

NLM: Fostering Biomedical Discovery and Data-Powered Health to Support Research on Women's Health

*63rd Meeting of the
NIH Advisory Committee on Research on Women's Health
June 17, 2025*

Dina N. Paltoo, PhD, MPH, CPL

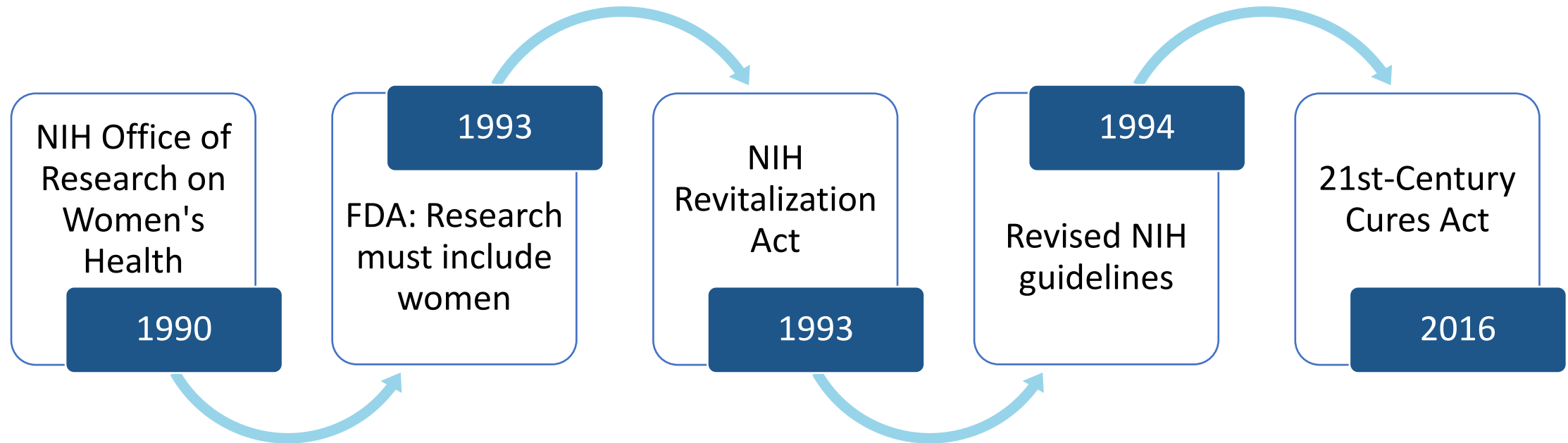
Deputy Director, Policy and External Affairs
National Library of Medicine (NLM)

Research into Women's Health

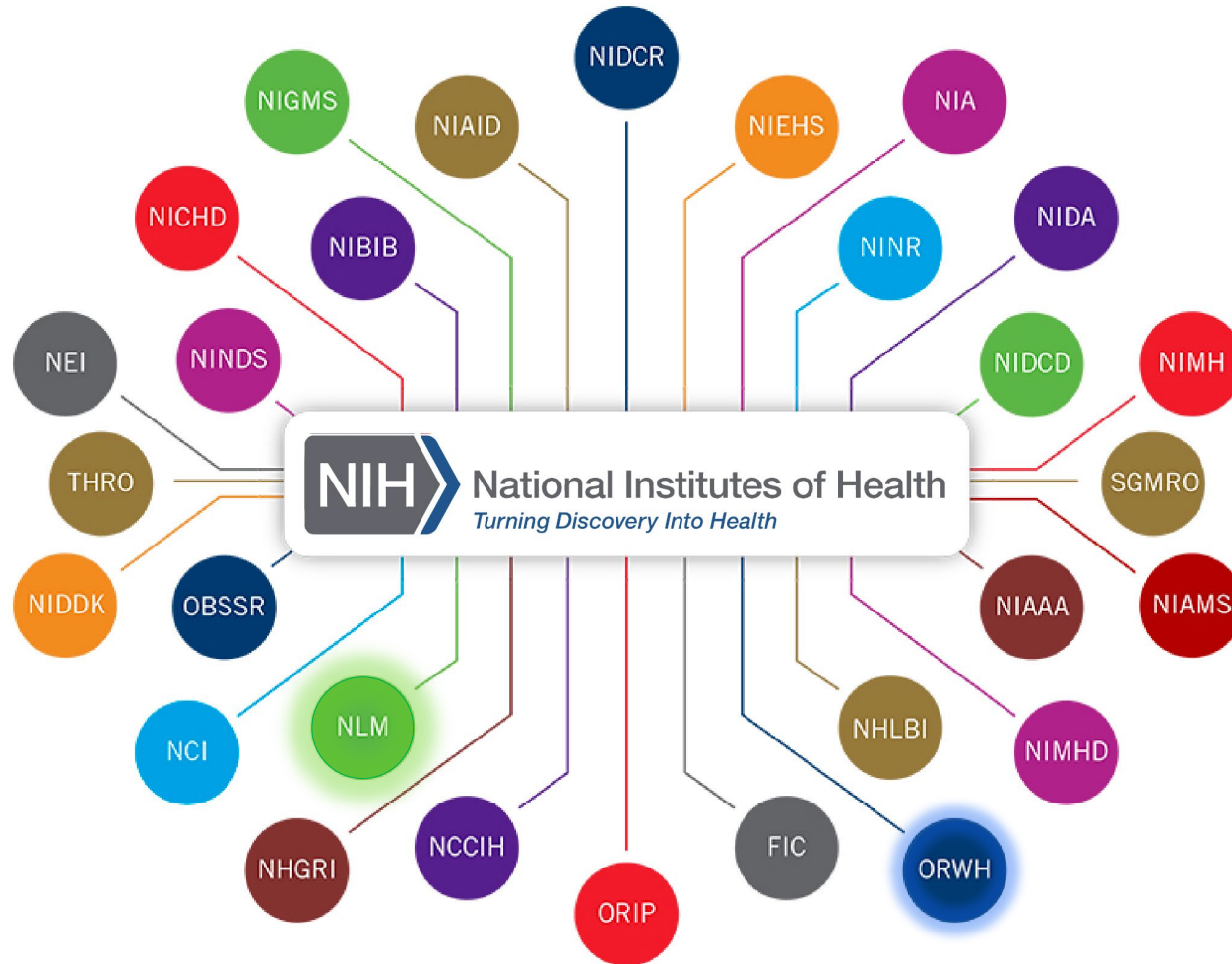
In 2019, women accounted for ~40% of participants in clinical trials on cancer, cardiovascular disease, and psychiatric disorders



