*Pernick, Martin S., $36,929
1 R01 LM06662-01
What Is Death? Changing Meanings Since 1740
University Of Michigan, Ann Arbor

Educational Technology

No separate budget has been identified for this area, nor is NLM likely to fund simple development or demonstration projects. However, educational technology viewed from the viewpoint of educational research is of great interest. Applicants seeking funding for educational technologies are advised to structure their efforts as research projects for which R01 informatics grants would be appropriate.

SBIR/STTR (PHS 301)

All NIH research grant programs, including NLM's, by Congressional mandate allocate a fixed percentage of available funds every year to Small Business Innovation Research (SBIR) grants. These projects may involve a Phase I grant for product design, and a Phase II grant for testing and prototyping. NLM also participates in the other mandated fund allocation program, Small Business Technology Transfer, but generally it contributes its small allocation to other NIH institutes, as it did this year.

Frawley, Sandra, $49,732
3 R43 LM06330-01S1
Linking Web-Based Retrieval to Online Patient Record
Medical Decision Associates, Inc.
New Haven, CT

*Baclawski, Kenneth P., $90,298
1 R43 LM06665-01
Biomedical Science Info. Retrieval and Mgmt.
Softamp, Waltham, MA

*Liddy, Elizabeth D., $98,672
1 R43 LM06671-01
Medlink, Textwise LLC
Syracuse, NY

Liddy, Elizabeth D., $50,000
3 R43 LM06671-01S1
Medlink, Textwise LLC
Syracuse, NY

*Kalinyak, Judith E., $90,298
1 R43 LM06679-01
An Intranet System for Cardiovascular Disease
Intelligent Medical Objects
Northbrook, IL

*Doyle, Michael D., $100,000
1 R43 LM06728-01
Anatomical Mapping And Visualization System
Muritech, Inc.
Cambridge, MA

Other Grants

Conference Grants

Support for conference and workshops is intended to help scientific communities identify research needs, share results, and prepare for productive new work.

Biomedical Ethics

Ethical issues in health care and research produce an enormous literature. This literature comes from law, medicine, public health, and government. The National Reference Center for Bioethics Literature at Georgetown University continues to offer invaluable resources and guidance for workers in this area. An NLM contract maintains the Center. A complementary contract from Library Operations supports an indexing activity that contributes to BIOETHICSLINE, one of NLM's online databases.

N0l LM 7-3529, $153,300
National Reference Center for Bioethics Literature
Georgetown University
Washington, DC

Other Extramural Programs Activities

HPCC and Outreach

The outreach and the High Performance Computing and Communications initiatives of NLM are elements of the formal grant programs.

In addition to its standing grant programs, Extramural Programs Division of NLM engages in a number of special projects aimed toward important biomedical goals, and often involving cooperation with another NIH institute or other Federal agency. Some examples of such activities in FY 1998 follow.

The Digital Libraries Initiative—Phase 2 (DLI-2)

This initiative explores innovative digital libraries research and applications. The program extends the previously sponsored "Research on Digital Libraries Initiative." The term "digital libraries" is used to denote the vast distributed collections of text and images available through the Internet. Much research and development will be needed before these new electronic libraries can be used easily and efficiently to obtain reliable

information. DLI-2 is administered by the National Science Foundation and is jointly sponsored by the NSF, the Defense Advanced Research Projects Agency, the NLM, the Library of Congress, the National Aeronautics and Space Administration, the National Endowment for the Humanities, and others.

The project is interested in electronic information in a broad spectrum of fields in arts and science. Improving network-based information access for health care consumers is an important goal of the project for NLM, although all aspects of digital libraries as applied to health domains may compete for funding. NLM, as have the other sponsors, contributed funds to NSF, which will manage the project. NLM's commitment for FY 1998 was $1,000,000, and represents an arm of the HPCC initiative. Total project budget from all sources may exceed $50 million over a 5 years. NLM is making available to interested applicants the Unified Medical Language System Knowledge Sources and the Visible Human datasets. Applicants are also free to use resources of their own choosing.

Program for Informatics Training in Africa

Computer-assisted information processing and communication have become critical to both medical research and health care in the developed world. Parts of the developing world are falling further and further behind technically during the explosive growth of these tools elsewhere, despite enormous opportunities they offer to improve science and health delivery in lower income nations.

During the development of NLM's long range international plan, NIH's Fogarty International Center (FIC) proposed that a training program in medical informatics be developed jointly by the Center and NLM. The broad aim of the program would be to support training that would improve the ability of developing country scientists and health professionals to use information technology to advance their work.

FIC and NLM held an international workshop at NIH on February 24, 1998 to help focus the specific objectives and structure of the program. As initial funding for the program is limited, FIC decided to focus initially on African scientists and health professionals. The reasons for this choice are several. Hurdles to development of informatics capability in Africa are significant, including connectivity, hardware, political and social barriers. However, the opportunities in Africa to leapfrog many of the traditional barriers to information access and communication are also great. EP participated in the development of the program, and conducted peer review of the applications received.

Improving Public Health and Health Services Research

Because of the remarkable potential of information technology to process huge quantities of data, there is growing interest by both professionals and the public in measuring the quality and effectiveness of current medical practices. Noting that the Agency for Health Care Policy and Research (AHCPR) recently funded a number of training sites intended to increase expertise in health services research, NLM initiated a series of joint discussions and planning for a workshop to explore ways and means of using informatics, and in particular, the NLM informatics research training programs, to facilitate the AHCPR training goals, and to further our mutual interest in health services research and public health research. A jointly sponsored symposium on the topic will be held in FY 1999 at NLM.

Informatics for the National Heart Attack Alert Program

The NHAAP was established by the National Heart, Lung, and Blood Institute in June 1991 to promote the use in clinical practice of scientific research that indicated that prompt medical treatment—notably, thrombolytic therapy—significantly improves survival rates for patients with acute myocardial infarction (AMI) and improves the quality of life for the patients and those around them. However, progress has been slow, and at present only a small minority of patients capable of benefiting are actually receiving the medications. The NHAAP has identified three stages where delay can occur in the identification and treatment of individuals with a potential heart attack:

Stage I: Patient and bystander recognition of the symptoms and signs of AMI and their actions in response to these symptoms.

State II: Prehospital action by emergency medical services providers - that is, the response to patients prior to their arrival at the hospital.

Stage III: Hospital action by health care providers at the hospital to identify and treat patients with the symptoms and signs of AMI.

Following a symposium sponsored jointly by NHLBI, NLM, and the Agency for Health Care Policy and Research, NLM published a Request for Proposals intended to obtain contract research and development services related to the use of medical informatics as an approach to reducing or eliminating some or all of the various obstacles which are hindering the ability of the NHAAP to reach its goals. NHLBI transferred $800,000 to NLM to support this program. Eight contracts for Phase One

planning contracts were awarded. It is expected that subsequent phases will include modeling and implementation contracts.

Lucille Ohno-Machado, M.D., Ph.D.
Decision Systems Group
Boston, MA

G. Octo Barnett, M.D.
Massachusetts General Hospital
Boston, MA

Henry C. Chueh, M.D.
Massachusetts General Hospital
Boston, MA

Victor J. Strecher, Ph.D., MPH
University of Michigan
Ann Arbor, MI

Stavroula Osganian, M.D., Ph.D.
New England Research Institutes, Inc.
Watertown, MA

Harry P. Selker, M.D., MSPH
New England Medical Center
Boston, MA

Pat McLaughlin, M.D.
University of Missouri-Columbia
Columbia, MO

James Cimino, M.D.
Columbia University
New York, NY

Miscellaneous Special Projects

NLM continues to transfer funds to other agencies to support projects of broad scope and utility for biomedical research.

