National Institute on Aging

ADC Meeting – NIH Roadmap and Budget
October 2003

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Why a Roadmap?

- **Acceleration in the pace of discoveries in the life sciences:**

- **Need for more rapid translational processes.**

- **Urgent need for novel approaches:**

  ➢ Orders of magnitude more effective than current approaches

Roadmap Participants were asked:

- **What are today's scientific challenges?**

- **What are the roadblocks to progress?**

- **What do we need to do to overcome roadblocks?**

- **What can't be accomplished by any single Institute – but is the responsibility of NIH as a whole?**

Roadmap Chronology

August 2002	**Consultation with over 100 thought leaders**
September 2002	**IC Directors Leadership Forum**
March 2003	**Formation of 15 Roadmap Working Groups, involving over 300 experts**
April 2003	**Presentation to Council of Public Representatives (COPR)**
May 2003	**Working Groups Develop Proposed Roadmap Initiatives and Plans**
June 20, 2003	**IC Directors' Retreat**
June 30, 2003	**Presentation to the Advisory Committee to the Director (ACD)**
FY 2004 & beyond	**Staged Implementation**

Roadmap Implementation

- **All NIH ICs have made the corporate decision to have a common pool of resources that will be used for all current and future investment in the Roadmap initiative**

- **$128 M in FY 2004**

- **Over $2B by FY 2009**

NIH Roadmap
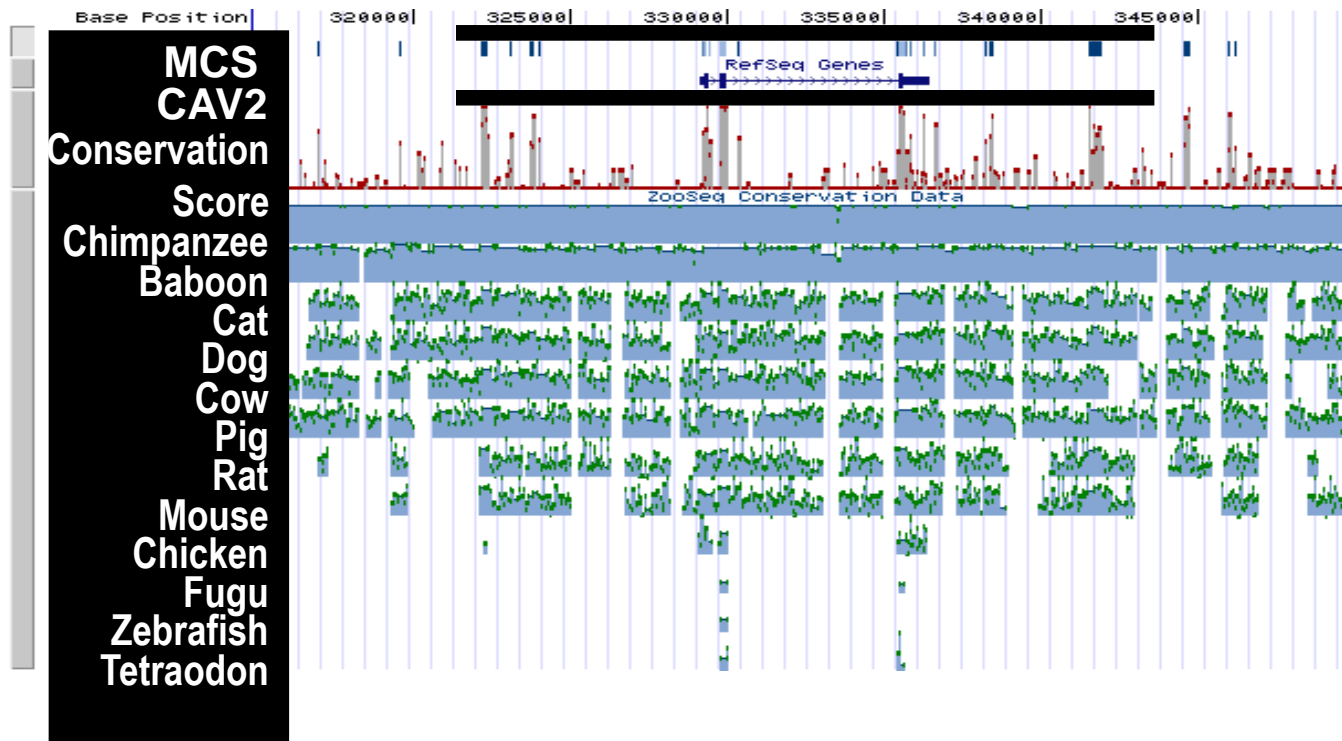# Three CORE Themes

- **New Pathways to Discovery**

- **Research Teams of the Future**

- **Re-engineering the Clinical Research Enterprise**

Computational Biology:
Modeling the Cell's Information Superhighway

- National Centers for Biomedical Computing

Structural Biology:
Life in Three Dimensions

- Proteins that reside in cell membranes – the next frontier

- Long term goal: the ability to predict shape and function of any protein from sequence
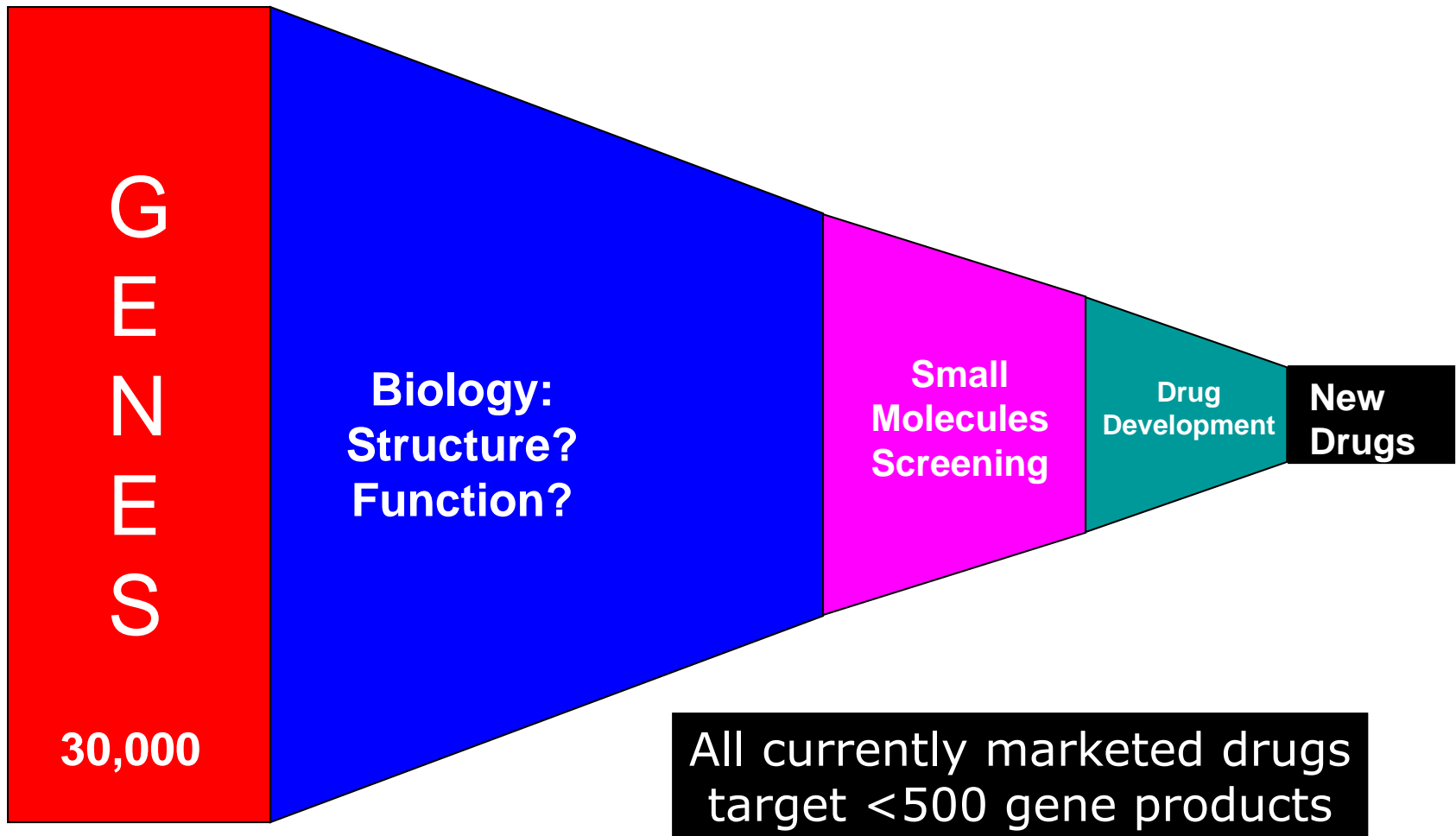
Molecular Libraries:
Putting Chemistry to Work for Medicine