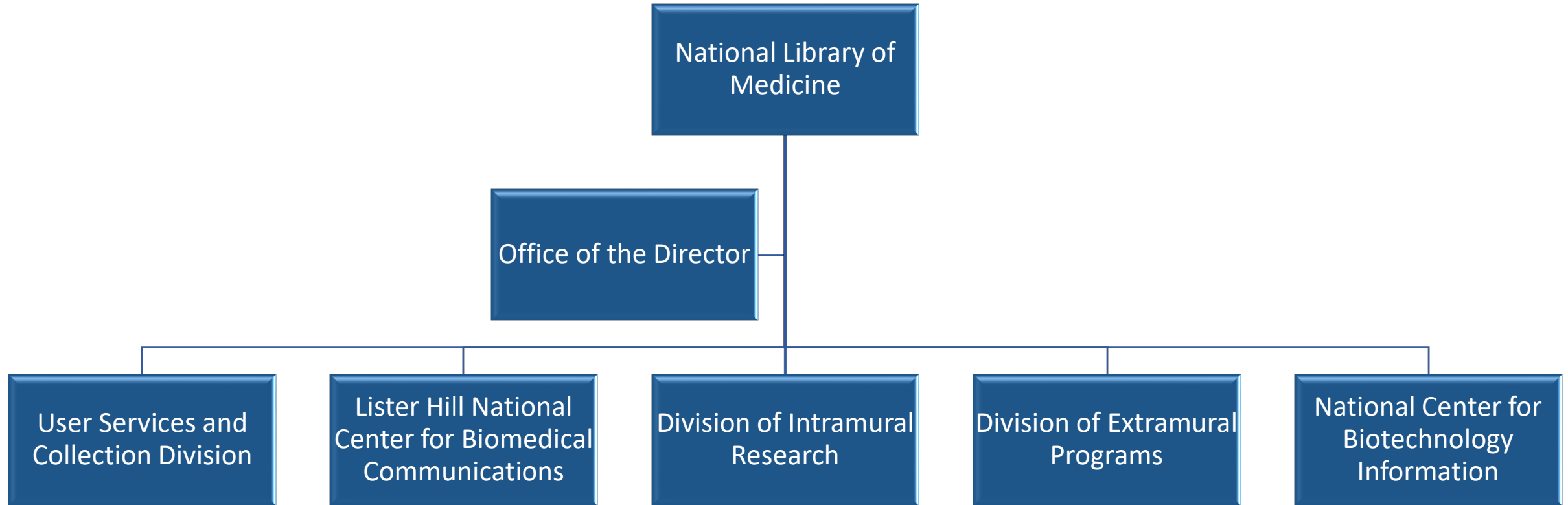
Federal Support for Research on Women's Health



NLM : One of NIH's 27 Institutes and Centers



NLM Organization



NLM Senior Leadership 2025



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Scientific Director

A Brief History of the NIH National Library of Medicine

“Acquire, collect, preserve, and disseminate biomedical data and information for research, medicine, and public health.”



Leader in biomedical informatics and computational health data science research

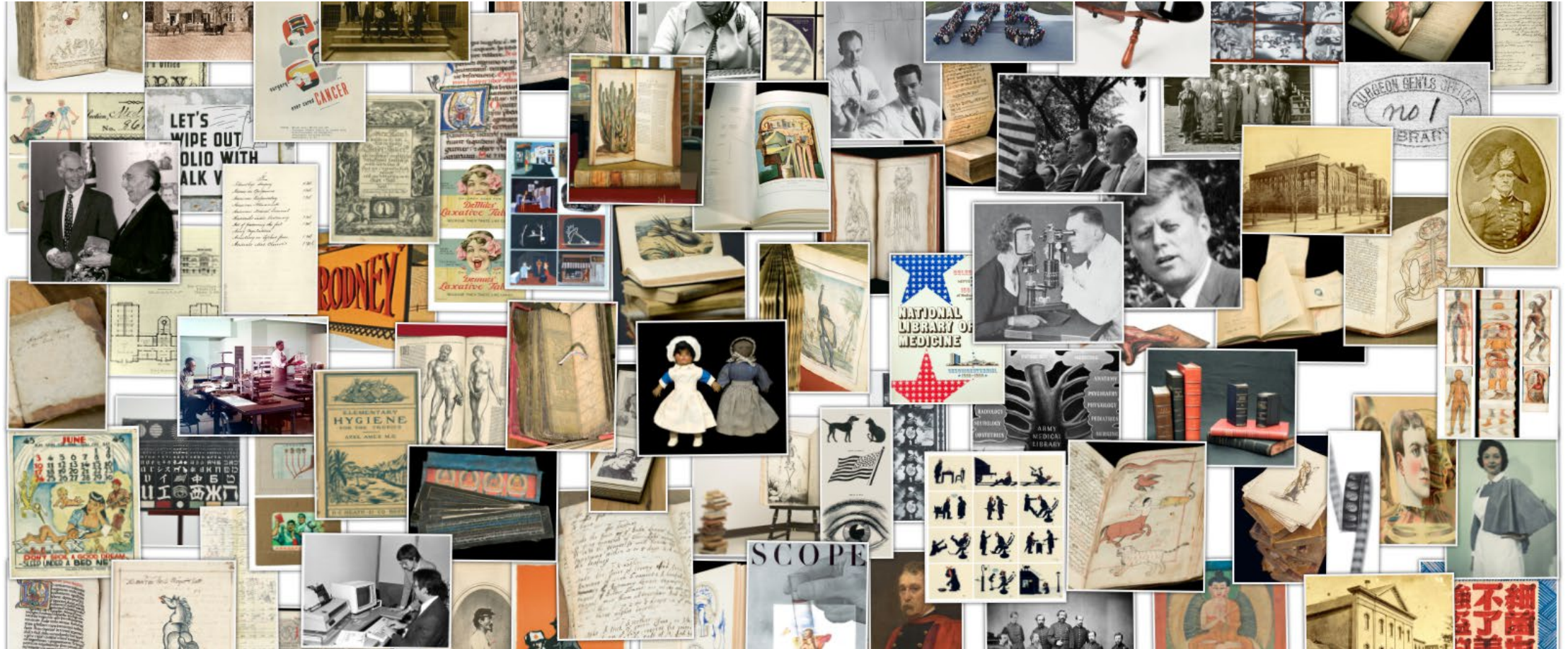


World's largest biomedical library



Developer of advanced biomedical information services

NLM Collections: Physical, Digital, Exhibitions



NLM Physical Collections

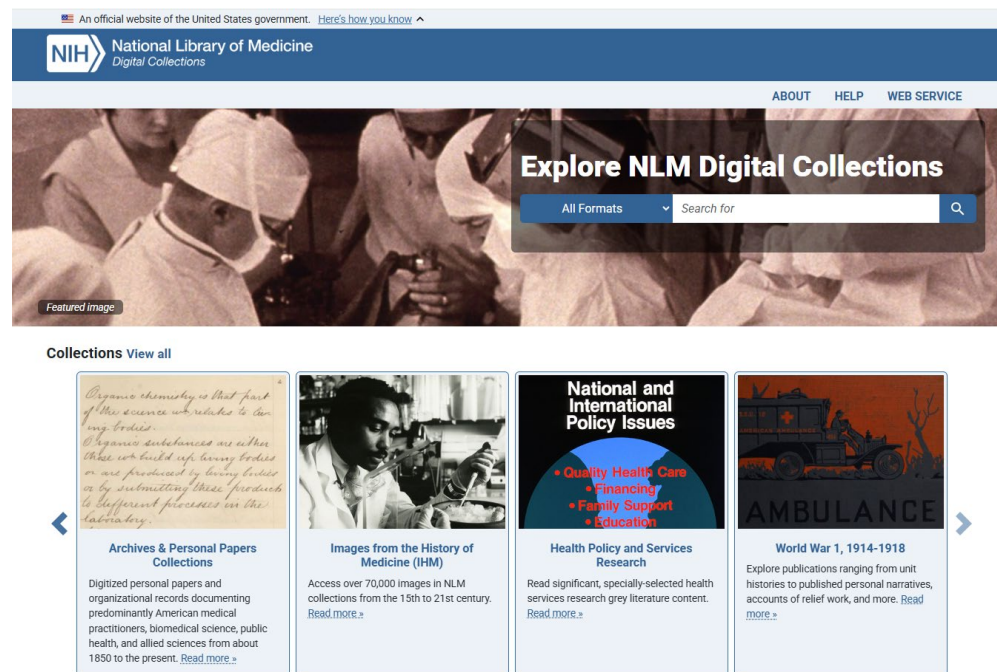
- Manuscripts
- Photos
- Films
- Books
- Journals

... and more!



