

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

A G E N D A

93rd Meeting of the

BOARD OF REGENTS

9:00 a.m., January 18-19, 1990

Board Room  
Mezzanine of  
National Library of Medicine

MEETING OPEN: From 9:00 a.m. to 4:30 p.m. on January 18 and from 9:00 a.m. to adjournment on January 19.

MEETING CLOSED: From 4:30 p.m. to 5:00 p.m. on January 18 for the review of grant applications.

1. CALL TO ORDER AND INTRODUCTORY REMARKS Dr. Don E. Detmer
2. REMARKS BY THE ASSISTANT SECRETARY FOR HEALTH Dr. James O. Mason
3. REMARKS BY THE DEPUTY DIRECTOR FOR EXTRAMURAL PROGRAMS Dr. Katherine L. Bick
4. CONSIDERATION OF OCTOBER MINUTES TAB I Dr. Don E. Detmer  
(Agenda Book)

5. FUTURE MEETING DATES

Spring Meeting: June 7-8, 1990 (Th-F)--CONFIRMED  
Fall Meeting: Sept. 27-28, 1990 (Th-F)--CONFIRMED  
Winter Meeting: January 17-18 (preferred) OR }--PROPOSED  
January 31-Feb. 1, 1991 }

(Subcommittees meet the day before the regular Board meeting.)

PLEASE NOTE potential Amer. Library Assoc. Midwinter Mtg.,  
conflicts with 1/12-17/91, Chicago  
January 1991 dates: NIAID Council Mtg., 1/24-25/91,  
Bethesda  
AAAS Annual Mtg., 2/14-19/91, DC

COFFEE BREAK

6. REMARKS BY THE DIRECTOR, NLM TAB II Dr. Donald A. B. Lindberg  
Discussion Board Members

7. FINAL REPORT ON ELECTRONIC IMAGING TAB III Dr. Elliot R. Siegel  
Dr. Daniel R. Masys  
Dr. Donald W. King  
Dr. Alvy R. Smith,  
Discussant  
Discussion Board Members
- LUNCHEON CATERED IN CONFERENCE ROOM "B" 12:15-1:10
8. UNIFIED MEDICAL LANGUAGE SYSTEM UPDATE TAB IV Ms. Betsy Humphreys  
META-1 DEMONSTRATION Mr. Mark S. Tuttle  
Dr. Edward A. Feigenbaum,  
Discussant  
Discussion Board Members
9. BIENNIAL REPORT OF THE BOARD OF REGENTS TAB V Dr. Elliot R. Siegel  
Ms. Nina W. Matheson,  
Discussant  
Discussion Board Members
- COFFEE BREAK
10. REGIONAL MEDICAL LIBRARY PROGRAM TAB VI Ms. Becky Lyon-Hartmann  
Ms. Nina W. Matheson and  
Dr. Lois E. DeBakey,  
Discussant  
Discussion Board Members
11. APPOINTMENT OF THE NOMINATING COMMITTEE Dr. Don E. Detmer
12. REPORT FROM EXTRAMURAL PROGRAMS TAB VII Dr. Roger W. Dahlen  
A. Budget and Funding Plans Tab A Extramural Programs  
B. Review of Board Operating Procedures Subcommittee, Discussants  
"Guidelines for Adjustments by Staff  
in Time or Amount of Grant Award" Tab B  
Discussion Board Members

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MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS, JANUARY 18, 4:30 P.M.  
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13. REVIEW OF GRANT PROPOSALS

Dr. Roger W. Dahlen

RESEARCH TAB I

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

RESOURCE TAB II

- A. Resource Project Tab A
- B. Resource Improvement/Access Tab B
- C. IAIMS Tab C

ACADEMIC RESEARCH ENHANCEMENT AWARDS TAB III

PUBLICATION TAB IV

DISAPPROVALS TAB V

INTERIM ACTIONS TAB VI

R E C E S S \* \* \* \* \*

DINNER. . . . . BETHESDA NAVAL OFFICERS' CLUB  
 Cocktails . . . . . 6:30 p.m. TERRACE ROOM  
 Dinner . . . . . 7:30 p.m.

SPEAKER: Dr. Alvy R. Smith, Member, Board of Regents, and Executive Vice President of Pixar

TITLE: "Making Pictures With Computers."

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R E C O N V E N E : FRIDAY, January 19, 9:00 a.m.

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14. NLM COOPERATION WITH THE INSTITUTE OF MEDICINE (IOM) TAB VIII
- A. Joint Project with IOM's Council on Health Care Technology Tab A Ms. Betsy Humphreys
  - B. Mission and Plans for an Agency for Health Care Policy and Research Tab B Dr. J. Jarrett Clinton
  - C. Role of the Primary Care Physician in Occupational and Environmental Medicine Tab C Dr. Daniel R. Masys  
Dr. Kathleen A. McCormick,  
Dr. Jerome P. Kassirer,  
Discussants
  - D. New Initiative on Digital Patient Record Tab D Dr. Don E. Detmer
- Discussion Board Members
15. REPORT ON OCTOBER BOARD OF SCIENTIFIC COUNSELORS' MEETING TAB IX Dr. Jerome P. Kassirer
- COFFEE BREAK
16. REPORT ON IAIMS SYMPOSIUM AT DUKE UNIVERSITY Tab X Dr. William W. Stead  
Dr. Steven C. Beering,  
Discussant
- Discussion Board Members
17. ADJOURNMENT Dr. Don E. Detmer

**DEPARTMENT OF HEALTH AND HUMAN SERVICES**

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

**BOARD OF REGENTS  
MINUTES OF THE 93RD MEETING  
JANUARY 18-19, 1990**

**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/  
January 18-19, 1990

The Board of Regents of the National Library of Medicine was convened for its ninety-third meeting at 9:00 a.m. on Thursday, January 18, 1990, in the Board Room of the National Library of Medicine, Bethesda, Maryland. Dr. Don E. Detmer of the University of Virginia chaired the meeting. In accordance with P.L. 92-463 and the Determination of the Director, NIH, as announced in the Federal Register on December 19, 1989, the meeting was open to the public from 9:00 a.m. to 3:15 p.m. on January 18 and from 9:00 to 11:45 a.m. on January 19. The meeting was closed from 3:15 to 3:45 p.m. on January 18 for the review discussion, and evaluation of grant applications. A Board roster is enclosed under Attachment A.

**Board members present were:**

Dr. Don E. Detmer, Chair	Dr. Edward A. Feigenbaum
Dr. Steven C. Beering	Mr. Joseph H. Howard
Dr. Ronald E. Cape (January 18)	Ms. Nina W. Matheson
Dr. Mary E. Clutter (January 18)	Dr. Alvy Ray Smith
Dr. Lawrence H. Cohn	Dr. Jeanne Spurlock
Dr. Ruth M. Davis	

**Alternates to ex officio members present were:**

Captain Noel E. Dysart, representing Vice Admiral James A. Zimble.  
Col. Howard E. Fauver, representing Lt. Gen. Frank F. Ledford, Jr.  
Captain Kathleen A. McCormick, representing Dr. James O. Mason.  
Ms. Karen Renninger, representing Dr. John Gronvall.  
Dr. Richard E. Rowberg, representing Dr. James H. Billington.  
Brig. Gen. Michael J. Torma, representing Lt. Gen. Monte B. Miller.

**Unable to attend:**

Mr. H. Robert Cathcart  
Dr. Jay P. Sanford

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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. Only when an application is under individual discussion will the Board member absent himself. This procedure does not apply 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. Michael Ackerman, Chief, Educational Technology Branch, LHNCBC  
Mr. John Anderson, Director, Information Systems, OD  
Dr. Jeanne L. Brand, Chief, International Programs Branch, EP  
Dr. Donald Buckner, Special Assistant to the Director, LHNCBC  
Mr. Kenneth Carney, Executive Officer, OD  
Ms. Lois Ann Collaianni, Associate Director for Library Operations  
Dr. Milton Corn, Special Consultant to the Director, OD  
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP  
Ms. Becky Lyon-Hartmann, RML Program Coordinator, LO  
Mr. Earl Henderson, Deputy Director, LHNCBC  
Dr. Richard Hsieh, Director for International Programs, OD  
Ms. Betsy Humphreys, Deputy Associate Director, LO  
Mr. Charles R. Kalina, Special Projects Officer, OD  
Dr. Lawrence C. Kingsland III, Chief, Computer Science Branch, LHNCBC  
Dr. Henry M. Kissman, Associate Director, SIS  
Mr. Sheldon Kotzin, Chief, Bibliographic Services Division, LO  
Dr. David J. 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  
Ms. Peri L. Schuyler, Head, Medical Subject Headings, LO  
Dr. Elliot R. Siegel, Assistant Director for Planning and Evaluation, OD  
Ms. Susan Buyer Slater, Deputy Assistant Director for Planning and Evaluation, OD  
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

**Others present included:**

Dr. Katherine L. Bick, Deputy Director for Extramural Programs, NIH  
Dr. J. Jarrett Clinton, Acting Director, National Center for Health Services Research and Health Care Technology Assessment  
Dr. Lois E. DeBakey, Professor of Scientific Communications, Baylor College of Medicine -- Consultant to Board of Regents  
Dr. Clifford Goodman, Staff Director of Council on Health Care Technology for Institute of Medicine  
Dr. Jerome P. Kassirer, Associate Chairman, Department of Medicine, Tufts University and Chairman, Board of Scientific Counselors, NLM  
Dr. Stuart Nelson, State University of New York at Stony Brook  
Dr. William W. Stead, Associate Professor of Medicine, Duke University  
Ms. Ileen Stewart, Executive Secretary, Special Study Section, DRG, NIH

## **I. OPENING REMARKS**

Dr. Don E. Detmer, Chairman, welcomed the Regents to the ninety-third meeting of the Board of Regents of the National Library of Medicine. He introduced two new Regents: Dr. Jeanne Spurlock and Dr. Lawrence H. Cohn. He also welcomed alternates, consultants, and those who have been invited to appear on the agenda.

## **II. REMARKS OF NIH DEPUTY DIRECTOR FOR EXTRAMURAL RESEARCH**

Dr. Katherine L. Bick covered several extramurally related topics in her remarks. First, as fiscal constraints continue, it becomes more and more difficult for the institutes to choose which among many good research applications should be supported. This will continue into the nineties. Research training is of concern to NIH--the "pipeline" necessary to ensure an adequate supply of future trained scientists. Demographic studies tell us that NIH faces a significant decrease in the supply of young scientists in the next seven or eight years. As one response, NIH must try to develop messages aimed at minorities and women, urging them to consider science as a career. Another major issue facing the biomedical research community is the extraordinary public outcry over the use of animals in research. NIH receives much mail espousing the most extreme viewpoints against such research. NIH is stepping up its educational effort to reach the broad range of citizens with the message that responsible animal research is necessary to medical progress.

Next, Dr. Bick reported on an issue that, she said, has been magnified far beyond its real importance--that of misconduct in science. Although there is much concern in the Congress, the actual number of cases of scientific misconduct is small. One of the reasons the community has such problems, she said, is that the level of scientific education in this country is astonishingly low. We, in our roles as local citizens, are responsible for the fact that children in the lower and middle elementary grades are not being exposed to the excitement of science. She noted that NLM has a role in this area--some of its exhibits on science and the history of medicine have generated great interest in the local community. Finally, Dr. Bick noted that our problems are in a measure a result of the post-World War II success of American science. We have raised expectations; if we are to enjoy continued support, we must make sure that science gets proper credit for its successes.

Following her presentation, Dr. Bick answered questions, commenting on the need to help women spread out their career training so as to lessen the conflict with family responsibilities. She also noted a number of current areas of high priority, such as AIDS research and research aimed at minority and underserved populations. In answer to a question about whether NIH was considering putting a cap on the amount of support that may be given to an individual scientist, Dr. Bick said that there was no serious consideration of this. Dr. Cohn, asked whether there was a trend to awarding grants to full-time Ph.D. researchers rather than clinicians and laboratory scientists. Dr. Bick said that although the proportion has not significantly changed in the last 15



years, there is a perception of change, and the Institutes are taking deliberate steps to protect the clinician researcher. There have been a number of recommendations on how to get and keep physician investigators in the system, including lengthening the training period for clinical investigators from one to two years and increasing the amount of the stipends.

### **III. CONSIDERATION OF MINUTES OF PREVIOUS MEETING**

The Regents approved without change the minutes of the October 5-6, 1989, meeting.

### **IV. DATES OF FUTURE MEETINGS**

The Board will meet next on June 7-8, 1990. The fall meeting on September 27-28, 1990, was confirmed. The meeting for next winter was set for January 31-February 1, 1991.

### **V. REPORT OF THE NLM DIRECTOR**

Dr. Lindberg reported on the state of the NLM budget; there is a substantial increase, from \$73.4 million in 1989 to \$81.8 million in 1990 (this does not include \$3.875 million transferred to the NLM from the NIH Division of Research Resources with the backing of the Regents). He briefly noted how the increase would be apportioned among NLM programs. In the area of recent personnel actions, Dr. Lindberg introduced to the Board several new appointments: Dr. Milton Corn, on sabbatical from the Georgetown Medical School; Martha Fishel, Deputy Chief of the Public Services Division; Sue Levine, Budget Officer, and two new members of the National Center for Biotechnology Information-- Drs. David Ghosh and Jonathan Kane.

Dr. Lindberg reported on a subject already raised during Dr. Bick's presentation--that of helping physicians establish careers in biomedical research. Dr. Wyngaarden, before he left, had set up an internal NIH task force to study the subject. One of the findings was that research training grantees, who are physicians, spend on the average one year or less in the program. This handicaps them in competing for grants with Ph.D.s and M.D./Ph.D.s. The second critical issue was the level of salary--the fact that the research stipend was lower than that for house officers. This would require either an additional \$60 million for the NIH budget or fewer trainees at higher pay scales. How would the universities feel about this? Is this the right strategy? Dr. Detmer, the Board Chairman, interjected here that the Regents might wish to consider this issue later in the meeting and make a recommendation to the NIH.

Dr. Lindberg reported about the continuing collaboration of NLM with the Institute of Medicine (IOM). As the Library moves more and more into the national health arena, it is working more closely with the IOM. One collaboration has to do with health care technology; this collaboration will change (but not end) now that the new Agency for Health Care Policy and Research (AHCPR) has been established in the HHS.

Dr. Jarrett Clinton, Director of the new Agency, will speak to the Board later in the meeting. The legislation creating the AHCPR specifies that the NLM will work formally with the Agency. Other cooperative projects with the IOM involve Dr. Masys, Dr. Detmer, and Ms. Humphreys; they also will be discussed later at this meeting.

The proposed reauthorization of the Paperwork Reduction Act is a current concern of NLM, Dr. Lindberg said. The House version of the bill to reauthorize the Act would in effect prohibit the Library from exercising a measure of quality control over commercial products based on NLM databases. It would do this by prohibiting the NLM from entering into licensing agreements whereby the commercial firm agrees to keep the products accurate and up-to-date and have retrieval software of high quality. NLM's role in ensuring the high quality of such products is actually welcomed by the commercial vendors, Dr. Lindberg said. The Board, which has an important role in advising NLM about how the databases should be priced and the circumstances under which they are made available, might wish to consider this issue and make a recommendation. During the discussion that followed the Director's presentation, it was decided that Ms. Nina Matheson would draft a resolution to be considered later at this meeting. [Note: the resolution was subsequently presented, discussed, and passed. See Attachment B.]

Other subjects discussed briefly by the NLM Director were: outreach to individual health professionals (the subject of the presentation on the Regional Medical Libraries later in the meeting); the recent thirteenth annual Symposium on Computer Applications in Medical Care held in Washington, D.C., at which the Unified Medical Language System got much attention (the symposium was chaired by the Lister Hill Center's Dr. Lawrence Kingsland, and Dr. Lindberg and Dr. Edward Shortliffe gave keynote addresses); the establishment of a Peer Review Panel for the NIH Computer Center (chaired by Dr. Lindberg); and the fact that the Association of Academic Health Centers has established four study groups, one of which, that on information sciences, involves working closely with the NLM.

## VI. REPORT ON ELECTRONIC IMAGING

Dr. Elliot R. Siegel, NLM Assistant Director for Planning and Evaluation, described the evolution of the draft final report of the Long-Range Planning Panel on Digital Image Libraries. The creation of the Panel was prompted by the comprehensive NLM Long-Range Plan, in which it was suggested that NLM thoroughly and systematically investigate the technical requirements and feasibility of building and disseminating biomedical image libraries, much the same as the NLM now acquires indexes and provides access to the biomedical literature. Early last year, at the direction of the Board of Regents, a 25-member Planning Panel on Digital Image Libraries was formed under the leadership of Dr. Donald King of the University of Chicago. NLM wanted to know (1) whether image libraries might be used in medical education and practice at a level sufficient to justify the costs of their creation and distribution; (2) what standards and data exchange arrangements might be required; and (3) whether the proposed 3-D "Visible-Human" project, an idea that emerged from a 1988 NLM workshop, would be a good place to start. The Planning Panel on Digital Image Libraries met twice in 1989 and prepared a draft report that was sent to the Regents for their review prior to this meeting.

Following Dr. Siegel's introduction of the subject, Dr. Daniel Masys, Director of the Lister Hill Center, using slides, discussed the opportunities for creating increasingly detailed and informative medical image banks made possible by large memory graphics computers, high resolution displays, optical disk and other storage media capable of storing billions of bits, and high-speed computer networks for transferring this information over long distances. Dr. Masys briefly described the 1988 meeting of experts at which it was suggested that NLM might build a digital image collection that they individually did not have the resources to create--a complete set of x-y-z numerical coordinates representing an entire human being at millimeter- or sub-millimeter-level resolution. The Planning Panel which subsequently met in 1989 was asked to consider the desirability and feasibility of such an undertaking.

Dr. Masys presented to the Board the summarized conclusions of the Panel: that NLM should be involved in the development of digital image collections; that computer technology is sufficiently powerful and economical to store, render, and display digital images of value in clinical practice, teaching, and research; that certain fundamental research problems remain to be addressed; and that high bandwidth computer networks many times faster than those now available will be needed for digital transmission of images. The Panel specifically recommended that the NLM should proceed with the Visible-Human Project, a digitized representation of a carefully selected male and female. A detailed plan to implement its recommendations are a part of the Panel's report to the Board. Dr. Masys briefly recounted the steps in the plan, from acquiring the raw data sets, to extracting representations of biologically important objects, to creating links to high-speed transmission networks.

Following Dr. Masys' presentation, Dr. King, Chairman of the Panel, described some of the reservations he and others from medical schools originally had to the Visible-Human project. Medical schools are notoriously independent and loath to adopt methods and curricula developed elsewhere, he said. Nevertheless, it is his belief that individual parts of the project would be enthusiastically embraced by medical educators and thus it is worth doing. Along the way, NLM would do a great service by standardizing the techniques for information gathering and methods for quality control.

Responding to the presentations, Dr. Alvy Ray Smith said that he believes NLM has a rare opportunity to make an important contribution in an important field--the development of a digital "Adam and Eve." This is an opportunity which no one else could carry off right now--the requisite technology and knowledge are exclusively American at this time. Dr. Smith then formally presented to the Board a unanimous recommendation prepared at the January 17, 1990, joint meeting of the Board's Research and Development and Planning Subcommittees to adopt as part of the NLM Long-Range Plan the recommendations of the Planning Panel on Electronic Imaging.

Following the presentations and introduction of the Subcommittees' motion, there was a discussion by the Regents of various aspects of the plan, including whether in these days of high-capacity compact storage media, high-speed broadband networks were necessary for transmitting the immense amounts of data that would be generated for the

Visible Human. It was noted that eventually there would be developed collateral image collections perhaps a thousand times larger than just the Visible Human, for example, collections that are disease-oriented, concerned with growth and development, embryology, etc., and have them selectable and searchable via tools that are analogous to MEDLINE. The selective transmission of such images in response to user queries will require high bandwidth networking. Following the discussion, the Regents voted unanimously to accept the Report of the Panel on Digital Image Libraries as presented.

## VII. UNIFIED MEDICAL LANGUAGE SYSTEM UPDATE

Ms. Betsy Humphreys, Deputy Associate Director for Library Operations, reviewed the development of the Unified Medical Language System (UMLS), the subject of several earlier presentations to the Board of Regents. The purpose of today's presentation is to demonstrate to the Board a preliminary edition of Meta-1, the first version of the UMLS Metathesaurus. Meta-1 is being constructed as a tool that can assist computer applications to determine when terms in user queries are ambiguous, to interact with the user to clarify and refine queries, to determine which of several machine-readable databases have information relevant to the query, and to identify appropriate search terms in the controlled vocabularies used in several databases. Some may also wish to use Meta-1 as a machine-readable reference tool for information about biomedical terminology. Ms. Humphreys briefly described the various vocabulary sources of Meta-1; some sources, such as NLM's own Medical Subject Headings (MeSH), are included in their entirety; others in Meta-1 are included selectively. Lexical Technology, Inc. (LTI), one of the UMLS contractors, produced the raw Meta-1 records that are now undergoing review. The first versions of Meta-1 and the Semantic Network (another major UMLS component) in mid-1990. There are plans to test both in a variety of contexts. They will also be made available to other institutions and companies under experimental agreements. Ms. Humphreys then introduced Mr. Mark S. Tuttle, Vice President of Lexical Technology, Inc., who demonstrated to the Board the unedited Meta-1 file in its Hypercard preliminary version.

