,844
1 R43 LM05568-01	DUALS SECONDARY REVIEW: HL EXPERT SYSTEM TO IMPROVE DOCUMENTATION OF HEART DISEASES	01 49,320
1 R43 LM05569-01	DOCUMENT MANAGEMENT SYSTEM FOR RURAL HEALTHCARE PROVIDER	01 49,884
1 R43 LM05570-01	PROTECTING COPYRIGHT OF JOURNALS DELIVERED ON NETWORKS	01 35,687
1 R43 LM05571-01	A CLINICAL INFORMATION SYSTEM FOR PRIMARY CARE DATA	01 40,010
1 R43 LM05572-01	AN AUTOMATIC DOCUMENT INPUT SYSTEM FOR MEDLINE	01 47,900
1 R43 LM05574-01	DUALS SECONDARY REVIEW: AI CAREFAX (COMPUTERIZED AIDS RESOURCE ENVIRONMENT FAX)	01 28,440
1 R43 LM05589-01	DUALS SECONDARY REVIEW: DK RENAL CONSTRUCTION KIT	01 29,541

APPLICATIONS APPROVED BY COUNCIL
(ARRANGED NUMERICALLY BY PROGRAM)

COUNCIL DATE: MAY 1993

PROG. CLASS:

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R43 LM05590-01	EMBRYOLOGY BY COMPUTER AIDED INSTRUCTION	01 50,000
1 R43 LM05593-01	DATABASE/MESH TERMS AND NATURAL TEXT TERMS	01 31,926
1 R43 LM05595-01	ECN ELECTRONIC MEDICAL INFORMATION MANAGEMENT SYSTEM	01 50,000

APPLICATIONS APPROVED BY COUNCIL - DUAL REVIEW
(ARRANGED NUMERICALLY)

COUNCIL DATE: MAY 1993

PROG. CLASS:

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
2 R01 CA42453-06	DUALS SECONDARY REVIEW: LM SATISFACTION OF SEARCH IN DIAGNOSTIC RADIOLOGY	06 197,156 07 140,001 08 147,893
1 R01 CA56980-01A2	DUALS SECONDARY REVIEW: LM DIGITAL ALTERNATOR SYSTEM FOR PRIMARY CHEST DIAGNOSIS	01A2 156,680 02 142,609 03 148,313
1 R01 CA58302-01A1	DUALS SECONDARY REVIEW: LM VISUAL SIGNAL DETECTION EFFICIENCY IN MEDICAL IMAGING	01A1 227,671 02 166,620 03 173,280 04 180,210 05 187,430
2 R01 HG00335-06	DUALS SECONDARY REVIEW: LM ANALYSIS OF MOLECULAR SEQUENCE DATA	06 267,699 07 278,407 08 289,543 09 301,125 10 313,170
1 R01 HG00932-01	DUALS SECONDARY REVIEW: LM NOVEL ALGORITHMS FOR GENETIC MAPPING	01 185,787 02 153,494 03 159,634
2 R01 HS06368-04	DUALS SECONDARY REVIEW: LM EFFECTIVENESS OF QMR IN MEDICAL DECISION MAKING	04 132,925
1 R01 HS07898-01	DUALS SECONDARY REVIEW: LM VALIDATION OF A GENERIC SEVERITY OF ILLNESS MEASURE	01 163,733 02 197,209 03 167,906
1 R01 HS07902-01	DUALS SECONDARY REVIEW: LM INFORMATION FLOW IN EMERGENCY MEDICINE	01 137,842 02 163,147 03 148,874

APPLICATIONS APPROVED BY COUNCIL - DUAL REVIEW
 (ARRANGED NUMERICALLY)
 COUNCIL DATE: MAY 1993
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE
 PROG. CLASS:

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 HS07911-01	DUALS SECONDARY REVIEW: LM	01 184,495
		02 197,833
	DISTRIBUTED NATIONAL RADIOLOGICAL IMAGE ARCHIVES SYSTEM	03 186,039

APPLICATIONS APPROVED BY COUNCIL - DUAL REVIEW
(ARRANGED NUMERICALLY)
COUNCIL DATE: MAY 1993
INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE
PROG. CLASS:
APPLICATION NUMBER PROJECT TITLE AMOUNTS
RECOMMENDED

1	R21	HG00779-01A1	DUALS SECONDARY REVIEW: LM	01A1	141,334
			RECONFIGURABLE PROCESSORS FOR GENE SEQUENCE COMPARISON	02	56,734

APPLICATIONS APPROVED BY COUNCIL - DUAL REVIEW
 (ARRANGED NUMERICALLY)

COUNCIL DATE: MAY 1993

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R43 CA62394-01	DUALS SECONDARY REVIEW: LM PALMTOP COMPUTER ASSISTED PERSONAL INTERVIEWING	01 48,175
1 R43 GM48914-01A1	DUALS SECONDARY REVIEW: LM PEDIATRIC COMPUTER ASSISTED MEDICATION DOSING	01A1 49,750
1 R43 HL50913-01	DUALS SECONDARY REVIEW: LM DECISION SUPPORT AND DOCUMENTATION FOR ACLS	01 49,925
1 R43 HL50957-01	DUALS SECONDARY REVIEW: LM ADVANCED CARDIAC LIFE SUPPORT TUTOR	01 44,850

APPLICATIONS APPROVED BY COUNCIL
(ARRANGED NUMERICALLY BY PROGRAM)
PROG. CLASS:

COUNCIL DATE: MAY 1993

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 K04 LM00096-01		01 65,000
		02 65,000
	BELIEF NETWORKS AND KNOWLEDGE-BASED DECISION MODELING	03 65,000
		04 65,000
		05 65,000

DEPARTMENT OF HEALTH AND HUMAN SERVICES
NATIONAL INSTITUTES OF HEALTH
NATIONAL LIBRARY OF MEDICINE
Bethesda, Maryland

A G E N D A

104th Meeting of the

BOARD OF REGENTS

9:00 a.m., September 30-October 1, 1993

Board Room
Mezzanine of
National Library of Medicine

MEETING OPEN: 9:00 a.m. to 4:30 p.m. on September 30 and from 9:00 a.m. to adjournment on October 1.

MEETING CLOSED: 4:30 to 5:00 p.m. on September 30 for the review of grant applications.

1. CALL TO ORDER AND INTRODUCTORY REMARKS 9:00-9:05 Ms. Rachael K. Anderson
2. REMARKS BY THE SURGEON GENERAL, PHS 9:05-9:30 Dr. M. Joycelyn Elders
3. UPDATE ON CLINICAL PRACTICE GUIDELINES TAB I 9:30-9:45 Dr. Kathleen McCormick
4. CONSIDERATION OF MAY MINUTES TAB II 9:45-9:50 Ms. Rachael K. Anderson
5. FUTURE MEETING DATES

Winter Meeting: January 27-28, 1994 (Th-F)--CONFIRMED

Spring Meeting: May 25-26, 1994 (W-Th)--CONFIRMED

Fall Meeting: Sept. 29-30, 1994 (Th-F)--PROPOSED

(Subcommittees meet, when necessary, the day before the full Board.)
(On Sept. 29: Extramural Programs Subcommittee--2:00-3:30 p.m.)

PLEASE NOTE:

(Potential conflicts
with Sept. 1994 dates.)

AAHC Annual Meeting,
Sept. 28-Oct. 1, 1994

- | | | | | |
|-----|---|----------------|-------------|---|
| 6. | REMARKS BY THE DIRECTOR, NLM | <u>TAB III</u> | 9:50-10:20 | Dr. Donald A.B. Lindberg |
| | a. Budget | <u>Tab A</u> | | |
| | b. Personnel | <u>Tab B</u> | | |
| | c. Legislation | <u>Tab C</u> | | |
| | d. HPCC | <u>Tab D</u> | | |
| | e. CIT Study | <u>Tab E</u> | | |
| | f. AIDS Information Conference | <u>Tab F</u> | | |
| | Discussion | | 10:20-10:35 | Board Members |
| | COFFEE BREAK | | 10:35-10:45 | |
| 7. | PLANNING PANEL ON THE EDUCATION AND TRAINING OF HEALTH SCIENCE LIBRARIANS | <u>TAB VI</u> | 10:45-11:15 | Dr. Thomas Detre |
| | Discussion | | 11:15-11:30 | Ms. Rachael K. Anderson
Dr. Robert J. Joynt
Other Board Members |
| 8. | MEHARRY OUTREACH PROJECT | <u>TAB V</u> | 11:30-12:00 | Ms. Cheryl J. Hamberg |
| | Discussion | | 12:00-12:15 | Dr. Lois E. DeBakey
Ms. Beverly E. Allen
Other Board Members |
| 9. | REGENTS' AWARD FOR SCHOLARSHIP OR TECHNICAL ACHIEVEMENT | | 12:15-12:20 | Ms. Rachael K. Anderson |
| | LUNCHEON CATERED IN CONFERENCE ROOM "B" | | 12:20- 1:00 | |
| 10. | REMARKS BY THE ACTING DIRECTOR, NIH | | 1:00- 1:15 | Dr. Ruth Kirschstein |
| 11. | DEMONSTRATION OF NCBI SERVICES ON THE INTERNET | <u>TAB IV</u> | 1:15- 1:45 | Dr. David Lipman |
| | Discussion | | 1:45- 1:55 | Board Members |
| 12. | DOCVIEW: DOCUMENT IMAGES VIA INTERNET | <u>TAB VII</u> | 2:00- 2:30 | Dr. George Thoma |
| | Discussion | | 2:30- 2:45 | Dr. Carol M. Newton
Other Board Members |
| | COFFEE BREAK | | 2:45- 3:00 | |