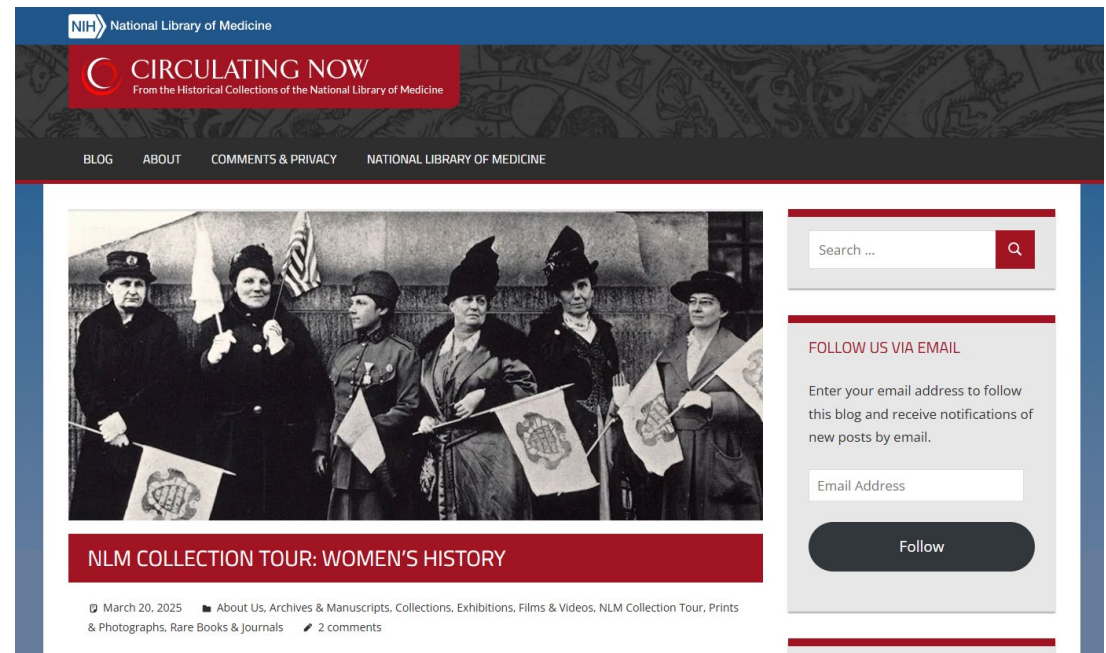
NLM Digital Collections

NLM Digital Collections homepage

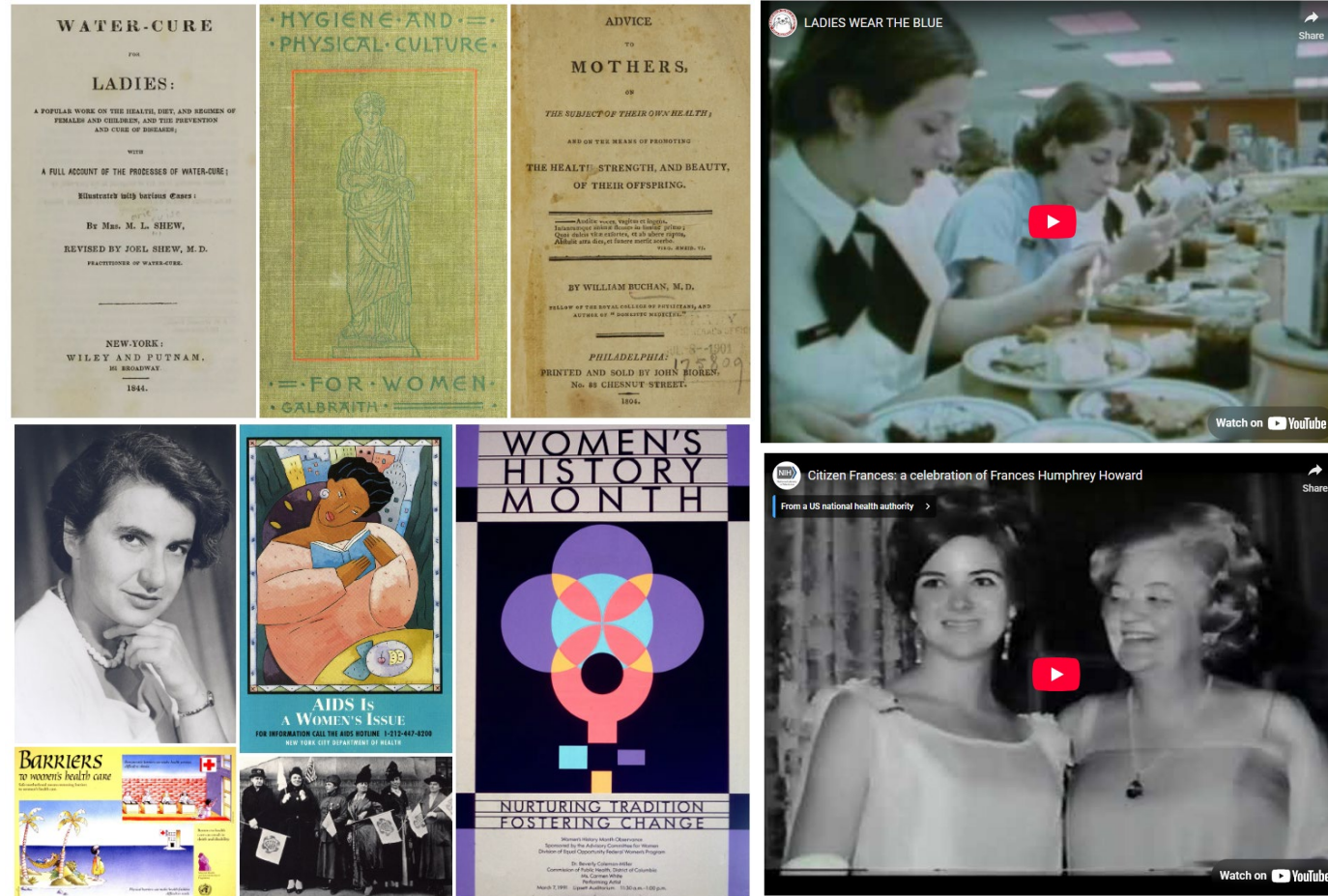


Circulating Now

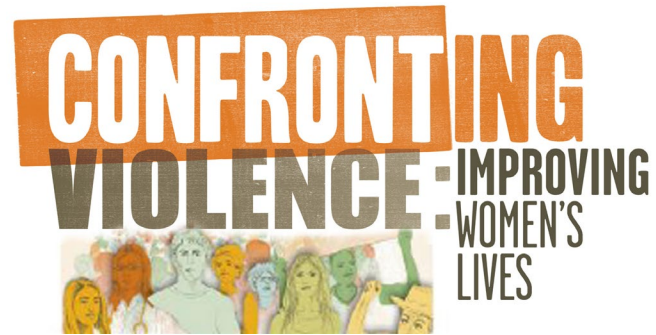
NLM Collection Tour: Women's History



Featured Women's History Content



NLM Exhibitions



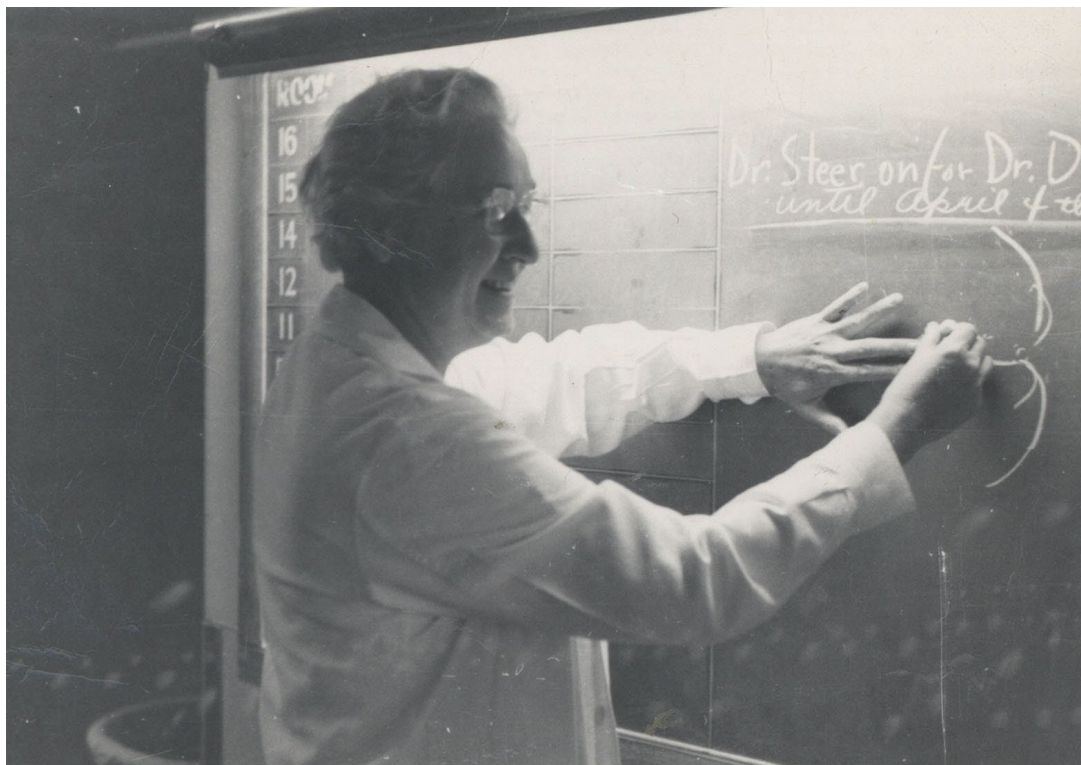
PHYSICIAN ASSISTANTS



Women Who *Rise, Serve, and Lead*

Dr. Virginia Apgar

Designed the first standardized method for evaluating newborns' transition after childbirth