Y1-LM-8035-01, $150,000
Coordinate Funding and Oversight of a Database to Contain Atomic Coordinates and Related Structural Information for Biological Macromolecules
Brookhaven National Laboratory
Uptown, NY

Y1-LM-8040-01, $50,000
CarbBank: A Structural and Bibliographic Database for Complex Carbohydrates
Department of Energy
University of Georgia

Grants Management Highlights

The Grants Management staff reviews NLM grant applications for administrative content and compliance with guidelines and directives; prepares and disseminates grant award documents; maintains official grant files for NLM; provides consultation and assistance to grantees on appropriate business management concepts; and advises NLM officials on grants management policy and procedures.

The Grants Management staff issued 156 awards for FY 1998. We are now able to e-mail the Notice of Grant Awards to the Grantee Institution instead of mailing hard copies. We are also now using the new Information Management Planning Analysis and Coordination II (IMPAC II) system to issue our Notice of Grant Awards. Effective October 1, 1998, there will be an increase in the stipend levels for the National Research Service Awards.

Review Committee Activities

NLM's scientific merit peer review group, the Biomedical Library Review Committee (BLRC) met four times in 1998 and reviewed 135 applications of which 80 were approved. The Committee (see Appendix 5 for roster of members) operates as a "flexible" review group; i.e., it is composed of three standing subcommittees: nine members on the Medical Library Resource Subcommittee, seven members on the Medical Informatics Subcommittee; and four members on the Biomedical Information Subcommittee. The subcommittees consider research applications in medical library projects, medical informatics, and biotechnology information respectively.

A final peer review of applications is performed by the Board of Regents, which meets three times a year, approximately three months after the Biomedical Library Review Committee. (A roster of the Board members is in Appendix 2.) One of the Board's subcommittees, the Extramural Programs Subcommittee, meets the day before the full Board for the review of "special" grant applications. Examples of "specials" include applications for which the recommended amount of financial support is larger than some predetermined amount; when at least two members of the scientific merit review group dissented from the majority; when a policy issue is identified, and when an application is from a foreign institution. The Extramural Programs Subcommittee makes recommendations to the full Board which votes on the applications.

Review Reform

The NIH is participating in the President's Reinventing Government initiative. A portion of this activity has been the establishment of a Peer Review Oversight Group charged with coordinating, evaluating, and making policy recommendations for all peer review conducted at NIH. The Group is continuing to meet and will consider input from the applicant community. Some changes which have occurred include:

- The Division of Research Grants has become the Center for Scientific Review, and a number of the standing study sections have been reorganized.
- Five specific criteria have been chosen as a basis for assessing the merit of NIH research projects grants.
- CFIRST (R29) awards for newly independent biomedical investigators will become R01 (traditional Research Project) awards after June 1998. Applicants wishing to apply for a FIRST award will indicate this on the cover of the application.
- New guidelines will go into effect after October 1, 1998 for the inclusion of children in NIH funded research involving human subjects.

Divisional Operations

An increase in the operating budget was requested for the Internet Connection Program. EP is moving toward the electronic processing of grant review for both the Board of Regents and Biomedical Library Review Committee meetings.

Administrative and Personnel

EP relocated to the Rockledge One Building in June 1998. EP continues to incorporate the new NIH streamlining initiative by utilizing appropriate staff in various tasks throughout the year. EP filled two Grants Technical Assistants and one program analyst positions.

Summary

NLM's EP, like almost all extramural grant divisions at NIH, regrets that not all applications of good quality can be funded, but the grants which can be made are furthering NLM goals in most key areas. However, support for developing the educational technology of Informatics remains uncomfortably small, and, most importantly, we have not yet expanded the informatics research budget commensurate with the increase in informatics scientists leaving our training programs.

Table 9

Extramural Grant and Contract Program
(dollars in thousands)

Category	*FY 1996*		*FY 1997*		*FY 1998*	
	No.	*$*	*No.*	*$*	*No.*	*$*
Resource projects	**53**	**5,754**	**40**	**5,307**	**39**	**5897**
IAIMS	(10)	(3,011)	(8)	(3,040)	(9)	(3,690)
Access	(5)	(476)	(6)	(320)	(3)	(198)
Systems	(12)	(1,387)	(11)	(1,412)	(10)	(1,352)
Connections	(26)	(880)	(15)	(535)	(17)	(657)
Research	**68**	**14,817**	**80**	**14,994**	**72**	**15,887**
Medical informatics projects	(24)	(4,433)	(32)	(5,955)	(38)	(8,384)
Medical informatics resource	(1)	(1,419)	(1)	(230)	…	…..
Biotechnology	(19)	(5,264)	(27)	(6,259)	(16)	(4,730)
Cooperative agreements	(7)	(1,872)	(2)	(754)	…	…..
Career awards	(16)	(1,638)	(18)	(1,796)	(17)	(1,773)
Library science	(1)	(191)	…	…..	…	…..
Digital library	…	…..	…	…..	(1)	(1,000)
Training	**19**	**4,501**	**20**	**5,645**	**23**	**5,519**
Institutional	(10)	(4,178)	(12)	(5,290)	(12)	(4,993)
Fellowship	(9)	(323)	(8)	(355)	(11)	(526)
Publications	**12**	**327**	**9**	**247**	**8**	**269**
Bioethics	**1**	**458**	**1**	**498**	**1**	**513**
SBIR/STTR	**2**	**196**	**4**	**401**	**5**	**508**
Regional Medical Library	**8**	**6,283**	**8**	**6,611**	**8**	**6,710**
NIH Tap		**849**		**830**		**830**
Totals:	**163**	**$33,185**	**162**	**$34,533**	**156**	**$36,133**

Office of Computer and Communications Systems

Roy A. Standing
Acting Director

Application Support Services

One of the major services performed by OCCS is to provide operational systems for applications that support the mission of the NLM. This includes requirements definition, analysis, system development, and operational support. Over the past 25 years numerous custom-built systems have been developed and implemented. These legacy systems continue to provide most of the support for traditional library services, and unique NLM services and information retrieval of many of NLM's databases.

OCCS ensures these applications are operational during all scheduled hours (typically around the clock) and responds to change requests from the program areas. These legacy systems support acquisition, cataloging, circulation, preservation, binding, online public access, and document delivery of the world's historical and contemporary biomedical literature; development of a thesaurus and classification system used to organize bibliographic information; authoritative indexing and cataloging of material; building and dissemination of bibliographic databases.

Ensuring these legacy systems are fully operational while at the same time resolving Y2K issues and supporting NLM's System Reinvention efforts has been especially challenging.

Application Development

MEDLINE*plus*

MEDLINE*plus* is an easy-to-understand resource for the public which includes MEDLINE as well as links to NIH consumer health organizations, clearinghouses, health-related organizations, self-help groups, and clinical trials. MEDLINE*plus* is the result of a joint effort by OCCS and LO. In the initial development of MEDLINE*plus*, pages were developed by LO using static HTML pages. It soon became clear that this approach would be extremely difficult to create and maintain. OCCS was asked to come up with an alternative.

The result was a system utilizing a commercial database (Oracle) and ColdFusion for the development of the web pages. A key feature of the design is that the web pages are dynamically built from the database. This allows the content providers to concentrate on content rather than being concerned about HTML formatting. The database design and a working prototype was developed within a few weeks in order to be prepared for a scheduled meeting with public librarians.