- Six national screening centers for small molecules

- Public database for "chemical genomics"

- Technology advances in combinatorial chemistry, robotics, virtual screening
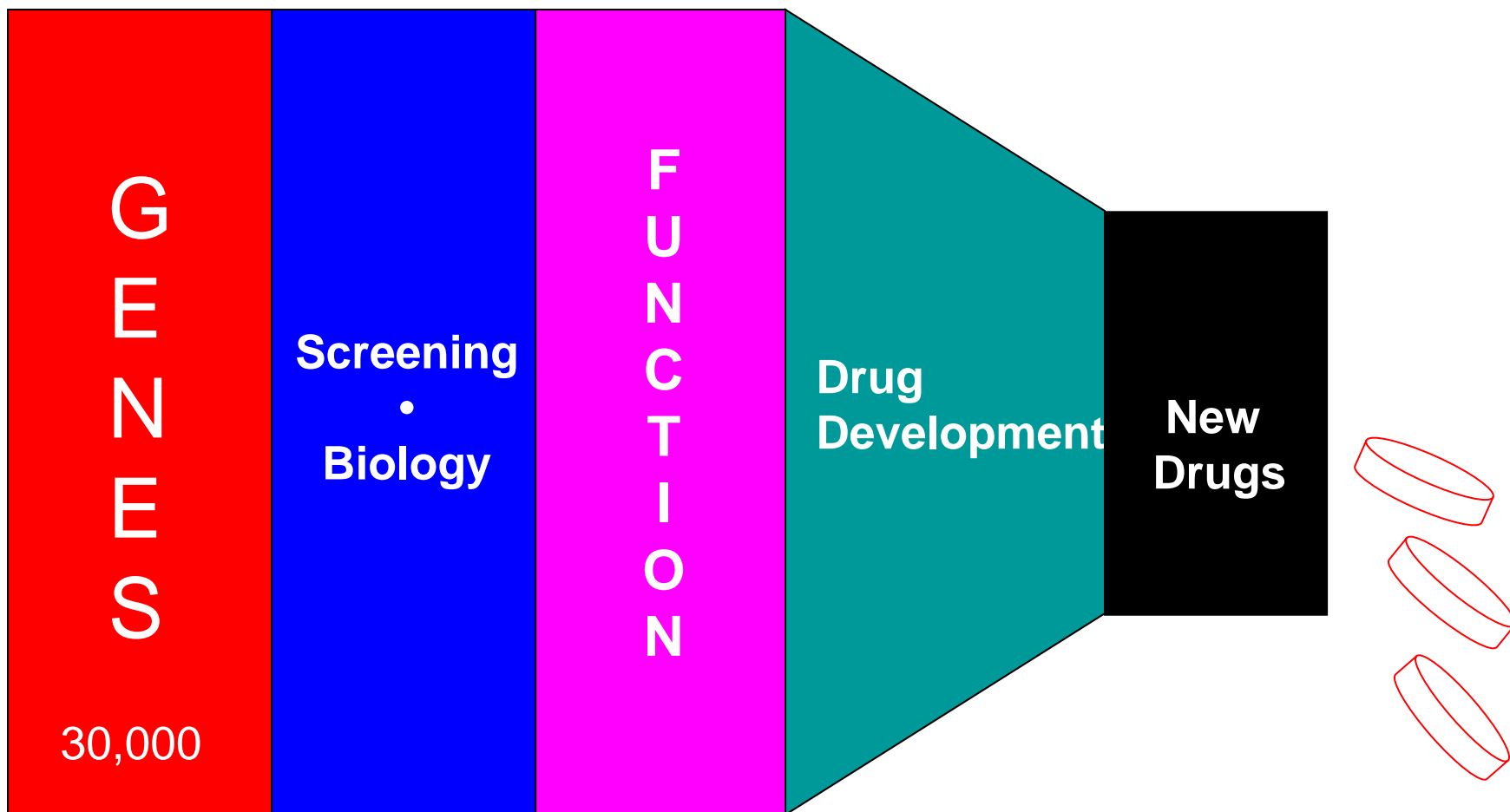
The Current Paradigm