Dr. Helen Octavia Dickens

First African American woman admitted to the American College of Surgeons



NLM Products and Services: Connecting Everyone with Health Information



ClinicalTrials.gov

PubMed®

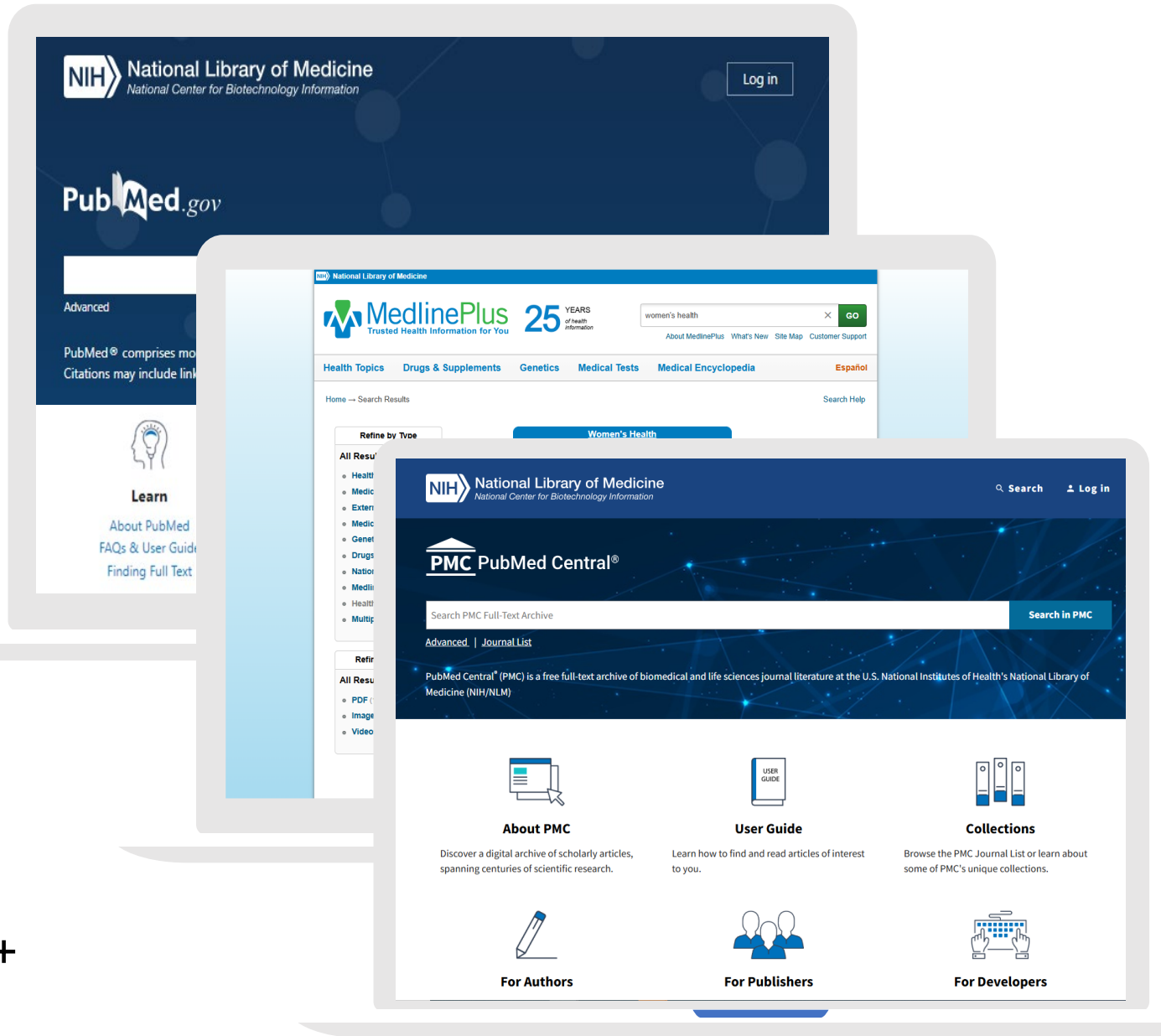
- Supports search and retrieval of biomedical and life sciences literature; 37 million+ citation records

MedlinePlus®

- Connects patients and families to reliable articles, videos and resources from NIH and other expert organizations