- | | | | |
|-------------------------------------|-----------------|------------|---|
| 13. DEMONSTRATION OF NCSA MOSAIC | <u>TAB VIII</u> | 3:00- 3:30 | Dr. R. P. C. Rodgers |
| Discussion | | 3:30- 3:45 | Dr. Robert E. Kahn
Other Board Members |
| 14. CONFLICT-OF-INTEREST RULES | | 3:45-3:55 | Ms. Michele Russell-Einhorn |
| 15. REPORT FROM EXTRAMURAL PROGRAMS | <u>TAB IX</u> | 3:55-4:20 | Dr. Milton Corn |
| a. Budget and Funding Plans | <u>Tab A</u> | | |
| b. Update on IAIMS | | | |
| c. History of Bioethics Support | | | |
| d. Other | | | |
| Discussion | | 4:20-4:30 | Ms. Rachael K. Anderson
EP Subcommittee Members
Other Board Members |

MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS, September 30, 4:30 P.M.

- | | | | |
|--|----------------|-----------|---------------------|
| 16. REVIEW OF GRANT APPLICATIONS | | 4:30-5:00 | Dr. Roger W. Dahlen |
| (Conflict-of-interest instructions in front
of workbook for your information and review.) | | | |
| RESEARCH | <u>TAB I</u> | | |
| A. Medical Informatics | <u>Tab A</u> | | |
| B. Biotechnology | <u>Tab B</u> | | |
| C. HPCC | <u>Tab C</u> | | |
| RESOURCE | <u>TAB II</u> | | |
| A. Information Systems | <u>Tab A</u> | | |
| B. Information Access | <u>Tab B</u> | | |
| C. IAIMS | <u>Tab C</u> | | |
| CONFERENCE APPLICATIONS | <u>TAB III</u> | | |
| SMALL BUSSINESS INITIATIVE RESEARCH | <u>TAB IV</u> | | |
| PUBLICATIONS APPLICATIONS | <u>TAB V</u> | | |

SUMMARY LIST OF APPLICATIONS NOT RECOMMENDED FOR FURTHER CONSIDERATION

TAB VI

INTERIM ACTIONS

TAB VII

R E C E S S * * * * *

DINNER. Uniformed Services University of the Health Sciences

Cocktails. 6:30 p.m.

Dinner. 7:30 p.m. "Small Dining Room"

SPEAKER: Thomas N. Pyke, Jr. Director, High Performance Computing and Communications, National Oceanic and Atmospheric Administration

TITLE: "Environmental Forecasting Using Advanced Information Technology."

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R E C O N V E N E : Friday, 9:00 a.m., Board Room

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17. AI/RHEUM FIELD TEST TAB X 9:00- 9:30 Dr. Lawrence Kingsland Dr. H. James Williams

Discussion 9:30- 9:45 Dr. H. Kenneth Walker Other Board Members

18. IMPLEMENTATION PLAN FOR TOXICOLOGY TAB XI 9:45-10:05 Dr. Michael Ackerman PANEL

Discussion 10:05-10:15 Ms. Beverly E. Allen Other Board Members

COFFEE BREAK 10:15-10:30

19. COMPOSITE HEALTH-CARE SYSTEM TAB XII 10:30-11:00 Dr. Paul Tibbits OF THE MILITARY

Discussion 11:00-11:15 Col. Emmanuel Cassimatis Other Board Members

20. PILTDOWN DNA TAB XIII 11:15-11:45 Dr. Mark Boguski

Discussion 11:45-12:00 Board Members

21. ADJOURNMENT 12:00 Ms. Rachael K. Anderson

DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

NATIONAL LIBRARY OF MEDICINE

BOARD OF REGENTS

MINUTES OF THE 104TH MEETING

SEPTEMBER 30 - OCTOBER 1, 1993

BOARD ROOM

NATIONAL LIBRARY OF MEDICINE

BETHESDA, MARYLAND

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE

THE BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINE

Minutes of Meeting 1/2/
September 30 - October 1, 1993

The Board of Regents of the National Library of Medicine was convened for its one-hundred-and-fourth meeting at 9:00 a.m. on Thursday, September 30, 1993, in the Board Room of the National Library of Medicine, Bethesda, Maryland. Ms. Rachael K. Anderson, Director of the Health Sciences Center Library at the University of Arizona, chaired the meeting. In accordance with P.L. 92-463 and the Determination of the Director, NIH, as announced in the Federal Register on August 31, 1993, the meeting was open to the public from 9:00 a.m. to 4:25 p.m. on September 30 and from 9:00 to 11:45 a.m. on October 1. The meeting was closed from 4:25 to 5:15 p.m. on September 30 for the review, discussion, and evaluation of grant applications. A Board roster is enclosed under Attachment A.

Board members present were:

Ms. Rachael K. Anderson, Chair	Mr. Joseph H. Howard (9/30)
Ms. Beverly E. Allen	Dr. Robert J. Joynt (9/30)
Ms. Naomi C. Booker	Dr. Robert E. Kahn
Dr. Mary E. Clutter (10/1)	Dr. Carol M. Newton
Dr. Lawrence J. DeNardis	Dr. H. Kenneth Walker
Dr. M. Joycelyn Elders (9/30)	

Alternates to ex officio members present were:

Ms. Wendy Carter, representing Dr. John T. Farrar, Jr.
Col. Emmanuel Cassimatis, representing Lt. Gen. Alcide M. LaNoue.
Capt. David G. Kemp, representing Vice Adm. Donald F. Hagen.
Capt. Kathleen A. McCormick, representing Dr. M. Joycelyn Elders.
Col. Jacqueline Morgan, representing Lt. Gen. Alexander M. Sloan.
Dr. Richard E. Rowberg, representing Dr. James H. Billington.
Lt. Col. John Silva, representing Dr. James A. Zimble.

1/ For the record, it is noted that members absent themselves from the meeting when the Board is discussing applications (a) from their respective institutions or (b) in which a conflict of interest might occur. This procedure applies only to individual discussion of an application and not to "en bloc" actions.

2/ The Board of Regents, when considering the extramural programs of NLM, also constitutes and serves as the National Libraries Assistance Advisory Board.

National Library of Medicine staff members attending this meeting included:

Dr. Donald A. B. Lindberg, Director
Mr. Kent A. Smith, Deputy Director
Dr. Harold M. Schoolman, Deputy Director, Research and Education
Dr. Michael Ackerman, Acting Associate Director, SIS
Ms. Marjorie Cahn, Head, Office of Health Services Research Information
Mr. Kenneth Carney, Executive Officer, OD
Ms. Lois Ann Colaianni, Associate Director, LO
Dr. Milton Corn, Acting Associate Director, EP
Dr. George J. Cosmides, Deputy Associate Director, SIS
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP
Mr. Earl Henderson, Deputy Director, LHNCBC
Ms. Betsy Humphreys, Assistant Director for Health Services Research Information
Dr. Lawrence Kingsland III, Assistant Director for Applied Informatics
Dr. David Lipman, Director, National Center for Biotechnology Information
Dr. Daniel R. Masys, Director, Lister Hill National Center for Biomedical Communications
Mr. Robert B. Mehnert, Chief, Office of Inquiries and Publications Management, OD
Dr. Elliot R. Siegel, Associate Director, Health Information Programs Development
Dr. George Thoma, Chief, Communications Engineering Branch, LHNCBC
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

Others present included:

Dr. Ruth Kirschstein, Acting Director, NIH
Mr. Matthew Davis, "Washington Fax"
Dr. Lois E. DeBakey, Professor of Scientific Communications, Baylor College of Medicine
Dr. Thomas Detre, Sr. Vice Pres. for Health Sciences, Univ. of Pittsburgh
Ms. Cheryl J. Hamberg, Director of the Library, Meharry Medical College Library
Ms. Kristin Kiser, Program Analyst, Office of Legislative Policy Analysis, NIH
Mr. Chester Pletzke, Director, Learning Resources Center, USUHS
Ms. Michele Russell-Einhorn, Assistant Special Counsel for Ethics, NIH
Dr. Paul Tibbits, Program Manager, Composite Health-Care System, Dept. of Defense
Mr. Karl Uhlendorf, "The Blue Sheet"
Dr. H. James Williams, Chief, Div. of Rheumatology, Univ. of Utah School of Medicine

I. OPENING REMARKS

Ms. Rachael Anderson, Chair, welcomed the Regents and guests to the 104th meeting of the Board of Regents of the National Library of Medicine.

