Proposed NHGRI Reorganization

Eric Green, M.D., Ph.D.
Director, NHGRI

I. Background on NHGRI

II. Proposed Reorganization

III. Process for Implementation

Historical Context: ‘The Genome Institute’

Office for Human Genome Research

1988-1989

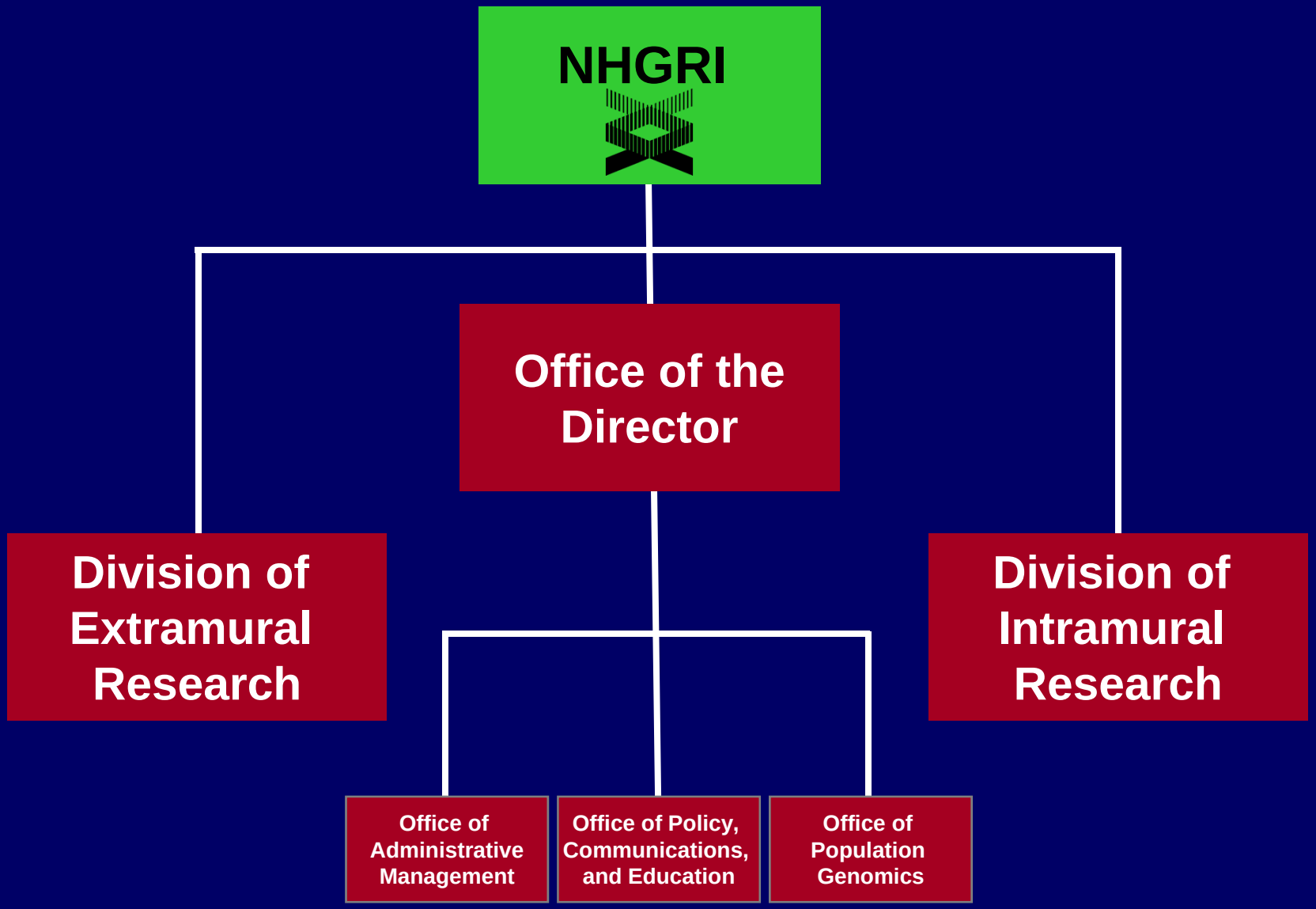
National Center for Human Genome Research

1989-1997

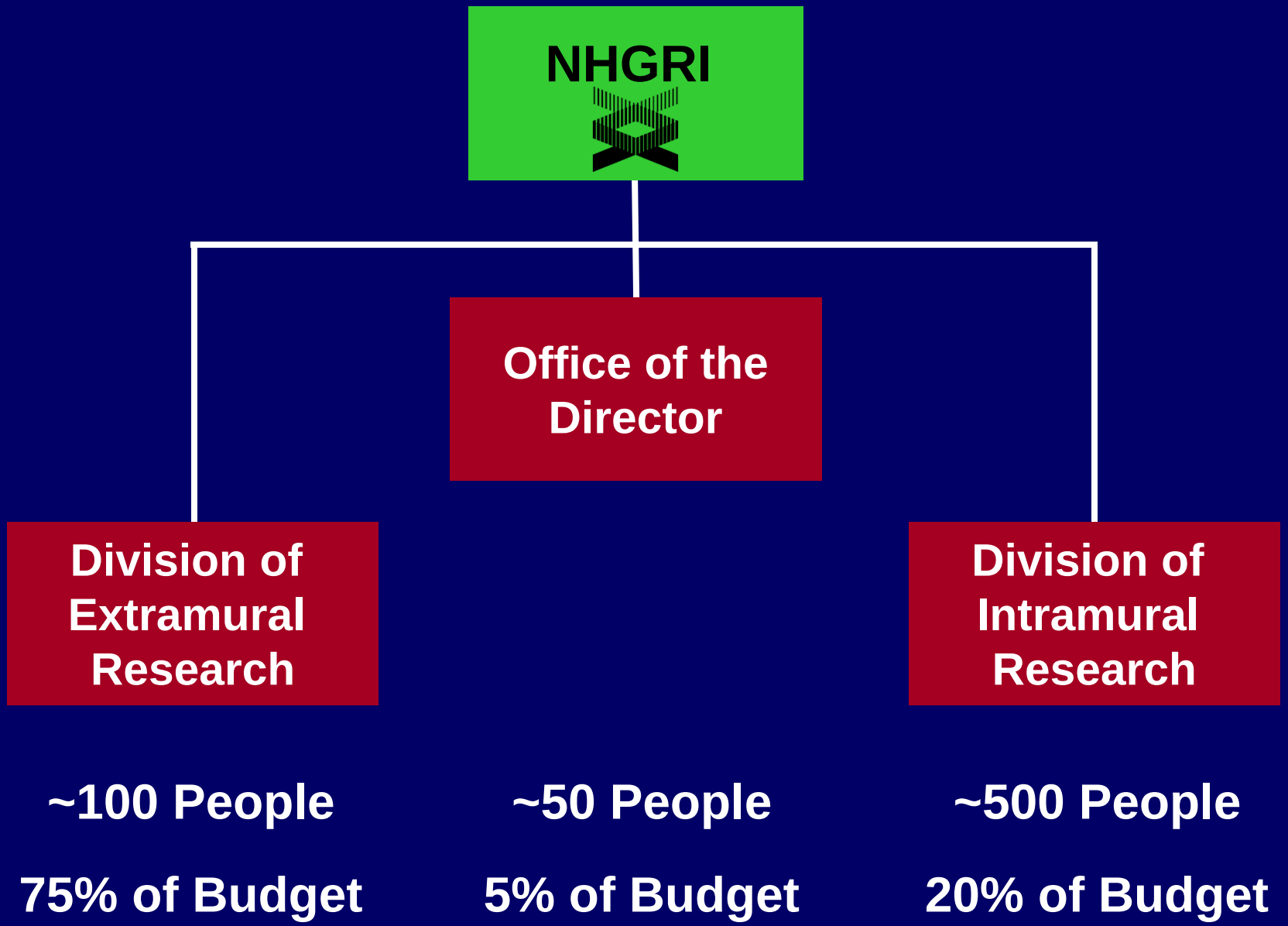
National Human Genome Research Institute