Following the presentation and demonstration, Dr. Edward Feigenbaum commented that this project is not merely "interesting" but that it is absolutely crucial work on the road to the intelligent electronic library of the future. In fact, it is necessary not just for medical libraries but for intelligent computer handling of any biomedical data--even down to data in patient records. No one else is attempting it on the scale that NLM has embarked on. What has been demonstrated today is an excellent, disciplined start in the development of a Unified Medical Language System. Dr. Feigenbaum said that NLM must keep in mind the multiplicity of potential users for interim UMLS products: (1) other UMLS computer programmers, (2) "value-added" software developers, (3) librarians, and (4) end-users themselves. The amount and kind of functionality built into the system will depend on the answer to the question: "Who is the user?"

## VIII. REGIONAL MEDICAL LIBRARY PROGRAM

Ms. Becky Lyon-Hartmann, Coordinator of the Regional Medical Library Program, gave a brief summary of how the RML Network came into being in the mid-sixties and how it evolved in the quarter century since. Originally composed of 11 regions, the Network today has seven. In addition to a Regional Medical Library in each region, there are some 135 resource libraries (primarily academic medical center libraries) and more than 3,000 institutions at the local level (primarily hospital libraries). The Regional Medical Libraries receive competitively-awarded contracts from the NLM. Among the many accomplishments of the Network are: Institutional information resources have been improved; staff have been trained; hundreds of consortia have been formed; online access has been expanded throughout the nation; DOCLINE, an interlibrary loan and request and referral system has been implemented. A database of information about the Network is now available. Ms. Lyon-Hartmann cited a number of programs being offered by the RMLs under their current contracts to reach out to underserved professionals. She described efforts under way in West Virginia and Mississippi (Region 2), and remote regions of the Pacific Northwest (Region 6).

The Outreach Planning Panel Report, accepted last year by the Board of Regents, has important implications for the future direction of the Network. The Panel called for the NLM to forge a new relationship with the members of the RML Network and, through the Network, to reach out to individual health professionals who are not presently being served. One result of the Panel's advocacy was funding from Congress for increased outreach. The RMLs have proposed additional outreach activities to be funded with this money during this, the last year of their present contracts. Ms. Lyon-Hartmann briefly described several of the proposed projects. Although they would reach only a relatively small percentage of health professionals who are not being served, it is a beginning. The "statement of work" for the new Regional Medical Library contracts (covering the period 1991-1996) has been written to include the tasks involving the RMLs that the Outreach Panel has recommended.

There were two additional specific recommendations of the Panel. One was to consider changing the name of the Network to emphasize its national nature. As a result, "The National Network of Libraries of Medicine" is being proposed. A second recommendation was to study the configuration of the Network for possible realignment of boundaries. That study has been completed and it was recommended that the Network be expanded from seven to eight regions. As a result, the present Region 1 (Greater Northeastern Regional Medical Library Program) is being split into two, with the New England states now designated as Region 8. The Network's mission statement has also been revised to read, "The mission of the National Network of Libraries of Medicine is to provide equal access to biomedical information to all U.S. health professionals in order to advance the progress of medicine and to improve the public health." A new set of goals has also been formulated: (1) to promote awareness of and access to biomedical information resources for health professionals and (2) to develop and improve the biomedical information resources in the regions and support the sharing of these resources within the regions and throughout the nation. Expanded outreach

will be a key element of future Network activities. The members are expected not only to act as "field agents" for NLM products and information services, but to provide feedback to NLM about how these services are used and suggestions for improvements and new services. Ms. Lyon-Hartmann provided details to the Board about the requirements for Regional Medical Libraries under the new contracts. She also showed graphs of past RML funding and proposed expanded outlays for the new contract period (1991-1996). To sum up, she said that the Regional Medical Library Network has been a signal success and NLM is excited about the future of the National Network of Libraries of Medicine.

Commenting on the presentation, Ms. Matheson said that the Network has always been a true collaboration between libraries of disparate size and capabilities; in making changes, she said, NLM must not lose respect for local institutional autonomy. NLM must remember that one of the reasons that the Network has been extremely successful at low cost is that there has been an enormous amount of voluntary effort and contributed resources. NLM must not lose sight of this. Ms. Matheson agrees with the new direction of the Network--expanding beyond document delivery into wider use of modern technology. Dr. Lois DeBakey commented that the staff might want to take another look at the proposed new name--it is somewhat of a tongue-twister and it does not suggest an affiliation with the NLM. She agreed with the plan to give more attention to underserved rural and minority health professionals. The plan to encourage feedback from users will be very helpful to the NLM in improving its products and services. Other discussion by the Regents reinforced the idea of linking Grateful Med with a document-delivery capability--the so-called "Lonely Doc" program that the NLM is developing. There was also discussion of the involvement of Canadian libraries within the Network and possible collaborations with other countries.

## **IX. BIENNIAL REPORT OF THE BOARD OF REGENTS**

Dr. Elliot Siegel, as background, reported that each NIH component is required to prepare two biennial reports, one from its advisory committee, and one from its director, focusing on the period since the last biennial report in 1988. They will be incorporated into a report submitted to the Congress by the NIH Director. A 12-page draft, prepared by Dr. Siegel's office, was sent to the Regents in advance of this meeting. The report concentrates on the process of updating the Long-Range Plan, including the recommendations of the Outreach Panel (the RML program, strengthening hospital access to national information resources, resource access grants, IAIMS training in health information management, new products and services, AIDS information activities, and electronic imaging), the establishment of the National Center for Biotechnology Information, and the evolution of the Unified Medical Language System.

Following Dr. Siegel's brief presentation, the Regents made a number of suggestions for strengthening the Report. Ms. Matheson suggested that the opening contain a "statement of the scientific problem" which the actions are designed to respond to. Dr. Siegel said that there is such a discussion in the section on the National Center for Biotechnology

Information, but it might be possible to extend it to other areas of the report. Dr. McCormick suggested that the report might contain more mention of individual states in which there are pertinent projects--such as those mentioned in the earlier presentation on the Regional Medical Library Network. Dr. Beering complimented the drafters on the clarity, brevity, and readability of the report; he thought that in a preamble there might be a brief general statement about how the services of the NLM help to alleviate human suffering in the nation (and the world) by maintaining and disseminating the knowledge base of biomedicine. Dr. Detmer said that the Critical Incident study was an interesting and important piece of work and might be included in the report. The Chairman invited the individual Regents to make other suggestions directly to Dr. Siegel. A final draft will be presented to the Board for their approval at the next meeting.

#### **X. APPOINTMENT OF NOMINATING COMMITTEE**

Dr. Detmer appointed the following to serve on a committee to nominate a Board chairman for 1990-91: Mr. Joseph H. Howard, Dr. Kathleen A. McCormick, and Gen. Michael Torma (chair).

#### **XI. REPORT OF THE ACTING ASSOCIATE DIRECTOR FOR EXTRAMURAL PROGRAMS**

##### Budget

Dr. Roger W. Dahlen compared the Extramural Programs' budget of FY 1989 with the FY 1990 budget. He stated that most of the increases in the 1990 budget deal with outreach efforts in the resource Grants and Regional Medical Libraries areas. In FY 1990 seventy-five percent of the budget is already committed--a normal occurrence each year.

##### Board Operating Procedures

As required annually, Dr. Dahlen 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  
JANUARY 18 -- 3:15 to 3:45 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 informed

Board members of confidentiality and conflict-of-interest procedures and 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 application which presented a conflict of interest.

The Board reviewed 33 applications, requesting \$9,034,071 and recommended for approval 26 applications in the amount of \$7,393,612 for the total years requested. Seven applications in the amount of \$667,008 were disapproved. Grant applications recommended for approval by the Board are listed in the summary actions (Attachment E). Interim actions taken by the 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 -- JANUARY 19 -- 9:00 A.M.**

### **XIII. NLM COOPERATION WITH THE INSTITUTE OF MEDICINE**

A. Ms. Humphreys, NLM Deputy Associate Director for Library Operations, brought the Board up-to-date on NLM's joint project with the information panel of the Institute of Medicine's Council on Health Care Technology. The project was first presented to the Board in September 1987. The original goal was to assist the Council fulfill its responsibility to serve as a clearinghouse on health-care technologies and technology assessment. As the collaboration proceeded, it was decided that certain NLM information services could be augmented and improved to serve this function. A contract was awarded by the NLM to the Council on Health Care Technology to prepare specific technical recommendations for such improvements in the field of health care assessment. The Council also provided partial funding for the study. Under the contract, the Council compared information in their recently published Medical Technology Assessment Directory with information in NLM's subject-heading scheme (MeSH), NLM's DIRLINE (Directory of Information Resources Online) database of information-providing, health-related organizations, NLM's collection of health-care technology literature, and MEDLARS indexing coverage of the field, and prepared specific recommendations for enhancements to NLM's coverage of health-care technology assessment. The Council also recommended extensions in UMLS coverage of important vocabularies and classifications dealing with the subject. In August 1989 the Council delivered to NLM the final report of the study.

Using slides, Ms. Humphreys summarized the report's recommendations and NLM's responses. Among the highlights: Of 94 suggested new MeSH headings, NLM has added 86; 135 recommended records were added to DIRLINE; NLM will expand its acquisitions of certain kinds of report literature; and NLM will examine how it can provide better subject access to important report literature in health services research. In summary, the Council's report has resulted in some very useful data and recommendations that the Library is proceeding to implement; it also gives NLM a helpful head start in responding



to the recent legislation creating the Agency for Health Care Policy and Research, legislation that gives NLM specific responsibilities for information services in this field.

B. Dr. J. Jarrett Clinton, Acting Director of the newly established Agency for Health Care Policy and Research (AHCPR), reported to the Board on the mission and plans for the agency. Over the past year there has been much discussion on the concept of "medical outcomes research"--that is, to change the focus in measuring health care from looking at processes (number of admissions, procedures, etc.) to looking at outcomes (what actually happened as a result of the process or treatment). The National Center for Health Services Research, the new agency's immediate predecessor, was becoming engaged in such patient-oriented health outcomes research. Dr. Clinton briefly described the Act that, in essence, disestablished the National Center for Health Care Research, and established the AHCPR within the Public Health Service. A national advisory council is being established for the AHCPR.

The purpose of the AHCPR is to enhance quality, appropriateness, and effectiveness of health-care services and to enhance access to such services through the establishment of a broad base of research and the promotion of improvements in clinical practice, as well as the system of health care--organization, financing, etc. The agency is authorized to do research (intramural and extramural), demonstration projects, evaluation projects, training, guideline development, dissemination of information, and medical data development. The Act has special provisions for health-care services in rural areas and the health of low-income groups. Priorities for outcomes research are: (1) Those things in which there is a significant benefit by having a proved "best method" for treatment; (2) where significant variations exist in clinical practice; (3) where current procedures are costly (e.g., cataract operations); and (4) research where evaluation data are already available. The agency will also begin looking at the uniformity, quality, and reporting formats of medical data in general. The agency has a clear mandate to publish and disseminate widely its findings and guidelines; also to provide indexing, abstracting, translating, and publishing. The law directs the administrator of the agency and the NLM director to enter into an agreement to do the latter functions. It also calls for the establishment of a Health Care Technology Information Center at the NLM. The most controversial part of the outcomes research is the mandated "Forum for Quality and Effectiveness in Health Care." The Forum would develop guidelines for clinical management of diseases. The Agency, which must prepare three guidelines by January 1, 1991, is working with specialty societies and the Institute of Medicine to do this. A number of excellent prototype guidelines already exist, he said. The AHCPR will have funding from various sources totaling about \$100 million in FY 1990, Dr. Clinton said.

C. Dr. Daniel Masys reported on a 1987 study by the Institute of Medicine that examined "The Role of the Primary Care Physician in Occupational and Environmental Health." The study was supported by the Agency for Toxic Substances and Disease Registry, the National Institute of Occupational Safety and Health, and the Environmental Protection Agency. Occupational illnesses and injuries are quite common. Environmental exposure potentially affects large numbers of people in their homes and workplaces. Yet few physicians have been trained in the recognition and management

of such problems. The study made two major recommendations: (1) to increase the number of faculty and teaching programs in occupational and environmental health and (2) to improve information services related to injuries and toxic exposures in the workplace and in the environment. Dr. Masys attended meetings of the original study group on behalf of NLM, and he prepared an "NLM White Paper" on the various information technologies applicable to the problem of toxic exposure. In an unusual move, the IOM charged itself with promoting the implementation of these two recommendations. A new IOM subcommittee was convened to plan the recommended information system. As a result of its work, requirements were set forth, a preliminary system designed, and some suggestions for sources of funding put forth. A database (or series of databases) was originally envisioned, but the information needs vary widely that this could not be a complete solution. It was also clear that the information in such a system would have to be available not only to professionals but to the general public. The subcommittee focused on two existing models: The existing network of Poison Control Centers (130 nationwide) and the National Cancer Institute's Cancer Information Service (accessible via the widely publicized 1-800-4CANCER). The subcommittee's recommendations, just formalized in a report, call for the creation of a network of regional multidisciplinary centers for occupational/environmental health information. The centers would provide information in response to toll-free telephone inquiries and serve as a surveillance network that would compile incidence and prevalence data. The program would be administered by a national center in an existing agency, such as the Agency for Toxic Substances and Disease Registry. Existing regional Poison Control Centers might well be members of the network. NLM's role in the proposed system would be to make available its current suite of toxicology information products and perhaps create needed new ones. The subcommittee's report is now being reviewed by IOM and will be released this spring, Dr. Masys said.

Following Dr. Masys's presentation, Dr. Kathleen McCormick commented that the recommendations of the report are consonant with what NLM is now doing--TOXNET/TOXLINE, for example, are valuable resources to such an undertaking and would be essential to the network of centers proposed. NLM could be proactive in refining its current offerings in line with the recommendations. Also, NLM's present outreach commitment fits in quite well with the proposals. Dr. Kassirer agreed that many physicians have little understanding of occupational and environmental issues. It should not be too difficult to have such issues put on the annual program of professional organizations such as the American College of Physicians; the American Board of Internal Medicine, on the other hand, already has a great interest in getting its diplomates to recognize occupational and environmental issues.

D. Dr. Detmer reported on the IOM Council on Health Care Technology's 18-month project to look at patient records. The study began last August. Three subcommittees have been formed to look at different aspects of the subject. What is emerging from their discussions so far is the idea that a restructured, digitized patient record would lead to a more scientific practice of clinical medicine. There are suggestions of half a dozen state demonstration projects that would link all of the providers (and also medical libraries). Another approach is to see that such data become linked to the health

"supercomputer highway." There are plans to see if a national journal would be interested in publishing in depth the major recommendations of the study when it is completed. Following Dr. Detmer's brief report, Dr. Clifford Goodman, Staff Director of the Council on Health Care Technology, commented that the IOM has received a number of complaints about health professionals not being able to locate patient records quickly enough. This study is looking into the possibility of the patient record being enhanced to serving a broader range of needs than it does at present: Clinical care, quality assurance, technology assessment, outcomes research, epidemiology, payment, and utilization review. There are several clear connections with the National Library of Medicine, Dr. Goodman said, including the Unified Medical Language System. Dr. Lindberg commented that although the idea of a computerized medical record certainly is not new, the current effort is very promising. He echoed the idea that the Unified Medical Language System could play an important linking role between patient records and the rest of the world of medical knowledge.

#### **XIV. REPORT ON THE BOARD OF SCIENTIFIC COUNSELORS**

Dr. Jerome P. Kassirer, Chairman of the Lister Hill Center's advisory body, the Board of Scientific Counselors (BoSC), reported about the October 1989 BoSC meeting. The Counselors reviewed two Lister Hill Center intramural research projects: the Dermatology Visual Database and the Machine Learning Project. The dermatology project, begun in 1983, seeks to determine the image-quality requirements for skin lesion recognition, to investigate archiving techniques for such images, and to investigate how new technologies can be applied to dermatology education. The project is based on a collection of 35mm color slides which have been digitized. The quality of the digitized images, Dr. Kassirer said, is impressive, but they cannot surpass the original slides in resolution. The BoSC felt that perhaps other techniques for capturing the lesions would result in an improved image. The Counselors felt that the teaching goal of the project was fairly narrow and that it might be expanded to include the development of images for the diagnosis of lesions, perhaps enriching the images with motion video to give them a somewhat 3-dimensional aspect. The Board also recommended that the Lister Hill Center work closely with the external medical community to assess the value of the images. The BoSC acknowledged that it does not really have the requisite expertise in this area and recommended that the Lister Hill Center director appoint an ad hoc advisory panel of experts.

The second project reviewed, the Machine Learning Project, is a new effort to expert systems to help scientists retrieve, analyze, and make inferences from diverse bodies of evolving data. Specifically, the project applies the artificial intelligence method known as "knowledge acquisition planning." The project is motivated by the idea that computer programs might be developed that would be guided by a user's search or planning strategy to work along with the researcher to identify, analyze, and make inferences about new information so it can be incorporated into the researcher's work. A prototype Knowledge Acquisition Planner (known as "Investigator") in the area of molecular biology has been developed by the project's principal investigator. The investigator has also developed a computer-based "Audio Knowledge Acquisition Tool" to rapidly debrief

scientists of their planning strategies without having to transcribe an entire recording session. The BoSC was impressed with the project and its potential. The Counselors suggested that the initial prototype of the "Investigator" might be defined more precisely and that the investigator consider applying the prototype to a knowledge base in which nature, not an investigator, provides the evidence (DNA database, for example). The idea would be to see if the approach could rediscover observations already made. The Board encouraged continued collaboration with scientists both within and outside NIH.

## **XV. REPORT ON DUKE IAIMS SYMPOSIUM**

Dr. William W. Stead, an IAIMS investigator at Duke University who is on the IOM technology subcommittee referred to earlier, reported to the Board about an IAIMS workshop held at Duke University in September 1989. Representatives of six of the seven IAIMS grantee institutions attended the workshop in an effort to improve communication among IAIMS investigators. Each site was limited to a maximum of four participants. Using slides, Dr. Stead described how the workshop was organized and conducted. There was a felt need to communicate practical, operational details, ranging from the organizational to the technical. One of the principal goals was to get the coinvestigators--those below the level of principal investigator--talking to each other. As a more formal goal, it was hoped that opportunities would be identified for direct collaboration between the sites. The idea of the workshop was to make the value of the collective IAIMS efforts greater than the sum of their individual efforts. Three focus topics were agreed on: the transfer of methodology, the architectural definition of a workstation, and the means of providing intelligent guidance to end-user queries. Dr. Stead briefly described the discussions in each of the three working subgroups that were formed to discuss these topics. To ensure continuing communication, an IAIMS consortium was proposed. Six task forces were formed: (1) to formalize the consortium and decide who should be in it, (2) to sponsor additional workshops, (3) to establish an electronic mail and conferencing facility between the sites (done), (4) to decide how to disseminate the IAIMS concepts and accomplishments, (5) to train staff and exchange personnel, and (6) to evaluate various IAIMS accomplishments. One conclusion so far is that the IAIMS models being developed are institution-specific; a broad range of successful IAIMS elements and solutions has to be identified, if we are to be able to implement the concept broadly. The need for IAIMS is now critical. The benefits of getting systems up and running quickly outweigh considerations of competition, Dr. Stead said.

Commenting on Dr. Stead's presentation, Dr. Beering said that IAIMS holds exciting promise for medicine. UMLS and the Metathesaurus will have a particularly important bearing on IAIMS as it develops. He has some concern about IAIMS models being too site-specific; they must be exportable. Dr. Stead responded that the technology being used at the different sites is straightforward; how to adapt the technology to an institution's organization requires specification. Different types of institutions require different types of information infrastructure. A range of solutions has to be identified, each of which will consist of a set of components. Dr. Davis asked about the content of the IAIMS systems under development. Dr. Stead responded that IAIMS is a process and infrastructure designed to pull together the substantive content of existing systems.

No one is building new information sources, but trying to link library-style databases with institutional-style databases with individual databases. In response to another question, Dr. Stead said that one of the issues not addressed at the workshop was the very important question of access control and confidentiality. Such matters of policy are being developed at the individual IAIMS institutions and will be shared in the future.

**XVI. ADJOURNMENT**

The meeting was adjourned at 11:45 a.m. on Friday, January 19, 1990.

\* \* \* \* \*

(Extramural Programs Subcommittee under Attachment C)  
Wednesday, January 16, 1990, 2:10 - 3:10 p.m.  
(Research & Development & Planning Subcommittees under Attachment D)  
Wednesday, January 16, 1990, 3:30 - 4:30 p.m.