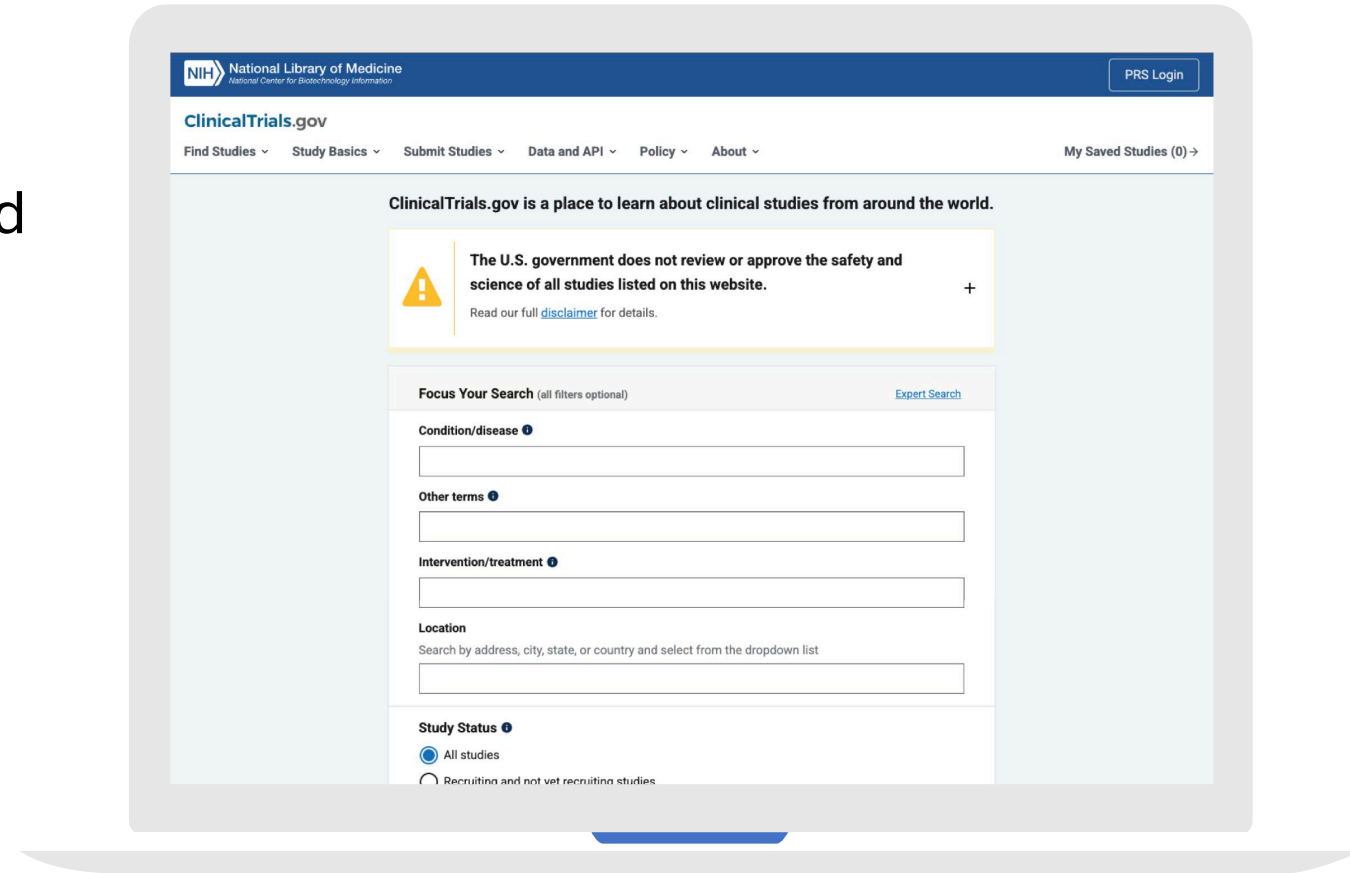
PubMed Central®

- Archives full-text biomedical and life sciences journal literature; 9 million+ articles, manuscripts, and more



ClinicalTrials.gov

- Free public resource with up-to-date information about ongoing and completed clinical trials
- Promotes transparency, evidence-based care, and research that can lead to better health outcomes





Health Data Standards

- Develop and apply standards for improved access to biomedical information resources
- Develop, promote and distribute data standards and terminology resources for health care and research

Biomedical Data Repositories



Human Data and Health

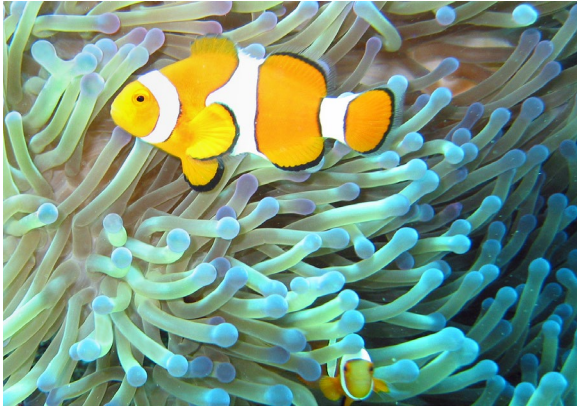
- ClinVar
- database of Single Nucleotide Polymorphisms (dbSNP)
- database of Genotypes and Phenotypes (dbGaP)
- Pathogen Detection

Sequence and Chemical Information

- GenBank®
- Gene Expression Omnibus (GEO)
- Protein Domains
- PubChem®
- RefSeq
- Sequence Read Archive (SRA)

What is Being Sequenced and Why?

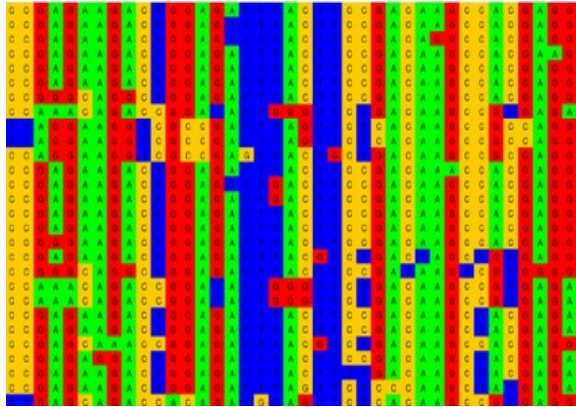
Ecosystems



GENOMES

Understand how life forms interact with each other and their environment.

Populations



GENES

Understand variation within or between species to learn more about their biology through comparative genomics.

Biodiversity



TRANSCRIPTS

Learn about life forms and preserve their genetic data before they become extinct.

Public Health



PROTEINS

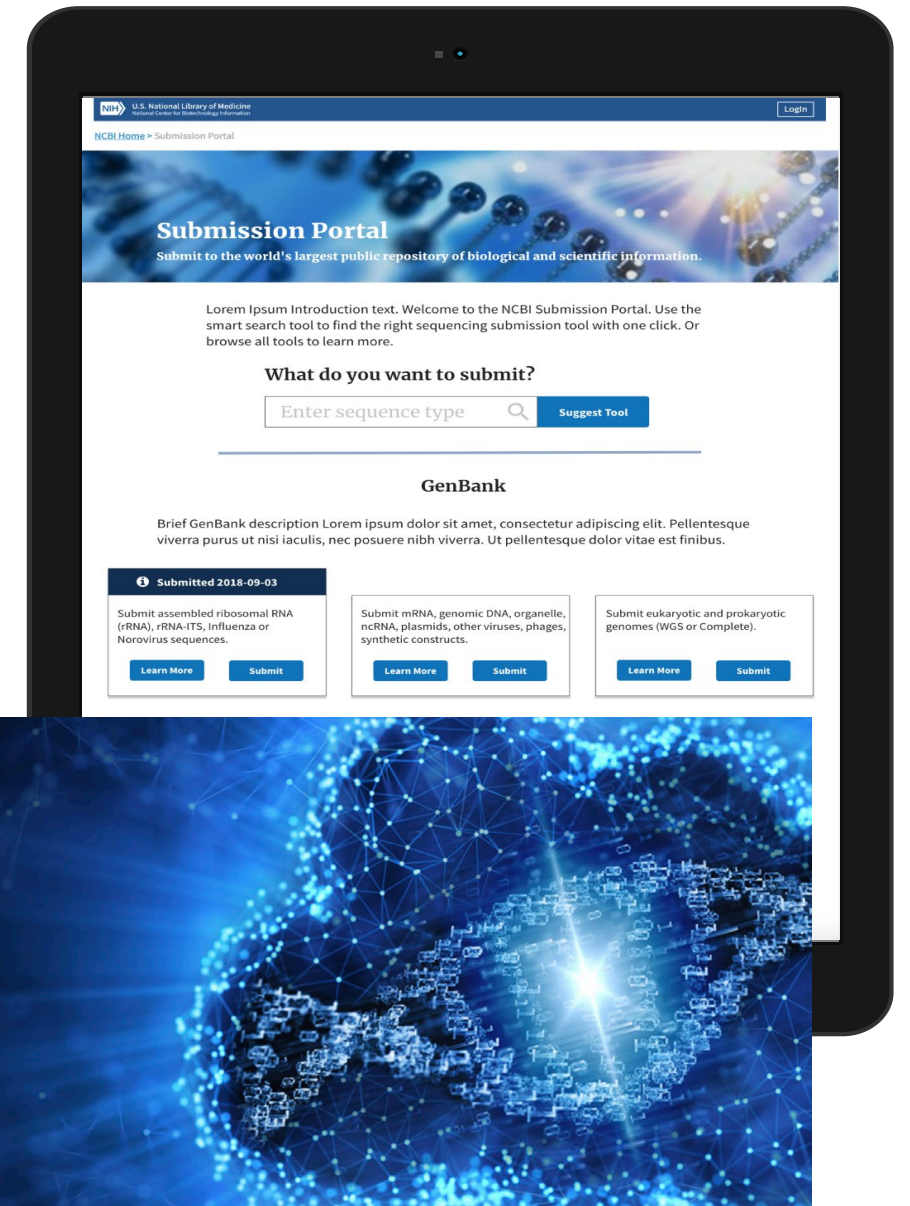
Understand causes and trends in infectious diseases