II. REMARKS BY THE SURGEON GENERAL

Dr. Joycelyn Elders, newly appointed Surgeon General, said she was aware of the important role of the NLM and the Board of Regents in serving health education and health care delivery. She especially thanked the Library for providing services in rural areas (like Arkansas) so that health professionals there feel they have the same access to the literature as those in more populated areas. She encouraged NLM to continue providing financial and technical assistance to health institutions around the country and to continue "reaching out" to let health professionals know that "access is as close as your computer." Dr. Elders briefly discussed health care reform and how it would affect various institutions. In this regard, she supported the continuation of the Uniformed Services University of the Health Sciences. Universal access to insurance is the cornerstone of the proposed reform program. Education of our citizens so they can be responsible for their health and lead healthy lives is also an important part of the program. Dr. Elders cited statistics on the toll taken--in lives and dollars--by automobile accidents, alcohol abuse, and tobacco. She said there was a lack of good health education programs for people who are not high school graduates or above. Following Dr. Elders's presentation, Board Chairman Rachael Anderson, stated that the NLM, the National Network of Libraries of Medicine, and the entire medical library community stand ready to provide the kind of information vitally needed if the country is to attain the kind and quality of health care now envisioned. Dr. Lois DeBakey asked about support of research under the new program. The Surgeon General replied that continued research is vital to generate new information and noted that the health care package calls for substantial prevention research.

III. UPDATE ON CLINICAL PRACTICE GUIDELINES

Dr. Kathleen McCormick, Director, PHS Office of the Forum for Quality and Effectiveness in Health Care, and alternate to the Board of Regents, reported to the Board about the clinical practice guidelines being developed because of (1) the great variability in medical practice around the country and (2) the uncertainty of the quality and effectiveness of certain medical procedures. Much information that could improve clinical decision-making is currently not available in a usable format, she said. The definition of clinical practice guideline used by her office is "a systematically developed statement to assist the practitioner and the patient about decisions of what is appropriate in health care for specific clinical circumstances." There are guidelines on acute pain management, pressure ulcers in adults, urinary incontinence in adults, cataracts in the adult, depression in primary care, and sickle cell disease screening and diagnosis. Soon to be released are guidelines on diagnosis and treatment of benign prostatic hyperplasia, the evaluation and management of early HIV infection, and the management of

determinants in mammography, screening for Alzheimers and related dementias, low back problems, the diagnosis and treatment of anxiety and panic disorder, and smoking prevention and cessation. She also mentioned a number of possible future topics. Dr. McCormick distributed material to the Board describing how they select topics for guidelines and panels of experts to create them. More than five million copies of guidelines have been released so far, she said. Each guideline is issued as a 200-page booklet, a quick reference version, a 12-20 page version for clinicians, and a version for patients in both Spanish and English. Existing guidelines will be updated as important new information becomes available. She ended her presentation by thanking the NLM staff and the Regional Medical Libraries for their extensive help in developing and disseminating the guidelines.

IV. CONSIDERATION OF MINUTES OF PREVIOUS MEETING

The Regents approved the minutes of the May 26-27 meeting with a minor correction.

V. DATES OF FUTURE MEETINGS

The Board will meet next on January 25-26, 1994. The next spring meeting will be May 24-25, 1994. The proposed dates of September 27-28, 1994, were accepted and confirmed for the meeting next fall.

VI. REPORT FROM THE NLM DIRECTOR

Dr. Donald A. B. Lindberg reported that, because of budget constraints in FY 1993, NLM has had difficulty maintaining adequate levels of basic library services. The FY 1994 President's budget request for \$133,349,000 is some \$30,000,000 above the FY 1993 operating budget of \$103,613,000. Of this increase, \$21.5 million was earmarked for High Performance Computing and Communications (HPCC), \$8 million for health services research, and \$1,948,000 for AIDS. Ignoring these earmarked increases, NLM's proposed 1994 budget for all other operations is less than 1993. The outcome of the 1994 budget is uncertain: The House recommended \$118,481,000, splitting the difference between the President's request and the 1993 appropriation. Most of the reduction would be in the area of HPCC. The Senate added \$2 million to the House figure, for HPCC.

In the area of personnel, Dr. Lindberg announced that the NLM is having its ceiling reduced in FY 1994 from 599 to 585. The Library was saddened by the death on August 4 of its Personnel Officer, Mrs. Patricia Southcomb. There are five newly graduated library science students who have joined the NLM as Library Associates, including a Lithuanian librarian. The NLM Director announced three personnel changes: Betsy Humphreys, Deputy Associate Director for Library Operations, will also assume the title of NLM Assistant Director for Health Services Research Information; Dr. Larry Kingsland, Chief of the Lister Hill Center's Computer

Science Branch, will also assume the title of NLM Assistant Director for Applied Informatics; Mr. Fernando Burbano was selected to be head of NLM's Office of Computer and Communications Systems. In the area of legislation, Dr. Lindberg announced that NLM's programs were reauthorized for three years in the recent "NIH Revitalization Act." The Act also establishes the Library's health services research information function and mandates the NLM to continue its HPCC activities.

Dr. Lindberg reported on the recent Broad Agency Announcement issued by the NLM to solicit HPCC-related proposals in biomedicine. There was a strong response--more than 140 proposals were received. Because the hoped-for \$9 million HPCC funds were not forthcoming, NLM will be able to fund only one proposal in FY 1993 and, presumably, more in FY 1994 when a budget is made final. He also brought to the attention of the Board a paper he co-authored in the *Journal of the American Medical Association* in June about an evaluation of the use of MEDLINE by physicians in clinical problem-solving. Finally, Dr. Lindberg reported on a successful conference on NIH/NLM HIV/AIDS Information Services co-sponsored by NLM in June 1993. The Conference, attended by 150 invited participants--providers and users of information--was held in the Lister Hill Center Auditorium. A report of the Conference is being prepared and will be published

VII. PLANNING PANEL ON THE EDUCATION AND TRAINING OF HEALTH SCIENCE LIBRARIANS

Ms. Rachael Anderson introduced the subject by saying that NLM's Long Range-Plan called for an extensive review of the NLM's relation to the medical library profession and its role in supporting the education and training of health science librarians. A steering committee for the Planning Panel met at NLM in June; the first meeting of the full Panel was held at NLM earlier this week. Ms. Anderson introduced to the Board Dr. Thomas Detre, Senior Vice Chancellor for Health Sciences at the University of Pittsburgh, who chairs the Planning Panel. Dr. Detre reported briefly on the Planning Panel's first meeting. A number of important questions were posed by the members: What can be expected in the future for librarianship in general and, specifically, for health sciences librarianship? What is the current status of the educational pipeline in health sciences librarianship? What changes are foreseen in training and continuing education? What changes will occur in the environment in which health science librarians will be employed? How many health science librarians will be needed in the future? What are their special educational needs? What are we going to do with hospital librarians, who have different educational needs? How can the technical skills of information specialists be maximally infused into health sciences librarianship? Among the pressures affecting the profession, Dr. Detre said, are the new High Performance Computing and Communications imperatives and the increasingly interdisciplinary nature of the health professions. These questions and issues will receive a thorough airing over the course of two more meetings of the Planning Panel. Regent Naomi Booker commented, and Dr. Detre agreed, that the question of how to attract minority candidates to the profession of health sciences librarianship is extremely important.