Thursday and Friday, January 18 and 19, 1990  
(Full Board of Regents)


\* \* \* \* \*

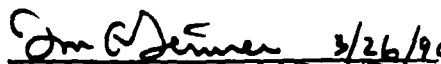
**ACTIONS TAKEN BY THE BOARD OF REGENTS**

1. The Board passed a resolution, asking the Secretary to protect the quality and integrity of the MEDLARS databases which may be compromised by the proposed reauthorization of the Paperwork Reduction Act (Attachment B).
2. The Board adopted the final report of the Planning Panel on Electronic Imaging on the Visible-Human Project.
3. Dr. Detmer appointed a nominating committee for the appointment of next year's chairman, consisting of Gen. Torma, Chair, Mr. Howard and Capt. McCormick.
4. The Board reaffirmed the Operating Procedures.
5. The Board concurred with the recommendations of the Extramural Programs Subcommittee. Grant applications for approval are listed in the summary actions (Attachment E).

\* \* \* \* \*

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

  
Don E. Detmer, M.D. (Date)  
Chairman

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**EXECUTIVE SECRETARY**

**LINDBERG, Donald A. B., M.D.**  
Director  
National Library of Medicine  
Bethesda, MD 20894 301-496-6221

January 19, 1990

TO: The Secretary  
Through: US \_\_\_\_\_  
COS \_\_\_\_\_  
ES \_\_\_\_\_  
ASH /s/ James O. Mason FEB 20 1990  
Acting Director, NIH /s/ William F. Raub, Ph.D. FEB 2 1990  
Director, NLM *[Signature]*

FROM: Chairman, Board of Regents  
The National Library of Medicine

SUBJECT: NLM Board of Regents Resolution - INFORMATION

I have the honor to convey to you, as Chairman, a resolution passed by the Board of Regents of the National Library of Medicine at our January 18-19, 1990 meeting. Pursuant to Public Law 84-941, the National Library of Medicine Act, the Board is charged with the duty of advising, consulting with, and making recommendations to you on important matters affecting the operations of the National Library of Medicine.

This resolution is asking you, as Secretary, to assist the biomedical community in assuring that the quality and integrity of NLM's MEDLARS databases be protected.

Currently, there are two bills before the Congress to reauthorize the Paperwork Reduction Act, namely H.R. 3695 and S. 1742. Both bills have provisions applying to the electronic collection and dissemination of information. Although both enunciate admirable, broad information principles, H.R. 3695 contains some very specific language that would seriously restrict the NLM's ability to assure the quality of its databases through its leasing arrangements.

In essence, the Board believes that section 44 USC 3504(h)(D) and (E) should be removed from the House bill, and ask that DHHS specifically oppose this portion of the bill. We ask that you consider this matter carefully in order to ensure that the quality, integrity, and reasonable fees associated with NLM's vitally important medical information services be sustained.

On behalf of the Board, I wish you continued success as Secretary of Health and Human Services. Please be assured that the Board stands ready to render any support it can in carrying forward the important progress of the Department.



Don E. Detmer, M.D.

Attachment

Prepared by: NIH:NLM/OD:SBurke:bl:1/19/90  
Official file located in NLM:OD



**RESOLUTION  
ADOPTED BY THE  
BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINE  
January 19, 1990**

**WHEREAS, the National Library of Medicine is noted world-wide for the quality and integrity of its MEDLARS databases, programs, and services; and**

**WHEREAS, the Board of Regents, Congress, the Office of Technology Assessment, the General Accounting Office, and other investigative bodies have reviewed and approved the National Library of Medicine's pricing approach and philosophy, and found it reasonable and fair to all as well as allowing full recovery of access costs; and**

**WHEREAS, the Board of Regents is convinced that the assurance of quality, integrity, and cost recovery through reasonable fees is essential to the Library's mission; and**

**WHEREAS, the Board of Regents on numerous occasions over the years has reviewed its dissemination policies and verified its pricing and licensing practices; and**

**WHEREAS, the bill, H.R. 3695, now pending in Congress contains provisions to amend 44 USC 3504(h)(D) and (E) that would restrict the National Library of Medicine's programmatic activities, in particular the MEDLARS leasing arrangements; and**

**WHEREAS, the Board of Regents believes these leasing arrangements are crucial to ensuring the quality, integrity, and cost recovery of access through reasonable fees associated with the MEDLARS databases; therefore,**

**BE IT RESOLVED that the Board of Regents, deeply concerned with the negative impact on the NLM mission that could result from provisions in H.R. 3695 at 44 USC 3504(h)(D) and (E), takes this means to express its strong opposition to the proposal, and requests that the Secretary, HHS state the Department's opposition to the provisions of the House bill as noted above.**

**FURTHER BE IT RESOLVED that if the dissemination language contained in H.R. 3695 is to be retained, then it is the view of the Board that an exclusion for the NLM's medical information dissemination activities be made. In the interest of public health, such information must not be compromised.**

**B O A R D O F R E G E N T S**

**EXTRAMURAL PROGRAMS SUBCOMMITTEE MEETING**

**January 17, 1990**

**2:10 to 3:10 p.m.**

**A T T E N D E E S**

**Subcommittee Members Present:**

Ms. Nina W. Matheson, Chair  
Dr. Steven C. Beering  
Dr. Jay P. Sanford  
General Michael J. Torma

**NLM Staff Present:**

Mrs. Ruth E. Bortz, Grants Management Specialist, EP  
Dr. Jeanne Brand, Chief, International Programs Branch, EP  
Mr. Peter A. Clepper, Program Officer, EP  
Mrs. Karin K. Colton, Committee Management Assistant, EP  
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP  
Ms. Andrea Epstein, Grants Assistant, EP  
Mrs. Rose Marie Holston, Program Analyst, EP  
Mrs. Frances E. Johnson, Program Officer, EP  
Dr. M. Kathleen Nichols, Grants Management Specialist, EP

**B O A R D O F R E G E N T S**

**RESEARCH AND DEVELOPMENT AND PLANNING SUBCOMMITTEE MEETING**

**January 17, 1990**

**3:30 to 4:30 p.m.**

**A T T E N D E E S**

**Research and Development Subcommittee Members Present:**

Dr. Ronald E. Cape  
Dr. Ruth M. Davis  
Dr. Alvy Ray Smith

**Unable to attend:**

Dr. Edward A. Feigenbaum

**Planning Subcommittee Members Present:**

Dr. Don E. Detmer, Chair  
Ms. Karen Renninger  
Ms. Nina W. Matheson  
Dr. Lois E. DeBakey (Consultant)

**NLM Staff Present:**

Dr. Donald A. B. Lindberg, Director  
Dr. Daniel R. Masys, Director, Lister Hill National Center for  
Biomedical Communications  
Mr. Earl Henderson, Deputy Director, Lister Hill National Center for  
Biomedical Communications

The Research and Development Subcommittee met concurrently with the Planning Subcommittee at 3:30 p.m. on Wednesday, January 17, 1990. Dr. Masys presented the findings and recommendations of the planning panel on Electronic Imaging. The Panel endorsed NLM's involvement in the creation and distribution of digital image collections as an extension of its traditional mandate to collect, preserve, and disseminate the knowledge of biology and medicine. The panel recommended that NLM proceed with a first project to build a collection of images representing the xyz numerical coordinates of a complete male and female human, at millimeter level resolution. This "Visible Human Project" would include images derived from

computed tomography, magnetic resonance imaging, and digitized photographic data from anatomic cryosections. The project would serve to develop techniques and standards for such image collections and would serve as a cornerstone for linking future image collections of normal and abnormal anatomy.

After discussion by Board members, clarifying the scope of the recommendations made by the planning panel, the subcommittee voted unanimously to recommend to the entire Board that the electronic imaging recommendations be incorporated into NLM's Long-Range Plan.

The meeting adjourned at 4:30 p.m.

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 LMD5144-01	MEDIAVAL ENGLISH MEDICINE CR 800-1450	01 \$23,000
1 R01 LMD5150-01	A SOCIAL HISTORY OF NUT NURSING IN THE NORTHERN UNITED STATES	01 \$25,000
1 R01 LMD5152-01	SIMULATION TOOL KIT FOR INSTRUCTION IN PHYSIOLOGY	01 \$133,849 02 \$146,095 03 \$138,481
1 R01 LMD5154-01	ATLAS OF PROTEIN SEQUENCE AND STRUCTURE CURRENT REPORTS	01 \$183,920 02 \$193,116 03 \$202,772
1 R01 LMD5159-01	OPTIMIZING THE USE OF COMPLEX CARBOHYDRATE RESEARCH DATA	01 \$134,772 02 \$148,031 03 \$154,301
1 R15 LMD5156-01	COMPUTER SUPPORT FOR PATIENT CARE COORDINATION	01 \$34,703 02 \$34,798
1 R29 LMD4986-01A1	AN INTELLIGENT DESIGN SYSTEM FOR LUNG DISEASE IN AIDS	01 \$78,973 02 \$63,754 03 \$66,305 04 \$68,957 05 \$71,716
1 R29 LMD5074-01A1	ADVANCING MEDICAL EXPLANATORY SYSTEMS	01A1 \$70,344 02 \$62,711 03 \$65,721 04 \$68,882 05 \$72,701
1 R29 LMD5157-01	CUSTOM-TAILORED TOOLS FOR PROTOCOL-KNOWLEDGE MANAGEMENT	01 \$62,239 02 \$66,270 03 \$69,869 04 \$73,787 05 \$77,318

APPLICATIONS APPROVED BY COUNCIL - DUAL ASSIGNMENTS  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 PROG. CLASS: COUNCIL DATE: JANUARY 1990  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 HS06368-01	EFFECTIVENESS OF QMR IN MEDICAL DECISION SUPPORT	01 \$121,124 02 \$139,335 03 \$152,480
1 R01 CR51729-01	CLINICAL TRIALS OF EXPERT SYSTEM ON LYMPH NODE PATHOLOGY	01 \$213,096 02 \$192,940 03 \$200,057
1 R01 CR52013-01	DIAGNOSTIC DECISION MAKING USING 2D AND 3D IMAGES	01 \$218,094 02 \$220,909 03 \$218,556

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 607 LM05142-01 MEDICAL LIBRARY RESOURCE IMPROVEMENT		01 \$11,400
1 607 LM05145-01 MEDICAL LIBRARY RESOURCE IMPROVEMENT		01 \$11,740
1 607 LM05146-01 MEDICAL LIBRARY RESOURCE IMPROVEMENT		01 \$41,450
1 607 LM05149-01 MEDICAL LIBRARY RESOURCE IMPROVEMENT		01 \$12,000
1 607 LM05151-01 MEDICAL LIBRARY RESOURCE IMPROVEMENT		01 \$12,000 02 \$156,000
1 607 LM05155-01 MEDICAL LIBRARY RESOURCE IMPROVEMENT		01 \$11,477
1 607 LM05158 MEDICAL LIBRARY RESOURCE IMPROVEMENT		01 \$10,500

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
2 R01 LM04572-04	INVESTIGATIONS IN KNOWLEDGE MANAGEMENT	04 \$253,098 05 \$273,346 06 \$295,217
1 R01 LM04685-01A1	SCIENTIFIC AND SOCIAL ORIGINS OF ANESTHESIA BEFORE 1846	01 \$9,050 02 \$3,200
2 R01 LM04843-03	INFORMATION AND COGNITION IN MEDICAL EDUCATION	03 \$119,872 04 \$130,357 05 \$116,650 06 \$34,306
1 R01 LM05023-01A1	A COMPUTER INSTRUCTION AND TESTING OF A COGNITIVE SKILL	01 \$100,748 02 \$95,390 03 \$100,983
1 R01 LM05058-01A1	TECHNOLOGY USE IN ENGLISH AND U.S. HOSPITALS: 1900-1925	01A1 \$25,000 02 \$23,240 03 \$24,933
1 R01 LM05130-01	ADVANCED COMPUTER METHODS FOR ICU TREATMENT PLANNING	01 \$165,445 02 \$196,894 03 \$251,928 04 \$279,524 05 \$301,101
1 R01 LM05139-01	TORTI AND FRASSONI: MANUSCRIPT CONSULTATIONS ON FEVER	01 \$20,956 02 \$21,731 03 \$21,203
1 R01 LM05140-01	ENFORCING THE 1906 FOOD AND DRUG ACT, 1907-1940	01 \$5,580 02 \$6,270
1 R01 LM05141-01	INNER HYGIENE IN MODERN HEALTH CULTURE	01 \$24,982



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

A G E N D A

94th Meeting of the

BOARD OF REGENTS

9:00 a.m., June 7-8, 1990

Board Room  
Mezzanine of  
National Library of Medicine

MEETING OPEN: From 9:00 a.m. to 1:55 p.m. and from 2:35 to approx.  
4:30 p.m. on June 7 and from 9:00 a.m. to adjournment  
on June 8.

MEETING CLOSED: From 1:55 to 2:35 p.m. on June 7 for the review of grant  
applications.

1. CALL TO ORDER AND INTRODUCTORY REMARKS Dr. Don E. Detmer
2. REMARKS BY THE ASSISTANT SECRETARY FOR HEALTH Dr. James O. Mason
3. REMARKS FROM THE SURGEON GENERAL'S OFFICE Dr. Rice C. Leach
4. CONSIDERATION OF JANUARY MINUTES TAB I Dr. Don E. Detmer  
(Agenda Book)
5. FUTURE MEETING DATES:

Fall Meeting: Sept. 27-28, 1990 (Th-F)--CONFIRMED  
Winter Meeting: Jan. 31-Feb. 1, 1991 (Th-F)--CONFIRMED  
Spring Meeting: June 20-21, 1991 (Th-F)--PROPOSED

(Subcommittees, when necessary, meet the day before the regular Board.)

PLEASE NOTE potential Medical Library Association Annual  
conflicts with Meeting, May 31-June 6, 1991, San Francisco  
June 1991 dates: AMIA Annual Meeting, June 6-8, 1991,  
San Francisco  
HeSCA Annual Meeting, June 14-19, 1991,  
Rancho Mirage, Ca.

- |     |  |                |  |
|-----|--|----------------|--|
| 6.  | REMARKS BY THE DIRECTOR, NLM<br>Discussion<br>COFFEE BREAK   | <u>TAB II</u>  | Dr. Donald A. B. Lindberg<br>Board Members                                   |
| 7.  | REMARKS BY THE ACTING DIRECTOR, NIH  |                | Dr. William F. Raub  |
| 8.  | BIENNIAL REPORT OF THE BOARD OF REGENTS<br>Discussion  | <u>TAB III</u> | Dr. Elliot R. Siegel<br>Ms. Nina W. Matheson,<br>Discussant<br>Board Members |
| 9.  | BIOTECHNOLOGY--BACKBONE PROGRESS<br>Discussion   | <u>TAB IV</u>  | Dr. David J. Lipman<br>Dr. Ronald E. Cape,<br>Discussant<br>Board Members    |
| 10. | REGENTS' AWARD FOR SCHOLARSHIP<br>OR TECHNICAL ACHIEVEMENT   |                | Dr. Don E. Detmer  |
| 11. | DIRECTOR'S AWARD   |                | Dr. Donald A. B. Lindberg  |
| 12. | THE FRANK B. ROGERS' AWARD   |                | Dr. Donald A. B. Lindberg  |
|     | LUNCHEON CATERED IN CONFERENCE ROOM "B"<br>(Before lunch, photograph of Board members<br>will be taken on front steps of Library.) | 11:50-12:50    |  |
| 13. | ROLE OF TECHNOLOGY IN EDUCATION<br>Discussion  | <u>TAB V</u>   | Dr. Michael Ackerman<br>Board Members  |

- 14. REPORT FROM EXTRAMURAL PROGRAMS TAB VI Dr. Milton Corn  
Extramural Programs Sub-  
committee, Discussants
- A. Budget
- B. Other Items
- Discussion Board Members

**MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS - 1:55 TO 2:35 P.M.-- JUNE 7**

- 15. REVIEW OF GRANT APPLICATIONS (Application Book) Dr. Roger W. Dahlen
- 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
- NATIONAL REFERENCE CENTER FOR BIOETHICS TAB III
- SPECIAL SCIENTIFIC PROJECT TAB IV
- PUBLICATION TAB V
- SMALL BUSINESS INITIATIVE RESEARCH TAB VI
- SUMMARY LIST OF DISAPPROVED APPLICATIONS TAB VII
- INTERIM ACTIONS TAB VIII
- IAIMS (Separate Book)

**MEETING OPEN TO THE PUBLIC 2:35 P.M. TO ADJOURNMENT**

COFFEE BREAK

- 16. DEMONSTRATION OF EDUCATIONAL PROGRAMS IN LEARNING CENTER OF LISTER HILL CENTER BG. Dr. Michael Weisberg  
and Staff
  - 17. JOINT NLM FRIENDS PROGRAM OF "The Proper Role of the Public and Private Sector in Biotechnology Research and Development" Hon. Paul Rogers  
Dr. James O. Mason  
Ms. Barbara Culliton  
Mr. Irwin Lerner
- (Lister Hill Center Auditorium)

R E C E S S \* \* \* \* \*

FRIENDS' RECEPTION IN THE LOBBY OF THE LISTER HILL CENTER 5:30 to 7:00 P.M.

DINNER. . . . . 7:30 p.m. BETHESDA OFFICERS' CLUB  
BRIDGE ROOM

SPEAKER: Patricia K. Woolf, Ph.D.

TITLE: "Accountability and Responsibility in Biomedical Publications."

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R E C O N V E N E: FRIDAY, June 8, 9:00 a.m., Board Room

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18. NETWORK EXPERIMENTS

TAB VII

A. MEDLINE NIH

Mr. John Anderson  
Mr. Alan S. Graeff

B. Biotechnology Databases and Services

Dr. David J. Lipman  
Dr. Alvy Ray Smith,  
Discussant

Discussion

Board Members

COFFEE BREAK

19. REPORT FROM THE CONGRESSIONAL RESEARCH  
SERVICE DIVISION OF THE LIBRARY OF CONGRESS

TAB VIII

Dr. Richard E. Rowberg

Discussion

Board Members

20. COLLECTION ASSESSMENT

TAB IX

Mrs. Lois Ann Colaianni  
Mr. Daniel Richards  
Mr. Joseph H. Howard,  
Discussant

Discussion

Board Members

21. AUTOMATED DOCUMENT DELIVERY--PILOT PROJECT

TAB X

Dr. Daniel R. Masys  
Ms. Eve-Marie Lacroix  
Ms. Nina W. Matheson,  
Discussant

Discussion

Board Members

22. REPORT OF THE NOMINATING COMMITTEE

Mr. Joseph H. Howard

23. ADJOURNMENT

Dr. Don E. Demter

**DEPARTMENT OF HEALTH AND HUMAN SERVICES**

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

**BOARD OF REGENTS  
MINUTES OF THE 94TH MEETING  
JUNE 7-8, 1990**

**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/  
June 7-8, 1990**

The Board of Regents of the National Library of Medicine was convened for its ninety-fourth meeting at 9:00 a.m. on Thursday, June 7, 1990, in the Board Room of the National Library of Medicine, Bethesda, Maryland. Dr. Don E. Detmer of the University of Virginia chaired the meeting. In accordance with P.L. 92-463 and the Determination of the Director, NIH, as announced in the Federal Register on May 7, 1990, the meeting was open to the public from 9:00 a.m. to 1:40 p.m. and from 2:15 to 4:00 p.m. on June 7 and from 9:00 a.m. to 12:15 p.m. on June 8. The meeting was closed from 1:40 to 2:15 p.m. on June 7 for the review, discussion, and evaluation of grant applications. A Board roster is enclosed under Attachment A.

**Board members present were:**

Dr. Don E. Detmer, Chair	Dr. Edward A. Feigenbaum
Dr. Steven C. Beering (6/7)	Ms. Nina W. Matheson
Dr. Ronald E. Cape (6/7)	Dr. Alvy Ray Smith
Dr. Mary E. Clutter (6/7)	Dr. Jeanne Spurlock
Dr. Lawrence H. Cohn (6/7)	

**Alternates to ex officio members present were:**

Col. Howard E. Fauver, representing Lt. Gen. Frank F. Ledford, Jr.  
Col. Charles K. Maffet, representing Lt. Gen. Monte B. Miller.  
Capt. Kathleen A. McCormick, representing Dr. Antonia C. Novello.  
Ms. Karen Renninger, representing Dr. John Gronvall.  
Dr. Richard E. Rowberg, representing Dr. James H. Billington.  
Mr. Duane Straub, representing Vice Admiral James A. Zimble.