GENES

30,000

Biology:
Structure?
Function?

Small
Molecules
Screening

Drug
Development

New
Drugs

All currently marketed drugs
target <500 gene products

# The Molecular Libraries Paradigm

Research Teams of the Future

Scale and complexity of current Science require novel team approaches

- Interdisciplinary Research Teams

- Director's Innovator Award

- Public-Private Partnerships

Challenges to Interdisciplinary Research

- **The current system of academic advancement in science favors the independent investigator.**

- **Most research institutions house scientists in discrete departments.**

- **Interdisciplinary research teams take time to assemble and require unique resources to be maintained.**
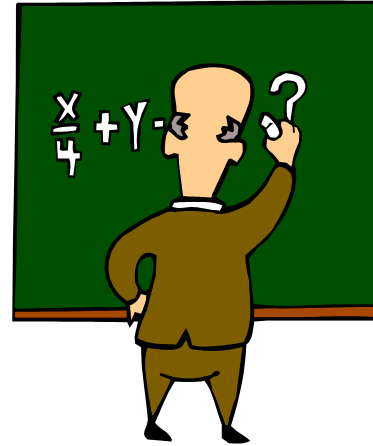
Director's Innovator Award

- **New program to support individuals with untested ideas with groundbreaking potential**

- **Totally new peer review process**

- **Provides $500K/year for five years**

- **Encourages innovation, risk-taking**

- **Expected to be highly competitive**

Re-Engineering of the Clinical Research Enterprise

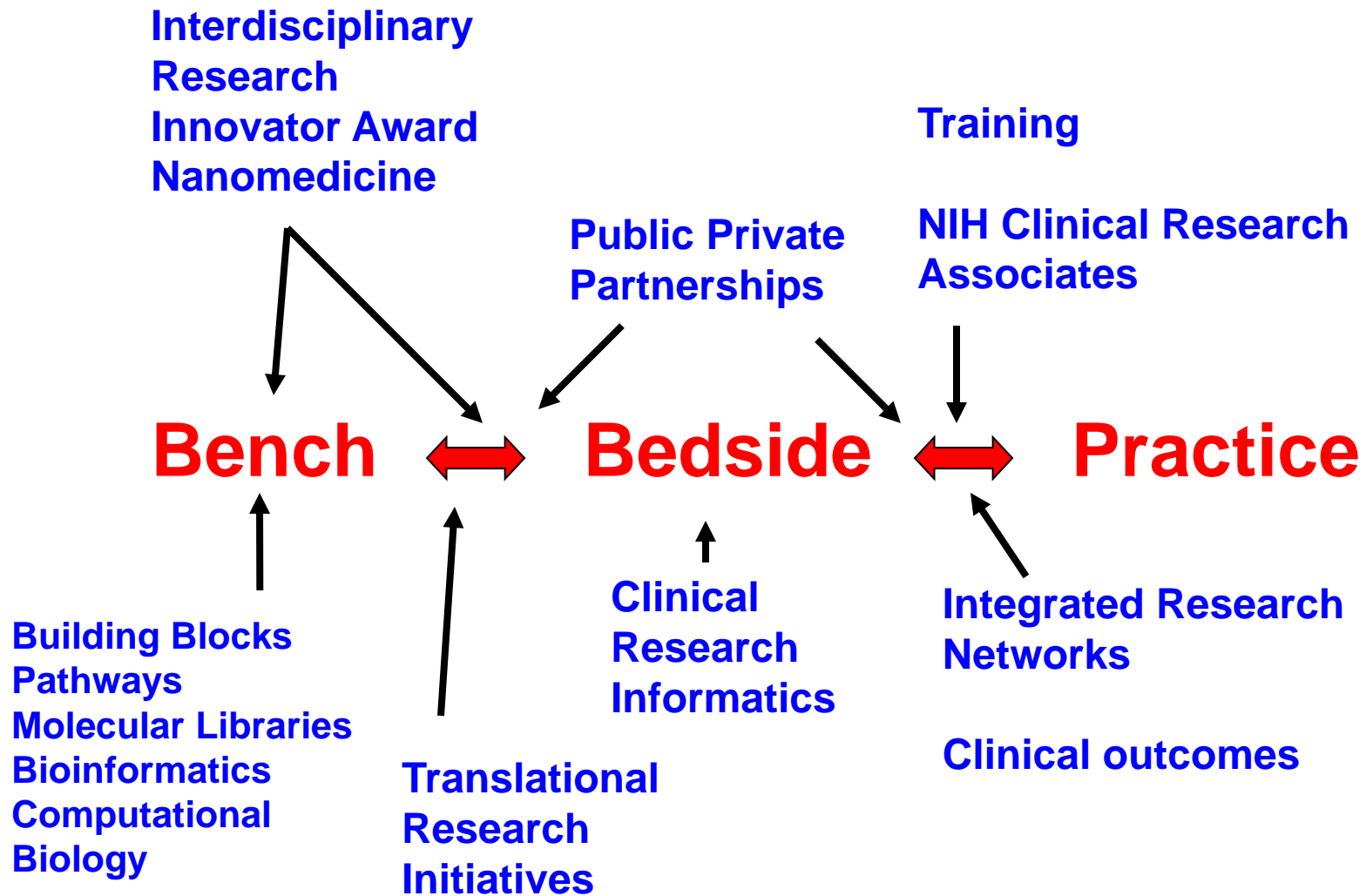**Bench** ⇔ **Bedside** ⇔ **Practice**

Networks
Clinical outcomes
Clinical Research informatics
Training