The MEDLINE*plus* prototype was presented to representatives from 37 libraries on July 27th. Design and development of the project has continued in order to provide an input and approval system that can support remote contract work. This has included creating a static page generation application that parallels the dynamic input system. The application was moved to a production environment with a new production ColdFusion server accessing a production Oracle database server. Link checking is performed to ensure all links are valid.

World Wide Web Support Services

OCCS is responsible for the development and support of the NLM home page(s) that provides links to other NLM services and numerous other sites. This includes the computing and networking environments. To provide a stable environment for this dynamic site OCCS designed and implemented a dual development/production environment. NLM web contributors are able to develop and update HTML pages in the development environment with no impact on production. Upon approval, appropriate pages are promoted to the development systems. OCCS developed scripts to support this promotion process.

The NLM home page is constantly being evaluated to ensure it is the best it can be. Early in 1998 the new NLM Intranet "look and feel" design was implemented. This included restructuring to support the use of Frames, Stylesheets, Tables, and image maps. Use of the Internet and NLM Intranet continues to grow dictating changes in computing hardware and networking facilities to support this workload and to provide a more robust environment.

Loansome Doc

A Web-based server to support registration and submitting interlibrary loan requests from PubMed and Internet Grateful Med was put in production. This effort required coordination from many NLM components and from the Regional Medical Libraries.

NLM System Reinvention

Integrated Library System

A team of OCCS and LO staff conducted a multi-year analysis of commercially available Integrated Library Systems(ILS). This analysis was completed in February 1998, when NLM selected

Voyager, developed by Endeavor Information Systems Inc., as the Library's new integrated library system to support its basic library functions. Voyager, an integrated information management system designed for academic and research libraries, will be used by NLM for acquisitions, serials control, cataloging, collection management, circulation, preservation, binding, and an Online Public Access Catalog (OPAC). The OPAC will provide the retrieval engine for online access to the Library's cataloging records for monographs, audiovisuals, and serials, replacing existing online access mechanisms such as Locator, CATLINE, AVLINE and SERLINE. Voyager is a fully integrated system that combines open system architecture and relational database technology. It will allow NLM to incorporate data from the ILS into its other unique applications. Voyager will replace numerous internal custom-built systems developed at NLM over the past 25 years.

Following the award OCCS and LO staff worked with Endeavor to add new features to the product, including enhancements to serials processing and enhancements to the closed stack request module and a binding module. The process of extracting information from NLM's disparate legacy systems into a single integrated system was extremely challenging requiring the combined efforts of over 100 NLM staff members. Hundreds of computer programs were developed to support this effort.

The first phase of the ILS implementation will begin later this year with the release of Voyager for in-house use by NLM staff for cataloging and acquisitions work.The Web-based Voyager OPAC will be available for public use in early 1999. As noted above the OPAC will provide the retrieval engine for online access to the Library's cataloging records for monographs, audiovisuals and serials. The implementation of Voyager was a key milestone in NLM's System Reinvention efforts. Numerous other applications, including DOCLINE, SERHOLD and the creation of journal article citations (e.g., MEDLINE) will rely on the bibliographic data in the Voyager ILS.

DOCLINE Reinvention

Successful completion of this project will result in a replacement system for DOCLINE, NLM's Interlibrary Loan System. The goal is to re-engineer the current DOCLINE system utilizing state-of-the-art technology while adding functionality. Key features will be a Web access with interfaces to PubMed and the Voyager Integrated Library System.

The project includes DOCLINE itself and two key other components: SERHOLD and DOCUSER. SERHOLD is the system where participating DOCLINE libraries submit their holding information to be used by the DOCLINE system when routing interlibrary loan requests. DOCUSER is the system where information about participating DOCLINE libraries is maintained. The system is being developed using ColdFusion Web development tool and Oracle. Development is expected to be completed in the summer of 1999 with full implementation in the fall of 1999.

Data Creation and Maintenance of MEDLARS Databases

A major component of NLM's Systems Reinvention effort is the creation of a computing system to support the creation of MEDLINE and other databases. The system must provide journal authority control, handle both print and electronic material, support for the addition of MeSH terms to each article, and a mechanism to maintain the MeSH terms consistent with the current year of MeSH.

The Voyager Integrated Library System and the MeSH2000 thesaurus maintenance system are essential components of the new data creation and maintenance system. Process flow and data analysis have been completed and the resulting data model was used to create a database (Oracle). The database was populated with MEDLINE records and prototypes have been created. Work continues with a projected completion date of fall 1999.

Thesaurus Development

Central to the creation of all MEDLARS database are the Medical Subject Headings. A project (MeSH2000) to create a new thesaurus maintenance system has been under way for some time. Originally conceived to simply re-engineer the legacy system, the scope of the project was expanded to permit MeSH to be more in line with the UMLS Metathesaurus. This change in scope resulted in restructuring of the database design as well as rethinking of the process model.
Java, Oracle and Oracle Context are the key development tools being utilized. Development was completed late in 1998; system and acceptance testing will be completed in the spring of 1999.

RELAIS

The final v1.5 release of Relais was installed and tested in April. Requests for Overnight Photocopy Service(OPS) was the first group of requests to be processed. In the middle of May, we began downloading all NLM DOCLINE requests into Relais for processing. In June, we began downloading all NIH library electronic delivery

requests from DOCLINE and Loansome Doc into Relais.

CUSTOMERQ and HELPQ

CUSTQ is a commercially available software product that provides centralized support for reporting tracking and problem resolution. This system went operational and supports the centralized customer support services for much of NLM.

HELPQ is a commercially available software product to support OCCS online trouble reporting was installed and implemented. It went into production in June 1998

Local Area Network and Communications

During FY 1998, work continued on the project of upgrading the NLM LAN communications from 10BaseT Ethernet to 100BaseT Ethernet using a switched environment. The core of the LAN was first upgraded to this capacity, and then conversion of user subnets was started.

The conversion and migration to the GroupWise e-mail and calendar system from cc:mail and Quickmail was completed in FY 1998. This has simplified and improved e-mail administration by reducing the number of systems supported to two—Unix (POP, Eudora, IMAP) and GroupWise.

The NAL (Novell Application Launcher) was deployed for use as a software distribution tool via the LAN. NAL was used to roll out the GroupWise client software. Eventually NAL will totally replace Saber/McAfee for network based menus. The NAL was used for the automated distribution of Voyager software, McAfee Virus protection, and other applications via the LAN to staff PCs.

Preliminary investigations were performed for Y2K compliance for PCs, servers, and network devices and software. Some remediation was completed, and monitoring of vendor solutions for COTS products was started.

The IT functions of the Extramural Programs Office were supported in EP's relocation to the Rockledge I Building in Bethesda. On-site technical support was provided for the PC, network, and IMPAC II systems.

Overall NLM Network Management was improved with the addition and use of management and monitoring tools. One such tool is the Netscout RMON probe that is attached to the T3 link to our Internet Service Provider B GTE/BBN Planet. This enables us to monitor the traffic and utilization of the traffic on this important link.

Y2K

OCCS is meeting the Y2K compliance mandates set forth by the Office of Management and Budget and the Department of Health and Human Services. NLM had earlier identified 14 IT systems as having potential Y2K problems. Of these 14, 3 were considered critical to NLM's mission and required to undergo Independent Validation & Verification (IV&V) testing.