1997-present

Current NHGRI Organizational Structure



Current NHGRI Organizational Structure



Additional Background

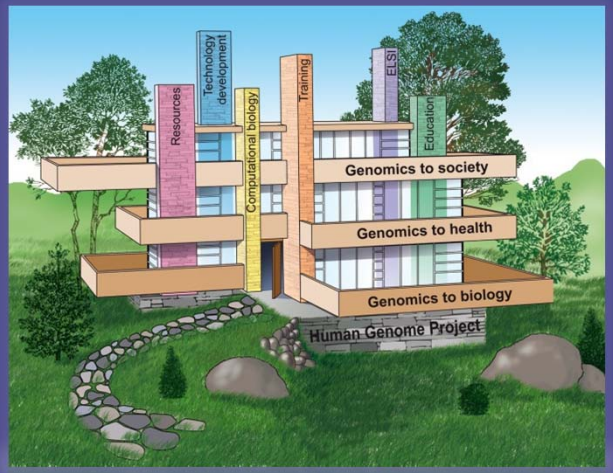
- Organizational structure of the Extramural Research Program has been essentially unchanged since the Human Genome Project—largely a ‘flat’ (non-hierarchical) structure

- The Office of the Director has grown in mission, complexity, and scale in recent years, commensurate with the Institute’s expanding research portfolio

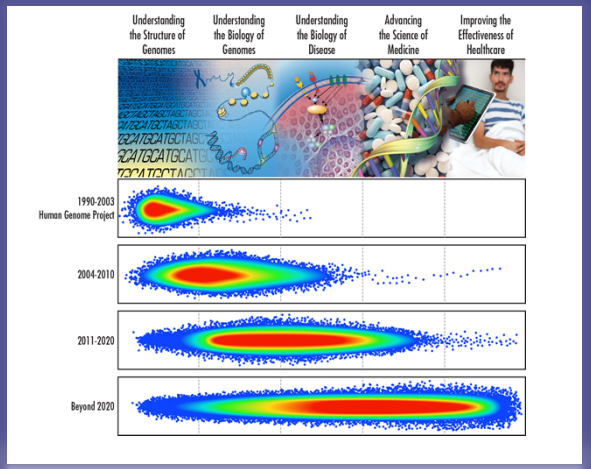
The Different Eras of NHGRI

1990-2003

2003-2010



2011-??



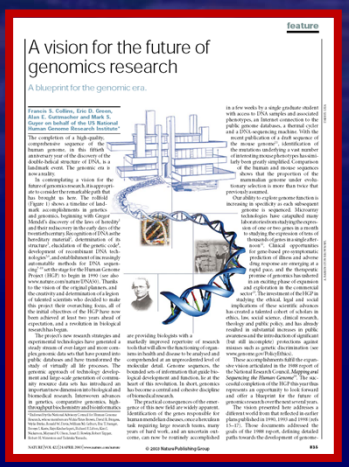

SPECIAL SECTION

GENOME

New Goals for the U.S. Human Genome Project: 1998–2003

Francis S. Collins,* Ari Patrinos, Elke Jordan, Aravinda Chakravarti, Raymond Gesteland, LaDoy Walters, and the members of the DOE and NIH planning groups

REVIEW


feature

A vision for the future of genomics research

A blueprint for the genomic era.