Translational research
Harmonization

Interdisciplinary Research Innovator Award Nanomedicine

Training

NIH Clinical Research Associates

Public Private Partnerships

Bench ⟷ **Bedside** ⟷ **Practice**

Building Blocks Pathways Molecular Libraries Bioinformatics Computational Biology

Translational Research Initiatives

Clinical Research Informatics

Integrated Research Networks

Clinical outcomes

National Institutes of Health
FY 2004 Roadmap Initiatives
(Dollars in millions)

Implementation Group	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Total
Molecular Libraries and Imaging	32	67	92	116	129	120	556
Building Blocks, Biological Pathways and Networks	15	29	31	20	21	9	125
Structural Biology	5	10	10	10	10	10	55
Bioinformatics and Computational Biology	12	24	24	24	24	24	132
Nanomedicine	0	6	12	12	25	25	80
Interdisciplinary Research	20	27	26	69	68	59	270
High-risk Research	6	11	17	22	28	33	117
Public-Private Partnerships	1	1	1	1	1	1	3
Re-engineering the Clinical Research Enterprise	38	61	120	174	214	227	833
Total Roadmap Initiatives	**128**	**237**	**332**	**448**	**520**	**507**	**2,172**

www.nihroadmap.nih.gov

National Institute on Aging
Distribution of Appropriations by Budget Category: Fiscal Year 2003

