

**DEPARTMENT OF HEALTH AND HUMAN SERVICES
NATIONAL INSTITUTES OF HEALTH
NATIONAL LIBRARY OF MEDICINE
MINUTES OF THE BOARD OF REGENTS MEETING
(VIRTUAL MEETING)
September 13, 2022**

The 191st meeting of the Board of Regents (BOR) was convened remotely on September 13, 2022, at 10 a.m. The meeting was open to the public from 10 a.m. to 3:45 p.m., followed by a closed session that lasted until 4:30 p.m. The meeting adjourned at 4:30 p.m.

MEMBERS PRESENT (Appendix A)

Dr. Lourdes Baezconde-Garbanati, University of Southern California
Dr. James Cimino, University of Alabama at Birmingham
Dr. Kristi Holmes, Northwestern University
Ms. Jennie Lucca, The NIH Children’s Inn
Dr. Heidi Rehm, Massachusetts General Hospital
Dr. Nancy Smider, Epic Systems Corporation

MEMBER NOT PRESENT:

Dr. Omolola Ogunyemi, Charles R. Drew University of Medicine and Science

CONSULTANTS:

Dr. Andrew Clark, Cornell University
Dr. Mitchell Katz, New York Health + Hospitals
Mr. Philip Walker, Vanderbilt University

EX OFFICIO AND ALTERNATE MEMBERS PRESENT:

Col. Thomas Cantilina, United States Air Force
Ms. Jeane Garcia Davis, Office of the Surgeon General, U.S. Public Health Service
Col. Kent DeZee, United States Army
Dr. Michelle Elekonich, National Science Foundation
Dr. Joseph Francis, Veterans Health Administration
Dr. Lauren Maggio, Uniformed Services University of the Health Sciences
Dr. Mary Mazanec, Library of Congress
Mr. Paul Wester, National Agricultural Library, U.S. Department of Agriculture

SPEAKERS AND INVITED GUESTS PRESENT

Dr. Nigam Shah, Stanford University

MEMBERS OF THE PUBLIC PRESENT

Mr. Glen Campbell, Friends of the National Library of Medicine
Ms. Loretta Jurnak, Technical Resources International, Inc.
Ms. Joyce Wanga, Technical Resources International, Inc

FEDERAL EMPLOYEES/CONTRACTORS PRESENT

Dr. Patricia Flatley Brennan, Director, NLM
Mr. Jerry Sheehan, Deputy Director, Policy & External Affairs, NLM
Dr. Stacey Arnold, National Center for Biotechnology Information, NLM
Ms. Dianne Babski, Division of Library Operations, NLM
Mr. Philip Banh, Lister Hill National Center for Biomedical Communications, NLM
Dr. Dennis Benson, National Center for Biotechnology Information, NLM
Dr. Olivier Bodenreider, Lister Hill National Center for Biomedical Communications, NLM
Ms. Lauren Cameron, Office of the Director, NIH
Mr. Todd Danielson, Office of the Director, NLM
Dr. Allison Dennis, Division of Extramural Programs, NLM
Dr. Nachiket Dharker, National Center for Biotechnology Information, NLM
Mr. Ivor D'Souza, Office of Computer and Communications Systems, NLM
Dr. Anna Fine, National Center for Biotechnology Information, NLM
Dr. Valerie Florance, Acting Scientific Director, NLM
Dr. Elisa Golfinopoulous, Lister Hill National Center for Biomedical Communications, NLM
Ms. Liliya Gusakova, Division of Library Operations, NLM
Dr. Lyn Hardy, Division of Extramural Programs, NLM
Dr. Zoe Huang, Division of Extramural Programs, NLM
Dr. Michael Huerta, Office of Strategic Initiatives, NLM
Ms. Christine Ireland, Division of Extramural Programs, NLM
Dr. David Landsman, National Center for Biotechnology Information, NLM
Ms. Wei Ma, Office of Computer and Communication Systems, NLM
Dr. Clement McDonald, Office of the Director, NLM
Ms. Margaret McGhee, Division of Library Operations, NLM
Dr. Virginia Meyer, Lister Hill National Center for Biomedical Communications, NLM
Ms. Hibah Nazir, National Center for Biotechnology Information, NLM
Ms. Jody Nurik, Office of Communications and Public Liaison, NLM
Ms. Queenmoore Okeke, Lister Hill National Center for Biomedical Communications, NLM
Dr. Richard Palmer, Division of Extramural Programs, NLM
Ms. Amie Park, Division of Extramural Programs, NLM
Mr. Troy Pfister, Office of the Director, NLM
Ms. Allison Powell, Lister Hill National Center for Biomedical Communications, NLM
Ms. Marie Preston, Division of Library Operations, NLM
Dr. Kim Pruitt, National Center for Biotechnology Information, NLM
Dr. Veerasamy Ravichandran, Division of Extramural Programs, NLM
Ms. Christina Robinson, Lister Hill National Center for Biomedical Communications, NLM
Ms. Angela Ryder, National Institute of Allergy and Infectious Diseases, NIH
Ms. Leigh Samsel, Office of Strategic Initiatives, NLM
Ms. Mary Sanders, National Center for Biotechnology Information, NLM
Dr. Valerie Schneider, National Center for Biotechnology Information, NLM
Dr. Stephen Sherry, National Center for Biotechnology Information, NLM
Ms. Nicole Sroka, Division of Library Operations, NLM
Dr. Meryl Sufian, Division of Extramural Programs, NLM
Ms. Kimberly Thomas, Office of Strategic Initiatives, NLM