OCCS is in the process of replacing the library automation functions by a Y2K compliant COTS system—Voyager Integrated library System. The MEDLARS information retrieval system has been made Y2K compliant and will be replaced by PubMed in 1999. PubMed is Y2K compliant. The remaining mainframe systems (database creation and maintenance, DOCLINE, MESH and publications) have been made Y2K compliant by OCCS program development efforts. The TOXNET system has been replaced with a Y2K compliant system**.** The IV & V for these systems is scheduled to be completed by March 31, 1999.

NLM Computer Center

In addition to the normal operating system and program product support functions, the major accomplishments of the OCCS Mainframe Systems Team were related to the various efforts required for Year 2000 (Y2K) compliance. These Y2K efforts consisted of three phases. Phrase 1 was a successful hardware upgrade (disk drives and memory) that was required in order to provide concurrent support for both IGM and Y2K testing. Phase 2 tasks included the installation of the following software on a dedicated Y2K virtual computer: OS/390 Operating System, numerous IBM programs products, numerous non IBM products, and the MEDLARS Shell and Supporting Tasks. Phase 3 consisted of the development and successful execution of Y2K test plans for all of the phase 2 software components in the dedicated Y2K environment. In summary, work accomplished during 1998 left the OCCS mainframe and software supported by the Systems Team well positioned for Y2K.

Computer Operations

The in-house cartridge tape library was updated and consolidated, allowing for the removal of over 5,000 outdated and damaged cartridges.

Several program entities have transferred their systems into the NLM computer facility, including the Specialized Information Systems which transferred TOXNET system. Those organizations have also been provided with floor space, electrical power (UPS), system monitoring, system interaction and system reporting on a 24 hour, 7 days a week

basis, allowing OCCS to move towards total facilities management.

OCCS was successful in getting CBOMS (a mainframe job scheduler) to be Y2K compliant and compatible with the current OS390 mainframe operating system.

Information Systems Laboratory

The Information Systems Laboratory (ISL) has as its primary responsibility the maintenance and support of OCCS's 40+ UNIX servers and workstations, as well as the NT workstations in the NLM public reading room. In addition, during 1998, the ISL was responsible for the following major developmental tasks:

- Establish an Oracle infrastructure to support production and developmental databases, and serve as the Oracle Database Administrator (DBA) for these databases.
- Improve overall NLM computer security. This was done by forming the NLM Computer Security Committee to: provide a forum for sharing computer security information; act as an NLM Computer Incident Response Team; and develop NLM wide computer security policies. Also, to improve security, ISL installed both network intrusion detection software to monitor Internet traffic for hacker activity, and network scanning software to probe NLM systems for security weaknesses.
- Define the hardware environment and perform the initial system configuration for NLM's new Voyager Integrated Library System.
- Create a new High Availability/High Performance infrastructure to support NLM's WWW services.
- Configure and maintain NLM's Images of the History of Medicine WWW server.

User Services

- The Desktop Computer Support contract was awarded to Digicon Corp. of Bethesda. The contract commenced on June 15, 1998. They are performing the work previously done by Trawick and BDM, whose contracts each ended on June 19, 1998.
- As part of the OCCS HelpDesk reinvention, the OCCS HelpDesk was renamed to Information Technology Services Center (IT Services Center).
- Digicon Corporation, in conjunction with MIL Corp., played a substantial role in the Y2K audit of NLM's workstations and servers. Over 1,200 units were tested in less than two months.
- NT training courses were offered to the NLM by OCCS.
- 16 Dell Notebooks were ordered for the mobile training OCCS is providing. Classes are taught by Laszlo Nagy of MIL Corp and consist of MS Word, Excel, Powerpoint and Access. Future courses may include Netscape, HTML and HelpQ.
- 269 new 400 MHz workstations were configured and installed at NLM.

Administration

Executive Officer
Donald C. Poppke

National Performance Review

The NLM System Reinvention is a high priority initiative conducted by NLM in support of its role as a reinvention laboratory under the National Performance Review. The project is designed to reinvent the Library's information systems, to move to a more flexible, powerful, and maintainable computer system that will improve internal processing and provide innovative services to outside users. Significant progress in system reinvention was made in several areas in FY 1998:

Internet Grateful Med (IGM): Several databases, including TOXLINE and BIOETHICSLINE, were added to IGM towards the end of the fiscal year. At the same time, IGM began using the new PubMed system in place of the old ELHILL retrieval system for all its MEDLINE searches.

Document Delivery Systems: NLM's Loansome Doc service, through which users can request copies of journal articles from a local medical library, was upgraded this year. The new web-based Loansome Doc is linked to both PubMed and IGM, giving users of either system a simple way of immediately ordering a copy of an article found in a search. Another system, Relais, installation of which began in FY 1997, went into full operation in May 1998. Relais streamlines NLM's document delivery process and is particularly efficient at electronic transmission of copies of articles requested by NLM's users.

Integrated Library System (ILS): NLM purchased Endeavor Information System's Voyager ILS product and contracted with the company to make certain enhancements to the product to meet NLM's needs. Besides working out the details of the changes to be made to the product, members of NLM's project team got extensive training in the operation and use of Voyager. By the end of the fiscal year, NLM staff had also completed the bulk of a major effort to clean up and reorganize the catalog and other existing library system files in preparation for transferring them to the new system.

Financial Resources

In FY 1998, the Library had a total appropriation of $160,516,000. Table 11 displays the FY 1998 budget authority plus reimbursements from other agencies, and the allocation of these resources by program activity.

TABLE 10

Financial Resources and Allocations, FY 1998 (dollars in thousands)

Budget Authority:	
Appropriation, NLM	$160,885
Plus: Reimbursements	10,037
TOTAL	**$170,922**
Budget Allocation:	
Extramural Programs	$ 36,033
Intramural Programs	126,214
Library Operations	(64,812)
Lister Hill National Center for Biomedical Communications	(36,877)
National Center for Biotechnology Information	(15,221)
Toxicology Information	(9,304)
Research Management and Support	8,675
TOTAL	**$170,992**

The 1998 appropriation language authorized the Library to use personal services contracts and provided for the availability of $4.0 million without fiscal year limitations. These authorities are key elements of NLM's system reinvention initiative.

Personnel

In October 1997, Carol Hotton, Ph.D., received a Postdoctoral Intramural Research Training Award from the National Center for Biotechnology Information (NCBI). Dr. Hotton received her Ph.D. in botany from the University of California. Immediately before her appointment with NCBI, Dr. Hotton served as a Research Associate at the National Museum of Natural History in Washington, D.C. While at NCBI, Dr. Hotton's research includes the continuing analysis of the taxonomy of species in GenBank, the advancing of systematics of angiosperms, caryophylles, and organismal evolution at the molecular level.

In November 1997, Sharee Pepper, Ph.D., was selected for the position of Health Scientist Administrator within the Division of Extramural Programs. Formerly, Dr. Pepper worked for NIDDK as a Health Scientist Administrator for more than six years. In her new position, Dr. Pepper is responsible for planning, conducting, and coordinating the scientific and technical merit review of grant applications assigned to NLM.

In November 1997, Yuri Wolf, Ph.D., was appointed as an NCBI Visiting Fellow. Dr. Wolf received his Ph.D. in bioinformatics at the Institute of Cytology and Genetics, Russian Academy of Sciences, Novosibirsk, Russia. At NCBI, Dr. Wolf

will conduct research in the analysis of intergenome relationships.

In November 1997, Zuoming Deng, Ph.D., received a Postdoctoral Intramural Research Training Award from the NCBI. Dr. Deng received his Ph.D. from the University of Texas at Houston. Dr. Deng is involved in the analysis of DNA and protein sequences.