VIII. MEHARRY OUTREACH PROJECT

Dr. Elliot Siegel, NLM Associate Director for Health Information Programs Development, introduced Ms. Cheryl J. Hamberg, Director of the Meharry Medical College Library, who has been heading an outreach project funded by NLM. The project seeks to provide medical information access for health professionals practicing in rural and urban medically underserved areas of Tennessee and to train Meharry faculty and students in the use of Grateful Med. An important feature of the project was to identify barriers or impediments to information access and to develop strategies to overcome the barriers. Ms. Hamberg said that a physician-evaluator and a librarian-evaluator were hired for the NLM-Meharry project, which began in September 1990. Both quantitative and qualitative data were collected. To facilitate access to information resources, the hardware, Grateful Med, and free access time were provided to those who participated. Training and continuing support were provided. Grateful Med access was provided in the Meharry hospital on the general medical floor, in the dental school, on four public access computers in the library, several in the reference department, in the President's office, and to selected faculty members via laptop computers. The physician-evaluator reported that many searches were done in clinical settings--to find treatment standards, new therapies, alternative therapies, drug interactions, the mechanics of drug actions, statistical outcomes, etc. Ms. Hamberg described through anecdotes the various uses of the Grateful Med/MEDLINE connection by residents, house staff, faculty, researchers and students. In addition to the use on the Meharry campus, there were 32 field demonstration sites located across the state in rural and urban areas. Hardware was provided and the local health professionals were trained by either the physician-evaluator or the librarian-evaluator to use Grateful Med. Two community hospitals, three offices with nurse practitioners, and 27 physicians' offices made up the remote sites. Not only was free search time provided, but full-text documents were made available without charge from Meharry. Ms. Hamberg briefly described the kind of use at the various types of sites. Field participants said that the ability to search using Grateful Med decreased their feelings of professional isolation, especially in the area of new techniques and discoveries. Patient costs were in some cases decreased because a literature search by the primary care physician obviated the need for a specialist consultation. More than 400 people were trained to search Grateful Med over the course of the project. Ms. Hamberg said that the response to Grateful Med was so positive that the Library decided to finance continuing access for the campus, and they placed Grateful Med computers in the emergency room and in the intensive care unit. The Library will continue to provide free Grateful Med searching for selected field demonstration sites who buy their own hardware and who are moderate or frequent users. She recommended that in the future such projects concentrate on multiuser sites such as group practices, small hospitals, and neighborhood health centers and clinics because site participants in group settings were more likely to become searchers than solo practice participants. She also suggested that in future efforts it might be helpful at the outset to identify potential participants based on their attitude toward medical library services. In the Meharry project, a positive view of library services and access to information appeared to be a more important variable than even computer literacy. Ms. Hamberg concluded by saying that proposed health reform gives even greater importance to medical information access.

Following the presentation, Ms. Anderson said that the experience and data gained from this project will have applicability in other such endeavors. Consultant to the Board, Dr. Lois DeBakey, complimented Meharry for undertaking this experiment. Linking literature searching with real medical situations, as was done in this project, is an excellent marketing strategy for Grateful Med. She said that librarians could increase their visibility and enhance their status within an organization by doing a better job of marketing their skills and by going into the field to bring their skills--including online searching via Grateful Med--to the faculty, scientists, and practitioners. Regent Beverly Allen commented that minority institutions as a rule have not had sufficient funds to be able to mass purchase hardware and software for things like Grateful Med access. She said the Meharry model will be a valuable model for institutions like hers (Morehouse School of Medicine). In answer to a question from Ms. Allen, Cheryl Hamberg said that Grateful Med has not noticeably increased the demand for full-text articles--users seem to be satisfied in most cases with the abstract.

IX. AWARD

Ms. Rachael Anderson presented the Regents Award for Scholarship or Technical Achievement to Mr. Joseph Hutchins of NLM's Office of Computer and Communications Systems. Mr. Hutchins was honored for designing and implementing "LOCATOR," NLM's new Online Public Access Catalog System.

X. REMARKS BY THE ACTING DIRECTOR, NIH

Dr. Ruth L. Kirschstein, Acting NIH Director, reported that Dr. Harold Varmus, a Nobel Laureate who has been tapped by President Clinton to be NIH Director, is on campus and visiting the various NIH components. No difficulty is anticipated in the Congress approving an NIH budget for FY 1994. She commented that, since her appointment on July 1 as Acting NIH Director, her relations with the Department as a whole and the new Assistant Secretary for Health (Dr. Philip Lee) have been remarkably good. Dr. Lee and the HHS Secretary are very much involved in crafting the health care reform package; NIH would have a significant role in prevention research in the proposed plan. She said one of her roles is to see that the interests of the Nation's medical scientists are well represented in the health care planning. Dr. Kirschstein briefly reported on recent publicity concerning racial discrimination and sexual harassment at NIH. NIH has to take these matters seriously and ensure a working environment free of discrimination and harassment. On another matter, she is hopeful that the High Performance Computing and Communications program will result in some exciting initiatives at NIH. NIH will be working closely with the White House Office of Science and Technology Policy on this.

XI. DEMONSTRATION OF NCBI SERVICES ON THE INTERNET

Dr. David Lipman, Director of NLM's National Center for Biotechnology Information, said that Dr. Kirschstein, who as Director of the National Institute of General Medical Sciences had been responsible for the GenBank sequence databank since 1981, agreed to NCBI assuming responsibility for GenBank beginning in October 1992. Since that time the use of the database has increased ten-fold--both online and by CD-ROM subscriptions. On all its systems, NCBI is now receiving inquiries at the rate of about three million a year. An online server-client version of *Entrez* has recently been made available via Internet. (*Entrez* contains all known sequences and pertinent MEDLINE data.) About half the queries currently being received are for sequence similarity searches. With the help of NCBI's Dr. Gregory Schuler, Dr. Lipman demonstrated a new system ("NetBlast") that allows both rapid online similarity searching of the database via Internet and filtering of the sometimes massive outputs. In answer to a question following the demonstration, Dr. Lipman said that NCBI has structured the system in such a way that researchers who use the database to make discoveries can easily submit their new data back to the database so that they are immediately available to the community. Responding to another question, he said that NCBI has devised ways of assessing the accuracy of information being submitted; if a question arises, NCBI verifies the data with the author and can directly modify or annotate the pertinent database record as necessary.

XII. DOCVIEW: DOCUMENT IMAGES VIA INTERNET

Dr. George Thoma, Chief of the Communications Engineering Branch of the Lister Hill National Center for Biomedical Communications, said that DocView is part of a continuing effort at the Lister Hill Center to address automated document delivery. The goal is to enable a user to start with a bibliographic search of a database like MEDLINE, select citations of interest, and receive the corresponding documents at the user's machine. DocView is the continuation and extension of a project called SAIL (System for Automated Interlibrary Loan) that had been demonstrated previously to the Board. In SAIL, document images were stored on optical disks and, in response to electronic requests, were faxed or mailed back to the requester in hard copy. DocView, on the other hand, allows users to see on their PC screens page images that have been transmitted over the Internet. The user can preview pages on the monitor, zoom in for detail, electronically mark pages of interest, and print out any pages desired. Among the advantages of using the Internet is that it allows document images to be received more quickly, at higher resolution, and as a manipulable electronic file. Dr. Thoma and his colleague, Frank Walker, demonstrated DocView to the Regents.

Following the demonstration, Dr. Carol Newton said that DocView is a very exciting development and a logical extension of work that has gone on before. It puts unprecedented power in the hands of the user to select, view, and generate a document. She praised the quality of the research on which the project is based. DocView foreshadows a completely different view of how information resources can be optimally managed in libraries. The ability to reproduce "bits" as well as entire documents will give rise to interesting questions as to "fair use" under

intellectual property laws. She asked whether 300 dots-per-inch resolution in the present project was adequate for some kinds of gray-level material. Dr. Thoma replied that earlier research showed that 200 dpi resolution was more than adequate for the images involved. Dr. Masys commented that DocView doesn't require any specific dpi standard--it can be any usable resolution that is desired. Rachael Anderson said that the technology demonstrated today has the potential to revolutionize the existing interlibrary loan system. Dr. Robert Kahn said that DocView is an excellent piece of work and that it is more advanced than any other project in its field. He said that as long as the use is small-scale and for medical purposes, "intellectual property" issues may not be raised vigorously. Sooner or later though, if use grows appreciably, these questions will have to be faced up to. Discussion of current trends by several of the Regents indicated this time may be sooner than later.