Ms. Elisabeth Unger, Division of Library Operations, NLM
Dr. Yanli Wang, Division of Extramural Programs, NLM
Dr. Jeremy Weiss, Lister Hill National Center for Biomedical Communications, NLM
Dr. Teresa Zayas Cabán, Office of the Director, NLM

I. CALL TO ORDER AND INTRODUCTORY REMARKS

Dr. Heidi Rehm, Chair, BOR

Dr. Heidi Rehm called the meeting to order and welcomed attendees to the meeting. Dr. Rehm welcomed three Board consultants:

- Dr. Andrew Clark, Professor, Department of Molecular Biology and Genetics, and Chair, Department of Computational Biology, Cornell University
- Dr. Mitchell Katz, President and CEO, NYC Health + Hospitals
- Mr. Philip Walker, Director, Annett and Irwin Eskind Family Biomedical Library and Learning Center, Vanderbilt University

Dr. Rehm also welcomed Dr. Michelle Elekonich, PhD, Deputy Division Director, Division of Integrative Organismal Systems, Directorate for Biological Sciences, National Science Foundation (NSF), replacing Dr. Brent Miller as the *ex-officio* NSF representative.

The meeting was broadcast to the public via streaming video at <https://videocast.nih.gov>

II. REPORT FROM THE OFFICE OF THE SURGEON GENERAL

Ms. Jeane Garcia Davis, Office of the Surgeon General, U.S. Public Health Service

Ms. Jeane Garcia Davis provided an update on efforts of the Office of the Surgeon General (OSG) to address health worker wellbeing, highlighting the latest Surgeon General’s Advisory on health worker burnout. OSG also partnered with the National Academy of Medicine (NAM) to promote clinical wellbeing and resilience.

The latest Surgeon General’s Advisory for Building a Thriving Health Workforce was issued in May 2022 with the overarching goal of raising awareness of health worker burnout and catalyzing meaningful, measurable, and sustainable changes to improve wellbeing. Ms. Davis gave an overview of the advisory including recommendations targeted for key stakeholders, definitions of “health worker” and “burnout,” and a description of the effects the COVID-19 pandemic had on the average health worker. Ms. Davis highlighted the high prevalence of mental health symptoms and workplace violence, as well as widespread falsehoods and misinformation surrounding COVID-19 during the pandemic. Ms. Davis also noted factors contributing to intensified health worker burnout including inadequate staffing, administrative burdens, insufficient wages and paid time off, barriers to mental health and substance use care and treatment, and organizational culture. Resultant health worker burnout has negatively impacted not only health workers, but also patients, health care systems, and the broader community in general. The advisory identified six key recommendations for action including protecting health workers, transforming organizational cultures to prioritize health worker wellbeing, eliminating barriers to mental health and substance abuse care, reducing administrative burdens, prioritizing social connection and community, and investing in public health care and health workers. Ms. Davis noted the support of NLM and the American Medical Informatics Association through the “25x5” Symposium to reduce administrative burdens by 75% by 2025.

Ms. Davis highlighted notable OSG accomplishments from FY2022 including the May 2022 launch event for the Surgeon General’s Advisory with the Vice President and community partners, and participation in the Health Worker Wellbeing Symposium at Children’s National Medical Center. A National Plan for Health Workforce Well-being, a collaborative effort with NAM, will also be launched in October 2022.