In January 1998, the NLM entered into an Intergovernmental Personnel Act agreement (IPA) with Neil Rambo, Associate Director, Pacific Northwest Regional Medical Library, University of Washington, Seattle. Mr. Rambo has significant experience in health information services, outreach, and training in the use of advanced information services. Mr. Rambo is developing public health informatics training materials, organizing pilot tests of the materials with groups of public health professionals identified by Regional Medical Libraries, and modifying and updating the materials as indicated by the pilot tests.

In January 1998, Paul A. Fontelo, M.D., M.P.H., joined NLM as a Special Expert with the Office of High Performance Computing & Communications. Dr. Fontelo received his M.D. from the University of the Philippines. He is a board certified pathologist and has served as Chief, Telepathology Division, Armed Forces Institute of Pathology; Chief, Department of Pathology, 196th Station Hospital SHAPE, Belgium; and Chief, Department of Early Diagnosis, U.S. Army Medical Research, Research Institute of Infectious Diseases. Dr. Fontelo has had extensive experience in computer system hardware and software integration and high-speed networking. As a Special Expert with NLM, Dr. Fontelo is working on developing NLM's Next Generation Internet in health and medical areas.

In February 1998, Thomas L. Madden, Ph.D. was selected for a Research Biologist position with the Information Engineering Branch, NCBI. Dr. Madden received his Ph.D. in physics from the University of California, Santa Cruz and did postdoctoral work at Brandeis University. Dr. Madden started at NCBI as a postdoctoral fellow in 1993. Dr. Madden maintains and manages the BLAST database. He has extensively redesigned the popular sequence database search tool which is used by scientists all over the world thousands of times a day and has led to innumerable scientific discoveries.

In February 1998, Junga Kim was appointed as a Visiting Associate with the Information Engineering Branch, NCBI. Ms. Kim received her Master's Degree in biology from George Washington University in 1993 and came to NCBI as a Scientific Data Analyst immediately afterwards. She serves as the assistant GenBank coordinator, providing day-to-day detailed supervision of the sequence indexers. Ms. Kim also works on troublesome sequence submissions and updates and has created web pages for in-house use to help maintain the scheduling of various quality assurance duties performed by the NCBI staff.

In March 1998, NLM's Division of Specialized Information Services (SIS) announced the selection of Jeanne C. Goshorn and Michael D. Moore for two branch chief positions. Ms. Goshorn will direct the Biomedical Information Services Branch and Mr. Moore will direct the biomedical Files Implementation Branch. Ms. Goshorn joined the NLM in 1980 as a Technical Information Specialist. Before becoming branch chief, Ms. Goshorn was responsible for managing a variety of activities and services related to the TOXLINE family of databases, the RTECS database and query response, training, and exhibit efforts of the Toxicology Information Program. Mr. Moore joins the NLM from the Department of Commerce, Patent and Trademark Office where he served as Chief of the Scientific and Technical Information Center, Biotechnology/Chemical Division, directing the Center's daily operations and long-term information systems and services, and supervising the development of online biotechnology databases.

In May 1998, Fernando Burbano, Director Office of Computer and Communication Systems (OCCS) left the NLM for a position with the State Department. Roy Standing, Chief, Information Management Branch, OCCS is serving as Acting Director, OCCS.

In June 1998, Paul A. Kitts, Ph.D., joined NLM as a Special Expert with the Information Engineering Branch, NCBI. Originally from Great Britain, Dr. Kitts received his Ph.D. in genetics from the University of Glasgow, Scotland. Dr. Kitts came to NLM from CLONTECH Laboratories Inc. in Palo Alto, California, where he spent six years as a research scientist. There he developed new commercial reagents such as cloning vectors, expression vectors, reporter vectors and supporting resources. As a Special Expert with NCBI, Dr. Kitts will use his scientific expertise in the development of vectors and his experience in the biotechnology industry to provide scientific oversight of the design of GenBank and the content of the vector database.

Between June and September 1998, 10 appointments to Staff Scientist positions were made in NCBI under the newly expanded appointment mechanism for the appointment of scientists at NIH under 42 U.S.C. Sections 209 (g) and 209 (h) and C.F.R. Part 61B. This appointment authority applies to scientific positions in both the NIH intramural and extramural programs.

In July 1998, the OCCS announced the selection of Karen B. Casey and Wei Ma for two section chief positions. Ms. Casey, who serves as Chief, Information Collection Section, joined NLM

from the Information Resources Division, U.S. Coast Guard, where she was responsible for various applications systems, most notably the Marine Safety Information System and the Merchant Mariner Licensing and Documentation System. Ms. Ma, who serves as Chief, Software Development Branch, joined NLM from AT&T Corporation where she served as Senior Technical Specialist and Project Leader for a variety of projects including the AT&T web-based Customer Direct Platform. Ms. Ma brings to NLM expertise in software and systems analysis, design, integration, testing, and deployment.

In August 1998, Milton Corn, M.D., was appointed to the Senior Executive Service position of Associate Director for Extramural Programs. For the past eight years, Dr. Corn has served as Acting Associate Director, EP. During this time, he has contributed significantly to NLM's extramural activities. In his new appointment, Dr. Corn will continue to provide technical advice to the Director, NLM, on issues related to the Library's extramural program.

In August 1998, Karen Hajarian was appointed to the position of Director, MEDLARS Promotion, in the Office of the Chief, Bibliographic Services Division, Division of Library Operations (LO). Ms. Hajarian has an extensive background in nursing and over 20 years of national and international sales and marketing experience in the health care and information science industry. Ms. Hajarian had previously served as a Special Expert in LO promoting biomedical online information systems and providing solutions for Internet and World Wide Web access to electronic information. Before her association with the NLM, she held the position of Director, BRS Search Services with BRS Information Technologies, where she directed outside sales.

In August 1998, Diane Boehr was appointed as Cataloging Unit Head, Cataloging Section, Technical Services Division, LO. Ms. Boehr received her MLS from the University of Maryland, and for the past several years she has been an adjunct professor there. For the past 15 years, Ms. Boehr has served as a library services consultant for Costabile Associates, Inc. As Cataloging Unit Head, Ms. Boehr is responsible for planning, organizing, and providing administrative supervision for the unit.

In September 1998, Donald C. Poppke was appointed to the Senior Executive Service position of NLM Associate Director for Administrative Management. He had been with the NLM since 1995 as the Library's Executive Officer. Mr. Poppke received his Masters of Science in Technology Management from the American University in 1983. He previously worked as a Program Analyst for the National Cancer Institute, as Executive Officer for the National Center for Nursing Research, and as Chief, Public Health Branch in the Division of Public Health and Social Services Budget Analysis under the Office of the Secretary, HHS.

In September 1998, Terry S. Yoo, Ph.D., joined the staff of NLM as a Computer Scientist with the Lister Hill National Center for Biomedical Communications (LHNCBC), Office High Performance Computing and Communications. Dr. Yoo received his B.A. degree from Harvard University and his Ph.D. in Computer Science from the University of North Carolina at Chapel Hill in 1996. Prior to his appointment with NLM, Dr. Yoo served as Assistant Professor in the Department of Radiology at the University of Mississippi Medical Center in Jackson, MS. As a senior Computer Scientist with NLM, Dr. Yoo is responsible for conducting research projects to develop prototype systems and comprehensive models in medical informatics and digital imaging systems.