**Unable to attend:**

Mr. H. Robert Cathcart  
Dr. Ruth M. Davis  
Mr. Joseph H. Howard

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. Only when an application is under individual discussion will the Board member absent himself. This procedure does not apply 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 for Research and Education  
Dr. Michael Ackerman, Chief, Educational Technology Branch, LHCNCBC  
Mr. John Anderson, Director, Information Systems, OD  
Mr. Kenneth Carney, Executive Officer, OD  
Ms. Lois Ann Colaianni, Associate Director for Library Operations  
Dr. Milton Corn, Acting Associate Director, EP  
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP  
Mr. Earl Henderson, Deputy Director, LHCNCBC  
Dr. Richard Hsieh, Director for International Programs, OD  
Ms. Betsy Humphreys, Deputy Associate Director, LO  
Mr. Charles R. Kalina, Special Projects Officer, OD  
Dr. Lawrence C. Kingsland III, Chief, Computer Science Branch, LHCNCBC  
Dr. Henry M. Kissman, Associate Director, SIS  
Mr. Sheldon Kotzin, Chief, Bibliographic Services Division, LO  
Ms. Eve-Marie Lacroix, Chief, Public Services Division, LO  
Dr. David J. 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, Assistant Director for Planning and Evaluation, OD  
Ms. Susan Buyer Slater, Deputy Assistant Director for Planning and Evaluation, OD  
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

**Others present included:**

Dr. James O. Mason, Assistant Secretary for Health  
Dr. William F. Raub, Acting Director, NIH  
Dr. Rice C. Leach, Chief of Staff to the Surgeon General, PHS  
Dr. Lindsey Desrochers, Fellow, American Council of Education, University of Virginia, Charlottesville  
Mr. Alan S. Graeff, Chief, Technology Systems Section, NLAID, NIH  
Mr. Douglas Hussey, Deputy Director, Division of Legislative Analysis, NIH  
Ms. Kris Kiser, Program Analyst, Division of Legislative Analysis, NIH

## **I. OPENING REMARKS**

Dr. Don E. Detmer, Chairman, welcomed the Regents to the ninety-fourth meeting of the Board of Regents of the National Library of Medicine. He introduced alternates Col. Charles K. Maffet, Mr. Duane Straub, and Dr. Rice C. Leach, and Mr. Douglas Hussey and Ms. Kris Kiser of the NIH Legislative Office.

## **II. REMARKS OF THE ASSISTANT SECRETARY FOR HEALTH**

Dr. James O. Mason began his remarks by saying that the challenge to biomedical research posed by the animal rights movement is extremely serious and should not be underestimated. The research community should take the offensive in alerting the general public to what is at stake in the issue. He next described recent work on developing "Year 2000" objectives for the nation. Over the past three years hundreds of groups around the nation have been meeting and public hearings have been held. The results, national health objectives in 21 high-priority areas, will be publicly launched at a ceremony on September 6, 1990. There is much concern within the Department about the problems of minority health. There are some 60,000 "excess deaths" each year in minority populations in the United States. To narrow the gap, the Department will concentrate on the primary areas of concern: cancer, cardiovascular disease, diabetes, injuries, infant mortality, AIDS, and drug abuse. "As one dimension of solving the problem, we as a Nation need to devise a system whereby quality health-care services are accessible and affordable," Dr. Mason said.

Dr. Mason thanked the Regents for the resolution passed at the last Board meeting on the subject of how the House renewal bill (HR 3695) for the Paperwork Reduction Act posed a threat to the NLM. The resolution and its recommendations were helpful to the Secretary in preparing the Department's response to the OMB on the subject. The Secretary's Office agreed with the Board that the House and Senate bills as drafted would pose a threat to the NLM in its attempt to maintain high quality database services. The serious impact of HR 3695 on the National Library of Medicine was detailed in Secretary Sullivan's letter to Mr. Darman. Both the House and the Senate bills are stalled for the present. Dr. Mason noted that a draft bill, being prepared by Senator Kennedy that would reauthorize certain activities at the NIH, contained language that would supersede any language in either Paperwork Reduction Act bill. This bill would allow the Library to enter into database licensing arrangements with the private sector (thus permitting NLM to ensure quality control of the information products that would result), and it also explicitly states that the Library may charge for database services at a rate that recovers full access costs. "This would be the preferred way to protect the National Library of Medicine and its licensing agreements; it would also put into law the concept that NLM may recover full access costs," Dr. Mason said. "This is a good sign that people are aware of our concerns." He concluded his remarks by mentioning briefly several items: the demonstration at NIH last month by ACT-UP, activists who were protesting the pace of AIDS drug development; the recommendations of an NIH advisory committee concerning the powers of and delegations of authorities to the NIH director; the deliberations of the search committee and the recommendation of three to five individuals to the Secretary, any one of whom would be eminently qualified to serve as director of the NIH.



### **III. REMARKS FROM THE SURGEON GENERAL'S OFFICE**

Dr. Rice C. Leach, representing the Surgeon General, said that Dr. Novello was in Alaska at the annual scientific meeting of the Public Health Service. Dr. Leach commented that setting priorities for today's medical challenges requires information that is conveniently available, understandable, accurate, and affordable. Good decisions will be made only if good information is available from a source of integrity. In medical science, the National Library of Medicine is the institution that ensures the integrity, accessibility, and affordability of the information needed to make these decisions. NLM is "one of the fixed points on the map as we collectively chart our course for the future." Dr. Leach, whose career included extensive experience at Indian Health Service facilities in the west, concluded by saying that "those of us in the trenches" are proud to be associated with this organization; the Board of Regents and staff of the NLM should be congratulated for their accomplishments.

### **IV. CONSIDERATION OF MINUTES OF PREVIOUS MEETING**

The Regents approved the minutes of the January 18-19, 1990, meeting, correcting the reference on page 9 from "Lonely Doc" to "Loansome Doc."

### **V. DATES OF FUTURE MEETINGS**

The Board will meet next on September 27-28, 1990. The winter meeting on January 31 - February 1, 1991, was confirmed. The meeting for next spring was set for June 20-21, 1991.

### **VI. REPORT OF THE NLM DIRECTOR**

Dr. Donald A. B. Lindberg briefly discussed the state of the NLM budget. Using charts, he demonstrated that there were substantial increases from 1989 to 1990 and that the Library has been fairly dealt with in the President's budget for 1991. Dr. Lindberg said he was especially encouraged that the budget for Library Operations was, for the first time in many years, adequate to the demands made on that component. He also described how money was being allocated on biotechnology information activities, both within the NCBI and the Extramural Programs. NLM's Outreach Program does not show up as such on budget tables, but funds for outreach are included in the Extramural Programs and Regional Medical Library Program, for example. The sum earmarked for outreach in this fiscal year is \$3.8 million. Dr. Lindberg said that at a future Board meeting, the Regents will get a look at the total outreach picture as it can be assembled from the various ongoing activities. The staff is now taking an integrated look at all NLM outreach activities; there is much more going on in this area than one might first suspect. In the area of personnel, Dr. Lindberg said that NLM was operating with a 548 staff--a good figure. He introduced several new employees: Mr. David Nash (EEO Officer), Dr. Aaron Navarro (Deputy Director of the Office of Computer and Communications Systems), and Ms. Sally Burke (Deputy Executive Officer). Dr. David Lipman, Director of NLM's National Center for Biotechnology Information, introduced two new visiting scientists at the Center: Dr. John Wootton (from the University of Leeds) and Dr. Carolyn Tolstoshev (Pasteur

Institute). Dr. Lindberg also noted that Dr. Milton Corn, former Dean at the Georgetown University Medical School, who had been spending a sabbatical at the NLM, has decided to resign from the school to become a permanent staff member of the NLM as a Special Expert.

On the subject of the Paperwork Reduction Act, Dr. Lindberg said he was delighted with Dr. Mason's support of NLM's position earlier in the meeting. Reviewing the issue, the NLM Director said that it is the stated position of the Board of Regents that the Library should use appropriated funds to create databases, and that the NLM should collect fees to cover the incremental costs of giving access to the databases. The Congress has endorsed that view. Dr. Lindberg said it is entirely possible that, for reasons that have nothing to do with NLM, neither the House nor Senate bills to reauthorize the Paperwork Reduction Act would pass. A more permanent solution to the problem would be for the Library to have its own authorizing legislation that would explicitly provide for entering into licensing arrangements and for recovering access costs. In this connection, Dr. Beering suggested that the Board should support legislative language, such as used by Senator Kennedy's committee, in order to protect the Library's licensing arrangement and that such communication should be directed to the Secretary of the Department. (See Attachment D for letter sent to the HHS Secretary by Dr. Detmer on behalf of the Board.) Dr. Lindberg reported that the NLM and the Agency for Health Care Policy and Research have reached a formal agreement on the certain information aspects of the new agency's responsibilities. (The Board heard at its last meeting about the establishment and mission of the agency.) Under the signed agreement, there will be an interagency transfer of \$1 million a year to the NLM. This is a temporary arrangement; after two years, the NLM should have funds in its appropriation to carry out its responsibilities in this area.

Dr. Lindberg reported briefly on progress of the Unified Medical Language System. The NLM is reaching a planned milestone, that is, the distribution (at no cost, under a licensing agreement) of the Metathesaurus (Meta-1) as the first real product of the effort. An early version of the Metathesaurus was demonstrated at the last meeting of the Board. It will be distributed later this summer in three CD-ROM forms--as an ASCII flat file, in a form suitable for a relational database, and an Apple HyperCard stack. NLM hopes to modify and improve the Meta-1 as a result of the comments of users. Two other UMLS-related items will be distributed at a later date--the Semantic Network and the Information Sources Map.

As his last item, Dr. Lindberg reported on his recent trip to Egypt. He had been asked by Secretary Sullivan to visit that country to report on the status of medical libraries and information systems there and to see whether it would be feasible to establish an Egyptian National Medical Library. The Director said he would send to the Regents a copy of his report when it was finished. Although he began his trip dubious about the prospect of a national library, he ended up supporting the notion. The health professionals in Egypt are very well trained; the best of their practices, in way above the capabilities of even their best libraries to support. As a rule, the collections of the medical libraries are very poor. The NLM, within its current resources and programs, could provide a limited amount of assistance, but this would be slow and the ultimate payoff modest. A more dramatic plan would be to mobilize the actual resources needed--roughly \$2 million a year for five to ten years. It is uncertain where such funds could come from--perhaps from the U.S. Agency for International Development.

## VII. BIENNIAL REPORT OF THE BOARD OF REGENTS

Dr. Elliot R. Siegel, NLM Assistant Director for Planning and Evaluation, at the last Board meeting presented a draft report from the NLM Board of Regents that would be incorporated into an overall NIH biennial report to the Congress. Based on the discussions and suggestions at the last meeting, the Board's draft report was revised. It showcases the Board's Long-Range Plan, emphasizing the recent outreach panel report and some of NLM's initiatives in this area. The Board's report also highlights the work of the electronic imaging panel, recently published. The report also underscores progress on developing the Unified Medical Language System and the establishment of the National Center for Biotechnology Information. Both of these subjects were addressed in the Long-Range Plan. Dr. Siegel noted that the present report has been edited by former Regent, Dr. Lois DeBakey. Following Dr. Siegel's presentation, the Report was endorsed by Ms. Nina Matheson and Dr. Detmer. A motion was made and the Board voted unanimously to approve the Regents' Report and forward it for incorporation into the overall NIH report.

## VIII. BIOTECHNOLOGY--BACKBONE PROGRESS

Dr. David J. Lipman, Director of the National Center for Biotechnology Information (NCBI), reported that there is now an NCBI Board of Scientific Counselors. He listed the advisors and gave the background of each. Using slides, Dr. Lipman described the GenInfo backbone database and how three NLM indexers, using Sun workstations and specially designed entry screens enter critical data elements; the sequences themselves are entered into the database by contract keyboarders. He showed a "dump" of a computer-readable database record. By standardizing how the information is processed and entered, and by making sure that information tools are compatible with this, the user can do a database search, get MEDLINE information, do analyses on the results, and have a figure made--all seamlessly. Dr. Lipman showed extrapolations on the growth of GenInfo as compared with two other databases--GenBank and Protein Identification Resource (PIR). In the last four-five months, since the system became operational, NLM indexers have found articles with sequences in 440 different journals. This compares with 239 journals for GenBank and PIR. When considering sequences with more than 50 bases (the cutoff for GenBank), there are 25 percent more in GenInfo. Sequences of fewer than 50 bases, included in GenInfo, but not carried in GenBank, can be extremely important and are more than double the number of longer sequences. Dr. Lipman said that with the imminent hiring of more indexers by Library Operations, the system will be in full swing and the databases ready to distribute by this fall. He noted that relevant molecular sequence information from Patent Office records will also be entered into the system. In response to a question by Dr. Cohn, Dr. Lipman said that when the system is in full operation, the goal is to have 80-85 percent of the sequences input within one month of publication. Dr. Cape asked about marketing the database--how will NCBI make the potential user community aware of its existence? Dr. Lipman said that a meeting of developers--academic and commercial distributors of sequence information--will be held at NLM on July 16 to inform them of the Library's plans to structure and distribute the sequence data (including information from GenBank and PIR). This group of developers is in close contact with end-users.

## **IX. THE ROLE OF TECHNOLOGY IN EDUCATION**

Dr. Michael Ackerman, Chief of the Educational Technology Branch, Lister Hill Center, described the role of his Branch and, especially, its Learning Center for Interactive Technology (TLC). The TLC is an advocate for the use of interactive technology in health-care education. Later in the meeting, the Regents had a scheduled visit to the TLC where they were able to see demonstrated a number of the systems that Dr. Ackerman described in his presentation. There are some 20 computers in the TLC with a variety of more than 50 innovative applications, many of them with based-on videodiscs. Dr. Ackerman discussed with the Regents the capabilities of videodiscs, how they have various levels of interactivity, how they can be used in health-care education, and how the prices for machines to play videodiscs have dropped steadily in recent years. The TLC also offers information on educational "courseware" design and evaluation. TLC staff have published a series of monographs explaining the proper use of technology in health-science education. He described how simulations based on modern technology can be invaluable adjuncts to learning and he showed scenes from a half dozen interactive programs. Such methods can be useful at all levels--for medical and health-care education, post-graduate education, and recertification; it can also be used in patient education. Interactive technology has such positive benefits as consistency in quality and content, privacy and increased access for students, decreased costs and increased safety, that it allows mastery of a subject at the student's pace and, finally, that students enjoy such learning.

## **X. AWARDS**

A. Dr. Don E. Detmer presented the 1990 Regents' Award for Scholarship or Technical Achievement to Mr. David Kenton, Senior Analyst, Office of Information Systems. Mr. Kenton was cited in recognition of his work for more than a decade on NLM's retrieval program, ELHILL. ELHILL has grown to provide efficient and sophisticated access to more than 13 million online records for a network of more than 37,000 users.

B. Dr. Lindberg presented the 1990 NLM Director's Award to both Mr. Earl Henderson and Mr. Sheldon Kotzin. Mr. Henderson, Deputy Director of the Lister Hill Center, was honored for his scientific management skills and engineering expertise and for his leadership in establishing within the Center an undergraduate research study program for students from schools of engineering in historically black colleges. Mr. Kotzin, Chief, Bibliographic Services Division, LO, was cited for his efforts in increasing the number of users of NLM's online systems through programs to reach individual health professionals and for his efforts to bring the Grateful Med software to more users through exhibits and demonstrations at professional meetings.

C. Dr. Lindberg presented a new award, the Frank B. Rogers Award. Dr. Rogers was a former director of the NLM. The award was established in 1989 by an anonymous NLM employee to recognize an NLM staff member who has made a significant contribution to the Library's fundamental operational programs and services. Dr. Lindberg presented the first Rogers Award to Ms. Margaret Byrnes, Head of the Preservation Section, Public Services Division. Ms. Byrnes was cited for her role in developing the Library's internal preservation program and for writing and implementing of a national plan to preserve the biomedical literature.

## **XI. REMARKS BY THE ACTING DIRECTOR, NIH**

Dr. William F. Raub noted that earlier in the day he had attended a press conference dealing with the animal rights issue. It was organized on behalf of an organization known as "The Incurably Ill for Animal Research" and the Association of American Medical Colleges. Several high-level representatives of HHS attended to help respond to scientific questions that arose.

The Acting NIH Director next discussed in some detail the current controversy concerning NIH research project grants. The key number is the "award rate," that is, the percentage of the applications approved for funding that actually receive funding. In "good" years, the rate was 40 to 50 percent; it has dropped down to 24 percent for the current year. This has a number of consequences: excellent ideas going unfunded, young scientists are becoming discouraged, students are wondering whether to enter the field, peer reviewers question whether their hard work is to a large extent being wasted, and such large-ticket items as the human genome project are being attacked because it is perceived that they take funds away from individual investigator-initiated research projects. Whether the situation will be ameliorated in the 1991 budget is out of our hands; Congress, Dr. Raub said, is aware of the problem. When planning for FY 1992 began, Secretary Sullivan determined that strengthening biomedical research would be an explicit goal of the Department. Dr. Mason has called for bold and creative thinking to double the number of grants by 1996. Dr. Raub said that since there is increased emphasis on improving the project grant system, the NLM must articulate itself so that it is seen as complementary and essential to the NIH and to the biomedical research enterprise.

## **XII. EXTRAMURAL PROGRAMS**

Dr. Milton Corn, newly named Acting Associate Director for Extramural Programs (EP), underscored the serious problem of budget limitations in the Extramural Programs, a problem which is particularly notable in the last third of the fiscal year when no funds at all are available in some program categories, despite the high merit of many of the applications reviewed.

Dr. Corn outlined four areas of the extramural program which would be receiving review in the near future:

1. Administrative procedures used for handling grant applications and awards will be analyzed.
2. The relative priorities of the programs funded in terms of national needs, quality of applications received, and relationship to other NLM initiatives will be examined. In particular, both IAIMS and EP contributions to the Library's outreach plans deserve reevaluation.
3. The opinion of grant recipients and training program directors will be solicited to obtain an evaluation of EP as it is viewed by the extramural community.
4. Ways and means of assisting the Library Director in increasing the EP budget will be explored.

Dr. Corn also noted that EP at the NLM, unlike extramural programs at most other institutes, devotes a large share of its resources to activities, such as training of information science specialists, resource grants, and IAIMS, which serve to provide an infrastructure to facilitate the broad use of such NLM programs as MEDLINE, Electronic Imaging, Health Technology Assessment and other important NLM programs. Although EP at the Library does, of course, support "pure" research projects, its "engineering" function on behalf of the Library's intramural efforts should receive appropriate recognition.

Dr. Detmer remarked that he agreed with Dr. Corn's comments in general and stated that the Board looked forward to working with EP on these issues.

**MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS  
JUNE 7 - 1:40 -- 2:15 P.M.**

**XIII. REVIEW OF PENDING APPLICATIONS**

Before proceeding with the consideration of pending applications, Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP informed Board members of confidentiality and conflict-of-interest procedures and 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 application which presented a conflict of interest.

The Board reviewed 102 applications, requesting \$58,063,309 and recommended for approval 80 applications in the amount of \$35,122,857 for the total years requested. Twenty-two applications in the amount of \$8,289,913 were disapproved. Grant applications recommended for approval by the Board are listed in the summary actions (Attachment C). Interim actions taken by the Extramural Programs staff since the January meeting were considered by the Board's Extramural Programs Subcommittee and noted and concurred with by the Board of Regents.

**MEETING OPEN -- JUNE 7 -- 2:15 TO 4:00 P.M.  
AND FROM 9:00 A. M. TO ADJOURNMENT ON JUNE 8**

**XIV. THE LEARNING CENTER FOR INTERACTIVE TECHNOLOGY**

In the afternoon of June 7, the Board adjourned to The Learning Center for Interactive Technology in the Lister Hill Center to view demonstrations of the educational software that Dr. Ackerman had described earlier.

**XV. NETWORK EXPERIMENTS**

Two presentations dealt with NLM's efforts to connect users to NLM online services via the National Science Foundation's research and education network, INTERNET, a high-speed network used by thousands of scientists.

A. Mr. John Anderson, Director of Information Systems, NLM, described NLM's goal to make its bibliographic databases widely available through such commercial telecommunications networks as Telenet, Tymnet, Infonet, and CompuServe. Biomedical scientists, however, do not commonly use these value-added networks; they are more likely to use INTERNET--a consortium of networks. INTERNET, however, uses a different protocol (called TCP/IP) that operates at much higher speeds than the commercial networks. As part of plans to implement INTERNET access to MEDLINE this fall, the NLM is entering into an experiment with NIH's National Institute of Allergy and Infectious Diseases (NIAID) to modify the source code of Grateful Med so that it would be able to deal with the local "dialect" of TCP/IP used on NIAID's local area network (LAN). Following Mr. Anderson's introduction of the subject, Mr. Alan S. Graeff, Chief of NIAID's Technical Services Section, described the general technical approach being taken by the Institute. The NIAID LAN, which currently supports more than 1,000 users in nine locations, is used to support such functions as word processing, electronic mail, the sharing of expensive equipment such as laser printers, and for common file sharing access. He noted that Institute scientists now access to INTERNET for several remote applications, for example, the University of Wisconsin Genetic Computer Group and the NCBI's GenInfo databank. Mr. Graeff briefly described how the NIAID plans to modify the Grateful Med program to allow a selection for MEDLINE access via INTERNET in addition to Tymnet, CompuServe, etc.

B. Dr. David Lipman, Director of the National Center for Biotechnology Information, reported that the NCBI is also planning to use INTERNET to allow users high speed and user friendly access to several NCBI resources, including the GenInfo Backbone, an experimental biotechnology subset of MEDLINE, and the BLAST sequence similarity server. The combination of very powerful workstations and high-speed networks provides a very high level of information processing capability, all in a manner that appears to users that they are just interacting with their local microcomputers. Dr. Lipman, assisted by a colleague, Dr. Warren Gish, demonstrated live the capabilities of such a system: from a workstation in the Board Room he signed into a computer in Berkeley, California, instigated a BLAST sequence query from there to the NCBI machine in Bethesda, which transmitted the results to Berkeley, which were then viewed in the Board Room (Bethesda).