BOR members discussed methods to monitor and evaluate progress in addressing health worker burnout, including potential partnership with state and local institutions. Members also mentioned the importance of looking at burnout in other workers affected by the pandemic; for instance, Veterans, cemetery workers, and IT workers may also face increased demands due to the COVID-19 pandemic.

III. MAY 2022 MINUTES AND FUTURE MEETINGS

Dr. Heidi Rehm, Chair, BOR

Dr. Rehm noted the listed dates for future BOR meetings, including the winter BOR meeting which will be held virtually on February 7, 2023, and the addition of the fall BOR meeting date of September 10-11, 2024. There were no objections or conflicts noted.

Motion: The BOR approved the motion to accept the fall BOR meeting date of September 10-11, 2024.

Motion: The BOR approved the motion to accept the minutes from the May 2022 meeting.

IV. REPORT FROM THE NLM DIRECTOR

Dr. Patricia Flatley Brennan, Director, NLM

Dr. Brennan welcomed and thanked the BOR, NLM senior leadership, and guests for their attendance. She introduced the three new board consultants and a new *ex-officio* representative from the National Science Foundation, emphasizing the importance of the BOR in providing guidance and assisting in improving NLM services. She recalled that the current NLM Strategic Plan was developed five years ago and includes three pillars focused on accelerating discovery and data-powered health. It is used to evaluate, guide, and enhance current and future NLM services and investments.

During this past year, NLM has focused on formalizing commitments to current and new NLM policies, legislation, and external affairs, appointing a new Deputy Director for Policy and External Affairs and submitting a concept plan to NIH to establish a new Office of Policy and Legislative Affairs within the NLM Office of the Director (OD). As part of its policy work, NLM provides guidance for NIH-wide and federal polices related to scientific communication, clinical data, and open science. NLM is working with the Network of the National Library of Medicine (NNLM) National Center for Data Services to prepare the library community for the new NIH Data Management and Sharing Policy, which goes into effect at the end of January 2023. NLM is also collaborating with international stakeholders to improve global coverage and representativeness of genomic sequence data repositories and is working with publishers to accelerate access to monkeypox literature.

Among other highlights, Dr. Brennan noted the pending finalization of the recruitment for the Director of NCBI/Associate Director of NLM for Scientific Data Resources, active search for Scientific Director, and the planned recruitment of three additional leadership positions. NLM released earlier in September a Request for Information (RFI) to collect comments about a new innovation initiative. This anticipated 9- to 12-month exercise will aim to strengthen NLM’s position of continuous innovation. Additionally, NLM submitted its Racial and Ethnic Equity Plan (REEP) this past summer to ensure

Diversity, Equity, Inclusion and Accessibility (DEIA) within NLM operations and research. In parallel, the NLM Intramural Research Program (IRP) hosted five Data Science Diversity Interns.

Dr. Brennan highlighted current extramural research projects focusing on artificial intelligence (AI), including work at the University of Michigan that uses AI machine learning to indicate and categorize medications to ensure accurate prescriptions and prevent medication dispensing errors. NLM also issued awards to 12 institutions to support for short-term training experience to attract talented students from underrepresented populations to biomedical informatics data science careers. NLM's university-based T15 training program continues, with the first in-person conference recently conducted.

Recent NLM standardization efforts included the conversion of several clinical data sets to the Observational Medical Outcomes Partnership (OMOP) Common Data Model, namely *All of Us*, Clinical Practice Research Datalink (CPRD), UK Biobank, and the Chronic Conditions Warehouse (CCW) in the Virtual Research Data Center (VRDC). Among NLM resource updates, NCBI expedited the release in GenBank of poliovirus and monkeypox genomic sequences in response to the recent viral outbreaks. Additional updates were made to the database of Genotypes and Phenotypes (dbGaP), the NIH Comparative Genomics Resource (CGR), ClinVar, and ClinicalTrials.gov. Dr. Brennan also noted the recent opening of the NLM Reading Room, which will be available by appointment starting October 2022.

Regarding the NLM budget for FY23, Dr. Brennan anticipates a continuing resolution to start the year. Both the House and Senate have proposed appropriations of \$494 million for NLM, which would represent a \$100 million increase over the past 6 years. Dr. Brennan noted personnel changes, including new hires and appointments in the Lister Hill National Center for Biomedical Communications, Extramural Programs, and Library Operations.