In September, Ms. Jennifer Marill was appointed as a Senior Systems Librarian in the Office of the Chief, Public Services Division, LO. Ms. Marill received a Masters in Russian and East European Studies from the University of Michigan Center for Russian Studies and a Masters in Library and Information Science from the University of Illinois Graduate Library School. For the past 6 years, Ms. Marill served as a Systems Librarian for Technical Services and Collection Development at the Washington Research Library Consortium, and prior to that, she served as a Senior Automation Planning Analyst with the Library of Congress.

Retirements

In November 1997, Thelma G. Charen, Technical Information Specialist, Division of Library Operations, NLM, retired after completing 53 years of Federal service, most of which she served at NLM. Ms. Charen has been an integral part of the NLM, having helped formulate the principles under which the Library provides subject access to the world's biomedical literature. Over the decades, she has trained hundreds of librarians and indexers in the use of Medical Subject Headings, the Library's controlled vocabulary thesaurus, and in the principles of subject control and access.

In January 1998, Donald R. Buckner, Ed.D., Materials Development Officer, LHNCBC, retired after serving over 30 years in the Federal sector. Dr. Buckner's career included serving as an adviser and policy development expert to identify research and development opportunities to solve communications and information transfer problems in the health sciences. Dr. Buckner also provided strong leadership in the Equal Employment Opportunity arena, both at the NLM and within the NIH community.

In January, 1998, Gerard T. Guthrie, Computer Systems Analyst, Biomedical Files

Implementation Branch, SIS, retired with 36 years of service. Mr. Guthrie joined NLM in 1981 and served as a senior computer systems analyst with primary responsibility for the requirements analysis that translate program needs into functional specifications for supporting SIS files on the ELHILL system, including CHEMLINE, TOXLINE and ChemID.

In May 1998, Mr. Robert Kicklighter, Chief, Database Administration Section, Information Management Branch, OCCS, retired with 30 years of service from the Federal government. Mr. Kicklighter began his Federal career in 1968 and joined NLM as a computer programmer in 1974. As Chief, Database Administration Section he was responsible for the management of operational software systems and the administration of all operational databases.

Awards

The NLM Board of Regents Award for Scholarship or Technical Achievement was awarded to two employees: Dr. Stephen Bryant (NCBI) in recognition of outstanding work in designing the Molecular Modeling Database and for developing innovative approaches for protein structural comparisons; and Dr. George Thoma (LHNCBC) for his outstanding leadership in designing and implementing an automated data entry system for producing MEDLINE citation records.

The Frank B. Rogers Award recognizes employees who have made significant contributions to the Library's fundamental operational programs and services. The recipient of the award was Ms. Karen Sinkule, Division of Library Operations, for her foresight in the planning and implementation of a conservation and book repair lab, thus enabling scholars to use more items in the collection today and for many years to come.

The NIH Director's Award was presented to the following two individuals and team: Ms. Duane Arenales for superior management of the NLM's collection of biomedical literature; Ms. Patricia Carson in recognition of her resourcefulness and superb leadership in organizing major national and international events; and Dr. Mark Boguski and Dr. Gregory Schuler as members of the NCI Tumor Gene Index Project Team, in recognition of their scientific leadership in guiding the development of the Tumor Gene Index.

The NLM Director's Award, presented in recognition of exceptional contributions to the NLM mission, was awarded to three employees: Ms. Lois Ann Colaianni for exceptional leadership and innovative contributions to the Library's programs and services during her highly successful tenure as NLM's Associate Director for Library Operations; Mr. James Ostell for creative design and development of essential biomedical information resources; and Ms. Patricia Williams, for outstanding and innovative administrative support for NLM's basic library services.

The NIH Merit Award was presented to seven employees: Mary Smith, Office of Administration; Gale Dutcher, SIS; Dr. George Thoma, LHNCBC; and Kathi Canese, Rhonda Allard, Esther Baldinger, and Ione Auston, LO. Ms. Smith was recognized for exceptional management and effective administration of the contracting function at NLM. Ms. Dutcher was recognized for exceptional leadership and creativity in establishing programs to optimize awareness and availability of the NLM HIV/AIDS information services. Dr. Thoma was recognized for his leadership of advanced digital imaging systems projects and document management systems. Ms. Canese was recognized for contributions to the successful implementation of PubMed as NLM's primary MEDLINE retrieval system. Ms. Allard was recognized for her role in the development of new customer service tools needed to support free web access to MEDLINE. Ms. Baldinger was recognized for her leadership and technical expertise in coordinating and controlling the flow of journal information needed to support MEDLINE and other NLM online files. Ms. Auston was recognized for enhancing NLM's bibliographic services in health services research.

The PHS Commissioned Corps Commendation Medal was awarded to Dr. Richard Rogers for advanced demonstration of network-based information contributions in the promotion of research and health care application and Internet based teleconferencing technology, and to Dr. Michael Weisberg for contributions in the management of the activities of The Learning Center for Interactive Technology.

The NIH Harvey J. Bullock, Jr. Award for Equal Opportunity Achievement was presented to Mr. Michael Bumbray for his outstanding supervisory efforts in affording staff all possible opportunities to grow professionally and to work in a discriminatory-free workplace.

The NIH Quality of Work Life Award was presented to the four NLM employees: Mr. Donald Poppke for important contributions to the Library's Quality of Work Life Initiatives and strong commitment to ensuring the success of these activities; Ms. Sheila Levy for taking the initiative to improve staff morale, employee satisfaction and group cohesiveness by reorganizing space for employee offices necessitated by loss of space; and Ms. Alice Jacobs and Ms. Christa Hoffman as a team for their effort in providing support for the ergonomic evaluation of the Technical Services Division work stations and staff work habits and their application of the results in the redesign of the Cataloging Section's workstations.

TABLE 11

Staff, FY 1998 Full-Time Equivalents

Program	*Full-Time Permanent*	*Other*
Office of the Director	13	5
Office of Public Information	6	2
Office of Administration	50	5
Office of Computer and Communications Systems	54	9
Extramural Programs	14	3
Lister Hill National Center for Biomedical Communications	67	7
National Center for Biotechnology Information	31	14
Specialized Information Services	25	2
Library Operations	234	36
TOTAL	**494**	**83**
TOTAL FTEs	**577**	

NLM Diversity Council

Cassandra Allen, Chair
Public Services Division

In January, the NLM Diversity Council installed its first new members: LaShaun Alexander, Michael Bumbray, Perlita Liwanag, Joseph Pagano, and Frances Truong joined the Council for terms of two years beginning in January 1998. The vacancies they filled were created when four original members (Redmond Barnes, Liem Nguyen, Rose Marie Woodsmall, and Theodore Youwer) ended their terms. The fifth vacancy resulted from the retirement of Brenda Swanson in February 1997. The Diversity Council lost Mr. Pagano in February 1998 and Ms. Alexander in August 1998 when they accepted positions outside of NLM. Julia Royall joined the Council in August 1998. Current members of the Council are Cassandra Allen, Evelyn Bain, Michael Bumbray, Lou Knecht, Perlita Liwanag, Alexander Nobleman, Julia Royall, Kristine Scannell, Frances Truong and Monique Young. The Council's ex-officio members are David Nash, Donald Poppke, and Nadgy Roey.