## **XVI. CONGRESSIONAL RESEARCH SERVICE**

Dr. Richard E. Rowberg, Chief of the Science Policy Research Division of the Library of Congress' Congressional Research Service (CRS), reported to the Board on that organization's functions. The CRS, which has roots in the early part of the century, was established by law in the Library of Congress in 1970 to provide specialized information on request to the members of Congress. The need for such an organization as the CRS became clear in the 1960's when the environmental movement began, and it was apparent there was a need for unbiased information that could be used by members and committees of Congress in legislating and policy-making. Dr. Rowberg said that the CRS does not make recommendations; it provides information and lays out policy options. About 80 percent of the information provided is in the category of traditional reference information; about 20 percent is in-depth research and analysis of issues. The CRS prepares some 1,000 special reports each year; in addition, there are some 400 periodically updated "issue briefs" on important subjects. (The latter are available not only in print but also online.) There is a staff of about 800 in the CRS who each

books, journals, and other materials that the library's collection development policy suggests should be in the collection." There are different levels of collecting "comprehensive," "research," and "basic" information. Guidelines are developed to aid those responsible for selecting materials. The primary purposes of collection assessment are to determine the effectiveness of the acquisitions program and to improve the service capabilities of a library. Data from collection assessment studies can have value for virtually all library activities, Mr. Richards said. Collection assessment cannot include a review of the total universe of literature in a discipline; a variety of methods is used to examine the literature of the discipline--by type, geographic origin, language, use, etc. From these analyses of segments of the literature, one develops inferences that can be applied to the overall collection under scrutiny. Assessment methods generally fall into two categories: quantitative (numeric) and qualitative (judgmental). NLM uses both in its assessment activities. Over time, NLM assessment projects will cover the entire collection. One major study can be completed annually; smaller, more focused studies will be undertaken as time and resources allow.

Dermatology was selected as the first major subject to be reviewed. Mr. Richards described the literature of dermatology as rather slow-growing: There are 300-400 current serial publications on the subject, about 50 major monograph titles a year from medical publishers and many more congresses and symposia. The total literature comprises roughly 600 serial publications, 5000 monographs, and 500 audiovisuals. There is no bibliography that contains all of them. The Library assessed its dermatology holdings by comparing them against standard bibliographic sources and other major library collections. Mr. Richards described in some detail the many sources that were used for comparison. The assessment plan was approved by a committee of the American Academy of Dermatology, and the final report will also be reviewed by the Academy. To summarize the findings: NLM's acquisitions program has been very successful in identifying and acquiring dermatology materials published by principal commercial sources. Achievement rates for these materials were consistently in the 98-100 percent range. The study pointed out, however, that the Library has been somewhat less successful in acquiring material outside of traditional commercial channels, i.e., national and international associations, governmental bodies, private presses, and university departments. A complete statistical analysis will be in the final report. The total time commitment on the part of the staff was approximately 1400 hours. Several smaller collection assessments completed in the past year involved biotechnology, clinical immunology, paleopathology, and major biomedical serials from Central and South America. NLM's collection of medically related statistics sources is currently being reviewed. The next major assessment will be of the literature of neurology.

## **XVIII. AUTOMATED DOCUMENT DELIVERY--PILOT PROJECT**

Mrs. Colaianni introduced the subject by reporting that the demands on the Library to provide documents from its collection have risen in recent years. Five years ago NLM received 142,000 requests from other libraries; this year the figure will be over 265,000. There is a rise in the number of interlibrary loans among medical libraries generally, possibly because the interlibrary loan system itself has been vastly improved. The DOCLINE electronic request and referral system that greatly facilitates lending was instituted by NLM about five years ago. More than 1.9 million requests will be entered into DOCLINE this year, of which NLM will receive about 11 percent. "Loansome Doc" is the proposed system that would link individual health



professionals to DOCLINE resources through Grateful Med software. A Grateful Med user would be able to identify pertinent articles through an online search and then immediately enter a request for copies of those of greatest interest. There will be a field test of the "Loansome Doc" in Region 7 (Pacific Southwest) this summer. Another improvement in the interlibrary loan system is the telefacsimile service for interlibrary loan for clinical emergencies introduced by NLM two years ago. Today's challenge, Mrs. Colaianni said, is to integrate these improvements in document-request mechanisms, while reducing the amount of time and staff devoted to interlibrary loan service. Three NLM components (Library Operations, the Lister Hill Center, and the Office of Computer and Communications Systems) have recently completed a plan to conduct a pilot project for SAIL--System for Automated Interlibrary Loan. It would link NLM's DOCLINE with an optical disk system so that requests for articles that are preserved on disk can automatically be identified, retrieved, and transmitted to the user of a requesting library by fax or mail. Such a document delivery system would run entirely without staff intervention (except mailing, if necessary). The pilot system, which will run through 1991, will be based on a group of frequently requested titles, namely, articles from new journal titles recently selected for indexing in MEDLINE. Initially, NLM plans to scan and place on an optical disk the articles from 44 titles added to MEDLINE in 1989-90. Mrs. Colaianni summarized what NLM hopes to learn concerning interlibrary loan: how often each item is requested, how much it costs to deliver an article electronically through fax (or by mail), how much staffing is required, how quickly the article can be delivered to the user, how many users can receive fax, and the quality of the received document. As to system design, NLM hopes to learn: what hardware and software are required, the cost of the total system for providing documents this way, the volume of documents a particular system configuration can handle, and what would be required to go from a pilot system to a large-scale system for preservation and document delivery. Journal issues will be scanned cover to cover, so a virtual preservation copy will be created. NLM will want to find out the cost per page to capture these page images for preservation. What ultimately would be the savings in cost (and time) by instituting an automated interlibrary loan system? At the end of the pilot project, NLM will evaluate its options as to whether and how to expand such a system.

Following Mrs. Colaianni's presentation, Dr. Daniel R. Masys, Director of the Lister Hill National Center for Biomedical Communications, said that the SAIL project has its roots in the LHC's Electronic Document Storage and Retrieval System (EDSR), begun in the early Eighties. He described briefly the research and development work done on the EDSR which culminated in a comprehensive technical report recently reviewed by the Board of Scientific Counselors. The present pilot project, he said, is made more appealing by the dramatic increase in the installed base of telefacsimile machines in recent years. He noted that the total number of document pages in the SAIL project would be about 50,000. Once these pages are captured on optical disk, they will be interfaced with DOCLINE in a clever way. Since the NLM is the "library of last resort" on the routing tables all DOCLINE users in the nation, the SAIL system will function as one more DOCLINE library in the routing table, just before NLM itself. SAIL will look at each request coming to NLM and compare it with its list of documents on disk. If a match is found, SAIL will handle it, automatically faxing (when requested) or producing paper copy for mailing. Otherwise the request will pass through to the NLM. Dr. Masys described the time line for SAIL: the system development phase has already begun, the document capture phase will begin in the next several months, and an operational test of the system will begin early next year. The Board will be kept informed of progress of the system.

Following Dr. Masys' presentation, Ms. Nina Matheson commented that the SAIL project was impressive. It is very important to bridge the gap between finding a citation and having a document in hand. Ultimately, of course, people want to be able to call up immediately an image or surrogate of the article. This system will deal in the short term with an acute problem now and offer hope for a long-term solution to a chronic problem.

#### **XIX. ELECTION OF CHAIRMAN**

The committee to nominate a chairman for the Board of Regents for 1990-91, nominated Dr. Don E. Detmer. The nomination was seconded and the Board unanimously elected Dr. Detmer for another year.

#### **XX. CONCLUDING COMMENTS OF CHAIRMAN**

Dr. Detmer said that he has been approached by Regents with several subjects that he believes might be aired at future Board meetings. He gave three examples: (1) What is NLM actually "buying" with its extramural or grant funds? The Critical Incident Technique study gave us an insight into the value of MEDLINE in actual use; could we find out more about the value of the NLM grants programs? (2) How can we deal with the "ignorance" of some clinical leaders regarding some of the emerging realities of medical informatics--how can we get them to know there is an important professional area they do not know anything about? (3) Since the individual Board members have many contacts and considerable influence, is it possible for the Board to be even more helpful to the NLM?

#### **XXI. REMARKS OF RETIRING MEMBERS**

Ms. Nina Matheson said that she began her career at the National Library of Medicine and that it has been a privilege to serve on the Board as her last "tour of duty." She said it is exciting to see the 21st century medical library now being developed and put in place by NLM.

Dr. Edward Feigenbaum commented that being a Regent was like taking a post-doctoral curriculum. He had advice in several areas: (1) The most valuable resource of the Library is its excellent staff and its morale, and that should be nurtured by the Board; (2) the Long-Range Plan is a superb document and should be a centerpiece in the Board's thinking and actions; (3) the Board should pay special attention to NLM's Extramural Programs and work to have it funded at a higher level; and (4) the clout of NLM partly relates to its visibility and it needs to have its status as both the world's number one medical library and electronic library known much more broadly.

**XXII. ADJOURNMENT**

The meeting was adjourned at 12:15 p.m. on Friday, June 8.

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(Extramural Programs Subcommittee under Attachment B)  
Wednesday, June 6, 1990, 2:10 - 3:40 p.m.

Thursday and Friday, June 7 and 8, 1990  
(Full Board of Regents)

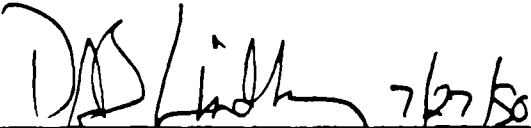
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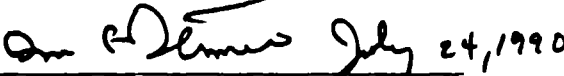
**ACTIONS TAKEN BY THE BOARD OF REGENTS**

1. The Board approved the Biennial Report to be incorporated into the overall NIH report to Congress.
2. The Regents' Award for Scholarship or Technical Achievement was presented by Dr. Detmer to Mr. David Kenton, Senior Analyst, Office of Information Systems.
3. The Board unanimously elected Dr. Don E. Detmer Chairman for another year.
4. The Board concurred with recommendation of the Extramural Programs Subcommittee. Grant applications for approval are listed in the summary actions. (Attachment D)

.....

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

  
 Don E. Detmer, M.D. (Date)  
 Chairman

## BOARD OF REGENTS OF THE NATIONAL LIBRARY OF MEDICINE

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Board of Regents Roster (Continued)

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**LINDBERG, Donald A. B., M.D.**  
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**ATTACHMENT "B"**

**BOARD OF REGENTS  
EXTRAMURAL PROGRAMS SUBCOMMITTEE MEETING**

**June 6, 1990**

**2:10 to 3:40 p.m.**

**A T T E N D E E S**

**Subcommittee Members Present:**

Ms. Nina W. Matheson, Chair  
Dr. Steven C. Beering  
Dr. Jay P. Sanford  
Dr. Don E. Detmer, Ex Officio

**NLM Staff Present:**

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



National Institutes of Health  
National Library of Medicine  
Bethesda MD 20894

June 8, 1990

The Honorable Louis W. Sullivan, M.D.  
Secretary, Health and Human Services  
Washington, D. C. 20503

Dear Mr. Secretary:

As Chairman, I wish to thank you for your favorable consideration of the views presented in our resolution concerning the Paperwork Reduction Act passed by the Board of Regents of the National Library of Medicine at our January 18-19 meeting.

You will recall that this resolution asked you, as Secretary, to assist the biomedical community in assuring that the quality and integrity and reasonable fees associated with the NLM's MEDLARS databases be protected. We reported that these essential ingredients to a premium medical information service would be in danger if provisions within H.R. 3695, the House Paperwork Reduction Act reauthorization bill, were to become law.

I understand that the Board's views were reflected in your letter to the Honorable Richard G. Darman, Director, Office of Management and Budget, dated February 28, 1990. On behalf of the NLM Regents, I thank you for your support.

As you are aware, several legislative actions have taken place since the resolution and your report to Mr. Darman. It now appears that a most critical step would be for the NLM to receive protection under its own legislative authority through the addition of specific language (see enclosure) enabling the NLM to enter into licensing arrangements that will continue to ensure database integrity and reasonable fees. Any support that you are able to give to such efforts will be most welcome.

Sincerely,

Don E. Detmer, M.D.

Enclosure

Revision to the National Library of Medicine's legislative authority:

Section 465(d)(2) of the Public Health Service Act should be amended by adding the highlighted phrases:

Notwithstanding any other law, rules prescribed under paragraph (1) may provide for making available such publications, materials, facilities, or services...

- a. Without charge as a public service,
- b. upon a loan, exchange, or share basis,
- c. in appropriate circumstances, under contract arrangements made with a public or other nonprofit entity,
- d. under licensing arrangements that provide for quality control and full recovery of access costs."



APPLICATIONS APPROVED BY COUNCIL  
(ARRANGED NUMERICALLY BY PROGRAM)  
PROG. CLASS: MAY 1990  
COUNCIL DATE:

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 G07 LM05165-01	INLAND EMPIRE MEDICAL LIBRARY FAX PROPOSAL	130,880
1 G07 LM05170-01	END USER TRAINING IN CD ROM FOR HEALTH PROFESSIONALS	12,000
1 G07 LM05171-01	UNION LISTS OF MONOGRAPHS	10,551
1 G07 LM05172-01	INFORMATION ACCESS GRANTS FOR HEALTH SCIENCE LIBRARIES	12,000
1 G07 LM05174-01	AN END USER PROGRAM AT CENTRAL MAINE MEDICAL CENTER	11,500
1 G07 LM05176-01	CD-ROM WORKSTATION FOR COMPUTER SEARCHING	7,025
1 G07 LM05186-01	MODEL ELECTRONIC LIBRARY FOR FRONTIER HEALTH CARE	6,908
1 G07 LM05193-01	HEALTH SCIENCES INFO/TRAINING, ACCESS AND DISSEMINATION	10,360

APPLICATIONS APPROVED BY COUNCIL  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 PROG. CLASS: NATIONAL LIBRARY OF MEDICINE  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE  
 COUNCIL DATE: MAY 1990

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 G07 LM05199-01	NORTH DAKOTA ONLINE LIBRARY SYSTEM ACCESS PROJECT	01 118,059
1 G07 LM05201-01	SO CENTRAL HEALTH INFO NETWORK INFORMATION ACCESS GRANT	01 156,770
1 G07 LM05204-01	NORTHEAST MISSOURI AHEC INFORMATION ACCESS CONSORTIUM	01 12,000 02 456,000
1 G07 LM05209-01	AHEC MOUNTAIN INFORMATION ACCESS COOPERATIVE (AMIAC)	01 192,000
1 G07 LM05215-01	INFORMATION ACCESS FOR BALLARD COMMUNITY HOSPITAL	01 12,000

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

COUNCIL DATE: MAY 1990

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
2 G08 LM04403-04A1	UNIVERSITY OF UTAH IAIMS IMPLEMENTATION PROJECT	04A1 646,223 05 596,800 06 566,438 07 727,216 08 719,216
2 G08 LM04613-04	IAIMS IMPLEMENTATION PROJECT	04 749,972 05 999,996 06 999,937 07 999,958 08 999,956
2 G08 LM04663-04	UCMC IAIMS: TOWARDS THE TWENTY-FIRST CENTURY	04 830,636 05 1,157,866 06 1,076,021 07 1,103,991 08 1,186,175
2 G08 LM04905-03	PHASE III IAIMS AT BAYLOR COLLEGE OF MEDICINE	03 686,005 04 891,532 05 903,891 06 906,658 07 904,086
1 G08 LM05160-01	MACHINE READABLE CATALOGUING MEDICAL ARTIFACTS	01 46,150 02 96,811
1 G08 LM05168-01	SOUTHEAST FLORIDA AIDS INFORMATION NETWORK	01 100,336 02 142,623
1 G08 LM05169-01	CORNELL UNIVERSITY MEDICAL COLLEGE LOCAL AREA NETWORK	01 151,668 02 139,331

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

COUNCIL DATE: MAY 1990

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 G08 LM05177-01	REMOTE ACCESS AND DELIVERY OF LIBRARY SERVICES	01 88,864 02 59,255 03 46,818
1 G08 LM05184-01	IMPROVING NYUMC INFORMATION INFRASTRUCTURE AND ITS USE	01 150,000 02 150,460 03 149,730
1 G08 LM05197-01	AN INTEGRATED APPROACH TO MEDICAL INFORMATION SERVICES	01 119,531 02 86,938
1 G08 LM05198-01	AUTOMATED INFORMATION ACCESS FOR INNER CITY PHYSICIANS	01 136,020 02 149,750
1 G08 LM05203-01	HEALTH INFORMATION ACCESS ENHANCEMENT PROGRAM	01 81,797 02 11,187 03 11,187
1 G08 LM05210-01	NAMED DATA SETS IN HEALTH: IDENTIFICATION AND LINKAGE	01 103,867 02 102,054
1 G08 LM05212-01	USING A LAN TO PROVIDE EQUAL ACCESS TO INFORMATION	01 145,433

APPLICATIONS APPROVED BY COUNCIL  
(ARRANGED NUMERICALLY BY PROGRAM)

COUNCIL DATE: MAY 1990

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
2 P50 LM04492-06	NATIONAL REFERENCE CENTER FOR BIOETHICS LITERATURE	06 301,769 07 313,135 08 328,683

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

COUNCIL DATE: MAY 1990

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
2 R01 LM04493-06	AN ARTIFICIAL INTELLIGENCE APPROACH TO CLINICAL DECISION	06 323,215 07 319,948 08 339,145
1 R01 LM05039-01A1	EVALUATION OF ONLINE LITERATURE SEARCHING BY RESIDENTS	01A1 48,199 02 27,762
1 R01 LM05067-01A1	FROMM-REICHMANN AND THE TREATMENT OF PSYCHOSIS, 1920-55	01A1 24,991 02 13,513 03 11,758
1 R01 LM05081-01A1	DETERMINING THE INFORMATION NEEDS OF CARDIOLOGISTS	01A1 157,018 02 61,133
1 R01 LM05093-01A1	PROTOTYPE QUERY TRANSLATOR FOR HUMAN GENOME DATABASES	01A1 90,093 02 71,240 03 73,986
1 R01 LM05097-01A1	NATURAL LANGUAGE INTERFACES FOR BIOSEQUENCE DATABASES	01A1 175,411 02 164,189 03 170,614
1 R01 LM05115-01A1	MACHINE LEARNING APPROACH-PROTEIN STRUCTURE PREDICTION	01A1 113,338 02 102,272 03 106,364
1 R01 LM05121-01A1	STUDIES ON GENES RECONSTRUCTED FROM PSEUDOGENE FAMILIES	01A1 91,917 02 85,193

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

COUNCIL DATE: MAY 1990

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 LM05147-01	KNOWLEDGE BASED BIBLIOGRAPHIC BIOTECH INFO RETRIEVAL	01 65,006 02 67,917 03 61,887
1 R01 LM05163-01	USE OF HOLOGRAPHY IN MEDICAL EDUCATION	01 137,750 02 41,595 03 43,051 04 44,624 05 46,822
1 R01 LM05164-01	MEDICAL EDUCATION IN W. EUROPE & N. AMERICA, 1800-1914	01 24,300 02 25,000
1 R01 LM05166-01	HEINZ KOHUT: CORRESPONDENCE, 1939-1981	01 25,000
1 R01 LM05175-01	BOOK: HEALTH & HEALTH CARE OF VULNERABLE POPULATIONS	01 13,282 02 11,640
1 R01 LM05178-01	HIERARCHICAL STRUCTURES IN VERBAL INTERACTION	01 111,880 02 100,614 03 100,556
1 R01 LM05181-01	HUMAN COMPUTER INTERACTIONS IN SEARCHING OF BIOMEDICAL D	01 128,418 02 125,900
1 R01 LM05183-01	HISTORY OF PUBLIC HEALTH IN CHINA: A PERSONAL ACCOUNT	01 17,930 02 18,916

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

COUNCIL DATE: MAY 1990

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 LM05189-01	PHARMACIST USE OF ONLINE INFORMATION SERVICES	01 56,456 02 51,589 03 53,103
1 R01 LM05195-01	EVALUATION OF IMAGES PRINTED ON RADIOLOGY REPORTS	01 109,504 02 113,708 03 118,168
1 R01 LM05196-01	DUALS SECONDARY REVIEW: GM QUANTITATIVE CLASSIFICATION OF PROTEIN SEQUENCES	01 87,463 02 81,911
1 R01 LM05200-01	PROBLEM-BASED KNOWLEDGE ACCESS	01 218,054 02 230,296 03 245,198 04 259,246 05 274,129
1 R01 LM05202-01	IMPACT OF AN EXPERT SYSTEM ON THE PRACTICE OF MEDICINE	01 303,293 02 281,515 03 294,642
1 R01 LM05216-01	CORE RESEARCH IN CLINICAL DECISION MAKING	01 210,828 02 204,082 03 212,616