XIII. DEMONSTRATION OF NCSA MOSAIC

Using a Sun workstation, Dr. Richard Rodgers of the Lister Hill Center's Computer Science Branch demonstrated a prototype system that might eventually evolve into a regular NLM service offered over the Internet. The application is based on the National Center for Supercomputer Application's "MOSAIC" system which is also now available in versions for Windows on the Macintosh and IBM-PC. MOSAIC is a multi-client application that is not dependent on a central mainframe computer but communicates with a large number of smaller machines located around the world. It utilizes several tools for getting information, three major ones being Gopher, Wide Area Information Service (WAIS), and World-Wide Web. Dr. Rodgers's application, which he demonstrated live, includes a mixture of images (both still and full-motion video), audio, and text about various aspects of the National Library of Medicine--staff, programs, exhibits, etc. Files accessed by Dr. Rodgers's NLM MOSAIC are located in various computers on the NIH campus. He demonstrated the system's versatility by starting a Telnet session and entering NLM's LOCATOR online catalog, and by invoking a Gopher to access a series of menus pointing to sources of information around the country. Dr. Rodgers also demonstrated the flexibility of the system by retrieving in seconds information from computers in Australia and Europe. He concluded by saying that MOSAIC will have a great influence on how people view the Internet--it will no longer be seen as the domain exclusively of scientists but as a tool for anyone seeking information. Following Dr. Rodgers's demonstration, Dr. Robert Kahn commented that this is another good example of technology being applied to information retrieval. He noted that intellectual property rights will also be a very important issue in this kind of system.

XIV. CONFLICT-OF-INTEREST RULES

Ms. Michele Russell-Einhorn, NIH Assistant Special Counsel for Ethics, briefed the Regents conflict-of-interest rules that apply to government employees, including Board members who are considered "special government employees" when attending Board meetings. During the closed session of each meeting, members have routinely been asked to absent themselves when

the Board is discussing individual grant applications from their own institutions, or any other organization with which they have a connection. In addition, a general waiver is now required that allows participation in all matters that come before the Board during the open session. Ms. Russell-Einhorn noted that members should be especially vigilant to disqualify themselves from any discussions of Board business that concerns an outside organization, such as a university, with which they have a connection. Also, beginning with the next round of meetings in January, members are required to file a "confidential financial disclosure report," which must be updated prior to each meeting. This replaces the annual disclosure report.

XV. REPORT FROM EXTRAMURAL PROGRAMS

Dr. Milton Corn, Acting Associate Director for Extramural Programs, noted that the Extramural Programs budget of \$26.0 million showed a balance of \$300 at the end of FY 1993.

IAIMS Program

The newly revised IAIMS (Integrated Advanced Information Management Systems) Program was approved by the Board in October 1992. Former Phases II and III were incorporated into one Phase II "Operational" program, while the Phase I "Planning" program was retained. The Operational Phase contained an option for a training component, a great need in the community, because so few have been trained in this field.

The first cycle was just completed, and those applications will be reviewed at this meeting. Although the lead time was short, 13 applications were received--eight for Planning grants and five for Operational grants. The Planning grants were of particular interest, because for the first time since the program was initiated, hospitals applied as the main unit, which suggests there is a huge base of potential applicants not considered by the original IAIMS Program. Of the eight Phase I applications reviewed, four were not recommended for further consideration; the two hospitals, did quite well and, it is hoped, will come back with revised proposals. Dr. Corn noted that he would probably not recommend for funding hospitals that have no teaching element. NLM would like to see these Information Management Systems spread; and a teaching hospital would be capable of disseminating sophisticated users. Of the five Operational applications, all five were worthy, and at least one will be funded shortly, while the remaining four have a chance to be funded with some revisions. For the upcoming initial review group meeting in November, ten new applications have been received. Dr. Corn addressed the financial picture of the Program: No new funds have been appropriated for the IAIMS program for a number of years; in FY 1994 approximately \$1.5 million will be available, because two IAIMS programs have completed their fifth year--Columbia and Georgetown; in FY 1995 another \$1.5 million will be freed up, because Baylor and Duke will have completed their cycle.

History of Bioethics Support

Dr. Corn noted that the evolution of bioethics in the last decade has become increasingly important to medicine and medical education. The Library first supported a bioethics center at Georgetown in 1985. The support grant was recompeted in 1990 and again awarded to Georgetown. Georgetown has two funded operations: a reference center and the preparation of the BIOETHICSLINE database for mounting on NLM's MEDLARS. Funding for preparing citations for BIOETHICSLINE is now obtained on a contract basis through Library Operations at NLM. The collection is unique, and users are increasing yearly.

To a question by Ms. Anderson what the prospects for financial support for the Bioethics Center are from NLM or other sources, Dr. Corn said that NLM is not going to fund this under a grant again. A contract seems to be a preferable mechanism. The Bioethics Center is unusual in that it is a national library resource which is supported by NLM, but not maintained here. Mrs. Lois Ann Colaianni, Associate Director for Library Operations, noted that a distributed national system in terms of a collection is a reality, and NLM needs to work on ways of knowing what is available elsewhere.

MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS SEPTEMBER 30, 1993, 4:25 TO 5:15 P.M.

XVI. REVIEW OF PENDING APPLICATIONS

Before proceeding with the consideration of pending applications, Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP, asked Board members to be aware of confidentiality and conflict-of-interest procedures included in the grant application workbook. He reminded them to sign at the conclusion of the grant applications review the statement noting that they had not participated in the discussion of any applications which presented a conflict of interest.

The Board reviewed 26 applications, requesting \$24,255,272 and recommended for further consideration 26 applications in the amount of \$19,230,792 for the total requested. Eleven applications in the amount of \$5,352,987 were not recommended for further consideration. Grant applications recommended for further consideration by the Board are listed in the summary action (Attachment C). Interim actions taken by Extramural Programs staff since the May meeting were considered by the Board's Extramural Programs Subcommittee and noted and concurred with by the Board of Regents.

MEETING OPEN--OCTOBER 1, 1993, 9:00 A.M. TO ADJOURNMENT

XVII. AI/RHEUM FIELD TEST

Dr. Lawrence C. Kingsland III, Chief of the Lister Hill Center Computer Science Branch and Assistant NLM Director for Applied Informatics, gave a preliminary report on the field testing of AI/RHEUM. This artificial intelligence consultant system has been demonstrated several times previously to the Board. After giving a brief history of the project, Dr. Kingsland described how the current evaluation project was set up, beginning with a panel of outside experts convened in 1987. Subsequent advisory groups recommended that NLM first demonstrate that inaccurate diagnoses by non-rheumatologists is a problem, and then go on to evaluate the effectiveness of AI/RHEUM in assisting clinicians. Phase 1 was to be an early validation and establishment of a baseline; Phase 2.0 was a formative evaluation as a result of which the system was modified in response to user comments; Phase 2.5 was the summative evaluation, a retest of the revised system. A competitive research support contract was awarded to the University of Utah School of Medicine. For the baseline study, the same outpatients were worked up by an expert rheumatologist and by a resident in internal medicine. The resulting data were then entered into AI/RHEUM for diagnosis. In Phase 1, of the 119 patients seen by both the rheumatologist and resident, there was complete agreement in diagnosis only 58 percent of the time, partial agreement in 17 percent, and disagreement in 25 percent. Dr. Kingsland reported some of the details about how the two groups agreed and disagreed. As a result of these findings, the knowledge base of AI/RHEUM was expanded and the data entry process improved. AI/RHEUM was then installed in clinical settings--5 family practice sites around Springfield, Missouri, and 5 internal medicine sites in Utah, and was used by the clinicians in the course of their normal medical practice. These same patients were then seen by an expert rheumatologist. The number of cases in Missouri was small; the number in Utah was greater and gives more confidence. The results of Phase 2.0 in Utah show the rheumatologist and the internist agreeing on patient diagnoses 67 percent of the time over 188 cases; there was partial agreement on 13 percent; disagreement on 20 percent. Focus groups were held with both groups of physicians after Phase 2.0 and with the Utah internists after Phase 2.5. Dr. Kingsland then introduced Dr. H. James Williams, Professor of Internal Medicine, Associate Chairman of the Department of Internal Medicine, and Head of the Division of Rheumatology at the University of Utah School of Medicine.