Council accomplishments for this year include:

- Updating the Diversity Council web page to include a list of dates of religious and ethnic holidays that may warrant scheduling consideration, a link to the names of the members of NIH's Diversity Council, a link to information about NIH's Workplace Diversity Initiative, and the names of NLM Diversity Council members. The page is regularly updated to include information about Council events and projects.
- Conducting a diversity assessment by surveying NLM staff. The survey characterized the current NLM workforce, identified issues of concern to the workforce, and enabled the Council to make recommendations to address these concerns. The survey will also serve as a baseline which the Council will use to measure progress and track the make up of the NLM workforce and to identify changing concerns.
- Sponsoring a monthly brown bag session for all NLM staff and employees on diversity issues and issues of general concern. This activity also supports NLM's Quality of Work Life Strategy. The sessions offered in FY 1998 included: NIH Retirement Seminar; an encore showing of the NLM Diversity Training Video from August 1997 (this will be an annual showing targeted at new NLM staff and those wishing to refresh their skills); and Success Strategies for the 21st Century.
- Coordinating the viewing of two career-oriented videos for students from Calvin Coolidge High School as part of NLM's adopt-a-school program. The videos that the students saw were titled, "Me! A Librarian" which featured librarianship as a career, and "Connected: Career for the Future" which focused on different international careers.
- Recommending the establishment of the NLM Director's Employee Education Fund to assist employees in achieving educational goals. The fund will support up to two academic courses annually for NLM employees who wish to pursue their education.

Appendix 1 : Regional Medical Libraries

1. **MIDDLE ATLANTIC REGION**
The New York Academy of Medicine
1216 Fifth Avenue
New York, NY 10029-5283
(212) 822-7396 FAX (212) 534-7042
States served: DE, NJ, NY, PA
URL: http://www.nnlm.nih.gov/mar

2. **SOUTHEASTERN/ATLANTIC REGION**
University of Maryland at Baltimore
Health Science and Human Services Library
601 Lombard Street
Baltimore, MD 21201
(410) 706-2855 FAX (410) 706-0099
States served: AL, FL, GA, MD, MS, NC, SC, TN, VA, WV, DC, VI, PR
URL: http://www.nnlm.nih.gov/sar

3. **GREATER MIDWEST REGION**
University of Illinois at Chicago
Library of the Health Sciences (M/C 763)
1750 West Polk Street
Chicago, IL 60612-7223
(312) 996-2464 FAX (312) 996-2226
States served: IA, IL, IN, KY, MI, MN, ND, OH, SD, WI
URL: http://www.nnlm.nih.gov/gmr

4. **MIDCONTINENTAL REGION**
University of Nebraska Medical Center
Leon S. McGoogan Library of Medicine
600 South 42nd Street
Omaha, NE 68198-6706
(402) 559-4326 FAX (402) 559-5482
States served: CO, KS, MO, NE, UT, WY
URL: http://www.nnlm.nih.gov/mr

5. **SOUTH CENTRAL REGION**
Houston Academy of Medicine-
Texas Medical Center Library
1133 M.D. Anderson Boulevard
Houston, TX 77030-2809
(713) 799-7880 FAX (713) 790-7030
States served: AR, LA, NM, OK, TX
URL: http://www.nnlm.nih.gov/scr

6. **PACIFIC NORTHWEST REGION**
University of Washington
Regional Medical Library, HSLIC
Box 357155
Seattle, WA 98195-7155
(206) 543-8262 FAX (206) 543-2469
States served: AK, ID, MT, OR, WA
URL: http://www.nnlm.nih.gov/pnr

7. **PACIFIC SOUTHWEST REGION**
University of California, Los Angeles
Louise M. Darling Biomedical Library
Box 951798
Los Angeles, CA 90024-1798
(310) 825-1200 FAX (310) 825-5389
States served: AZ, CA, HI, NV and U.S. Territories in the Pacific Basin
URL: http://www.nnlm.nih.gov/psr

8. **NEW ENGLAND REGION**
University of Connecticut Health Center
Lyman Maynard Stowe Library
263 Farmington Avenue
Farmington, CT 06030-5370
(860) 679-4500 FAX (860) 679-1305
States served: CT, MA, ME, NH, RI, VT
URL:http://www.nnlm.nih.gov/ner

Appendix 2: Board of Regents

The NLM Board of Regents meets three times a year to consider Library issues and make recommendations to the Secretary of Health and Human Services affecting the Library

Appointed Members:

ALBRIGHT, Tenley E., M.D. (Chair)
Two Commonwealth Avenue
Boston, MA

BARUCH, Jordan, Sc.D.
President, Jordan Baruch Associates
Washington, D.C.

BOND, Enriqueta, Ph.D.
President
Burroughs Wellcome Fund
Durham, NC

FONSECA, Raymond J., D.M.D.
Department of Oral and Maxillofacial Surgery
Univ. of Pennsylvania School of Dental Medicine
Philadelphia, PA

FOSTER, Henry, M.D., Ph.D.
Senior Advisor to the President on Teen & Youth Issues
Department of Health and Human Services
Washington, D.C.

FULLER, Sherrilynne, Ph.D.
Acting Director, Informatics
University of Washington School of Medicine
Seattle, WA

GAGE, John
Director, Science Office
Sun Microsystems Computer Corporation
Palo Alto, CA

KLEIN, Michele, MSLS
Systems Director, Library Services
Children's Hospital of Michigan
Detroit, MI

LEDERBERG, Joshua, Ph.D.
President Emeritus
Rockefeller University
New York, NY

PARDES, Herbert, M.D.
Vice President for Health Sciences
Dean of Faculty of Medicine
College of Physicians and Surgeons
Columbia University
New York, NY 10032

Ex Officio Members:

Librarian of Congress

Surgeon General
Public Health Service

Surgeon General
Department of the Air Force

Surgeon General
Department of the Navy

Surgeon General
Department of the Army

Under Secretary for Health
Department of Veterans Affairs

Assistant Director for Biological Sciences
National Science Foundation

Director
National Agricultural Library

Dean
Uniformed Services University of the Health Sciences

Appendix 3: Board of Scientific Counselors/ Lister Hill Center

The Board of Scientific Counselors meets periodically to review and make recommendations on the Library's intramural research and development programs.

Members:

BUCHANAN, Bruce G., Ph.D. (Chair)
Professor of Computer Science
University of Pittsburgh
Pittsburgh, PA

CLAYTON, Paul D., M.D.
Professor of Medical Informatics
University of Pittsburgh
Pittsburgh, PA

JAFFE, Conrade C., M.D.
Director, Center for Advanced Instructional Media
Yale University School of Medicine
New Haven, CT

KAHN, Michael G., M.D., Ph.D.
Assistant Professor of Medicine
Division of Medical Informatics
Washington University
St. Louis, MO

MASYS, Daniel R., M.D.
Director of Biomedical Informatics
School of Medicine
University of California at San Diego
La Jolla, CA

MITRA, Sunanda, Ph.D.
Professor of Electrical Engineering
Texas Tech University
Lubbock, TX

SIEVERT, MaryEllen C., Ph.D.
Professor of Library and Information Science
University of Missouri
Columbia, MO

WILKERSON, LuAnn, Ed.D.
Director, Center for Educational Development
UCLA School of Medicine
Los Angeles, CA

Appendix 4: Board of Scientific Counselors/ National Center for Biotechnology Information

The National Center for Biotechnology Information Board of Scientific Counselors meets periodically to review and make recommendations on the Library's biotechnology-related programs.