GenBank®

- Data repository that collects, preserves, and provides public access to assembled and annotated nucleotide sequence data from all domains of life
- 4.75 billion+ records and 228 terabytes

Sequence Read Archive (SRA)

- Largest publicly available repository of raw, unassembled genetic sequencing data
- 33 million+ records and 150+ petabytes





NLM Intramural and Extramural Research Programs

NLM Division of Intramural Research



**Evolutionary Genomics and
Biomolecular Structure**



**Health Information Standards and
Clinical Discovery**



Image Processing



Natural Language Processing

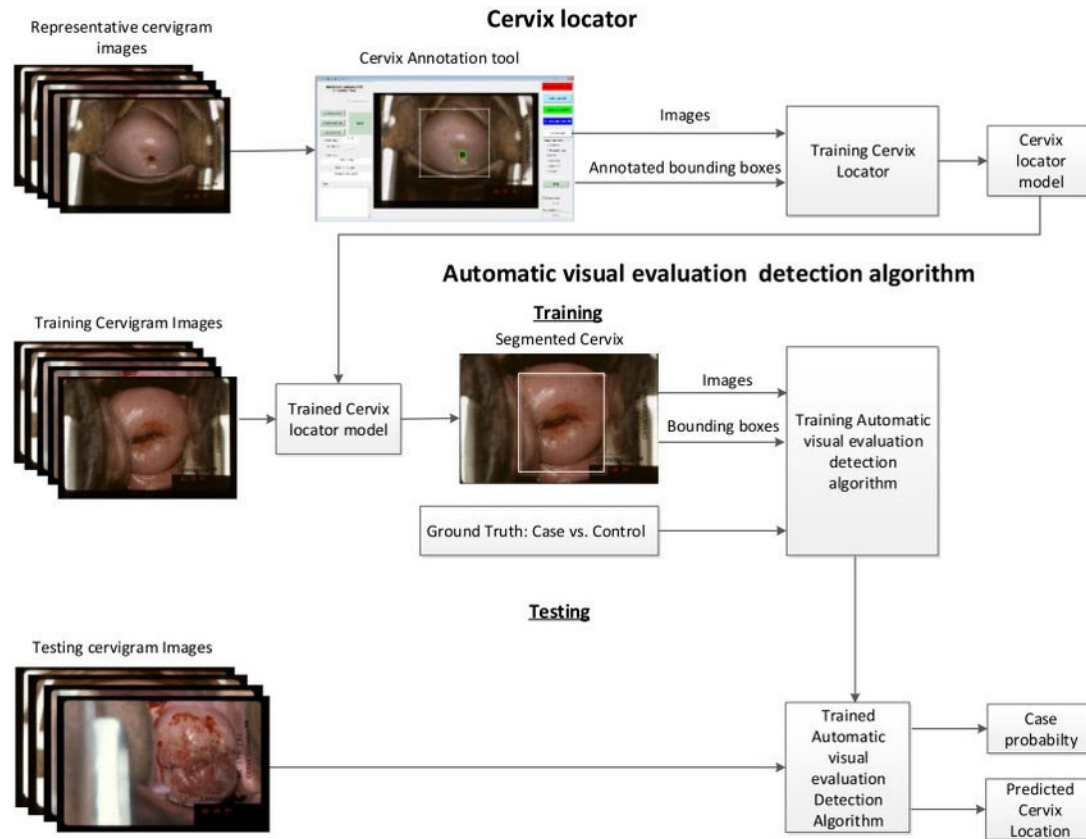


**Networks, Gene Regulation, and
Chromatin**



Statistical Methods

Study: An Observational Study of Deep Learning and Automated Evaluation of Cervical Images for Cancer Screening



Using images from cervical cancer screenings to train large language models could potentially help catch cervical cancer earlier and more easily

Study: Regulatory Risk Loci Link Disrupted Androgen Response to Pathophysiology of Polycystic Ovary Syndrome



Has the potential to lay the groundwork for novel diagnostics, experimental validation, and drug discovery for the development of improved diagnostics and treatments for PCOS

NLM Division of Extramural Programs



Research projects and advanced training in biomedical informatics and data science

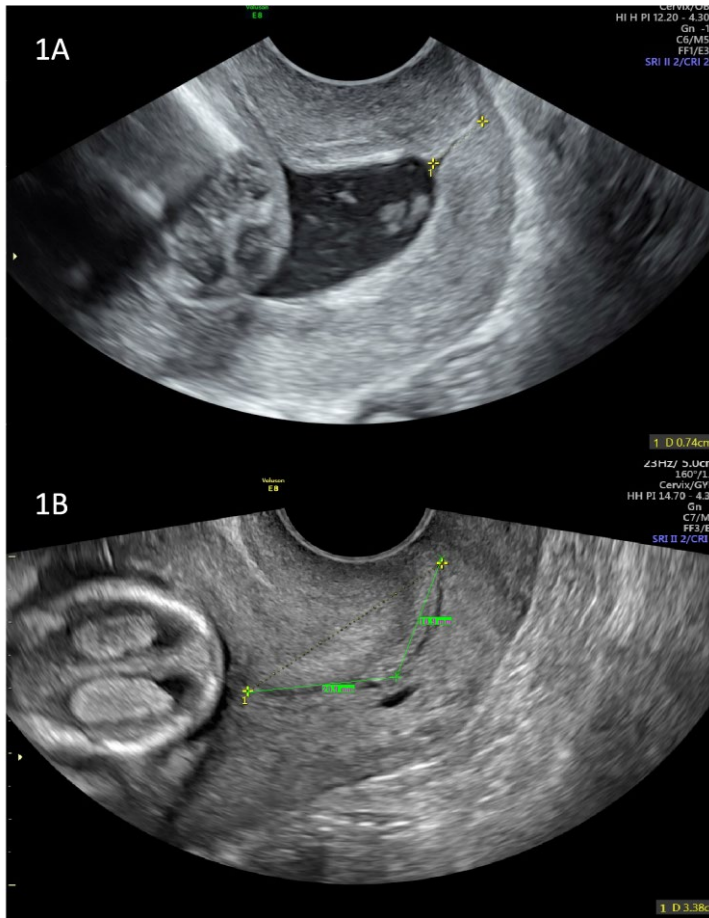


Informatics resources for biomedicine and health



Health information for health professionals and the public

Study: Prediction of Preterm Birth in Nulliparous Women



Investigators have already identified several genetic data elements that help predict indications for preterm birth in first-time pregnant people

Study: Partnering with Women with Disabilities to Develop a Health Information Website