Dr. Teresa Zayas Cabán, NLM's Assistant Director for Policy Development, introduced the Executive Order, issued on September 12, 2022, titled Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure American Bioeconomy. She noted several areas of interest to NLM including cross-government coordination, easily accessible high-quality, secure datasets, and engagement with international partners on genomic data. Additional updates focused on FY23 appropriations, public access, and open science. In August 2022, the White House Office of Science and Technology Policy (OSTP) released updated guidance for expediting access to federally funded research results. NLM is currently working with other components of NIH on establishing an updated plan based on this guidance. The OSTP also released a call for public access to monkeypox-related research and data. The National Science and Technology Council issued a report in April identifying desirable characteristics of repositories for federally funded research data.

BOR members discussed NLM's role is assisting international and non-institution affiliated users in accessing *All of Us*-related datasets. It was noted that NLM has consulted with the program regarding public access to datasets. Several alternative pathways were shared and discussed.

V. WORKING GROUP BREAKOUTS

BOR members divided into four breakout groups. Representatives from the groups summarized the discussions later in the meeting.

VI. WORKING GROUP REPORTS

Strategic Planning

Dr. Michael Huerta reported for the Strategic Planning Working Group. Dr. Huerta presented an overview of strategic planning both at NLM and across NIH. Historically, strategic planning was institute- and office-centric; however, as the number of strategic plans increased, it became increasingly difficult to track plan implementation and report on accomplishments. The opening of the Office of Evaluation, Performance, and Reporting (OEPR) within the NIH Office of the Director (OD) has led to an increased coordination of strategic planning across NIH.

NLM's Office of Strategic Initiatives (OSI) is responsible for strategic planning within NLM and coordinating planning efforts with the NIH Strategic Plan and other NIH plans. Internally, OSI staff are engaging with NLM offices and divisions to streamline the reporting of strategic accomplishments. Also, OSI and the Office of Computer and Communications Systems (OCCS) are developing internal systems to collect information from NLM leadership and help track implementation in support of the NLM Strategic Plan.

Three NLM working groups have been created to implement the NLM Racial and Ethnic Equity Plan, including groups on: Increasing Participation in Workplace Cultural Assessments, Evaluating Recognition and Promotions, and Establishing a Management Commitment Plan for Enhancing Workforce Ethnic and Racial Diversity and Inclusivity.

OSI is collaborating with the NIH OD to implement NIH-wide information systems to help track strategic and topical plan implementation. Also, OSI is mapping NLM activities within the NIH-wide plans including the NIH Strategic Plan and topical plans such as the NIH Strategic Plan for COVID-19 Research. These efforts will assist NLM in reporting on various NLM initiatives and activities to emphasize the contribution NLM makes to the overall mission of NIH.

Working Group members discussed potential policy and system considerations for strategic discussions relating to the publishing ecosystem. NLM may play an important role in gathering stakeholders across the ecosystem to participate in strategy discussions on various issues.

Research Frontiers

Dr. James Cimino reported for the Research Frontiers Working Group, which discussed the reinvention of the electronic health record (EHR). The EHR was not originally designed to advance patient care, but rather to act as a replacement for paper records. Further investigation into the methodologies behind the creation and use of EHRs will be needed to better understand the changes needed moving forward. The Working Group noted current limitations of the EHR and noted the role of the HHS Office of National Coordinator for Health Information Technology (ONC) in promoting standardization and interoperability among EHRs. They noted that future modifications, additions, and functionality of the EHR is a cross-cutting research issue that necessitates the involvement of scientists from a variety of disciplines.

BOR members discussed roles various stakeholders, including medical librarians and NLM, could play in EHR development, including whether NLM could help in bringing those stakeholders together. Members also noted the need to integrate genomic data into the EHR and the role artificial intelligence will play in any redesign effort.

Public Service

Dr. Lourdes Baezconde-Garbanati reported for the Public Service Working Group. The ClinicalTrials.gov Working Group continues to meet regularly and is nearing completion of the third year of the Modernization Effort. Highlights from the year include the launch of the beta website for ClinicalTrials.gov and subsequent updates, a New Records List and subsequent updates to the Protocol Registration and Results System (PRS), and the continuation of usability research to make iterative improvements to the beta sites. A summary report of Year 3 accomplishments will be released in fall 2022 and provided to the BOR.

Dr. Baezconde-Garbanati also presented some of the key features of the new PRS Record List beta site including customizable displays, default Help Drawers display, the ability to e-mail study staff directly from the Record List, and the availability of study records for download in Microsoft Excel and comma-separated values (CSV) formats.