Members:

ROBERTS, Richard J., Ph.D. (Chair)
Research Director
New England Biolabs
Beverly, MA

BUETOW, Kenneth H., Ph.D.
Chief, Laboratory of Population Genetics
National Cancer Institute
Bethesda, MD

DELISI, Charles, Ph.D.
Dean, College of Engineering
Boston University
Boston, MA

LEE, Christopher J., Ph.D.
Assistant Professor
Molecular Biology Institute
University of California Los Angeles
Los Angeles, CA

MATISSE, Tara Cox, Ph.D.
Assistant Professor
Laboratory of Statistical Genetics
The Rockefeller University
New York, NY

PACE, Norman R., Ph.D.
Distinguished Professor of Biology
Indiana University
Bloomington, IN

SCHLICK, Tamar, Ph.D.
Associate Professor
Chemistry Department
New York University
New York, NY

Appendix 5: Biomedical Library Review Committee

The Biomedical Library Review Committee meets three times a year to review applications for grants under the Medical Library Assistance Act.

Members:

KULIKOWSKI, Casimir A., Ph.D. (Chair)
Professor of Computer Science
Rutgers University
New Brunswick, NJ

ALLMAN, Robert M., M.D.
Professor of Radiology
Univ. of Maryland School of Medicine
Baltimore, MD

ASH, Joan S., Ph.D.
Associate Professor
Library and Medical Informatics
Oregon Health Sciences University
Portland, OR

BASLER, Thomas G., Ph.D.
Professor and Director
Libraries and Learning Resource Centers
Medical University of South Carolina
Charleston, SC

BROADNAX, Lavonda
Automation Operations Coordinator
Library of Congress
Washington, DC

CHUEH, Henry C., M.D.
Co-Director, Laboratory of Computer Science
Assistant Professor of Medicine
Harvard Medical School
Boston, MA

CHUTE, Christopher G., Dr.P.H., M.D.
Section Head and Professor
Medical Informatics
Mayo Foundation
Rochester, MN

DALRYMPLE, Prudence, Ph.D.
Dean and Associate Professor
Graduate School of Library Information Science
Dominican University
River Forest, IL

FLORANCE, Valerie, Ph.D.
Director, Edward G. Miner Library
Asst. Professor, School of Medicine and Dentistry
University of Rochester
Rochester, NY

FRIEDMAN, Richard B., M.D.
Medical Director
Waianae Comprehensive Health Center
Waianae, HI

FUCHS, Rainer T., Ph.D.
Director, Bioinformatics
Glaxo Wellcome Research and Development
Research Triangle Park, NC

HOLST, Ruth
Director, Library Services
Columbia Hospital
Milwaukee, WI

HUANG, H.K., DSC
Professor and Vice Chairman
Director, Radiological Informatics
University of California at San Francisco
San Francisco, CA

LATTMAN, Eaton E., Ph.D.
Professor and Chair
Department of Biophysics
Johns Hopkins University
Baltimore, MD

MOLHOLT, Pat A., Ph.D.
Assistant Vice President
Columbia University Health Sciences
New York, NY

MOULT, John, Ph.D.
Professor
Center for Advanced Research in Biotechnology
Rockville, MD

NILAND, Joyce C., Ph.D.
Director of Biostatistics
City of Hope National Medical Center
Duarte, CA

ORTHNER, Helmuth , Ph.D.
Professor, Department of Medical Informatics
University of Utah Health Sciences Center
Salt Lake City, UT

PINSKY, Seth, Ph.D.
Senior Director
Merck and Company, Inc.
Rahway, NJ

RINDFLEISCH, Thomas
Director, Lane Medical Library
Stanford University
Stanford, CA

TANG, Paul C., M.D.
Medical Director, Information Systems
Northwestern Memorial Hospital
Chicago, IL

Appendix 6: Literature Selection Technical Review Committee

The Literature Selection Technical Review Committee meets three times a year to select journals for indexing in *Index Medicus* and MEDLINE.

Members:

ROLETT, Ellis L., M.D. (Chair)
Professor of Medicine
Dartmouth-Hitchcock Medical Center
Lebanon, NH

CABELLO, Felipe C., M.D.
Dept. of Microbiology and Immunology
New York Medical College
New York, NY

CLEVER, Linda Hawes, M.D.
Chair, Dept. of Occupational Health
California Pacific Medical Center
San Francisco, CA 94120

COLLEN, Morris F., M.D.
Consultant and Director Emeritus
Kaiser Permanente Medical Care Program
Oakland, CA

COPELAND, Robert L., Ph.D.
Assistant Professor of Pharmacology
Howard University School of Medicine
Washington, D.C.

EPSTEIN, Neal, M.D.
Cardiology Branch
National Heart, Lung, and Blood Institute
Bethesda, MD

LI, Yihong, Ph.D.
Assistant Professor
Oral Biology Department
University of Alabama School of Dentistry
Birmingham, AL

MAKINEN, Ruth H.
Head, Technical Services
University of Minnesota
Bio-Medical Library
Minneapolis, MN

MATHIEU, Alix, M.D.
Professor of Anesthesia
University of Cincinnati
College of Medicine
Cincinnati, OH

O'DONNELL, Anne Elizabeth, M.D.
Assistant Professor
Pulmonary and Critical Care Medicine
Georgetown University School of Medicine
Washington, D.C.

STRICKLAND, Ora Lea, Ph.D.
Professor, School of Nursing
Emory University
Atlanta, GA

WILLIAMS, Benjamin T., M.D.
Professor of Information Science
University of Illinois
Champaign, IL

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Further information about the programs described in this administrative report are available from:

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Cover: The home pages of four of NLM's popular Web sites (May 2000).

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NATIONAL LIBRARY OF MEDICINE

Programs and Services
Fiscal Year 1998

U.S. Department of Health and Human Services

Public Health Service

Bethesda, Maryland

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Preface

We at the National Library of Medicine seem to be operating on "fast forward" these days. Fiscal Year 1998 saw the introduction of new services and dramatic increases in the usage of existing services. More than 100 million MEDLINE searches were done this year compared to 8 million last year. The steeply rising trend in Web usage of MEDLINE via the Internet Grateful Med and PubMed shows every indication of continuing unabated. In April, we convened a group of 15 health sciences librarians to identify problems and suggest modifications with IGM and PubMed. The systems are constantly being improved.

Also this year there was an emphasis on how we can better serve the general public. For the first time, we added selected consumer health newsletters to MEDLINE. We met in July with representatives of 35 public library systems to plan how the NLM can help them meet the health information needs of their patrons. Early in FY 1999 a pilot program to do this will be announced along with a new NLM Web-based service to link the public with reliable health information. NLM also co-sponsored a "train the trainer" program to see if we could make MEDLINE and other electronic health information resources more widely accessible to seniors.

A new feature introduced by the Library this year is *Profiles in Science*. This Web service brings together the best in archival practices with state-of-the-art technology to present to the public a look behind the scenes of scientific findings and the unpublished writings, letters, and lab notes of great scientists. The first scientist selected was Oswald Avery, whose research laid the groundwork for modern genetics and molecular biology. Early in FY 1999 we will add the papers of Nobel Laureate Joshua Lederberg.

A notable advance in document delivery took place this year with the installation of "Relais," a modified commercial system that automates many interlibrary loan functions formerly done manually. Networked scanners and special workstations allow the NLM to turn around requests for copies of articles within a day, often within hours of a request being submitted. Some 3 million requests a year are entered by more than 3,000 libraries into DOCLINE, NLM's automated routing system. Almost 375,000 ended up at NLM and Relais is helping to handle this load.

My thanks to the staff and to our library colleagues around the world are tinged with sadness this year. Lois Ann Colaianni, Associate Director for Library Operations for 14 years, has announced her intention to retire at the end of 1998. She is widely know and respected throughout the community of health science librarians, and we will miss her greatly.

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Donald A. B. Lindberg, M.D.
Director, NLM