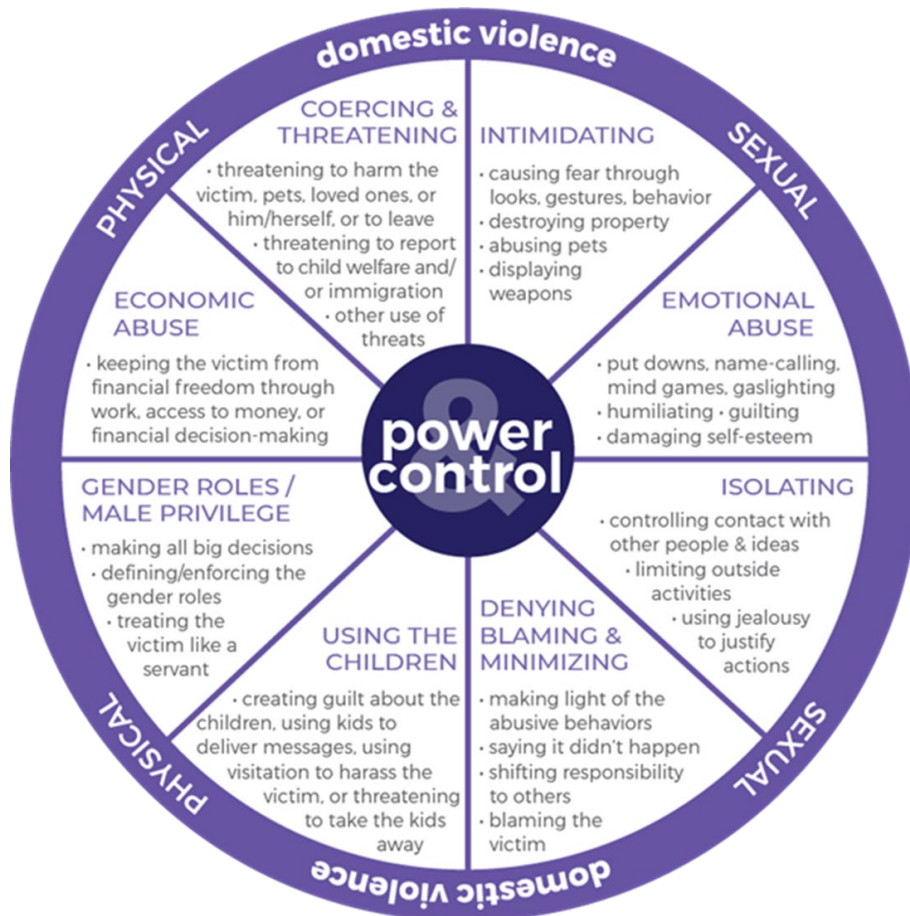
Partnering with Women with Disabilities to Develop a Health Information Website



The image shows a video conference call with five participants: four women and one man, all smiling. The call is titled "Partnering with Women with Disabilities to Develop a Health Information Website". The logos for Baylor College of Medicine, University of Montana, and TMC Library are visible in the bottom right corner of the video frame.

Investigators' goal is to meet the needs of women with disabilities and empower them to manage their health care

Project: Decision-Making Modeling for Treating Intimate Partner Violence



Investigators hope to develop a decision-making tool for clinicians that will reduce the disparities faced by people experiencing intimate partner violence

A Forward-Looking Science Vision for NLM Extramural Research

- NLM is seeking to understand gaps, transformative opportunities, and underexplored areas for its extramural research program, for example, bold strategies for:
 - Biomedical informatics
 - Emerging AI methodologies
 - Frameworks for scalable and innovative data sharing and interdisciplinary collaboration
- Request for Information (RFI): Future of NLM Biomedical and Data Science Extramural Research Programs
 - Notice: NOT-LM-25-002
 - Response date: July 14, 2025



Women and Biomedical Informatics

NLM Research Grants

- Improve decision-making and human health through biomedical informatics

NLM NCBI Codeathons

- 2019: First-ever all-women-led Codeathon
- Projects included:
 - OVARIE
 - FANI-PACK
 - Viral-VDAP



NLM-ORWH Collaborations



Myositis Common Data Elements Workshop

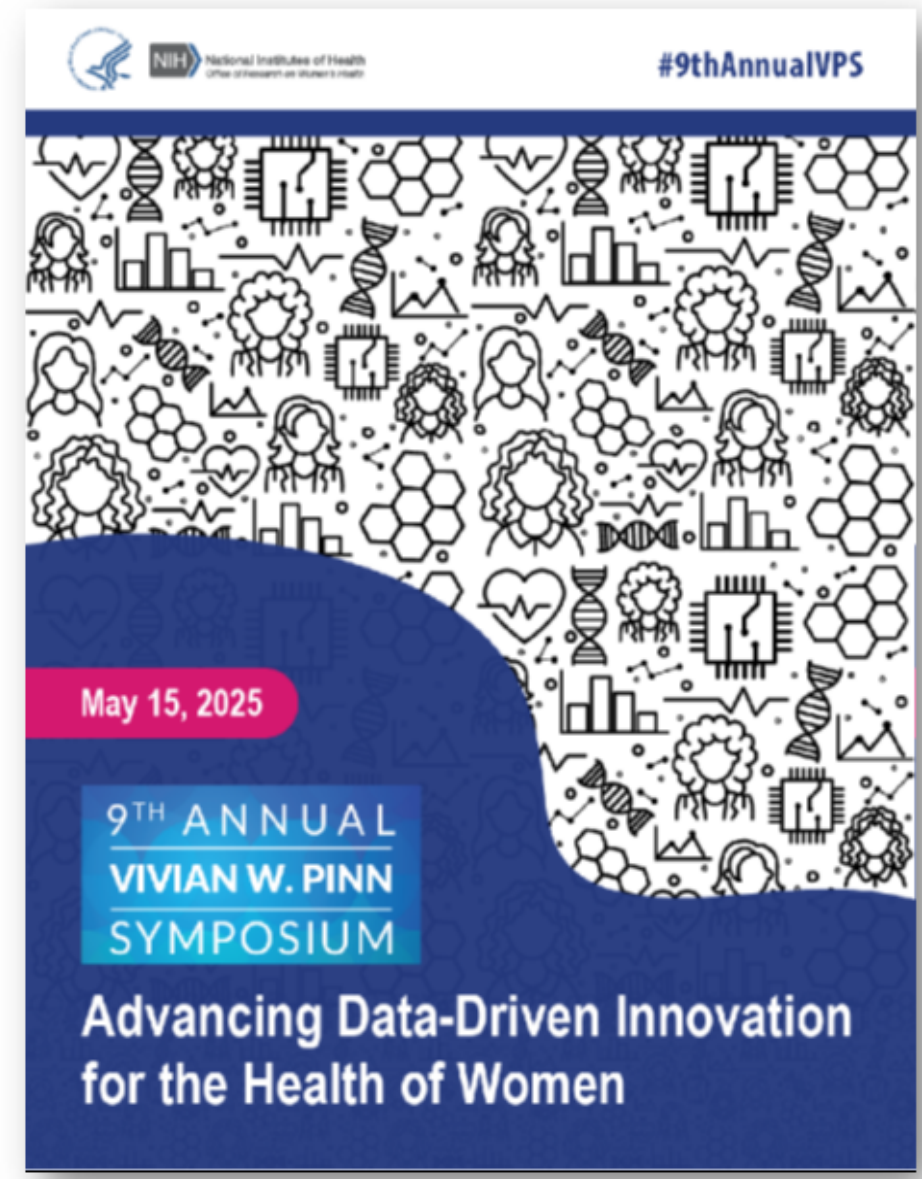


Annual Vivian W. Pinn Symposium

“My exposure to the full breadth of human diseases and human and scientific concepts, and my experience as a basic science researcher as well as a clinical researcher, has contributed to what my conception of women's health should be and hopefully has had a positive impact on just how we have developed programs.

—Vivian W. Pinn, M.D.

First full-time director of ORWH and Associate Director for NIH Women's Health Research



DISCOVERY PORTAL FOR WOMEN'S HEALTH RESEARCH

NLM and ORWH launched the **Discover Women's Health Resource (DiscoverWHR)**, an innovative resource to advance women's health research

DiscoverWHR simplifies the search for NIH women's health research resources by providing a single place to find funding opportunities, information about literature, and ongoing research projects and health issues that uniquely, disproportionately, and/or differently affect women across their lifespan.