Dr. Williams reported in some detail the results of the Phase 2.0 evaluation at the University of Utah. There were five participating physician offices throughout the state and two expert rheumatologists at the University of Utah, Dr. Christopher Jackson and himself. About 12 percent of all new patients seen by the participating physicians had rheumatologic complaints; about 18 percent of established patients had such complaints. As Dr. Kingsland reported, some two thirds of the diagnoses reported by the internists were correct (with corrections defined as agreeing with the diagnosis of the expert rheumatologist). One out of five was incorrectly diagnosed. Although AI/RHEUM improved the diagnostic performance of the internists, there still needs to be some improvement in the system. There were several conclusions reached following the initial focus groups: Some questions in AI/RHEUM were vague or open to misinterpretation by the internists; the system did not follow the physicians' thought processes; several important diseases were not included in the system; there were gaps in auxiliary features

of AI/RHEUM (such as the "tell-me-more" function); the internists felt they needed more help in physical diagnosis; and the internists wanted a system that would help lead them through the diagnosis of an area they were not comfortable with. Dr. Williams said that a training session was held following the focus groups that concentrated on several problem areas. Dr. Jackson and Dr. Williams made a number of recommendations for changes in the system after Phase 2.0 to address some of the clinicians' comments. These changes, which Dr. Williams described, were made by Dr. Kingsland and his staff. In Phase 2.5, again about two thirds of the internists' diagnoses were correct. The incorrect diagnoses, however, dropped from 20 to 16 percent. Overall, there was measurable improvement: In Phase 2.0 there was agreement in only 46 percent of the diagnoses (33 percent were totally different); in Phase 2.5 the 46 percent figure had increased to 53, and the 33 percent had dropped to 20. In Phase 2.0, the internists felt the system was helpful in only 35 percent of the cases. In Phase 2.5 this figure rose to 55 percent. The focus groups following Phase 2.5 revealed that the internists thought that AI/RHEUM had definitely been improved and was easier to use. Several of them expressed a desire to have the system in their offices. Finally, Dr. Williams made several suggestions for further improvement, including improving the criteria tables AI/RHEUM uses in making decisions and investigating the use of AI/RHEUM as a teaching tool.

Following Dr. Williams's presentation, Dr. Walker commented favorably on the criteria that AI/RHEUM uses to make its diagnoses and the rigor of the evaluation conducted. He believes the system will be a role model for future expert systems.

XVIII. IMPLEMENTATION PLAN FOR TOXICOLOGY PANEL

Dr. Michael Ackerman, Acting NLM Associate Director for Specialized Information Services, reported on a proposed implementation plan for the recommendations presented by the Planning Panel on Toxicology and Environmental Health presented to the Board in October 1992. Dr. Ackerman said that the limiting factor in considering the scope of offerings under the Toxicology Information Program is the budget; NLM has relied on substantial contributions from other agencies for many of its services in this area. NLM currently funds directly only 60 percent of its programs in the Toxicology Information Program. Recommendations, spelled out in a report distributed to the Board by Dr. Ackerman, have been prioritized to take advantage of funding as it becomes available. The first broad category deals with facilitating access by enlarging the base of users, making the databases available via Internet, providing more information by fax and other means, providing client-server access and developing graphical interfaces, and providing better access to those responding to emergency situations. The second category of recommendations deals with evaluating the adequacy of information resources currently being provided to the community and the need to integrate various information resources and to include additional pertinent vocabulary in the Unified Medical Language System. The third category is the need to build information infrastructure for the future in such disciplines as molecular biology and its link to chemical and toxicological data. Finally, Dr. Ackerman endorsed the recommendation of the Planning Panel that NLM should seek to

amend its legislation to give the Library explicit authority in the area of toxicology and environmental health.

After Dr. Ackerman's presentation, Beverly Allen commented that the Board of Regents should become involved both in assisting the Library to find funds for the Toxicology Information Program and in helping in the question of legislative authorization. Both are critical to the program's long-term prospects. Responding to these comments, Rachael Anderson appointed an ad hoc committee of the Board to work on these matters; the members will be named after this meeting.

XIX. COMPOSITE HEALTH CARE SYSTEM OF THE MILITARY

Dr. Paul Tibbits, Program Manager of the Composite Health Care System in the Department of Defense, gave a brief overview of the CHCS using slides. The goal of the Composite Health Care System is to automate all inpatient and outpatient services in all military clinics and hospitals around the world. Dr. Tibbits listed the major functions of a hospital--radiology, pharmacy, nursing, laboratory testing, food services, etc.--and gave a brief status of where CHCS stands on each. Worldwide deployment is now being undertaken. Following this introduction, Major Brad Dawkins, a family physician, used a personal computer to demonstrate the CHCS via a graphical user interface. As examples he used the interfaces for ordering x-rays, laboratory procedures, and drugs from the hospital pharmacy. Col. Emmanuel Cassimatis commented that CHCS users have received the new system well: They especially appreciate its e-mail functions. Other functions that are very popular are those for the outpatient pharmacy and for patient appointment and scheduling. One problem is that when the system goes down, as for routine maintenance, there is no satisfactory substitute. Dr. John Silva said that many of the lessons being learned during the development of CHCS are transferable to NLM's Integrated Advanced Information Management Systems development. The extensive and stringent cost-benefit analyses being done of CHCS will yield much valuable data. Dr. Lindberg commented favorably on the friendly CHCS interface.

XX. PILTDOWN DNA

Dr. Mark Boguski of NLM's National Center for Biotechnology Information recounted briefly for the Board the celebrated (and widely believed) hoax early in this century of the "Piltdown Man" discovery in England. How could so many well-trained scientists be taken in? Dr. Boguski next reported on his "investigation" (using the BLAST search tool previously demonstrated to the Board) of the "dinosaur DNA sequences" mentioned in *Jurassic Park* and his subsequent correspondence with the author about them. It turned out that the author, Dr. Michael Crichton, had taken great pains in contriving (albeit unimaginationally) his fictional sequence, much as the creator of the Piltdown Man had taken great pains to cover that hoax. Dr. Crichton, on learning of Dr. Boguski's detective work, wrote that "I'm sorry I was not clever enough to insert an interesting sequence. Frankly, it never crossed my mind that anyone would

ever have the interest to investigate this." He said that if anyone wanted to concoct "real" fake dinosaur DNA sequences, they could be included in the next edition of the book. In some ways, Dr. Boguski concluded, things have not changed from the Piltdown Man: "People still see in their data what they want to see."

XXI. ADJOURNMENT

The meeting was adjourned at 11:55 a.m., Friday, October 1.


Subcommittee Meeting on Wednesday, September 29:

Extramural Programss Subcommittee--2:00-4:30 p.m.
(Attachment B)


ACTIONS TAKEN BY THE BOARD OF REGENTS

1. The Regents Award for Scholarship or Technical Achievement was presented to Mr. Joseph Hutchins of NLM's Office of Computer and Communications Systems for designing and implementing LOCATOR, NLM's new Online Public Access Catalog System.
2. The Board concurred with the recommendations of the Extramural Programs Subcommittee. Grant applications recommended for further consideration are listed in the summary actions. (Attachment C).

I hereby certify that, to the best of my knowledge, the foregoing minutes and attachments are accurate and complete.

 11/7/53

Donald A. B. Lindberg, M.D. (Date)
Executive Secretary

 11/22/93

Rachael K. Anderson (Date)
Chair

BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINE

CHAIRMAN

ANDERSON, Rachael K. (8/3/94)
 Director
 Health Sciences Center Library
 University of Arizona
 1501 N. Campbell Avenue 602-626-6121
 Tucson, AZ 85724 FAX 602-626-2922
EMAIL rachaela@ccit.arizona.edu

ALLEN, Beverly E. (8/3/95)
 Director, Multi-Media Center
 Morehouse School of Medicine
 720 Westview Drive S.W.
 Atlanta, GA 30310-1495 404-752-1530
FAX 404-755-7318

KAHN, Robert E., Ph.D. (8/3/94)
 President
 Corporation for National
 Research Initiatives
 1895 Preston White Drive
 Suite 100
 Reston, VA 22091 703-620-8990
FAX 703-620-0913
EMAIL rkahn@cnri.reston.va.us

BOOKER, Naomi C. (8/3/96)
 Chair and President
 Marketing and Management
 Innovations, Inc.
 Village of Cross Keys/Suite 314
 Quadrangle East/2 Hamill Road
 Baltimore, MD 21210 410-433-0400
FAX 410-433-0478

NEWTON, Carol M., M.D., Ph.D. (8/3/96)
 Professor
 Department of Biomathematics
 School of Medicine
 University of California
 10833 Le Conte Avenue
 Los Angeles, CA 90024-1766 310-825-5800
FAX 310-825-8685
EMAIL cnewton@biomath.medsch.ucla.edu

DeNARDIS, Lawrence J., Ph.D. (8/3/94)
 President
 University of New Haven
 300 Orange Avenue
 West Haven, CT 06516 203-932-7276
FAX 203-937-0756

JOYNT, Robert J., M.D., Ph.D. (8/3/96)
 Vice President and Vice Provost
 for Health Affairs
 University of Rochester
 School of Medicine and Dentistry
 601 Elmwood Avenue 716-275-3407
 Rochester, NY 14642 FAX 716-256-1131