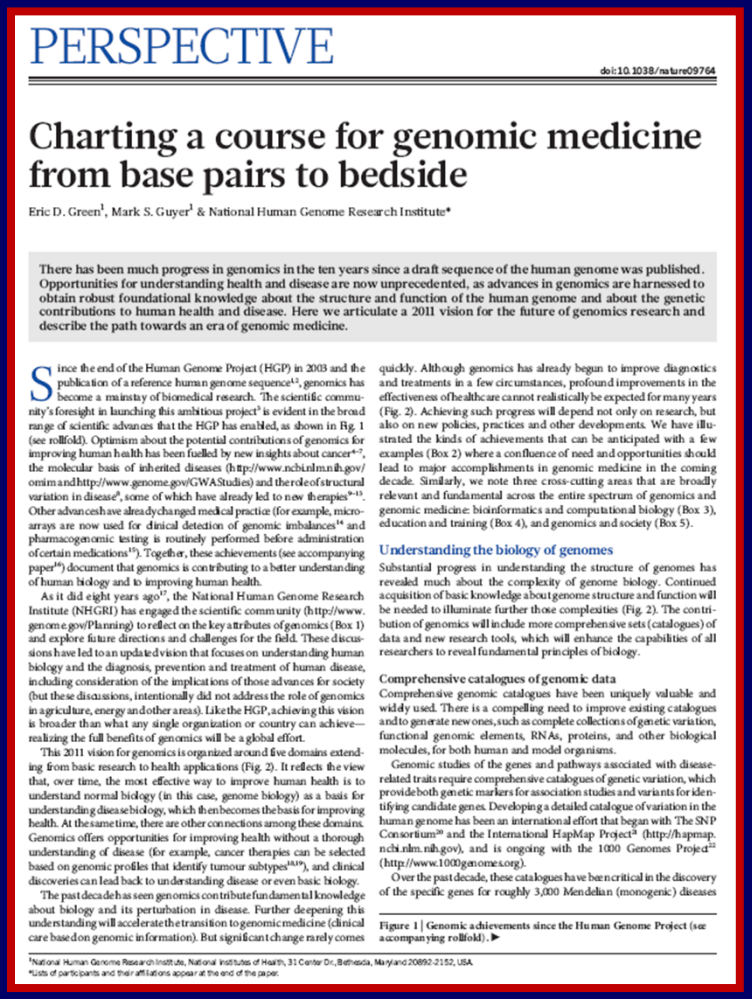
Francis S. Collins, Eric D. Green, Alan E. Guttmacher and Mark S. Guyer on behalf of the US National Human Genome Research Institute*


PERSPECTIVE

Charting a course for genomic medicine from base pairs to bedside

Eric D. Green†, Mark S. Guyer† & National Human Genome Research Institute*

~1 Year Ago



PERSPECTIVE

doi:10.1038/nature09764

Charting a course for genomic medicine from base pairs to bedside

Eric D. Green[1], Mark S. Guyer[1] & National Human Genome Research Institute*

There has been much progress in genomics in the ten years since a draft sequence of the human genome was published. Opportunities for understanding health and disease are now unprecedented, as advances in genomics are harnessed to obtain robust foundational knowledge about the structure and function of the human genome and about the genetic contributions to human health and disease. Here we articulate a 2011 vision for the future of genomics research and describe the path towards an era of genomic medicine.

Since the end of the Human Genome Project (HGP) in 2003 and the publication of a reference human genome sequence[1,2], genomics has become a mainstay of biomedical research. The scientific community's foresight in launching this ambitious project[3] is evident in the broad range of scientific advances that the HGP has enabled, as shown in Fig. 1 (see rollfold). Optimism about the potential contributions of genomics for improving human health has been fuelled by new insights about cancer[4–7], the molecular basis of inherited diseases (http://www.ncbi.nlm.nih.gov/omim and http://www.genome.gov/GWAStudies) and the role of structural variation in disease[8], some of which have already led to new therapies[9–13]. Other advances have already changed medical practice (for example, microarrays are now used for clinical detection of genomic imbalances[14] and pharmacogenomic testing is routinely performed before administration of certain medications[15]). Together, these achievements (see accompanying paper[16]) document that genomics is contributing to a better understanding of human biology and to improving human health.

As it did eight years ago[17], the National Human Genome Research Institute (NHGRI) has engaged the scientific community (http://www.genome.gov/Planning) to reflect on the key attributes of genomics (Box 1) and explore future directions and challenges for the field. These discussions have led to an updated vision that focuses on understanding human biology and the diagnosis, prevention and treatment of human disease, including consideration of the implications of those advances for society (but these discussions, intentionally did not address the role of genomics in agriculture, energy and other areas). Like the HGP, achieving this vision is broader than what any single organization or country can achieve—realizing the full benefits of genomics will be a global effort.

This 2011 vision for genomics is organized around five domains extending from basic research to health applications (Fig. 2). It reflects the view that, over time, the most effective way to improve human health is to understand normal biology (in this case, genome biology) as a basis for understanding disease biology, which then becomes the basis for improving health. At the same time, there are other connections among these domains. Genomics offers opportunities for improving health without a thorough understanding of disease (for example, cancer therapies can be selected based on genomic profiles that identify tumour subtypes[18,19]), and clinical discoveries can lead back to understanding disease or even basic biology.

The past decade has seen genomics contribute fundamental knowledge about biology and its perturbation in disease. Further deepening this understanding will accelerate the transition to genomic medicine (clinical care based on genomic information). But significant change rarely comes quickly. Although genomics has already begun to improve diagnostics and treatments in a few circumstances, profound improvements in the effectiveness of healthcare cannot realistically be expected for many years (Fig. 2). Achieving such progress will depend not only on research, but also on new policies, practices and other developments. We have illustrated the kinds of achievements that can be anticipated with a few examples (Box 2) where a confluence of need and opportunities should lead to major accomplishments in genomic medicine in the coming decade. Similarly, we note three cross-cutting areas that are broadly relevant and fundamental across the entire spectrum of genomics and genomic medicine: bioinformatics and computational biology (Box 3), education and training (Box 4), and genomics and society (Box 5).

Understanding the biology of genomes

Substantial progress in understanding the structure of genomes has revealed much about the complexity of genome biology. Continued acquisition of basic knowledge about genome structure and function will be needed to illuminate further those complexities (Fig. 2). The contribution of genomics will include more comprehensive sets (catalogues) of data and new research tools, which will enhance the capabilities of all researchers to reveal fundamental principles of biology.

Comprehensive catalogues of genomic data

Comprehensive genomic catalogues have been uniquely valuable and widely used. There is a compelling need to improve existing catalogues and to generate new ones, such as complete collections of genetic variation, functional genomic elements, RNAs, proteins, and other biological molecules, for both human and model organisms.

Genomic studies of the genes and pathways associated with disease-related traits require comprehensive catalogues of genetic variation, which provide both genetic markers for association studies and variants for identifying candidate genes. Developing a detailed catalogue of variation in the human genome has been an international effort that began with The SNP Consortium[20] and the International HapMap Project[21] (http://hapmap.ncbi.nlm.nih.gov), and is ongoing with the 1000 Genomes Project[22] (http://www.1000genomes.org).