Users can explore the following research areas:



Menopause



Autoimmune diseases

- Lupus
- Rheumatoid Arthritis



Polycystic Ovary Syndrome (PCOS)

Submit your feedback via the yellow **"Give Feedback"** button on the right-hand side of the page!

DISCOVER
WHR
Women's Health Research
at the National Institutes of Health





DiscoverWHR Research Areas and Resources

Current focus areas

- Menopause
- Polycystic ovary syndrome (PCOS)
- Select Autoimmune diseases
 - Lupus
 - Rheumatoid arthritis
 - Scleroderma

Resources for each research area

- Awarded projects from NIH RePORTER
- Clinical trials from ClinicalTrials.gov
- Scientific literature from PubMed
- Health topic summaries from MedlinePlus
- Common data elements from CDE Repository (*coming soon!*)

Future focus areas

- Alzheimer's disease
 - Cardiovascular disease
 - Cervical cancer
 - Chronic pain
 - Endometriosis
 - HIV
 - Obesity
 - Ovarian cancer
 - Uterine fibroids
- ... and more!*



DiscoverWHR Website Metrics

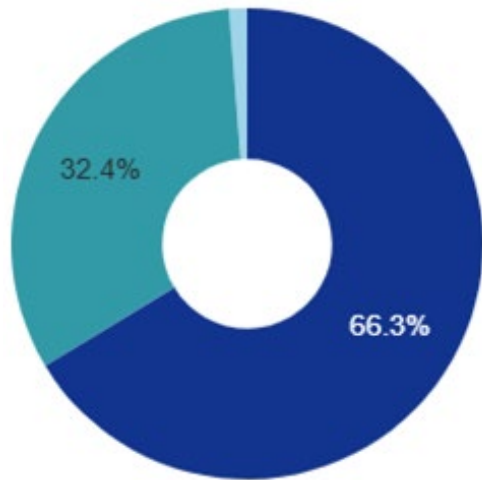
Unique Users
25,616

Views
56,657

Countries
120

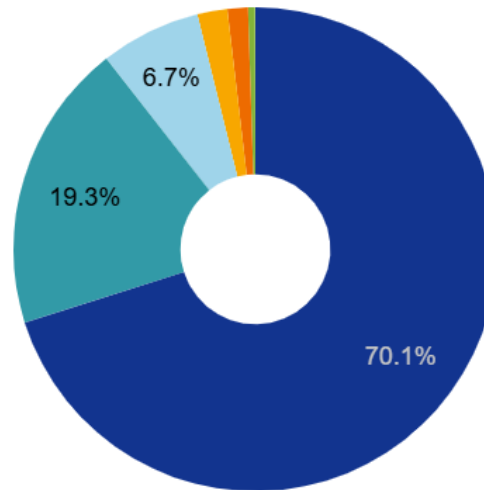
Devices

- desktop
- mobile
- tablet



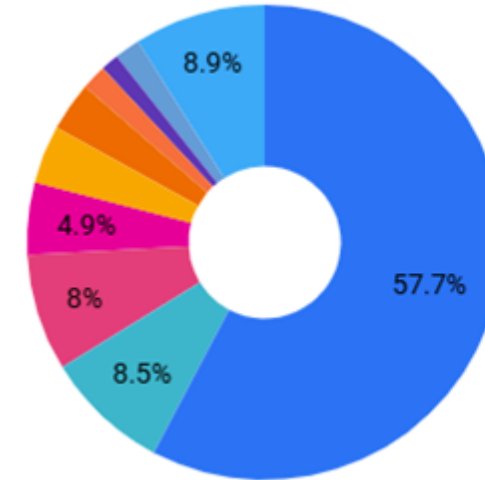
Acquisitions

- Direct
- Organic Search
- Referral
- Organic Social
- Email
- Unassigned
- Organic Video
- Display



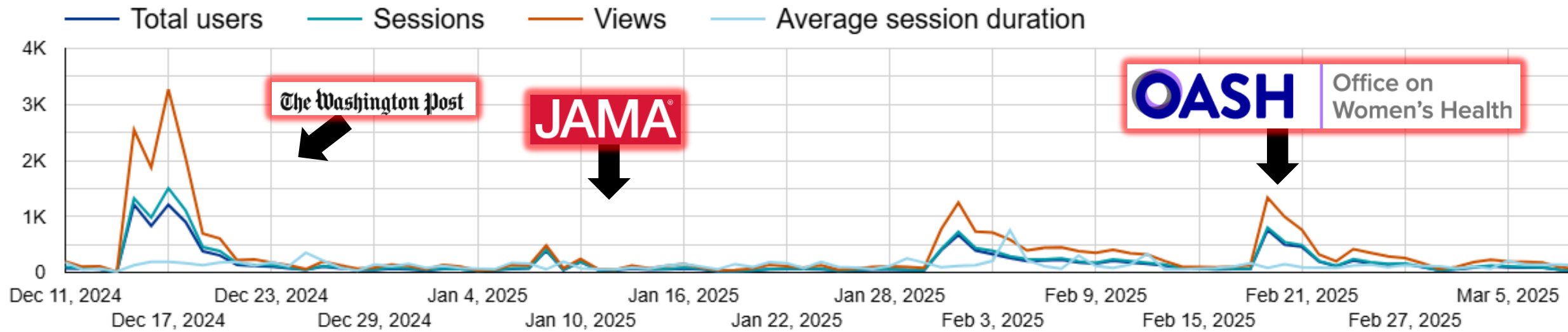
Most Popular Pages

- Home
- Menopause NIH Overview
- About
- PCOS NIH Overview
- Funding
- Menopause Awards
- Menopause Scientific Literature
- Menopause Clinical Trials
- Others





DiscoverWHR Website Metrics



OASH and DiscoverWHR



[Home](#) > [Menopause](#) > Women's health research

Menopause

- Menopause basics
- Menopause symptoms and relief
- Early or premature menopause
- Menopause treatment
- Menopause and your health
- Menopause and sexuality
- Programs and initiatives
- Funding opportunities

Women's health research

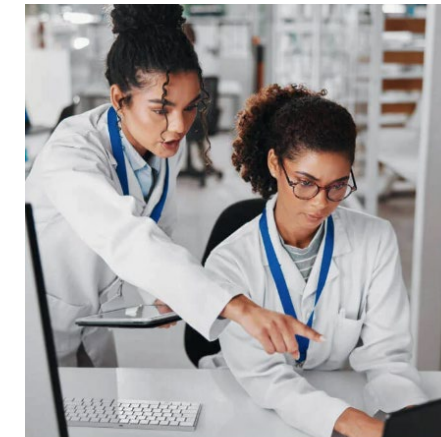


Women's health research



National Institutes of Health (NIH)

Partnering with the National Library of Medicine, the NIH Office of Research on Women's Health offers a discovery resource for women's health research, called [DiscoverWHR](#). This resource simplifies finding information on menopause for patients, caregivers, medical professionals, researchers, and the general public.



Women's Health Research

DiscoverWHR is a centralized resource for women's health research and information from NIH.

[LEARN MORE](#) ➤

*artist modification of OASH webpage layout

“

Advancing women's health is integral to advancing science itself. By prioritizing women's unique physiological and psychological experiences, we are expanding the frontiers of knowledge in ways that benefit everyone.

—Dr. Tali Sharot
Neuroscientist,

Advancing the science of
women's health, *Scientific
Advances*, 2025 (DOI:
[10.1126/sciadv.adw5514](https://doi.org/10.1126/sciadv.adw5514))



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- NIH Office of Women's Health Research
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 - NLM Policy Team
 - Other contributors



Image from: <https://coursesandconferences.wellcomeconnectingscience.org/event/womens-health-genes-data-and-advancing-approaches-20250127/>

Questions