The Working Group discussed enhancements to the ClinicalTrials.gov beta site primarily intended to improve user experience without disrupting workflows. Currently, the beta site is available in parallel to the current site; however, efforts are being made to usher users to the beta site, which is planned to become the primary site in 2023. Dr. Baezconde-Garbanati also provided an overview of the beta features currently available, as well as those in progress and those that will be available in the future, noting outreach with stakeholders as an essential factor in organizing these efforts.

BOR members discussed future enhancements to the input of registration records and the future conversion to the Fast Healthcare Interoperability Resources (FHIR) standard.

Collections

Ms. Dianne Babski reported for the Collections Working Group. The working group heard an update on the Library Operations 2036 Long-Range Plan. The plan was developed with input from NLM staff and various stakeholders and drew on knowledge gained from adapting to challenges confronted during the pandemic. She outlined the current challenges facing libraries, including evolving user expectations, rapid evolution of science, increase in health misinformation, recognition of growing inequalities and health disparities, and rapid shifts in technology and social systems. The Long-Range Plan is based on the vision of using data and information to transform and accelerate biomedical discovery. Current initiatives include redefining space allocation to provide an integrated reading room for NLM's historical and contemporary collections (a temporary version of which will open to visitors in October 2022) and increasing automated indexing of MEDLINE citations.

Several common themes emerged from the planning process, including prioritizing user needs, making collections accessible to all users, providing translation options for non-English speaking patrons, enhancing staff training and skills, prioritizing digitalization of library resources, and emphasizing innovation and flexibility when implementing changes.

Ms. Babski outlined the five goals of the Long-Range Plan: creating a modernized organizational structure, unifying and transforming NLM collections, supporting and promoting the use of health data standards and terminologies, providing customer design experience support, and knowing and equitably engaging with users. Challenges to achieving these goals will include resource availability, the reproducibility of scientific research, and the measurement of outcomes.

BOR members discussed techniques for identifying systematic reviews, improving targeted search strategies, and maximizing search tools. Members also discussed potential ways to engage and educate

new users.

VII. COMPARATIVE GENOMICS RESOURCE: COMMUNITY ENGAGEMENT STRATEGY

Dr. Valerie Schneider, National Center for Biotechnology Information, NLM

With 9,000 species having assembled genome sequences available in GenBank, Dr. Schneider noted the value of eukaryotic genomic data for the overall understanding of basic biological processes and human disease. Currently, most data are dispersed among numerous databases and repositories, creating access challenges for researchers. Dr. Schneider reintroduced the NIH Comparative Genomics Resource (CGR), a five-year project that aims to facilitate access to reliable comparative eukaryotic genomic analyses via current National Center for Biotechnology Information (NCBI) repositories and knowledge bases in collaboration with the genomics community.

Nearing the end of Year 2 of the active project, Dr. Schneider noted multiple ongoing initiatives supporting the following strategic goals:

- Promote high-quality data submissions
- Facilitate comparative biological analyses
- Enrich NLM-held genomic-related content with community-provided content
- Support workforce development

Dr. Schneider highlighted overall features of the CGR website, including improved web and programmatic interfaces to facilitate access to genomes and related content, as well as easier search, access, and download of data for enhanced compatibility with standard bioinformatic tools, consistent with the principles of FAIR data.

Active and strategic stakeholder engagement and communication is critical to overall CGR development. NCBI engaged with the MITRE-operated Health Federally Funded Research and Development Center (FFRDC) in developing a Community Engagement Strategy (CES) for the CGR. Delivered in June 2022, the CES includes an overall approach to engage CGR stakeholders, a communication plan to guide message customization, and a measurement plan to track progress.

Divided into three phases targeting champions, enablers, and users, stakeholder groups will conduct activities and generate feedback that will inform additional activities and refinements to the CES and CGR overall. Champions include CGR Working Group members and other internal stakeholders who serve as primary communicators to gather initial engagement feedback for CGR. Enablers include researcher organizations and professional societies. Users include individuals such as researchers, developers, educators, and others.

Initial champion interviews have helped refine enabler engagement strategies and communication needs. The engagement process will involve introducing the CGR, assessing engagement, conducting follow-up engagement with enablers or users, and reassessing engagement effectiveness and user commitment. Near-term engagement will focus on recurring, event-based, enabler-focused efforts. Dr. Schneider highlighted direct, indirect, and interactive engagement opportunities, including social media, self-service products, and user testing, respectively. Dr. Schneider noted feedback she received on gaps in messaging and tone from champions, ecosystem organization and data exchange/development opportunities from enablers, and product development from users. Long-term engagement will include

regular CES updates based on current progress and ongoing development of messaging and communication materials to support outreach.