Over the past decade, these catalogues have been critical in the discovery of the specific genes for roughly 3,000 Mendelian (monogenic) diseases

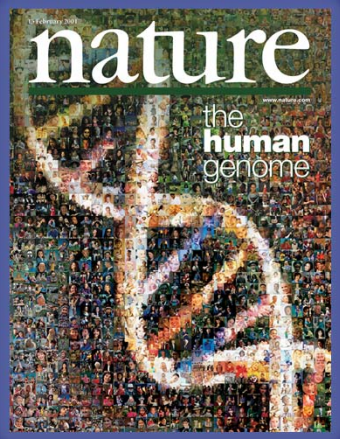
Figure 1 | Genomic achievements since the Human Genome Project (see accompanying rollfold). ▶

[1]National Human Genome Research Institute, National Institutes of Health, 31 Center Dr., Bethesda, Maryland 20892-2152, USA.
*Lists of participants and their affiliations appear at the end of the paper.

February 2011

NHGRI Published New Vision for Genomics

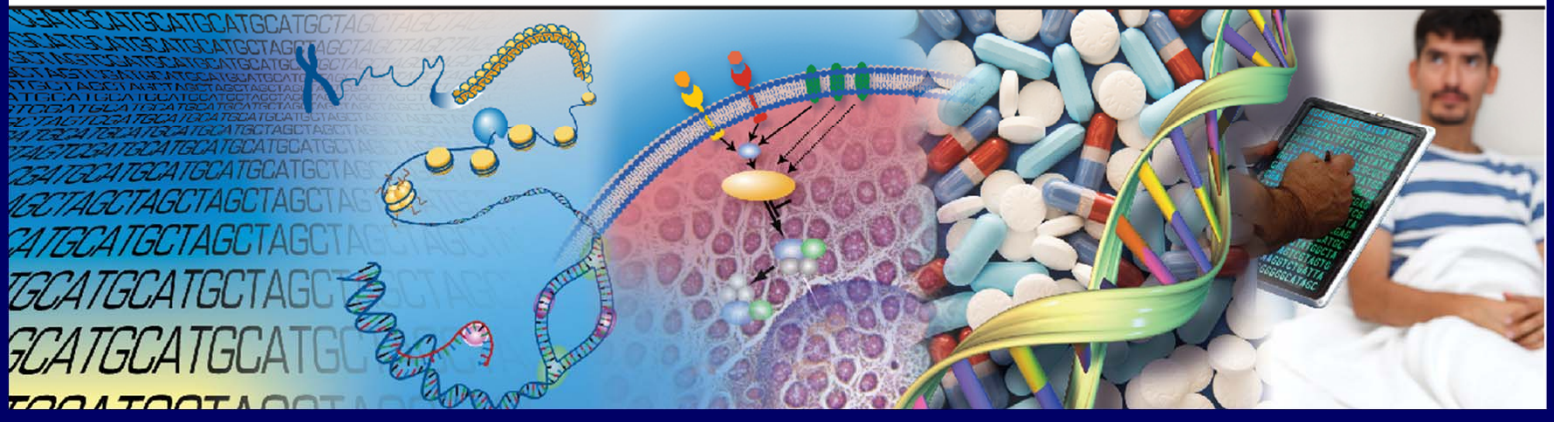
The Path to Genomic Medicine

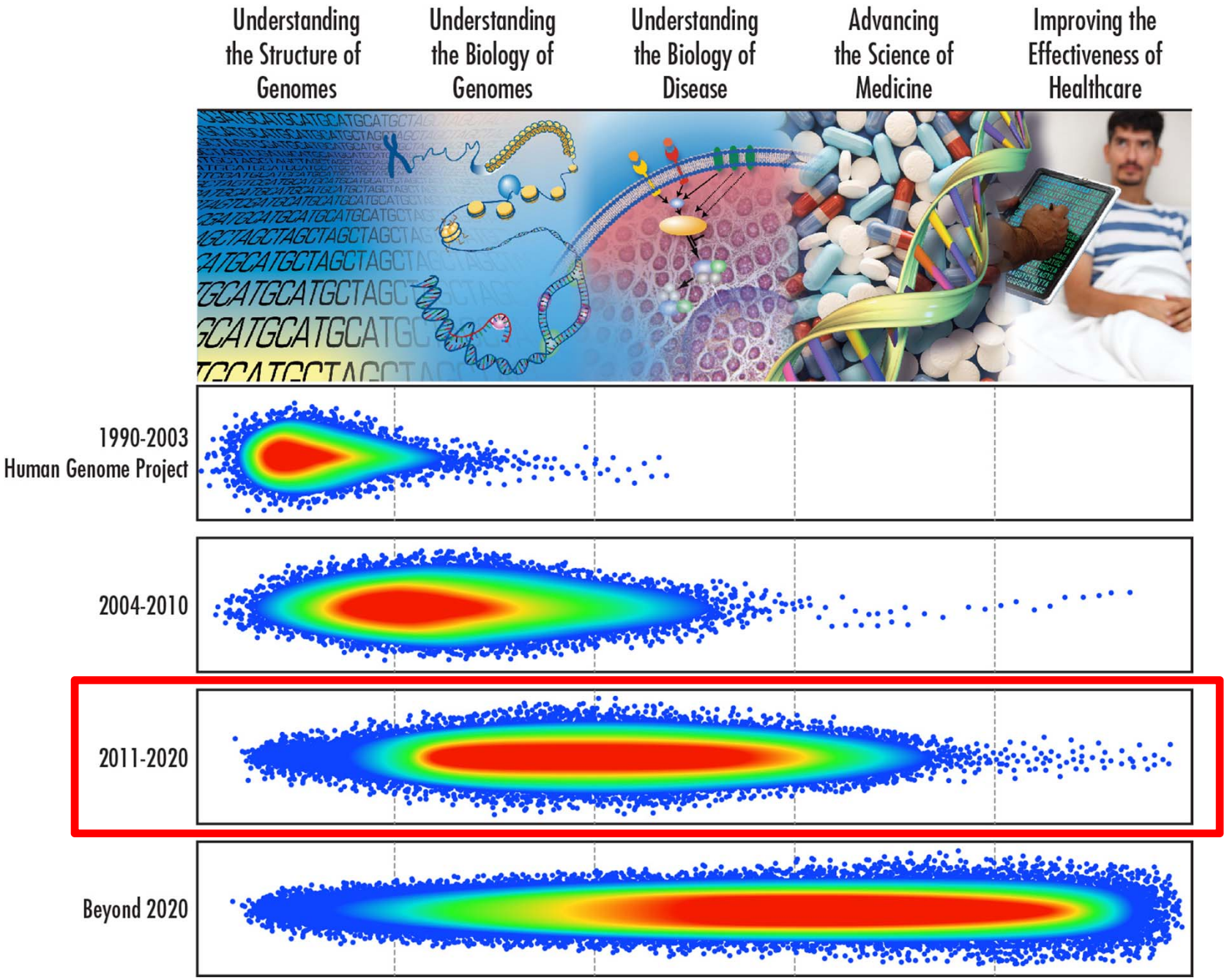


Human Genome Project

Realization of Genomic Medicine

Understanding the Structure of Genomes	Understanding the Biology of Genomes	Understanding the Biology of Disease	Advancing the Science of Medicine	Improving the Effectiveness of Healthcare





Green et al. (2011)