APPLICATIONS APPROVED BY COUNCIL  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 PROG. CLASS: COUNCIL DATE: MAY 1990  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R29 LM05173-01	DESIGNING A PRACTICAL OUTPATIENT CLINICAL WORKSTATION	01 73,847
		02 78,227
		03 65,222
		04 65,961
		05 66,555
1 R29 LM05194-01	AUTOMATED CONCEPTUAL LINKAGE BETWEEN MEDICAL DATABASES	01 74,036
		02 68,316
		03 66,209
		04 68,471
		05 72,489

APPLICATIONS APPROVED BY COUNCIL  
 (ARRANGED NUMERICALLY BY PROGRAM)  
 PROG. CLASS: NATIONAL LIBRARY OF MEDICINE  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE  
 COUNCIL DATE: MAY 1990

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R43 LM05137-01A1	IMPROVING RETRIEVAL WITH INNOVATIVE USER INTERFACES	50,000
1 R43 LM05219-01	DIAGNOSTIC ASSISTANT NEURAL NETWORK	50,000
1 R43 LM05222-01	PREDICTION AND DISPLAY OF INTERACTIONS OF MACROMOLECULES	41,657
1 R43 LM05224-01	AN INGENIOUS INTERFACE FOR GENETIC DATABASE SEARCHING	31,410
1 R43 LM05225-01	DUALS SECONDARY REVIEW: AG A SPECIALIZED CLEARINGHOUSE ON POPULATION RESEARCH AND A	41,645
1 R43 LM05227-01	DATABANK OF LINKING TERMS IN PSYCHONEUROIMMUNOLOGY	46,400
1 R43 LM05229-01	DUALS SECONDARY REVIEW: HG A LOGICAL DATA MODEL FOR MOLECULAR BIOLOGY	50,000

APPLICATIONS APPROVED BY COUNCIL - DUAL REVIEW  
(ARRANGED NUMERICALLY)  
COUNCIL DATE: MAY 1990  
INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE  
PROG. CLASS:

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 P41 RR06033-01	DUALS SECONDARY REVIEW: LM	01 587,665
	SPECIAL RESEARCH RESOURCE FOR BIOMOLECULAR VISUALIZATION	02 432,353
		03 382,353

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 CA49697-01A2	DUALS SECONDARY REVIEW: LM MEDICAL IMAGE COMPRESSION BY VECTOR QUANTIZATION	01A2 184,897 02 164,730 03 174,634
1 R01 GM44647-01	DUALS SECONDARY REVIEW: LM LEARNING MODELS OF PROTEIN FOLDING	01 76,072 02 62,026
1 R01 GM45381-01	DUALS SECONDARY REVIEW: LM MAPPING GENES AFFECTING QUANTITATIVE TRAITS	01 144,156 02 123,963 03 131,461
1 R01 HG00121-01	DUALS SECONDARY REVIEW: LM GENOME ANALYSIS BY SYNTACTIC PATTERN RECOGNITION METHODS	01 74,473 02 81,411 03 87,652 04 94,199 05 101,049
1 R01 HG00129-01	DUALS SECONDARY REVIEW: LM THE MURINE H-2 COMPLEX AS A MODEL GENETIC DATABASE	01 167,186 02 170,778 03 210,539 04 201,671 05 213,470
1 R01 HG00159-01	DUALS SECONDARY REVIEW: LM AN INTERACTIVE SOFTWARE ENVIRONMENT FOR GENOMIC DATA	01 297,083 02 221,256 03 232,599
1 R01 HG00252-01	DUALS SECONDARY REVIEW: LM OPTIMAL MULTIPLE SEQUENCE ALIGNMENT:PARALLEL COMPUTATION	01 66,139 02 69,395

APPLICATIONS APPROVED BY COUNCIL - DUAL REVIEW  
 (ARRANGED NUMERICALLY)  
 COUNCIL DATE: MAY 1990  
 PROG. CLASS:  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R43 CA50104-01A2	DUALS SECONDARY REVIEW: LM SEARCH STRATEGIES AND META-ANALYSIS OUTCOME	01A2 42,021
1 R43 ES05472-01	DUALS SECONDARY REVIEW: LM AN IN VITRO TOXICITY TESTING DATABANK (IVT)	01 29,100

APPLICATIONS APPROVED BY COUNCIL  
(ARRANGED NUMERICALLY BY PROGRAM)

COUNCIL DATE: MAY 1990

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 K10 LM00090-01	DATABASE OF TAPED INTERVIEWS IN DERMATOLOGY	01 34,650 02 31,600 03 29,600

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
NATIONAL INSTITUTES OF HEALTH  
NATIONAL LIBRARY OF MEDICINE

A G E N D A

95TH Meeting of the

BOARD OF REGENTS

9:00 a.m., September 27-28, 1990

Board Room  
Mezzanine of  
National Library of Medicine

MEETING OPEN: From 9:00 a.m. to 4:30 p.m. on September 27 and from 9:00 a.m. to adjournment on September 28.

MEETING CLOSED: From 4:30 to 5:00 p.m on September 27 for the review of grant applications.

1. CALL TO ORDER AND INTRODUCTORY REMARKS Dr. Don E. Detmer
2. REMARKS BY THE ASSISTANT SECRETARY FOR HEALTH Dr. James O. Mason
3. REMARKS FROM THE SURGEON GENERAL'S OFFICE Dr. Rice C. Leach
4. CONSIDERATION OF JUNE MINUTES TAB I Dr. Don E. Detmer  
(Agenda Book)
5. FUTURE MEETING DATES:  
Winter Meeting: Jan. 31-Feb. 1, 1991 (Th-F)--CONFIRMED  
Spring Meeting: June 20-21, 1991 (Th-F)--CONFIRMED  
Fall Meeting: Sept. 26-27 OR Oct. 3-4, 1991 (Th-F)--PROPOSED

(Subcommittees meet, when necessary, the day before the regular Board.)

PLEASE NOTE: NIAID Council Fall Meeting, 9/26-27/91,  
(Potential conflict Bethesda, MD.  
w/Sept./Oct. 1991 Association of Academic Health Centers (AAHC)  
meeting dates.) Semi-annual Meeting, 10/2-5/91, Napa, CA.  
Institute of Medicine Annual Meeting,  
10/14-15/91, Washington, DC.  
LSTRC Meeting, 10/17-18/91.  
The Society for Medical Decision Making,  
Annual Meeting, 10/19-23/91, Rochester, NY.  
American College of Surgeons Annual Meeting,  
10/20-25/91, Chicago, IL.

8/28/90

6. REMARKS BY THE DIRECTOR, NLM TAB II Dr. Donald A. B. Lindberg  
Discussion Board Members  
  
COFFEE BREAK
7. REMARKS BY THE ACTING DIRECTOR, NIH Dr. William F. Raub
8. REPORT ON MEETINGS OF THE LITERATURE SELECTION TECHNICAL REVIEW COMMITTEE TAB III Dr. Albert E. Gunn  
Discussion Board Members  
  
LUNCHEON CATERED IN CONFERENCE ROOM "B" 11:45-12:45
9. OUTREACH PROGRAM--A PROGRESS REPORT TAB IV  
A. Overview Dr. Elliot Siegel  
B. Regional Medical Libraries' Role Ms. Becky Lyon-Hartmann  
C. Strengthening Hospital Access Dr. Milton Corn  
D. Undergraduate Research Study Program Mr. Earl Henderson  
E. New Products and Services Dr. Elliot Siegel  
F. Publicity Mr. Robert B. Mehnert  
G. Wrap-up Dr. Don E. Detmer  
Dr. Lois E. DeBakey  
  
Discussion Board Members  
  
COFFEE BREAK
10. REPORT FROM EXTRAMURAL PROGRAMS TAB V Dr. Milton Corn  
A. Budget and Funding Plans Tab A Extramural Programs  
B. Review of NLM's Training Grants Program Tab B Subcommittee,  
Discussants  
  
Discussion Board Members



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MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS, 4:30-5:00 P.M., September 27  
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11. REVIEW OF GRANT APPLICATIONS (Application Workbook) Dr. Roger W. Dahlen

- 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
- PUBLICATION TAB III
- SMALL BUSINESS INITIATIVE RESEARCH TAB IV
- SUMMARY LIST OF DISAPPROVED APPLICATIONS TAB V
- INTERIM ACTIONS TAB VI

R E C E S S \* \* \* \* \*

DINNER . . . . . BETHESDA NAVAL OFFICERS' CLUB  
 Cocktails . . . . . 6:30 p.m. Bethesda, Maryland  
 Dinner . . . . . 7:30 p.m. "BRIDGE ROOM"

SPEAKER: Mr. Edwin C. Whitehead, Chairman, Whitehead Associates

TITLE: "Research!America"

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R E C O N V E N E : FRIDAY, September 28, 9:00 a.m., BOARD ROOM

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12. PRICING POLICIES AND NEW PRICING STRUCTURE TAB VI

Mr. Kent A. Smith  
Dr. Jeanne Spurlock,  
Dr. Lois E. DeBakey  
Discussants

Discussion

Board Members

13. REDESIGN OF THE TOXNET SYSTEM

TAB VII

- A. Highlights
- B. Relational Database

Tab A  
Tab B

Dr. Henry M. Kissman  
Dr. James Ostell  
Dr. Ruth M. Davis,  
Discussant

Discussion

Board Members

COFFEE BREAK

14. HISTORY OF MEDICINE PRINTS AND  
PHOTO VIDEODISC

TAB VIII

Dr. Daniel R. Masys

Discussion

Board Members

15. ADJOURNMENT

Dr. Don E. Detmer

**DEPARTMENT OF HEALTH AND HUMAN SERVICES**

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

**BOARD OF REGENTS  
MINUTES OF THE 95TH MEETING  
SEPTEMBER 27-28, 1990**

**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 27-28, 1990**

The Board of Regents of the National Library of Medicine was convened for its ninety-fifth meeting at 9:00 a.m. on Thursday, September 27, 1990, in the Board Room of the National Library of Medicine, Bethesda, Maryland. Dr. Don E. Detmer of the University of Virginia 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 17, 1990, the meeting was open to the public from 9:00 a.m. to 4:15 p.m. on September 27 and from 9:00 a.m. to 11:15 a.m. on September 28. The meeting was closed from 4:15 to 4:45 p.m. on September 27 for the review, discussion, and evaluation of grant applications. A Board roster is enclosed under Attachment A.

**Board members present were:**

Dr. Don E. Detmer, Chair	Dr. Ruth M. Davis
Dr. Steven C. Beering	Dr. Jeanne Spurlock
Dr. Lawrence H. Cohn	

**Alternates to ex officio members present were:**

Col. Howard E. Fauver, representing Lt. Gen. Frank F. Ledford, Jr.  
Capt. David S. Kemp, representing Vice Admiral James A. Zimble.  
Col. Charles K. Maffet, representing Lt. Gen. Monte B. Miller.  
Capt. Kathleen A. McCormick, representing Dr. Antonia C. Novello.  
Ms. Karen Renninger, representing Dr. James W. Holsinger, Jr.  
Dr. Richard E. Rowberg, representing Dr. James H. Billington.

**Unable to attend:**

Dr. Ronald E. Cape  
Dr. Mary E. Clutter  
Dr. Alvy Ray Smith

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. Only when an application is under individual discussion will the Board member absent himself. This procedure does not apply 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 for Research and Education  
Mr. John Anderson, Director, Information Systems, OD  
Dr. Jeanne Brand, Chief, International Programs Branch, EP  
Mr. Kenneth Carney, Executive Officer, OD  
Dr. Milton Corn, Acting Associate Director, EP  
Dr. George Cosmides, Deputy Associate Director, SIS  
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP  
Ms. Becky Lyon-Hartmann, Regional Medical Library Coordinator, LO  
Dr. George F. Hazard, Chemical Information Services Section, SIS  
Mr. Earl Henderson, Deputy Director, LHNCBC  
Ms. Betsy Humphreys, Deputy Associate Director, LO  
Mr. Charles R. Kalina, Special Projects Officer, OD  
Dr. Lawrence C. Kingsland III, Chief, Computer Science Branch, LHNCBC  
Dr. Henry M. Kissman, Associate Director, SIS  
Mr. Sheldon Kotzin, Chief, Bibliographic Services Division, LO  
Dr. David J. 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  
Mr. David Nash, EEO Officer  
Dr. James M. Ostell, Chief, Information Engineering Branch, NCBI  
Dr. John Parascandola, Chief, History of Medicine Division, LO  
Dr. Elliot R. Siegel, Assistant Director for Planning and Evaluation, OD  
Ms. Susan Buyer Slater, Deputy Assistant Director for Planning and  
Evaluation, OD  
Mr. Bruno Vasta, Chief, Biomedical Files Implementation Branch, SIS  
Mr. Richard T. West, Chief, Office of Program Planning and Evaluation, EP

**Others present included:**

Dr. James O. Mason, Assistant Secretary for Health  
Dr. William F. Raub, Acting Director, NIH  
Dr. Rice C. Leach, Chief of Staff to the Surgeon General, PHS  
Dr. Lois E. DeBakey, Professor of Scientific Communications, Baylor College  
of Medicine, Consultant to Board of Regents  
Dr. Albert E. Gunn, Associate Dean for Admissions, The University of Texas  
Medical School, Houston, and Chairman, Literature Selection Technical Review Committee

## **I. OPENING REMARKS**

Dr. Don E. Detmer, Chairman, welcomed the Regents to the ninety-fifth meeting of the Board of Regents of the National Library of Medicine. He introduced newly appointed Regent, Ms. Rachael K. Anderson; and ex officio alternate Navy Captain David G. Kemp; Dr. James Mason, Dr. Rice C. Leach, and Dr. William F. Raub of HHS; and Dr. Albert E. Gunn, Chair of the Literature Selection Technical Review Committee and Dr. Lois E. DeBakey, consultant to the Library.

## **II. REMARKS OF THE ASSISTANT SECRETARY FOR HEALTH**

Dr. James O. Mason said that progress is being made in the search for a new NIH Director, although no name can be announced yet. He talked about "sequestration," a derivative of the Gramm-Rudman-Hollings law that calls for limiting the Federal deficit. Dr. Mason said that the budget situation is very fluid, and he outlined several possible scenarios if a compromise budget bill is not passed. The Assistant Secretary reported that the NIH has recently created an Office on Women's Health Research. This should help ensure that NIH components focus on making greater numbers of women a part of clinical trials. Several weeks ago, the HHS Secretary made a public announcement about the creation of a program known as "Healthy People 2000." This is a blueprint for health promotion and disease protection for the Nation in the Nineties. The program consists of 22 priority health areas with over 290 specific, realistic, measurable goals. There was widespread participation--the Institute of Medicine brought together 300 voluntary, private, business, and professional organizations to help create the program. Grass-roots participation was sought through public hearings around the Nation.

Dr. Mason reported on the pending reauthorization of NIH programs in the Congress as called for in House Report 5661. There are several positive aspects to this proposal: it would exclude NLM from the pernicious requirements of the Paperwork Reduction Act (he and the Secretary have fought against those provisions) and the reauthorization report also supports the Board's position concerning MEDLARS licensing and recovering costs of access. One serious concern with the house report, however, is that it would require periodic reauthorization of all of the Library's programs (at the present time only NLM's National Center for Biotechnology Information and extramural programs require reauthorization). A second concern is that the authorized funding level in the house bill is below the level being considered by the Appropriation Committee. Another subject covered by the Assistant Secretary was the NIH and ADAMHA attempt to arrive at conflict-of-interest guidelines. One area of concern is in clinical trials for commercial products, where there is sometimes the appearance of conflicts of interest. New guidelines now being prepared would require disclosure on the part of investigators being funded by the PHS in such trials.

The last item discussed by Dr. Mason was High Performance Computing. He said that the NLM is taking a leadership role in working with eight other major Federal agencies to see that medicine contributes to and benefits from the new High Performance Computing initiative. Biomedical areas of application are analyzing the human genome and rationalizing drug development, for example. The NLM has several programs directly pertinent to this initiative,

including the Unified Medical Language System, the Integrated Academic Information Management Systems, Medical Informatics, and the advanced research being done by the National Center for Biotechnology Information (NCBI). The NLM and NIH have put together a report that has been forwarded to the HHS Secretary as to the recommended involvement of the Department in the High Performance Computing initiative. There is also considerable Congressional interest in this subject. The NLM Board will no doubt be playing a significant role in this initiative as it unfolds.

### **III. REMARKS FROM THE SURGEON GENERAL'S OFFICE**

Dr. Rice C. Leach, representing the Surgeon General, reported on several items of current high priority within the Public Health Service. Dr. Novello, the Surgeon General, is carrying on the Secretary's objectives for health, including the "Healthy People 2000" objectives reported on by Dr. Mason. Dr. Rice recounted a number of the major points made in the Surgeon General's report on smoking which was released last week. "Healthy Children" is another major program of the Surgeon General. She is starting with a needs assessment and is highlighting existing health promotion activities for children. An important part of this program deals with preventing teenage drinking. Dr. Rice also reported on several activities involving the PHS Commissioned Corps, including recruiting minorities into the PHS and the Service's central role in civilian disaster planning and emergency preparedness. Dr. Novello is spending considerable time bringing to the public an awareness of what she is doing: In the last month she has been on USA Today (concerning teenage drinking); she visited the Dakotas and Wyoming looking into the health status of Native Americans; and today she is on her way to the Southwest to promote her initiative against teenage drinking.

In response to two questions from Dr. Spurlock, Dr. Rice replied that previous Surgeon General's reports dealt extensively with the dangers of passive smoking and with strategies for preventing people from starting to smoke. The present report, on the other hand, deals extensively with the benefits from quitting smoking, no matter when or under what circumstances. Dr. Davis asked about coordinating the Federal response to civilian disasters. Dr. Rice replied that the PHS has a close and vital relationship with FEMA (the Federal Emergency Management Agency). Related to the Surgeon General's initiative on teenage drinking, Dr. Beering commented that a high-level council on education has determined that teenage alcohol abuse is the single most pressing problem on American college campuses.

### **IV. CONSIDERATION OF MINUTES OF PREVIOUS MEETING**

The Regents approved without change the minutes of the June 7-8, 1990, meeting.

### **V. DATES OF FUTURE MEETINGS**

The Board will meet next on January 31-February 1, 1991. (These dates were changed after the September meeting to February 28-March 1, 1991.) The spring meeting on June 20-21, 1991, was

confirmed. The meeting for next fall was set on September 26-27, 1991.

## VI. REPORT OF THE NLM DIRECTOR

Using a chart, Dr. Lindberg reported first on the NLM budget. He briefly described the current budget and that being proposed by the Administration and the Congress, although since the budget situation changes almost daily, he did not spend much time on these matters. He reported in more detail on what is being spent on outreach as a result of the DeBakey Planning Panel Report's recommendations. In 1990, \$3.8 million was appropriated for outreach; in the new year, the proposals vary from slightly above that level (the Administration's proposal), to \$6.9 million (House recommendation), to almost \$9 million (Senate). Dr. Lindberg noted that the DeBakey report as adopted by the Board recommended that NLM spend \$26 million on outreach in 1990, \$35.5 million in 1991. He briefly detailed how the amounts actually appropriated were spent on outreach (later in this meeting there will be a series of presentations on outreach activities.) Despite the disparity in the recommended and the actual amounts, the NLM Director emphasized that the recommendations carried in the Long-Range Planning panels have a definitely beneficial effect. Turning from budget to personnel, Dr. Lindberg introduced to the Board several new staff members: Dr. Carolyn Tolstoshev (NCBI), Dr. Milton Corn (EP), and Dr. Angela Ruffin (RML Office).

The NLM Director summarized recent reauthorization activities related to NLM programs, a subject discussed briefly by Dr. Mason earlier. The Senate has been very sympathetic to issues concerning NLM, including the levels of support proposed and the need to be protected from certain provisions of the Paperwork Reduction Act. The House, however, is proposing to require that NLM receive legislative reauthorization periodically. Up until now, the NLM has operated under the statutory authority of the 1956 National Library of Medicine Act; only the NLM grant programs (authorized under the Medical Library Assistance Act) and the newly created National Center for Biotechnology Information have heretofore required reauthorization. The outcome of the proposal is uncertain at this time. Dr. Lindberg next reported on the High Performance Computing (HPC) Initiative, a subject also discussed earlier by Dr. Mason. The Initiative is being coordinated by the Federal Coordinating Committee for Science, Engineering, and Technology Committee (FCCSET). The NLM Director said that although the NLM is a small player in the Initiative, it has several programs directly relevant to three of the four major programs, specifically: advanced software technology and algorithms; National Research and Education Network; and basic research and human resources. Only a program dealing with computer hardware has no programmatic counterpart at the NLM. Although it may not be "totally logical" to have NLM as the sole representative for biomedicine in the High Performance Computing Initiative, Dr. Lindberg said that if NLM had not stepped in, there would have been no biomedical influence at all. Dr. Lindberg listed the present NLM programs that are germane to the Initiative. They represent an FY 1990-91 baseline of present activity at a level of about \$13.5 million. The NLM/NIH High Performance Computing plan mentioned by Dr. Mason that was sent to the HHS Secretary calls for an increase of \$16 million for FY 1992 for these NLM activities. Because the HPC Program is a White House/OMB initiative, the OMB representatives have a direct interest in seeing that the proposed funding levels are actually put into to the



various agency budgets. The NLM Director showed a graph that depicted how the high-speed National Research and Education Network will evolve over the next five years or so.