The CES Measurement Plan will propose a sample of outcome measures that can be used to assess CES goals and objectives in five engagement activity categories: 1) BOR CGR Working Group engagement and promotion, 2) communication materials, 3) community engagement, 4) website and social media activity, and 5) training and workforce development. Based on identified outcome measures and success measure types, a CGR Engagement Success Metrics Prioritization Survey was conducted for members of the BOR CGR Working group and NIH CGR Steering Committee. Based on the survey results, BOR CGR Working Group members identified specific targets for community engagement. Ongoing activities include developing measures with achievable baselines and targets.

BOR members discussed the relationship between community feedback and continuous engagement, as well as how to determine when to enhance existing products versus create new ones. The CES uses an iterative process that quickly applies new updates and shifts away from those that are not valuable to users. Several community engagement resources, including community-based discussions, were noted. The CGR team engages with other research groups to identify existing products and determine how well they work within the community. Members also discussed approaches for screening genomic sequences to maintain and improve data quality.

VIII. USING AGGREGATE PATIENT DATA AT THE BEDSIDE VIA AN ON-DEMAND CONSULTATION SERVICE

Dr. Nigam Shah, Stanford University

Dr. Nigam Shah presented the NLM-funded research project, “Using Aggregate Patient Data at the Bedside Via an On-demand Consultation Service.” He acknowledged NLM and others for their support of this research as well as prior efforts to use aggregated data in patient care, which have propelled the current research.

The research project used aggregate patient data retrieved from Stanford’s clinical data warehouse to group similar patients and their associated treatment and outcomes. Patient timelines were generated to identify phenotypes and build cohorts. An on-demand consultation service was then developed utilizing this data to answer clinician questions and support bedside decision making. Dr. Shah outlined the software, data, and personnel involved in the consultation service; the service typically involves 4 individuals and is completed within 24-72 hours. In October 2021, a paper was published summarizing the first 100 consultations. The most frequent questions addressed by the service concerned evaluation of institutional patient management and the outcome rates of approved drugs. Of the 83 consultations completed, 10 led to a change in patient care, 52 guided further research, and 17 led to follow-up analyses. To evaluate the service, a self-reported user survey was performed and revealed that nearly 100% of the users would recommend the service to a colleague; reliability analyses also demonstrated promising concordance among datasets and patients. Beyond this project, several questions about both the operation of the service and the use of the provided information remain.

BOR members discussed the reliability of the service and concerns about not accounting for confounding factors in analyses. The possible perpetuation of historical biases in the treatment options for various populations was also noted. The ability to modify filters to produce tailored reports, the use of genetic and demographic data, and the sharing of the final report with the patient were also discussed. Members noted that this service could be used to support clinical care for rare diseases. Members also discussed future funding sources including both commercial partners and NLM.

IX. ANNOUNCEMENT OF REGENTS AWARD

Dr. Heidi Rehm, Chair, BOR

Dr. Heidi Rehm presented the Board of Regents Award for Scholarship or Technical Achievement, which recognizes scholarly and technical achievements that enrich biomedicine, to Dr. Ghada Zamzmi Alzamzmi, Research Fellow with the Computational Health Research Branch of the Lister Hill National Center for Biomedical Communications. Dr. Alzamzmi was recognized for her outstanding efforts in developing an end-to-end echocardiography artificial intelligence system for cardiac disease detection.

X. CLOSED PORTION

The closed portion of the meeting took place from 3:45 p.m. to 4:30 p.m. The Board of Regents reviewed and approved for further consideration during *en bloc* concurrence, a total of 568 applications with the requested direct cost amount of \$561,728,018.

XI. ADJOURNMENT

Dr. Rehm adjourned the BOR meeting at 4:30 p.m. on September 13, 2022.

Actions Taken by the Board of Regents:

- Approval of the May 10, 2022, BOR meeting minutes
- Approval of the September 10-11, 2024, meeting dates
- En Bloc Approval of Grants

Appendix A. Roster — Board of Regents

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

Patricia F.
Brennan -S

Digitally signed by Patricia F.
Brennan -S
Date: 2022.11.21 10:57:53 -05'00'

Patricia Flatley Brennan, RN, PhD
Director, National Library of Medicine

HEIDI REHM

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Heidi L. Rehm, PhD
Chair, NLM Board of Regents