NHGRI Extramural Research Program: *Circa 'Then'*

Human Genome Project

NHGRI Extramural Research Program: *Circa 'Now'*

$1000 Genome
Technology Development Program

TCGA
The Cancer Genome Atlas

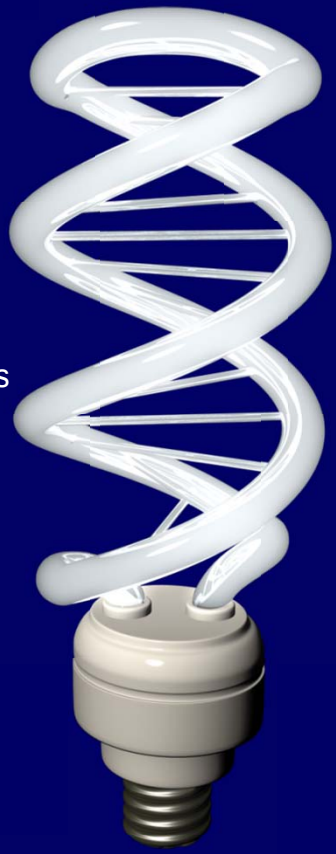
KOMP
Knockout Mouse Project

PAGE
Population Architecture using Genomics and Epidemiology

1000 Genomes

ENCODE
Encyclopedia of DNA Elements Project

modENCODE
Model Organism ENCODE



Clinical Sequencing

Mendelian Disorders Sequencing

Large-Scale Sequencing Program

eMERGE
Electronic Medical Records and Genomics

PhenX
Consensus Measures for Phenotypes and eXposures

GENEVA
Gene Environment Association Studies

CEGS
Centers of Excellence in Genomic Science

ELSI
Ethical Legal Social Implications Program

GARNET
Genomics and Randomized Trials Network

CEER Program
Centers for Excellence in ELSI Research

KOMP2
KOMP Phenotyping

HMP
Human Microbiome Project

GTEx
Genotype-Tissue Expression

H3Africa
Human Heredity and Health in Africa

Protein Capture Reagents

LINCS
Library of Integrated Network-based Cellular Signatures