WALKER, H. Kenneth, M.D. (8/3/95)
 Professor of Medicine
 Emory University School of Medicine
 69 Butler Street
 Atlanta, GA 30303 404-616-3420
FAX 404-525-2957
EMAIL kwalk04@emoryu1.cc.emory.edu

EX OFFICIO MEMBERS**Primary****Alternate**

BILLINGTON, James H., D. Phil.
 Librarian of Congress
 Library of Congress
 10 First Street, S.E.
 Washington, DC 20540
202-707-5205
FAX 202-707-1714

ROWBERG, Richard E., Ph.D.
 Chief
 Science Policy Research Division
 Congressional Research Service
 Library of Congress
 101 Independence Avenue, S.E.
 Madison Bldg., Rm. 413
 Washington, DC 20540
202-707-7040
FAX 202-707-7000

CLUTTER, Mary E., Ph.D.
 Acting Deputy Director
 National Science Foundation
 1800 G Street, N.W., Room 506
 Washington, DC 20550
202-357-9854
FAX 202-357-7059

HAGEN, Donald F., Vice Adm., MC, USN
 Surgeon General
 Bureau of Medicine and Surgery
 Department of the Navy
 Washington, DC 20265-1280
202-653-1144
FAX 202-653-1280

KEMP, David G., Capt., MC, USN
 Speciality Advisor for the
 Surgeon General for Internal Medicine
 Department of Internal Medicine
 Bethesda National Naval Medical Center
 Bethesda, MD 20889-5000
301-295-4630
FAX 301-295-5389
EMAIL kemp@usuhsb.ucc.usuhs.nnmcc.navy.mil

FARRAR, John T., Jr., M.D.
 Acting Under Secretary for Health
 Department of Veterans Affairs
 810 Vermont Avenue, N.W. (10)
 Washington, DC 20420
Delivery Address:
 801 I Street N.W., Room 710
 Washington, DC 20001
202-535-7010
FAX 202-535-7630

CARTER, Wendy, M.L.S.
 Asst. for Library Programs
 Dept. of Veterans Affairs
 810 Vermont Avenue, N.W. (142D)
 Washington, DC 20420
Delivery Address:
 801 I Street, N.W., Room 454
 Washington, DC 20001
202-535-7337
FAX 202-535-7539
carter.wendy@forum.va.gov

HOWARD, Joseph H.
 Director, National Agricultural Library
 U.S. Department of Agriculture
 10301 Baltimore Boulevard
 Beltsville, MD 20705
301-504-5248
FAX 301-504-7042

LANOUE, Alcide M., Lt. Gen., MC, USA
 The Surgeon General
 Department of the Army
 5111 Leesburg Pike
 Falls Church, VA 22041-3258
703-756-0000
FAX 703-0025

CASSIMATIS, Emmanuel G., Col., MC, USA
 Chief
 Graduate Medical Education Branch
 U.S. Army Health Professional Support
 Agency (SGPS-EDM)
 5109 Leesburg Pike
 Falls Church, VA 22041-3258
703-756-8036
FAX 703-756-8044

ELDERS, M. Joycelyn, M.D.
 Surgeon General, PHS
 200 Independence Avenue, S.W.
 Washington, DC 20201
202-690-6467
FAX 202-690-5810

McCORMICK, Kathleen A., R.N., Ph.D.
 Director, Office of the Forum
 for Quality and Effectiveness
 in Health Care
 6000 Executive Blvd., Suite 310
 Rockville, MD 20852
301-594-4015
FAX 301-594-4027

SLOAN, Alexander M., Lt. Gen., USAF, MC
 Surgeon General
 Department of the Air Force
 Bolling Air Force Base
 Washington, DC 20332-6188
202-767-4343
FAX 202-767-6208

MORGAN, Jacqueline, Col., USAF, MC
 Associate Director
 Air Force Medical Operations Agency
 HQ AFMOA/SGP
 170 Luke Avenue, Suite 400
 Bolling Air Force Base
 Washington, DC 20332-5113
202-767-1849
FAX 202-404-8089
EMAIL morgja@sg-usaf.mednet.af.mil

ZIMBLE, James A., M.D.
 Pres., Uniformed Services University
 of the Health Sciences
 F. Edward Hebert School of Medicine
 4301 Jones Bridge Road
 Bethesda, MD 20814-4799
301-295-3013
FAX 301-295-3542
EMAIL zimble@usuhsb.ucc.usuhs.nmnc.navy.mil

GARY, Nancy E., M.D.
 Dean, School of Medicine
 F. Edward Hebert School of Medicine
 4301 Jones Bridge Road
 Bethesda, MD 20814-4799
301-295-3016
FAX 301-295-3542

EXECUTIVE SECRETARY

LINDBERG, Donald A.B., M.D.
 Director
 National Library of Medicine
 8600 Rockville Pike
 Bethesda, MD 20894
301-496-6221
FAX 301-496-4450
EMAIL lindberg@lhcnlm.nih

BOARD OF REGENTS
EXTRAMURAL PROGRAMS SUBCOMMITTEE MEETING

September 29, 1993

2:00 to 4:30 p.m.

ATTENDEES

Subcommittee Members Present:

Dr. H. Kenneth Walker, Chair
Ms. Rachael K. Anderson, Ex Officio
Ms. Beverly E. Allen
Ms. Wendy Carter
Dr. Robert J. Joynt
Dr. Kathleen A. McCormick

NLM Staff Present:

Mrs. Ruth Bortz, Grants Specialist, EP
Mr. Brian R. Campbell, Grants Management/Administrative Officer, EP
Mrs. Shelly Carow, Grants Management Specialist, EP
Mr. Peter A. Clepper, Program Officer, EP
Mrs. Karin K. Colton, Committee Management Specialist, EP
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP
Ms. Andrea Epstein, Grants Assistant, EP, EP
Mrs. Rose Marie Holston, Program Analyst
Mrs. Frances Johnson, Program Officer, EP
Ms. Ellen Meltzer, Grants Management Specialist, EP
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

APPLICATIONS APPROVED BY COUNCIL
 (ARRANGED NUMERICALLY BY PROGRAM)
 COUNCIL DATE: SEPT./OCT. 1993
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE
 PROG. CLASS:

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
3 G07 LM05421-01S1	WESTERN MONTANA MEDICAL LIBRARIES ACCESS NETWORK	10,758
1 G07 LM05586-01	INFORMATION ACCESS GRANT FOR A M H PHYSICIANS	12,000
1 G07 LM05600-01	HHS LC HEALTH INFORMATION ACCESS PROJECT	91,566
1 G07 LM05611-01	INFORMATION ACCESS FOR RURAL HEALTH CARE PROFESSIONALS	12,000
1 G07 LM05623-01	BEAR VALLEY COMMUNITY HOSPITAL MEDICAL LIBRARY ONLINE	11,400

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1 G08 LM05415-01A1	MISSOURI INTEGRATED ADVANCED INFORMATION MGMT SYSTEM	01A1 153,194 02 134,737
1 G08 LM05548-01	ELECTRONIC ACADEMICAL VILLAGE FOR THE HEALTH SCIENCES	01 136,773
1 G08 LM05583-01	IAIMS IMPLEMENTATION AT YALE	01 549,223 02 545,272 03 543,972 04 547,243 05 548,078
1 G08 LM05604-01	TITLE OMITTED	01 549,988 02 549,956 03 549,908 04 549,947 05 550,000
1 G08 LM05614-01	INFORMATION SYSTEMS GRANT	01 149,669 02 116,094 03 50,481
1 G08 LM05616-01	PLANNING A COMPREHENSIVE IAIMS CAPABLE OF SUPPORTING CQI	01 149,660
1 G08 LM05620-01	CREATING THE UHMSC INTEGRATED INFORMATION INFRASTRUCTURE	01 550,000 02 550,000 03 550,000 04 550,000 05 550,000

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1 G08 LM05622-01	DEVELOPMENT OF A LIBRARY MANAGEMENT INFORMATION SYSTEM	01 130,515
		02 208,615
		03 170,320
1 G08 LM05625-01	INTEGRATION OF MEDICAL KNOWLEDGE IN PATIENT CARE	01 149,647
1 G08 LM05629-01	IAIMS OPERATIONAL PHASE FOR THE UNIVERSITY OF MICHIGAN	01 549,982
		02 549,973
		03 549,955
		04 549,932
		05 549,999
1 G08 LM05634-01	UNIVERSITY OF PITTSBURGH'S IMPLEMENTATION PHASE IAIMS	01 550,000
		02 550,000
		03 550,000
		04 550,000
		05 550,000