Dr. Lindberg reported that the current five-year contracts with the Regional Medical Libraries will soon be expiring and are now being recompeted. In April 1991, when the new contracts are in place, the present seven-region network will become an eight-region arrangement, with a new Regional Medical Library created for the New England area. On another topic, the Director reported that there is a proposal to update the Library's Long-Range Plan as it pertains to NLM's Toxicology Information Program. The Board's Subcommittee on Planning met yesterday, reviewed the proposal, and made suggested changes. The last item was a follow-up report by Dr. Lindberg concerning his visit to Egypt at the request of the HHS Secretary to look into the possibility of creating a national medical library in that country. Dr. Lindberg reported, at the Board's last meeting, that as a result of his visiting Egyptian facilities and meeting with Egyptian officials, he believes the idea has merit. NLM is working with the Agency for International Development to draw up a plan for such an institution. The funding available from AID (\$300,000) is adequate for planning the library, but not adequate to fund its establishment and operation.

After Dr. Lindberg's report, the Board of Regents voted unanimously to approve the proposal to begin a Long-Range Planning effort for the Library's Toxicology Information Program.

## **VII. REMARKS OF THE ACTING DIRECTOR, NIH**

Dr. William F. Raub reported to the Board about NIH's recent activities related to women's health. There have been recent criticisms that (1) NIH pays inadequate attention to women's diseases, (2) there is not enough representation of women in NIH-supported clinical trials, and (3) NIH's own policies regarding women's health are not being followed. Dr. Raub briefly dealt with each in turn. In response to the first, Dr. Raub cited recent estimates that 13 percent of NIH's resources is directed to diseases specific to women, five percent toward diseases of men. As to participation in clinical trials, there have indeed been cases of large studies in which the subjects were exclusively male, and, since the results of some of these studies could not be extrapolated to women, that criticism has weight. Similarly with the criticism that all NIH components do not follow established policy in this area. Dr. Raub said that steps were being taken to rectify these shortcomings and that an Office of Research on Women's Health has been established in the NIH Office of the Director.

Another issue discussed in some detail by Dr. Raub was that of cost containment. There has been criticism that: (1) Research project grants are not adequately controlled with respect to costs; (2) the average grant has been lengthened to 4.2 years in duration, and this has exacerbated the competition for money; and (3) the NIH and the scientific community have not done enough to quiet the controversy and channel it into constructive paths. A House report calls for NIH to take leadership in directing the debate and in suggesting solutions. The report, which recommends an increase in NIH's budget of \$1 billion, calls for NIH to award 6,000 new competing renewal grants each year for the next several years. It also suggests that NIH reduce the average length of grants to four years, and that the practice of "downward negotiations" should be eliminated. There are

two broad fronts for action, Dr. Raub said. The first concerns the peer-review system--the House report calls for tighter scrutiny on the costs associated with grants. The second is that there should be more attention paid to indirect costs. The House report also calls on the NIH to look at the total cost of an award before making a final judgment on whether to fund a project. Dr. Raub said that the House report's suggestions are just that--but the NIH is expected to put forth an action plan to address the issues in the report, both near-term and long-term. An NIH action group has been established to work on such a plan.

#### **VIII. REPORT FROM THE LITERATURE SELECTION TECHNICAL REVIEW COMMITTEE**

Dr. Albert E. Gunn, Chairman of the Literature Selection Technical Review Committee (LSTRC), reported on recent meetings of that body. The Committee was established in 1988 and, in its eight meetings since, has reviewed 849 new and existing journals. Of these, 191 were recommended for addition to *Index Medicus* and MEDLINE. Specialty societies have been used to assist in reviewing journals in geriatrics, family medicine, dermatology, epidemiology, oncology, and otolaryngology (neurology and ophthalmology are about to be reviewed). By and large, the societies' recommendations agreed with the titles already being indexed by NLM. Dr. Gunn described the Committee's procedures and how it reaches its judgments. Formal guidelines to govern the journal evaluation process are now being completed and will soon be adopted by the LSTRC. Some of the issues that the Committee has addressed over the last few years: coverage of the foreign literature, the rapid growth of the journal literature as represented by constantly appearing new titles, "super-specialization," the not-always-clear distinction between journal and book, and the role of syntheses and review articles. Dr. Gunn said that the NLM staff who support the work of the Committee do a superb job.

Following Dr. Gunn's presentation, Dr. Lois DeBakey, a member of the Committee, said that members feel the great responsibility they have in recommending what literature is to be indexed by the NLM. Devising the guidelines under which the LSTRC will operate has also been a difficult task. She said that qualitative judgments are unavoidable. She is troubled by the unnecessary proliferation of journals. Dr. DeBakey said that the LSTRC members are dedicated and very competent, and she echoed Dr. Gunn's compliments to the NLM staff who support the Committee's work.

#### **IX. WHITE HOUSE CONFERENCE**

Board member Karen Renninger announced that there will be a White House Conference on Libraries and Information Services on July 9-13, 1991. State pre-conferences are going on now in preparation; the Federal library community has been given permission to hold an official pre-conference and to have four delegates to the Conference itself (the only constituency outside of the states so privileged). The Federal pre-conference will be November 26-27 in NLM's Lister Hill Center auditorium. There will be four categories of delegates to the pre-conference: users, members of Boards and "Friends" organizations, appointed officials, and librarians. The three themes of the White House Conference are productivity, democracy, and literacy. Ms. Renninger

is on the Federal Steering Committee and also the liaison with the Medical Library Association.

## **X. STATUS OF NEW NLM OUTREACH ACTIVITIES**

### **A. Overview**

Dr. Elliot R. Siegel, NLM Assistant Director for Planning and Evaluation, described briefly the background of the outreach initiative. Although NLM has always engaged in a certain amount of what might be called "outreach," the blueprint for current activity is found in the 1989 report of the Outreach Planning Panel: "Improving Health Professionals' Access to Information." The report is wide-ranging, although there is an emphasis on serving rural health professionals and those providing health care to minority and other underserved populations. Dr. Siegel discussed the subgoals in the report, including (1) to build a more active partnership with the members of the Regional Medical Library Network, (2) to strengthen hospital access to national information networks, (3) to increase the number of health professionals trained in medical informatics, and (4) to conduct studies to find out more about who uses the NLM's services, what information needs are not being met, and to design and publicize services that will meet these needs. It is important to design ways to measure outcomes and to build these into the outreach activities so we will know to what extent we are succeeding.

### **B. The Regional Medical Library (RML) Network**

Ms. Becky Lyon-Hartmann, NLM's RML network coordinator, said that NLM's highly successful Regional Medical Library Program, now almost 25 years old, has in the past concentrated on the network libraries that serve health professionals, rather than directly on the health professionals themselves. This year we have begun several programs to reach out more directly to health professionals, especially those in rural and minority settings. One such effort concerns the current recompetition for RML contracts to cover the period 1991 to 1996. One area of focus foreseen in the new contracts is a greatly expanded role in outreach by the RMLs. Even before the new contracts are awarded, however, funds earmarked for outreach have made possible six new outreach-related projects with the existing RMLs. Ms. Lyon-Hartmann briefly described each of the projects; they all target rural and otherwise underserved health professionals. Although none of the projects has been under way long enough to determine ultimate success or failure, we have learned a number of valuable things: working directly with a network library is a good way to get a project started; it takes more time than one would expect to get a project under way and to begin to see results; it is sometimes difficult for the RMLs and network libraries to hire short-term staff to work on the projects, and that it is helpful to have a person on the RML staff designated to work on outreach. Ms. Lyon-Hartmann briefly described how the Library was handling the solicitation and review of the new RML contracts in the process going from a seven- to an eight-region configuration. She noted that all bidders have included a detailed outreach component.

In another effort, she reported to the Board how the Library is now awarding some 30 contracts (each for \$25,000 or less) directly to RML network libraries to engage in specific outreach

activities to underserved health professionals. Introducing these health professionals to Grateful Med is a focus of all of these projects. Many of the proposing libraries are in small hospitals; it is heartening to see how willing they are to reach out to the health professionals in their communities. If there ever was a doubt that network member libraries would serve as a "field force" for NLM's information services, the response to this program should dispel it. These institutions, in fact, are making a commitment--in time, effort, and resources--that goes beyond the dollars awarded to them by NLM. This kind of commitment has been a hallmark of the entire Regional Medical Library Network since its inception. Ms. Lyon-Hartmann described in general terms the 30 contracts being awarded. Seventeen are going to hospitals; thirteen to academic institutions and other associations. Twenty-two states and the District of Columbia are represented. All projects have an evaluation component so that NLM can learn from their experience.

Finally, in the area of new products and services of direct interest to RML Network members, Ms. Lyon-Hartmann briefly reported on several projects: Loansome Doc and System for Automated Interlibrary Loan (SAIL) (both previously described to the Board); a database combining online users, network libraries, various groups of health professionals, and demographic data--to help in targeting outreach efforts; and, to obtain feedback on our products and services, an invitational conference for hospital administrators and others at NLM in November 1990.

### C. Strengthening Hospital Access to Information Resources

Dr. Milton Corn, Acting NLM Associate Director for Extramural Programs, noted that the outreach planning panel placed special emphasis on improving the access of local facilities to national information systems so that all physicians, wherever they practice, would be able to tap into these resources. In response to this mandate, NLM's Extramural Programs has made special efforts in the area of resource grants, Integrated Academic Information Management Systems (IAIMS), and training. Using slides, Dr. Corn described each category in some detail. There are two kinds of resource grants--Information Access and Information Systems. The Information Access Grants, aimed at small to medium-size hospitals, are awards of \$12,000 to help these local institutions acquire access to computerized information sources. Fewer applications than expected were received; a relatively small fraction of them were given high enough scores under the peer review to result in awards, and only one-third of the funds set aside for this purpose were awarded. The value of such a program to the Library's outreach effort would seem to be unarguable; it is obvious that changes will have to be made if it is to live up to its potential. The Information Systems Grants are aimed at improving information access at larger, more sophisticated institutions, such as teaching centers. Although they were not originally considered to have great outreach implications, Dr. Corn described how several of them have enabled grantee institutions to reach out into their communities. The second category, IAIMS grants, has been reported several times previously to the Board. The outreach panel felt that IAIMS was deserving of greater support from the Congress. The development of good integrated systems at major institutions will certainly have important outreach applications--like the telephone system, it could be classified as information infrastructure. Although this is a goal, the IAIMS projects under development still have a ways to go to reach it. Some of the funds not awarded for

Information Access Grants have been shifted to IAIMS projects. Dr. Corn briefly characterized each of the current IAIMS grantees as to the extent of its outreach applicability. Training, the third category, is important to prepare a cadre of multidisciplinary experts in the application of information technology to biomedicine. Dr. Corn said that there are medical informatics training grants at seven universities and a new fellowship program. (No new funds have been added to NLM's training program as a result of outreach.)

Dr. Corn concluded by saying that Extramural Programs staff is considering several shifts of emphasis to make these programs more outreach-oriented: IAIMS proposals could be encouraged to have explicit outreach components; training grants could be shifted somewhat from a research orientation to one of information systems management; Information Access Grants might be made more attractive by increasing the amount of awards or by simplifying the application form; and NLM could investigate the perceived information needs of underserved health professionals.

#### D. Undergraduate Research Study Program

Mr. Earl Henderson, Deputy Director of the Lister Hill Center, described NLM's new intramural Undergraduate Research Study Program. The premise for the program is that there is increasing relevance between certain areas of interest to the Lister Hill Center--namely digital imagery and the evolution of image libraries--and the professions of electrical engineering and computer science. The Undergraduate Research Study Program seeks (1) to leverage the Lister Hill Center's intramural research resources by using undergraduate students from historically black colleges and universities, (2) to increase research collaboration between NLM and these institutions, (3) to stimulate new undergraduate research study programs in medical informatics at these institutions, and (4) to increase the number of minority-group professionals in the medical informatics field. To do this, the program will award two-year scholarships for students majoring in electrical engineering, computer science, or physics. The students will complete two summer internships at the Lister Hill Center and two academic-year assignments under the guidance of preceptors. Students selected would begin the program at the end of their sophomore year. Each would then begin to pursue a research project that would last over two summer internships at the NLM and also include part-time research at the college or university during the last two academic years.

The students will come from two or three schools that will be chosen (from among nine eligible) to collaborate with NLM for a five-year period. The selected academic institutions will provide not only the students but also software design and development pertaining to the research projects and publication of resulting technical reports. The NLM will provide the students with tuition and fees, monthly stipends during the academic year, two summer internships with housing support and salary, and initial training to prepare the student for the project. Preceptors will receive a consultation fee. The schools themselves will receive support for the students' use of laboratories outside of classroom hours and for student access to INTERNET for communicating with the NLM. Mr. Henderson was optimistic about the quality of the work to be done by the students and its applicability to the Lister Hill Center's programmatic interests. He noted that good work has been done under present arrangements (summer employment and "stay-in-school" programs),

although the students are not as rigorously selected, and the assignments tend to be short-term. Application packages to the nine schools will be sent out in November 1990; the deadline for applications will be in February 1991.

#### **E. User Studies**

Dr. Siegel described recent NLM contacts with institutions serving largely minority populations to develop experimental outreach intervention programs. There are two reasons for this approach: (1) Secretary Sullivan has identified minority health as a high priority of the Department, and (2) this is an excellent opportunity to demonstrate the value to health professionals of NLM's information services as a means for helping to improve minority health status. NLM will learn what the impediments are to information access and how to overcome them. The NLM has also asked the Department for "set-aside evaluation money" to assess these interventions. Dr. Siegel described in some detail two such outreach projects: one, in Tennessee, is just beginning and is in collaboration with the Meharry Medical College; the other, already under way, is in south Texas (with the University of Texas, San Antonio). A videotape on a part of the Texas project, involving a "circuit-rider librarian," produced by the American Library Association, was shown to the Board.

#### **F. Publicity**

Mr. Robert Mehnert, Chief of the Office of Public Information, briefly described a number of publicity-related activities over the past year. He said that the change from being primarily a "library's library" to one that also directly serves health professionals has meant a change in how the NLM engages in public information activities. A brief videotape was shown to the Board highlighting a number of instances over the last year in which the NLM was portrayed in television and radio productions.

Following these presentations by NLM staff, Dr. Don Detmer and Dr. Lois DeBakey commented on NLM's outreach activities. Dr. Detmer congratulated the Library on its early efforts. He was especially pleased to hear about the projects with the historically black colleges and universities and about the planned alterations in the grants programs. He said the Library was going about outreach in an enthusiastic and open way and that NLM should not be worried about an occasional error. Dr. DeBakey said it is obvious that the staff have been busy implementing the outreach planning panel's recommendations. In a brief period much has been done within the limitations of the \$3.8 million NLM has received from the Congress for outreach. She was pleased to see that earlier outreach work is being built on and that an evaluative component is included in most outreach activities. She singled out the Undergraduate Research Study Program as especially worthy of support; it will provide much needed future specialists in medical informatics. NLM has also come a long way in publicity efforts, but it is something that needs to be vigorously and constantly worked on.

## **XI. REPORT FROM EXTRAMURAL PROGRAMS**

Dr. Milton Corn, Acting Associate Director for Extramural Programs, commented on the Extramural Programs' proposed budget, based on the President's Budget for FY 1991. He noted that it would result, if passed, in the funding of approximately the same number of grants as in 1990. A small decrease in competing grants is possible, however, because of an anticipated increase in noncompeting awards.

Dr. Corn briefly reviewed the dual review process, explaining that the Board is responsible for the final review of applications, with emphasis on program relevance, while the Biomedical Library Review Committee (BLRC) performs the initial review of applications based on scientific merit. The BLRC was increased a year ago from 15 members to 21, adding consultants with specific expertise in biotechnology, and was divided into three subcommittees: Medical Library Resource, Medical Informatics, and Biotechnology Information. These subcommittees are composed of seven members each with common expertise in specific fields which assures a

consistent uniform evaluation of each application. The result has been satisfying, Dr. Corn said.

On another subject, Dr. Corn announced that NLM will allow Training Directors under NLM's Training Grants Program to hire predoctoral students. The intent is, of course, to interest medical students in informatics. The cost for this will be picked up by NLM as an extra in about a year. Also, in 1989, to complement direct institutional support, NLM created a Fellowship Program which makes it possible for individuals to apply directly to the Library for training support at an appropriate institution.

Touching on a matter mentioned by Dr. Detmer at the June meeting, Dr. Corn commented on what NLM is doing to evaluate the NLM grants programs: (1) The Extramural Programs staff is considering how NLM can promote the training of people skilled in information management, and this was discussed earlier under the Outreach Report. (2) Staff has also begun an evaluation of the Training Grants Program in Medical Informatics from its beginning in 1979 to 1989. Of the thirteen original institutions with training grants, seven remain active. They are Harvard, Tufts, Stanford, Washington, Yale, Minnesota and Pittsburgh. Their grant period will terminate in 1991, and at that time NLM will have an opportunity to analyze how the seven programs have fared. It was not until 1984 that the program began to have a marked emphasis on training scientists for the field of medical informatics. NLM was interested in a number of questions about the trainees. Where are they now? Did they stay in academics or go into research? How much research grant support did each receive in his career? How much did each publish? How often were they cited? How many MDs and how many PhDs entered the program? 63% of the entire group were MDs, 193 completed training, 67 stayed in academic medicine, and 35 are in health-related R&D. Not available at this time is a direct comparison with the other NIH institutes. The rate of publications and presentations is high in the group, both in quantity and quality. Important factors contributing to the trainees' involvement in medical informatics research were their program directors' own research activities, as well as the incentive offered both by the SCAMC (Symposium on Computer Application in Medical Care) student competition

and by the actual training programs. NLM suspects that successful academic placement may also reflect a growth of career opportunities in the field.

Dr. Corn concluded by saying that NLM favors continuing the program after the seven grants terminate next year and is in the process of preparing a new RFA (Request for Application). The RFA will include language on NLM's new biotechnology program, seeking specifically institutions capable of including training in the medical informatics/biotechnology area. In addition, the National Cancer Institute's Radiation/Oncology Branch will contribute funding support if the program can provide specialized medical informatics training in the radiation/oncology field. Dr. Detmer expressed the hope that NLM will publish the information gained from the study. (3) An evaluation is also planned of the IAIMS Program, including a report on the actual experience and what the real impact of the program has been. This will be an ongoing evaluation process. Data is already being collected on PHASE-I IAIMS projects for a report in the near future. In addition, NLM is hoping to incorporate into this program some form of training for information systems managers. Since no funds are available for IAIMS projects at this time, some alternative funding method would be needed.

**MEETING CLOSED FOR THE REVIEW OF GRANT APPLICATIONS  
SEPTEMBER 27 - 4:15 - 4:40 P.M.**

**REVIEW OF PENDING APPLICATIONS**

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

The Board reviewed 54 applications, requesting \$22,534,634 and recommended for approval 46 applications in the amount of \$13,953,586 for the total years requested. Eight applications in the amount of \$3,559,877 were disapproved. Grant applications recommended for approval by the Board are listed in the summary actions (Attachment E). Interim actions taken by the Extramural Programs staff since the June meeting were considered by the Board's Extramural Programs Subcommittee and concurred with by the Board of Regents.

**MEETING OPEN -- SEPTEMBER 28 - 9:00 A.M. TO ADJOURNMENT**

**XII. PRICING POLICIES AND NEW PRICING STRUCTURE**

Mr. Kent Smith, NLM Deputy Director, said that the Board of Regents sets NLM's database pricing policy and reviews this policy every few years, especially the principles on which the policy



is based. Using slides, he briefly summarized the legislative and appropriation actions that have a bearing on pricing. These include the several proposals related to the reauthorization of the Paperwork Reduction Act, a subject that has been considered previously by the Board. NLM estimates that under one of the proposals, costs recovered by NLM for providing access to its databases could drop from about \$15 million to \$3 million; even more damaging, however, would be the Library's loss of control over the quality of the commercial products derived from its databases.

NLM's pricing policy is under the purview of the Board of Regents Pricing Subcommittee. The Board approves the principles of pricing, but leaves to the discretion of the NLM Director the actual setting of rates. These principles may be summarized: (1) Medical information is a public good and not a marketplace commodity; (2) pricing and licensing of databases are necessary to protect the integrity of the information they contain; (3) American health professionals should have equal access to NLM's databases at equal prices, regardless of location; and (4) costs are to be shared--NLM's appropriation covers the creation of the databases; user fees cover access. Mr. Smith said that costs are recovered across all database-derived services and products. This ensures that access to the more esoteric databases would not be compromised because of their lower use. He briefly described how the Library determines the creation and access costs allocable to MEDLARS. In the case of MEDLARS-derived publications (such as *Index Medicus*), there is no problem: those prices are set by the Government Printing Office. NLM, however, does control the fees charged for its database tapes and for online access to the information the databases contain. NLM also attempts to maintain a balance between the cost and revenues of services provided directly by the Library and also for those provided by outside vendors.