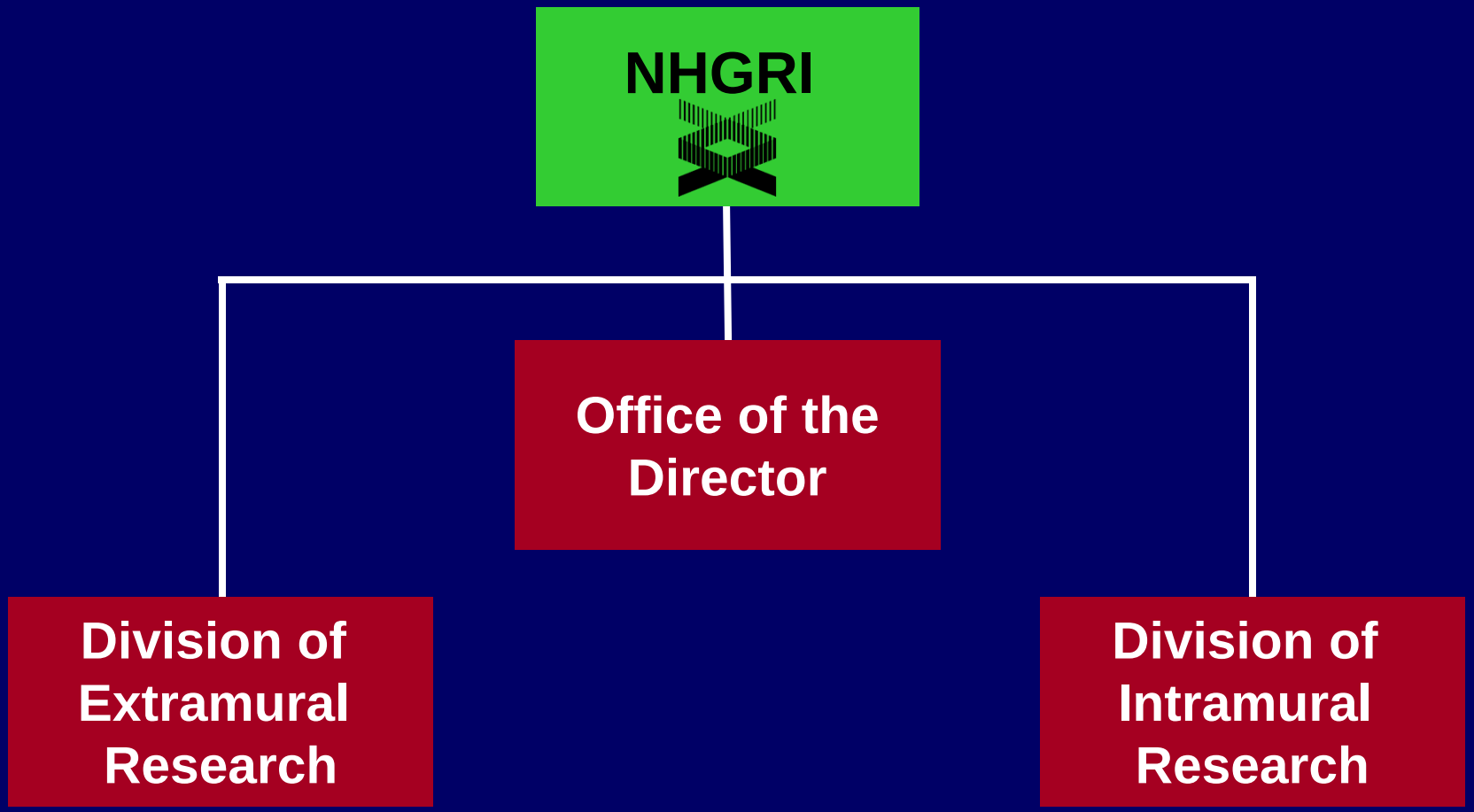
MLP
Molecular Libraries Program

I. Background on NHGRI

II. Proposed Reorganization

III. Process for Implementation

Current NHGRI Organizational Structure

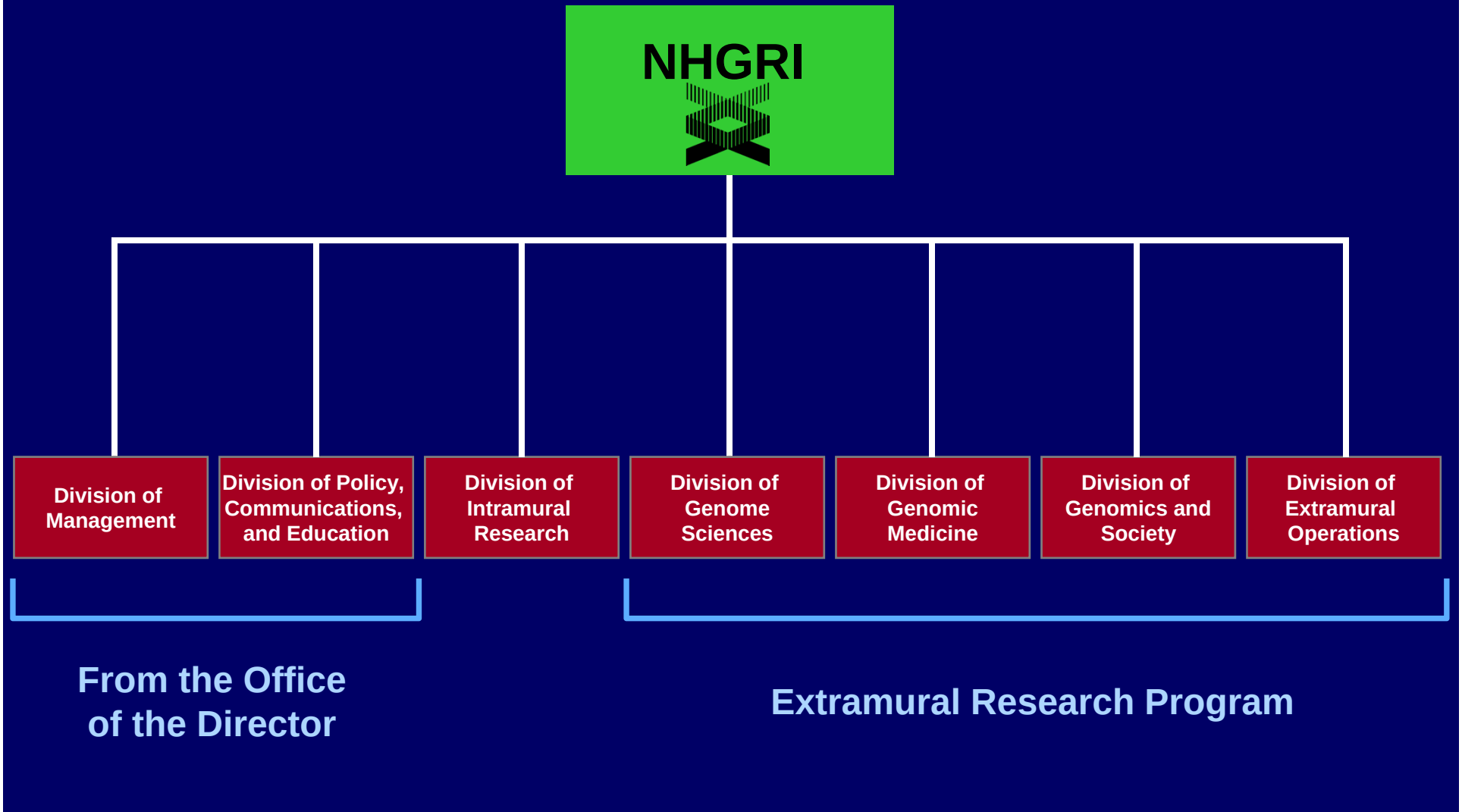


Major Changes

Minor Changes

No Changes

Proposed NHGRI Organizational Structure



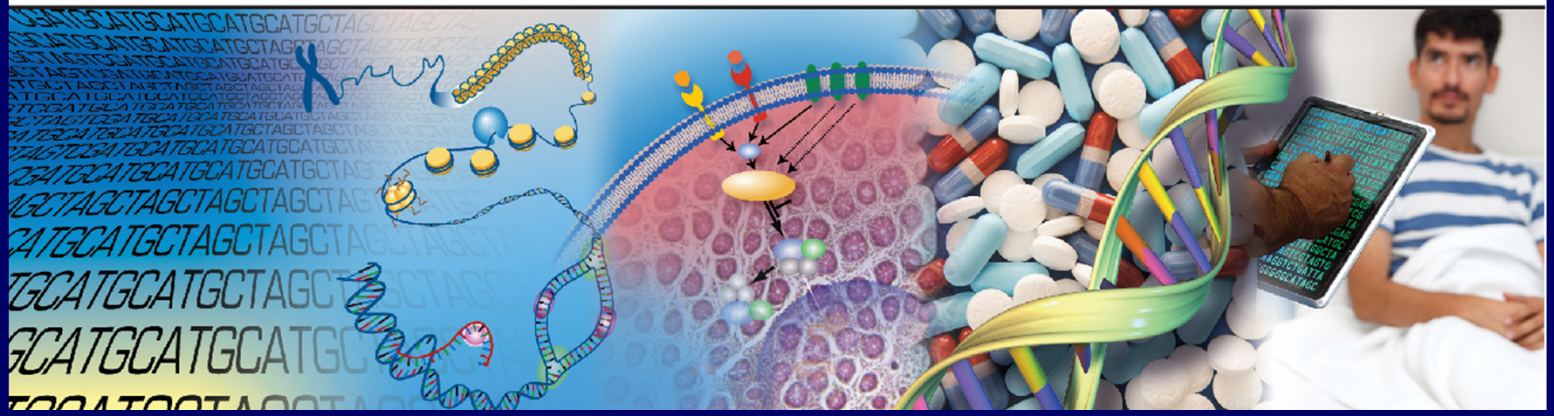
Understanding the Structure of Genomes

Understanding the Biology of Genomes

Understanding the Biology of Disease

Advancing the Science of Medicine

Improving the Effectiveness of Healthcare



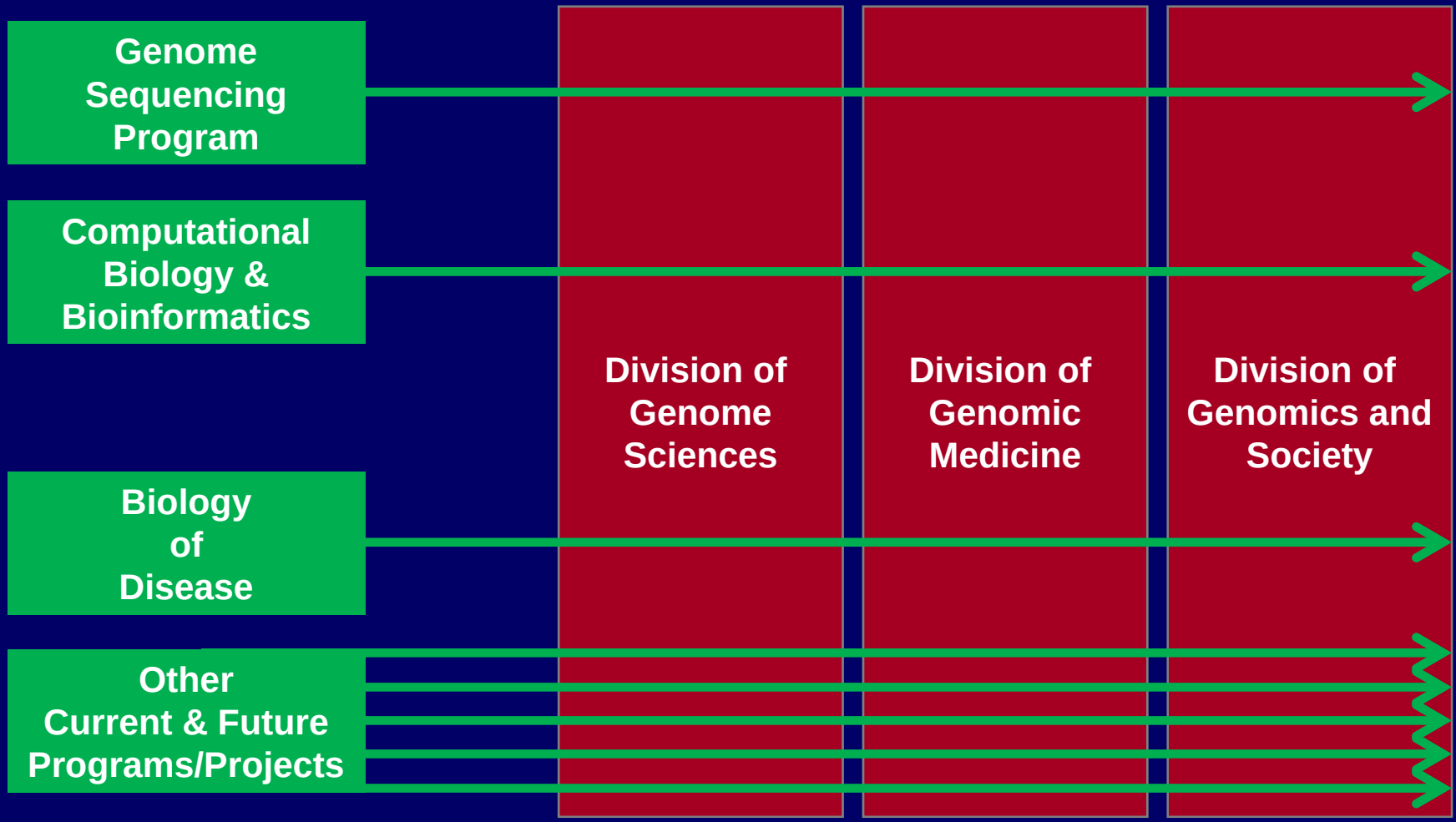
Division of Genome Sciences

Division of Genomic Medicine

Genomics & Society

Division of Genomics and Society

Program/Project Oversight and Execution




Division of Genome Sciences
Division of Management
Division of Policy, Communications, and Education
Division of Intramural Research
Division of Extramural Operations
Division of Genomics and Society
Division of Genomic Medicine
NHGRI

I. Background on NHGRI

II. Proposed Reorganization

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NIH Reform Act of 2006

H. R. 6164

One Hundred Ninth Congress
of the
United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Tuesday, the third day of January, two thousand and six

An Act

To amend title IV of the Public Health Service Act to revise and extend the authorities of the National Institutes of Health, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "National Institutes of Health Reform Act of 2006".

TITLE I—NIH REFORM

Federal Register Posting

2304 **Federal Register** / Vol. 77, No. 10 / Tuesday, January 17, 2012 / Notices

Time: 2 p.m. to 3 p.m.
Agenda: To review and evaluate grant applications.
Place: National Institutes of Health, 6701 Rockledge Drive, Bethesda, MD 20892, (Telephone Conference Call).
Contact Person: Lynn E Luethke, Ph.D., Scientific Review Officer, Center for Scientific Review, National Institutes of Health, 6701 Rockledge Drive, Room 5166, MSC 7844, Bethesda, MD 20892, (301) 806-3323, luethkel@csr.nih.gov.