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
2 R01 LM04493-09	ARTIFICIAL INTELLIGENCE IN CLINICAL DECISION MAKING	09 309,925 10 282,883 11 303,369
2 R01 LM04843-07	INFORMATION AND COGNITION IN MEDICAL EDUCATION	07 138,161 08 140,411 09 129,977 10 132,589
2 R01 LM04925-06	IMAGE-BASED KNOWLEDGE SYSTEM IN ANATOMY	06 382,539 07 283,497 08 287,557 09 299,059
1 R01 LM05042-01A2	PARASITIC INFECTIONS OF THE EYE	01A2 25,050 02 22,250 03 11,000
2 R01 LM05125-04	PHYSICIAN USE OF DIAGNOSTIC DECISION SUPPORT SYSTEM DATA	04 74,951 05 75,145
2 R01 LM05202-03A1	CAN SIMULATION TEACH RECOGNITION OF SECONDARY DIAGNOSES	03A1 168,697 04 175,352 05 181,960
1 R01 LM05500-01A1	A MULTI-JOURNAL RANDOMIZED TRIAL OF BLINDED PEER REVIEW	01A1 300,085 02 357,296
1 R01 LM05502-01A1	IMAGE AND NETWORK SPECIFICATIONS FOR TELEDERMATOLOGY	01A1 182,551 02 178,218 03 159,510

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1 R01 LM05538-01	PHYSICIANS AND AIDS: A HISTORY OF THE FIRST DECADE	01 25,000 02 25,000
1 R01 LM05598-01	DUALS SECONDARY REVIEW: NR	01 21,225
1 R01 LM05607-01	INTENSIFYING CARE: AMERICAN CRITICAL CARE, 1940-1980	01 122,436 02 162,285 03 132,477
1 R01 LM05624-01	ASSESSING NEW MATHEMATICAL MODELS FOR MEDICAL EVENTS	01 25,000 02 25,000
1 R01 LM05631-01	SPARE CHILDREN: SUBJECTS IN RESEARCH, 1900 - 1945	01 1,268,507 02 1,537,361 03 1,741,604 04 1,849,812 05 1,711,351
1 R01 LM05635-01	DUALS SECONDARY REVIEW: HL	01 171,013 02 141,081 03 146,759
1 R01 LM05637-01	COMPUTER-DRIVEN GUIDELINES AND CARE PLANS AT CPMC	01 9,505 02 7,986 03 7,271
1 R01 LM05665-01	AUTOMATED ANALYSIS OF METABOLIC MOTIFS	01 163,391 02 156,623 03 154,870 04 154,771 05 154,448
1 R01 LM05665-01	BEYOND EQUITY: TOWARD A U.S. NATIONAL HEALTH POLICY	01 163,391 02 156,623 03 154,870 04 154,771 05 154,448
1 R01 LM05665-01	VISIBLE BRAIN FOR INFORMATION MANAGEMENT & ACCESS	01 163,391 02 156,623 03 154,870 04 154,771 05 154,448

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1 R01 LM05666-01	DUALS SECONDARY REVIEW: NF	01 157,545
		02 148,107
		03 153,893
		04 159,908
		05 166,165
1 R01 LM05667-01	DUALS SECONDARY REVIEW: RR	01 169,136
		02 159,443
		03 158,822
		04 159,008
		05 158,545
1 R01 LM05668-01	DUALS SECONDARY REVIEW: NF	01 192,379
		02 156,870
		03 133,208
	ELECTROMAGNETIC FIELD-BRAIN DATABASE	
1 R01 LM05669-01	DUALS SECONDARY REVIEW: NF	01 136,983
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	SENEX: A COMPUTER TOOL SET FOR MOLECULAR NEUROPATHOLOGY	
1 R29 LM05619-01		01 68,175
		02 65,820
		03 68,353
		04 70,987
		05 73,727
	KNOWLEDGE-BASED LARGE-SCALE CLINICAL EVENT MONITORING	
1 R29 LM05626-01		01 80,000
		02 80,000
		03 80,000
		04 55,000
		05 55,000
	PREFERENCE ASSESSMENT FOR PHARMACEUTICAL EVALUATION	
1 R29 LM05627-01		01 92,564
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		03 62,714
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		05 69,143
	LINKING KNOWLEDGE-BASED SYSTEMS TO CLINICAL DATABASES	

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2 R44 CA58119-02	DUALS SECONDARY REVIEW: LM A SYSTEM FOR TRACKING LOCAL CANCER-RELATED LEGISLATION	02 107,640 03 104,146
1 R13 HG01006-01	DUALS SECONDARY REVIEW: LM SUPPORT FOR HICSS-27 MINITRACK ON GENOME INFORMATICS	01 25,110
1 R13 HG00990-01	DUALS SECONDARY REVIEW: RR GENOME SEQUENCING AND ANALYSIS CONFERENCES	01 68,188
1 R01 RR09801-01	DUALS SECONDARY REVIEW: NS NEURAL NET GUIDED SYNTHESIS OF NEURAL RECEPTOR LIGANDS	01 140,644 02 135,471 03 137,013 04 137,013 05 140,244
2 R44 LM05460-02	ALGORITHMS FOR HYPERTEXT RETRIEVAL OF FULL-TEXT INFO	02 142,689 03 176,463

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1 R01 AG12241-01	DUALS SECONDARY REVIEW: LM DIMENSIONALITY REDUCTION, VISUALIZATION AND RECOGNITION	01 158,569 02 194,092 03 205,908 04 218,608 05 232,263
2 R01 AI25616-05	DUALS SECONDARY REVIEW: LM SEQUENCES OF PROTEINS OF IMMUNOLOGICAL INTEREST	05 187,183 06 182,975 07 199,155 08 213,013
1 R01 CA62362-01	DUALS SECONDARY REVIEW: LM NEW ROC METHODOLOGY FOR EVALUATION OF DIAGNOSTIC SYSTEMS	01 223,818 02 207,050 03 215,333
1 R01 CA62799-01	DUALS SECONDARY REVIEW: LM ERROR-FREE IMAGE COMPRESSION USING BLOCK BIT ALLOCATION	01 145,513 02 151,380 03 157,055
1 R01 CA62800-01	DUALS SECONDARY REVIEW: LM JPEG COMPRESSION OF MAMMOGRAPHIC IMAGES-AN ASSESSMENT	01 255,667 02 267,989 03 241,932
1 R01 DC02310-01	DUALS SECONDARY REVIEW: LM STRUCTURAL INFORMATION FRAMEWORK FOR BRAIN MAPPING	01 160,851 02 199,796 03 181,959 04 189,012 05 196,347
2 R01 HG00175-04	DUALS SECONDARY REVIEW: LM REPRESENTATION & RETRIEVAL OF PHYSICAL MAPPING DATA	04 229,562 05 242,276 06 256,812

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1 R01 HG00972-01	DUALS SECONDARY REVIEW: LM AN INTELLIGENT AUTOMATED RESTRICTION MAPPING TOOL	01 99,930 02 91,227 03 96,028
1 R01 HG00997-01	DUALS SECONDARY REVIEW: LM ANALYSIS & ANNOTATION OF MOLECULAR SEQUENCE	01 227,048 02 193,990 03 210,731
1 R01 HL51611-01	DUALS SECONDARY REVIEW: LM EVALUATION OF TRANSFUSION MEDICINE LEARNING ENVIRONMENT	01 174,704 02 180,023 03 189,496
1 R01 HL51776-01	DUALS SECONDARY REVIEW: LM VIDEO COMPRESSION FOR CORONARY ANGIOGRAM	01 177,760 02 164,398 03 171,598
1 R01 HS07745-01A1	DUALS SECONDARY REVIEW: LM INTERFACING DIAGNOSTIC TOOLS TO AN HIS	01A1 273,488 02 300,147 03 257,791
1 R01 HS08082-01	DUALS SECONDARY REVIEW: LM COMPUTER-BASED TEACHING OF DIAGNOSTIC REASONING SKILLS	01 116,250 02 113,128 03 108,975
1 R01 MH52196-01	DUALS SECONDARY REVIEW: LM PROBABILITY ATLAS BASED MAPPING OF RAT BRAINS	01 161,316 02 147,884 03 146,225
1 R01 NS31840-01A1	DUALS SECONDARY REVIEW: LM SEQUENTIAL & SIMULTANEOUS VIEWING OF NEUROIMAGES	01A1 185,521 02 192,413 03 200,103 04 190,141