Mr. Smith briefly described the various ways that NLM charges for its systems. The Library has constructed an algorithm that calculates the charge for online access to its databases. There are also charges for pages printed offline by online users. For tape licensees there is an annual minimum fee and a charge of \$3-4 per hour and one cent per citation printed offline. There is an optional flat rate for universities that covers in one fee all searching for designated codes. For CD-ROMs, there is an annual license fee and a \$100 fee per subscription sold by the vendor. There are at present seven vendors of CD-ROM MEDLINE products, with a total of 4600 subscriptions in 56 countries.

Mr. Smith presented the proposed pricing changes. For online services provided on NLM's computers, the algorithm is being adjusted upward somewhat (an estimated 20 cents a search). Page charges are being raised from 25 to 30 cents. As to tapes, there will still be a minimum fee, although a usage algorithm is also being introduced. In introducing the algorithm there will also be a lowering of charging rates. In the case of CD-ROMs, the Library is introducing a more complex pricing structure. The rates will vary depending on various factors, including whether the subscriber is an individual or an institution, whether and how the CD-ROM is networked, and whether use is strictly intrainstitutional or is provided outside the subscribing institution. Mr. Smith emphasized that the Library is following a policy of establishing fee structures that, to the extent possible, are independent of the medium of access.

Dr. Jeanne Spurlock, who chairs the Board's Subcommittee on Pricing, said that the Subcommittee has reviewed all the principles by which the Library continues to price its services and found them reasonable and responsible. Dr. Lois DeBakey commented that NLM continues to conform to the established policies of the Board and has acted responsibly in reviewing the charges periodically, adjusting them as required. She noted that the integrity issue is extremely important; the medical community must be assured that the information in the databases is current and accurate. Dr. Spurlock, on behalf of the pricing Subcommittee, and Dr. DeBakey both recommended that the Board approve the pricing changes being proposed by NLM staff.

Following discussion, the Board of Regents voted unanimously (with one abstention) to approve the proposed changes in the schedule of prices for NLM's products and services.

### **XIII. REDESIGN OF THE TOXNET SYSTEM**

Dr. Henry Kissman, NLM Associate Director for Specialized Information Services, described TOXNET, the Library's online network of some 12 databases related to toxicology, pharmacology, environmental health, and hazardous substances. TOXNET is a multicomponent system that allows for online file building, content review and revisions, as well as online, interactive searching. TOXNET was developed in the mid-80s when it became clear that NLM's main online retrieval system, ELHILL, would not be able to handle the large data records resulting from an expansion of the Hazardous Substances Data Bank (HSDB). Unlike MEDLARS/ELHILL, the TOXNET system is written in the MIIS computer language. However, the TOXNET user interface was made to look like ELHILL's to avoid the retraining of users. The system, which became operational in July 1985, is available to all domestic users of NLM's online network on minicomputers operated by an NLM contractor. There is a gateway between the contractor's computer and NLM's main computer so that a user can easily switch from one system to the other. Dr. Kissman briefly described how the HSDB is built and maintained, and he showed a chart listing all the TOXNET files and the agencies with which the NLM cooperates in building them. Usage of TOXNET has been growing steadily and now is about 1700 hours a month. Since the system has grown in size and usage, NLM had to consider whether the contractor's Data General minicomputer is the best long-term vehicle for TOXNET. NLM decided to convert TOXNET from its present MIIS language to the closely related MUMPS language. This will allow the system to run on a wide variety of computers, some much less expensive than the present hardware. NLM was advised by a group of outside computer scientists on this conversion, which will be completed in the late spring of 1991. In a parallel effort, NLM is also considering the possibility of changing the TOXNET files into a relational database system that could be run in-house at NLM. This conversion would also allow two files presently on ELHILL--ChemID and TOXLINE--to join the TOXNET files. NLM now has in-house expertise to help on such a transformation--the relational database specialists within the National Center for Biotechnology Information (NCBI). Dr. Kissman listed a few of the advantages from such a conversion: more efficient file management in that there would be less data redundancy, thus making storage more efficient; more flexible file searching approaches that would support a variety of user purposes; the various individual files could be made transparent to the users--they would search the entire "system," not individual files; and the system would be operated in-house, giving NLM complete

control over it. Following Dr. Kissman's presentation, Dr. James Ostell of the NCBI used slides to explain to the Regents the nature of relational database systems and how such a system might be applied to the TOXNET files.

Following the presentations, there were questions about the nature of the users of TOXNET. Dr. Kissman said that use by industry (40 percent) and government agencies is especially heavy; foreign use is about 13 percent. Dr. Ruth Davis pointed out that it is timely that NLM make the transition to a relational database system. Although the advantages of such systems over rigid structure databases have been recognized for 20 years, the limiting factor in the past has been the state of the art of the technology--size of memory and speed of access. The conversion will be lengthy and resource-intensive, she said, and the management of the process in NLM's Division of Specialized Information Services will require considerable technical sophistication. Dr. Detmer said that in addition to the technical and managerial aspects of the project, there are what he called "policy and boundary issues" that might be discussed by the Board's Planning Subcommittee and brought to a future Board meeting.

#### **XIV. HISTORY OF MEDICINE PRINTS AND PHOTO VIDEODISK**

Dr. Daniel Masys, Director of the Lister Hill Center, reported to the Board about the development by NLM of a videodisk containing the 57,000 prints and photographs that are a part of the History of Medicine Division. In 1988, the Lister Hill Center funded a contract to capture the entire collection on 35mm film and transfer the images to videodisk. At the same time, a database system was designed to begin building electronic catalog records for each picture. The database uses a full-text retrieval method that allows pictures to be retrieved by any word that describes them, as well as by more structured elements such as a call number. Using two videodisk players and a videoprojector, Dr. Masys demonstrated to the Board the capabilities of the system. The disk will be available sometime next year to the library and health science community.

#### **XIII. ADJOURNMENT**

The meeting was adjourned at 11:10 a.m. on Friday, September 28.

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Subcommittee Meetings on Wednesday, September 26:

Extramural Programs Subcommittee--1:25 to 2:30 p.m.  
(Attachment B)

Subcommittee on Pricing of NLM Services--2:45 to 3:45 p.m.  
(Attachment C)

Planning Subcommittee--3:00 to 4:00 p.m.  
(Attachment D)

Full Board Meeting on Thursday and Friday  
September 27-28

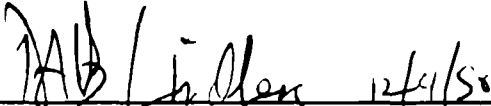
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**ACTIONS TAKEN BY THE BOARD OF REGENTS**

1. The Board approved the proposed pricing changes with one abstention.
2. The Board concurred with recommendations of the Extramural Programs Subcommittee. Grant applications for approval are listed in the summary actions (Attachment E).

\*\*\*\*\*

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

  
\_\_\_\_\_  
Don E. Detmer, M.D. (Date)  
Chairman

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Board of Regents Roster (Continued)

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**BOARD OF REGENTS  
EXTRAMURAL PROGRAMS SUBCOMMITTEE MEETING**

**September 26, 1990**

**1:25 to 2:30 p.m.**

**Subcommittee Members Present:**

Dr. Steven C. Beering, Chair  
Dr. Lawrence H. Cohn

**Subcommittee Members Absent:**

Dr. Jay P. Sanford

**NLM Staff Present:**

Mrs. Ruth E. Bortz, Grants Management Specialist, EP  
Mr. Peter A. Clepper, Program Officer, EP  
Mrs. Karin K. Colton, Committee Management Assistant, EP  
Dr. Milton Corn, Acting Associate Director, EP  
Dr. Roger W. Dahlen, Chief, Biomedical Information Support Branch, EP  
Ms. Andrea Epstein, Grants Assistant, EP  
Mrs. Rose Marie Holston, Program Analyst, EP  
Mrs. Frances E. Johnson, Program Officer, EP  
Ms. Ellen Meltzer, Secretary, EP

**B O A R D O F R E G E N T S**

**SUBCOMMITTEE ON PRICING OF NLM SERVICES MEETING**

**September 26, 1990**

**2:45 to 3:45 p.m.**

**A T T E N D E E S**

**Subcommittee Members Present:**

Dr. Jeanne Spurlock, Chair  
Mr. Joseph Howard  
Dr. Lois E. DeBakey (Consultant)

**NLM Staff Present:**

Mr. Kent A. Smith, Deputy Director  
Mr. Sheldon Kotzin, Chief, Bibliographic Services Division, LO  
Ms. Susan Levine, Chief, Office of Financial Management, OA

Mr. Smith reviewed the NLM pricing policy principles underlying the NLM database cost recovery methodology, whereby NLM receives funds to create databases through its appropriation, and the users pay the full cost of access to them, with costs recovered across all MEDLARS services rather than by each individually. He reported on legislation in process in this session of Congress that advocated limiting NLM's mandate to recover access costs through user charges, presumably to be compensated for by appropriations. At this time, the duration or the outcome of that process could not be predicted.

Mr. Smith presented and explained revisions in the schedule of prices for NLM products and services, proposed in order to maintain the balance desired between their cost and charges. The schedule was last revised in 1987. Recently, some divergence in cost and charges has been occurring, and consideration of revisions that would reestablish the balance between them for the next several years would therefore be appropriate:

For NLM services, adjust upward the existing charging algorithm made up of connect time, use of computer resources, and the amount of data retrieved, to be accompanied by a modest increase in offline charges.



For tape licensees, continue to charge an annual license fee, but in place of assessing charges based only on connect time, introduce an algorithm that measures connect time and characters transmitted, as a fairer reflection of how costs are incurred using current technology. Use of the algorithm is projected to result in equivalent or lower charges to the tape licensees. (The Board of Regents already approved the algorithm last year, but it has not yet been implemented).

For CD-ROM vendor licensees, continue to charge an annual license fee, but in place of assessing one equal subscription fee for all applications, assess variable subscription or use fees depending on the category of user - whether individual, single organizational workstation, local networked workstation, or remote access workstation. CD-ROM technology has advanced to where CD-ROM use is no longer limited to single user workstations. Workstations are now joined in local area networks, and systems that accommodate offsite users are beginning to emerge, hardly distinguishable from online systems in their functioning. Charges for NLM products should be equitable among all licensees, regardless of the technology of data delivery.

After brief discussion by the Subcommittee members, Dr. Spurlock summarized the Subcommittee observations that NLM continues to act responsibly in its pricing policy and practices, that the users' paying the full cost to access databases and the recovery of costs across all MEDLARS services rather being allocated individually is a responsible sharing arrangement, and that the Subcommittee recommend to the Board approval of the revisions to the schedule of prices for NLM products and services as proposed.

Dr. DeBakey noted that publicizing NLM services for extension of access to health professionals is part of the NLM outreach effort. She believed that publicizing online services is clearly an access cost, and that therefore NTIS MEDLARS collection accounts could be utilized for support of the outreach effort.

**ATTACHMENT "D"**

**BOARD OF REGENTS  
PLANNING SUBCOMMITTEE MEETING**

**September 26, 1990**

**3:00-4:00 p.m.**

**Subcommittee Members Present:**

Col. Howard Fauver  
Ms. Karen Renninger  
Dr. Lois E. DeBakey (Consultant)

**Subcommittee Members Absent:**

Dr. Don E. Detmer  
Dr. Mary E. Clutter

**NLM Staff Present:**

Dr. Donald A. B. Lindberg  
Mr. Kent A. Smith  
Dr. James Ferguson  
Dr. Henry Kissman  
Dr. Elliot Siegel  
Ms. Susan Buyer Slater

The Subcommittee met to discuss preliminary strategies for a new planning effort--developing a Long-Range Plan for the Toxicology Information Program. There have been many changes since the inception of the Toxicology Information Program in 1968. "Toxicology" has developed meanings and societal importance far beyond those recognized at that time. In parallel, the demand for access to comprehensive, accurate information about the subject, however defined, has expanded rapidly. There is growing awareness of the dangers associated with the release of hazardous chemicals into the environment. Dramatic disasters in locales like Bhopal have alerted the world community to the acute toxicity of certain chemicals. More recent reports have highlighted the devastating effects of prolonged exposure of populations in Eastern Europe to industrial contaminants. Public scrutiny is increasingly directed to more subtle hazards to populations exposed to lower doses of marginally harmful agents over long periods of time.

The Planning Subcommittee agreed that the time is propitious for reevaluating the goals, objectives, and scope of NLM's Toxicology Information Program--a topic that was not systematically addressed in the original Long-Range Plan. Tentative plans include assembling a panel of 20-25 members for three one-and-one-half to two-day meetings at NLM, with the first meeting planned for winter 1991.

After discussion of the scope of the planning effort and various alternatives for the name of the Panel, the subcommittee agreed to recommend to the entire Board that a Long-Range Plan for the Toxicology Information Program be initiated by NLM staff in the near future.

The meeting adjourned at 4:00 p.m.

APPLICATIONS APPROVED BY COUNCIL - DUAL REVIEW  
 (ARRANGED NUMERICALLY)  
 PROG. CLASS:  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE  
 COUNCIL DATE: SEPT./OCT. 1990

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 CA51816-01A1	DUALS SECONDARY REVIEW: LM INTELLIGENT RADIOLOGIC IMAGE DISPLAY	01A1 142,858 02 144,433 03 154,692
2 R01 GM41484-04A1	DUALS SECONDARY REVIEW: LM STABILITY OF NATIVE AND ALTERED PROTEINS	04A1 90,280 05 86,105 06 91,271 07 96,747 08 102,551
1 R01 HG00203-01	DUALS SECONDARY REVIEW: LM DESIGN OF A NATIONAL HUMAN GENOME DATABASE	01 363,766 02 249,660 03 317,273
1 R01 RR06161-01	DUALS SECONDARY REVIEW: LM NUTRIENT REQUIREMENTS OF LABORATORY ANIMALS	01 38,475 02 39,213 03 22,843

APPLICATIONS APPROVED BY COUNCIL  
(ARRANGED NUMERICALLY BY PROGRAM)  
COUNCIL DATE: SEPT./OCT. 1990  
INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
2 R44 LM05162-02	DUALS SECONDARY REVIEW: AG	02 232,302
	USING TELEPHONE MEDIA TO PLAN FOR RETIREMENT	03 95,097

APPLICATIONS APPROVED BY COUNCIL  
(ARRANGED NUMERICALLY BY PROGRAM)

COUNCIL DATE: SEPT./OCT. 1990

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R29 LM05260-01	KNOWLEDGE ENGINEERING TOOLS TO IMPROVE KNOWLEDGE BASES	01 77,104 02 75,484 03 75,689 04 75,689 05 45,655

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

COUNCIL DATE: SEPT./OCT. 1990

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 LM05269-01	DUALS SECONDARY REVIEW: HG	01 112,372
	DIGITAL SIGNAL PROCESSING METHODS FOR BIOSEQUENCE SEARCH	02 106,432
1 R01 LM05276-01	ANALYZING BIOLOGICAL SEQUENCES WITH MACHINE LEARNING	01 147,551
		02 144,200
		03 152,750

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 PROG. CLASS: COUNCIL DATE: SEPT./OCT. 1990  
 INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 LM05247-01	INFORMATION RETRIEVAL INCORPORATING BELIEF NETWORKS	01 118,106 02 120,886 03 120,212
1 R01 LM05250-01	ANALOGY AND EXPLANATION IN EXPERT MEDICAL DIAGNOSIS	01 59,624 02 58,334
1 R01 LM05252-01	LONGITUDINAL STUDIES ON USERS OF GRATEFUL MED	01 89,884 02 99,412 03 111,440 04 108,913 05 52,764
1 R01 LM05253-01	ADVANCED AI TECHNIQUES FOR DOCUMENT RETRIEVAL	01 177,961 02 156,615 03 156,240
1 R01 LM05257-01	MATHEMATICAL TOOLS FOR MACROMOLECULAR SEQUENCE ANALYSIS	01 221,734 02 204,603 03 212,787
1 R01 LM05263-01	COMPUTATIONAL APPROACHES TO PROTEIN STRUCTURE PREDICTION	01 77,000 02 79,480 03 82,059
1 R01 LM05264-01	EXTENDED ISCN DATA BASE SYSTEM FOR LEUKEMIA CYTOGENETICS	01 99,780 02 158,624 03 105,696
1 R01 LM05267-01	DUALS SECONDARY REVIEW: RR PROTEIN DYNAMICS AND NMR: SOLUTION STRUCTURE	01 176,933 02 121,894 03 123,053



APPLICATIONS APPROVED BY COUNCIL  
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PROG. CLASS:

COUNCIL DATE: SEPT./OCT. 1990

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 R01 LM05159-01A1	IDENTIFYING CARBOHYDRATE STRUCTURES BY NEURAL NETWORKS	01A1 72,599 02 75,503 03 78,523
1 R01 LM05217-01	RESPONSIVE PLANNING FOR MULTIPLE GOAL SATISFACTION	01 148,358 02 127,688 03 137,246
1 R01 LM05231-01	HISTORY OF HUMAN POPULATION GENETICS	01 45,500
1 R01 LM05232-01	INFORMATION TRANSFER OF FRAUD AND ERROR VIA CITATIONS	01 45,023
1 R01 LM05237-01	HOLISM AND THE REENCHANTMENT OF GERMAN PSYCHOBIOLOGY	01 24,800
1 R01 LM05240-01	TRANSLATION AND EVALUATION OF AN ARABIC MEDICAL MANUAL	01 12,000 02 12,000
1 R01 LM05241-01	PETRUS SEVERINUS AND 16TH-CENTURY PARACELSIAN MEDICINE	01 25,000
1 R01 LM05243-01	FRAME BASED REPRESENTATION OF MEDICAL INDEXES	01 63,156 02 65,750 03 69,452

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PROG. CLASS:

COUNCIL DATE: SEPT./OCT. 1990

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
2 R01 LM04336-06	EXPERT COMPUTER SYSTEMS WHICH CRITIQUE PHYSICIAN PLANS	06 157,788 07 170,562 08 185,053
2 R01 LM04487-06	COMPUTER-BASED EXERCISES IN CLINICAL DIAGNOSIS: PLANALY	06 178,330 07 181,284 08 196,164 09 245,830
2 R01 LM04572-04A1	INVESTIGATIONS IN KNOWLEDGE MANAGEMENT	04A1 241,870 05 276,040 06 309,355 07 340,665 08 356,685
2 R01 LM04622-04	DEVELOPING QMR KNOWLEDGE BASE INTO A RESOURCE	04 98,292 05 99,866 06 101,620
1 R01 LM05107-01A1	DUALS SECONDARY REVIEW: HL VENTRICULAR FIBRILLATION AND SUDDEN CORONARY DEATH	01A1 20,000
1 R01 LM05130-01A1	DUALS SECONDARY REVIEW: HL ADVANCED COMPUTER METHODS FOR ICU TREATMENT PLANNING	01A1 213,022 02 259,358 03 298,474 04 321,554 05 352,848
1 R01 LM05152-01A1	SIMULATION TOOL KIT FOR INSTRUCTION IN PHYSIOLOGY	01A1 156,369 02 170,867 03 181,165

APPLICATIONS APPROVED BY COUNCIL  
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 PROG. CLASS: COUNCIL DATE: SEPT./OCT. 1990  
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APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 G08 LM05235-01	MEDLARS ACCESS THROUGH A VAX NETWORK	01 138,131
1 G08 LM05239-01	DIAL ACCESS TO MEDLINE ON CD-ROM BY HOSPITAL STAFF	01 80,000
1 G08 LM05244-01	PUBLIC ACCESS TO ELECTRICAL STIMULATION INFORMATION	01 106,313 02 110,689 03 115,244
1 G08 LM05246-01	RURAL ALASKA HEALTH INFORMATION ACCESS PROJECT	01 29,595 02 74,103 03 24,651

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COUNCIL DATE: SEPT./OCT. 1990  
INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE  
PROG. CLASS:

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 G07 LM05262-01	ENHANCED INFORMATION ACCESS FOR END-USERS	01 208,960

APPLICATIONS APPROVED BY COUNCIL  
(ARRANGED NUMERICALLY BY PROGRAM)

COUNCIL DATE: SEPT./OCT. 1990

INSTITUTE/DIVISION: NATIONAL LIBRARY OF MEDICINE

APPLICATION NUMBER	PROJECT TITLE	AMOUNTS RECOMMENDED
1 G07 LM05155-01A1	OUTREACH OF CENTRALIZED PEDIATRIC LIBRARY SERVICES	11,477
1 G07 LM05233-01	TAYLOR MADE SEARCH CAPABILITY	11,976
1 G07 LM05234-01	BAHSIC INFORMATION ACCESS PROJECT	115,980
1 G07 LM05238-01	NEVADA HEALTH SCIENCE INFORMATION ACCESS PROGRAM	123,934
1 G07 LM05245-01	NEIHSL; STRENGTHENING THE NETWORK WITH BASIC TECHNOLOGY	100,959
1 G07 LM05255-01	LIBRARY COMPUTER ACCESS DEVELOPMENT	11,485
1 G07 LM05256-01	INFRASTRUCTURE FOR A SHARED INTEGRATED LIBRARY SYSTEM	11,965
1 G07 LM05258-01	HEALTH SCIENCE INFORMATION NETWORK MODERNIZATION	65,707