Name of Committee: Center for Scientific Review Special Emphasis Panel, Collaborative Applications in Adult Psychopathology and Disorders of Aging.
Date: February 6, 2012.
Time: 4 p.m. to 5 p.m.
Agenda: To review and evaluate grant applications.
Place: Doubletree Guest Suites Santa Monica, 1707 Fourth Street, Santa Monica, CA 90401.
Contact Person: Mark Lindner, Ph.D., Scientific Review Officer, Center for Scientific Review, National Institutes of Health, 6701 Rockledge Drive, Room 3182, MSC 7770, Bethesda, MD 20892, (301) 435-0913, mark.lindner@csr.nih.gov.

Name of Committee: Center for Scientific Review Special Emphasis Panel, Hypertension and Microcirculation A.
Date: February 7, 2012.
Time: 1 p.m. to 1:45 p.m.
Agenda: To review and evaluate grant applications.
Place: National Institutes of Health, 6701 Rockledge Drive, Bethesda, MD 20892, (Telephone Conference Call).
Contact Person: Larry Pinkus, Ph.D., Scientific Review Officer, Center for Scientific Review, National Institutes of Health, 6701 Rockledge Drive, Room 4132, MSC 7802, Bethesda, MD 20892, (301) 435-1214, pinkus@csr.nih.gov.

(Catalogue of Federal Domestic Assistance Program Nos. 93.306, Comparative Medicine; 93.333, Clinical Research, 93.306, 93.333, 93.337, 93.393–93.396, 93.837–93.844, 93.846–93.878, 93.892, 93.893, National Institutes of Health, HHS)

Dated: January 9, 2012.
Jennifer S. Spaeth,
Director, Office of Federal Advisory Committee Policy.
[FR Doc. 2012–732 Filed 1–13–12; 8:45 am]
BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

National Human Genome Research Institute; Notice of Meeting

Pursuant to section 401(d)(4) of the Public Health Service Act (42 U.S.C. 281(d)(4)), notice is hereby given that the National Human Genome Research Institute (NHGRI) will host a series of meetings to enable public discussion of the Institute's proposal to reorganize its internal structure. The proposed reorganization reflects the expanding scope of NHGRI's research portfolio in response to the priorities detailed in the Institute's new strategic plan for genomics research, titled "Charting a Course for Genomic Medicine from Base Pairs to Bedside." (Green, E.D., Guyer, M.S. *Nature.* (470) 204–213.2011.)

The first public meeting will be a webinar and teleconference on January 18, 2012. The second public meeting will be on February 13, 2012, during the open session of the 64th meeting of the National Advisory Council for Human Genome Research. Background materials on the proposed reorganization and logistical information regarding the two public meetings are available at genome.gov/reorg. Additional information and updated details on these public meetings will be added to this Web site as the dates approach.

Organizing Institute: National Human Genome Research Institute.
Dates and Times: January 18, 2012, at 2:30 p.m. EST.
February 13, 2012, at 1 p.m. EST.
Agenda: The agenda for each meeting will include presentations and discussion about the proposed internal reorganization. Members of the public will have the opportunity to ask questions and provide comments on NHGRI's proposal. Draft agendas, background materials, and instructions for joining the meetings will be made available at genome.gov/reorg. Individuals wishing to submit written questions or comments should send them via email to *NHGRIcomments@mail.nih.gov.*
Contact Person: Laura Lyman Rodriguez, Ph.D., Office of Policy, Communications, and Education, National Human Genome Research Institute, National Institutes of Health, 31 Center Drive, Room 4B09, Bethesda, MD 20892–2153, (301) 594–7185, *NHGRIcomments@mail.nih.gov.*

Dated: January 10, 2012.
Eric D. Green,
Director, NHGRI.
[FR Doc. 2012–729 Filed 1–13–12; 8:45 am]
BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

National Institute on Alcohol Abuse and Alcoholism; Notice of Closed Meeting

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. App.), notice is hereby given of the following meeting.

The meeting will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended. The grant applications and the and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: National Institute on Alcohol Abuse and Alcoholism; Special Emphasis Panel, Review of the Collaborative Initiative on Fetal Alcohol Spectrum Disorders.
Date: March 28–29, 2012.
Time: 4 p.m. to 5 p.m.
Agenda: To review and evaluate cooperative agreement applications.
Place: Legacy Hotel and Meeting Center, 1775 Rockville Pike, Rockville, MD 20852.
Contact Person: Beata Buzas, Ph.D., Scientific Review Officer, National Institute on Alcohol Abuse and Alcoholism, National Institutes Of Health, 5635 Fishers Lane, Rm 2081, Rockville, MD 20852, (301) 443–0800, *bbuzas@mail.nih.gov.*

(Catalogue of Federal Domestic Assistance Program Nos. 93.271, Alcohol Research Career Development Awards for Scientists and Clinicians; 93.272, Alcohol National Research Service Awards for Research Training; 93.273, Alcohol Research Programs; 93.891, Alcohol Research Center Grants; 93.701, ARRA Related Biomedical Research and Research Support Awards., National Institutes of Health, HHS)

Dated: January 9, 2012.
Jennifer S. Spaeth,
Director, Office of Federal Advisory Committee Policy.
[FR Doc. 2012–733 Filed 1–13–12; 8:45 am]
BILLING CODE 4140–01–P

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

[Docket ID: FEMA–2011–0042; OMB No. 1660–0083]

Agency Information Collection Activities: Proposed Collection; Comment Request, Application for Community Disaster Loan (CDL) Program

AGENCY: Federal Emergency Management Agency, DHS.
ACTION: Notice.

SUMMARY: The Federal Emergency Management Agency, as part of its continuing effort to reduce paperwork and respondent burden, invites the general public and other Federal agencies to take this opportunity to comment on a proposed extension,

Steps to Reorganization

- **Public meetings:**

  Webinar (January 18)

  NACHGR Meeting (February 13)

- **Submission of reorganization package**

- **If approved, pursue next steps of appointing Division Directors and implementing new organizational structure**

Anticipated Benefits of Reorganizing

- Organizational structure will more effectively align with the Institute's research portfolio (i.e., 'structure will match function')
- New divisions and anticipated substructures will improve succession planning of senior leadership
- New structure commensurate with Director's vision for organizational management

Additional information:

genome.gov/reorg

To provide feedback:

NHGRIcomments@nih.gov


NHGRI