Contracts 6.2%
Intramural 9.7%
Training 2.3%
RM&S 3.3%
Other 3.3%
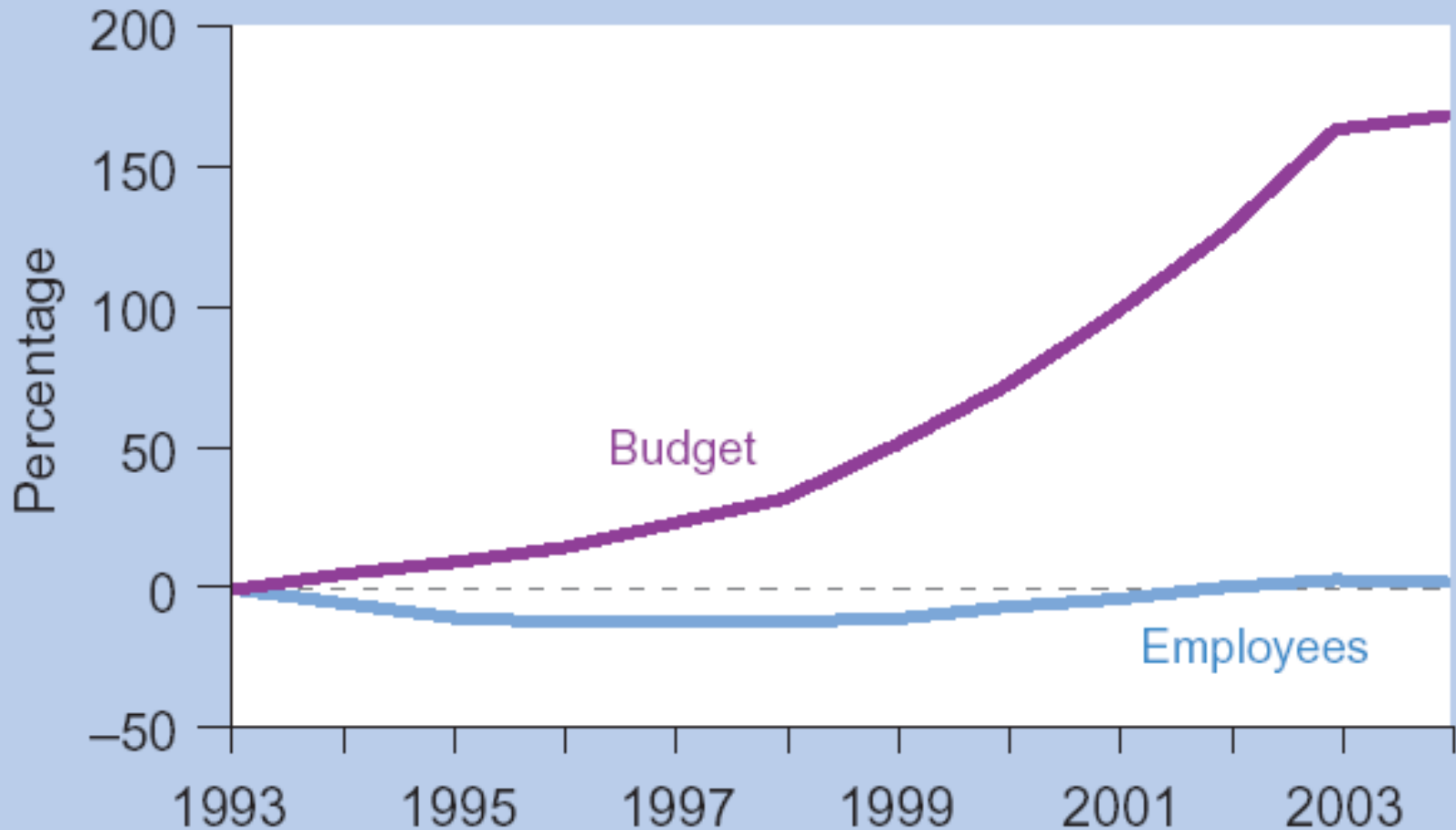Centers 8.4%
Research Project Grants 64.5%
SBIR/STTR 2.3%
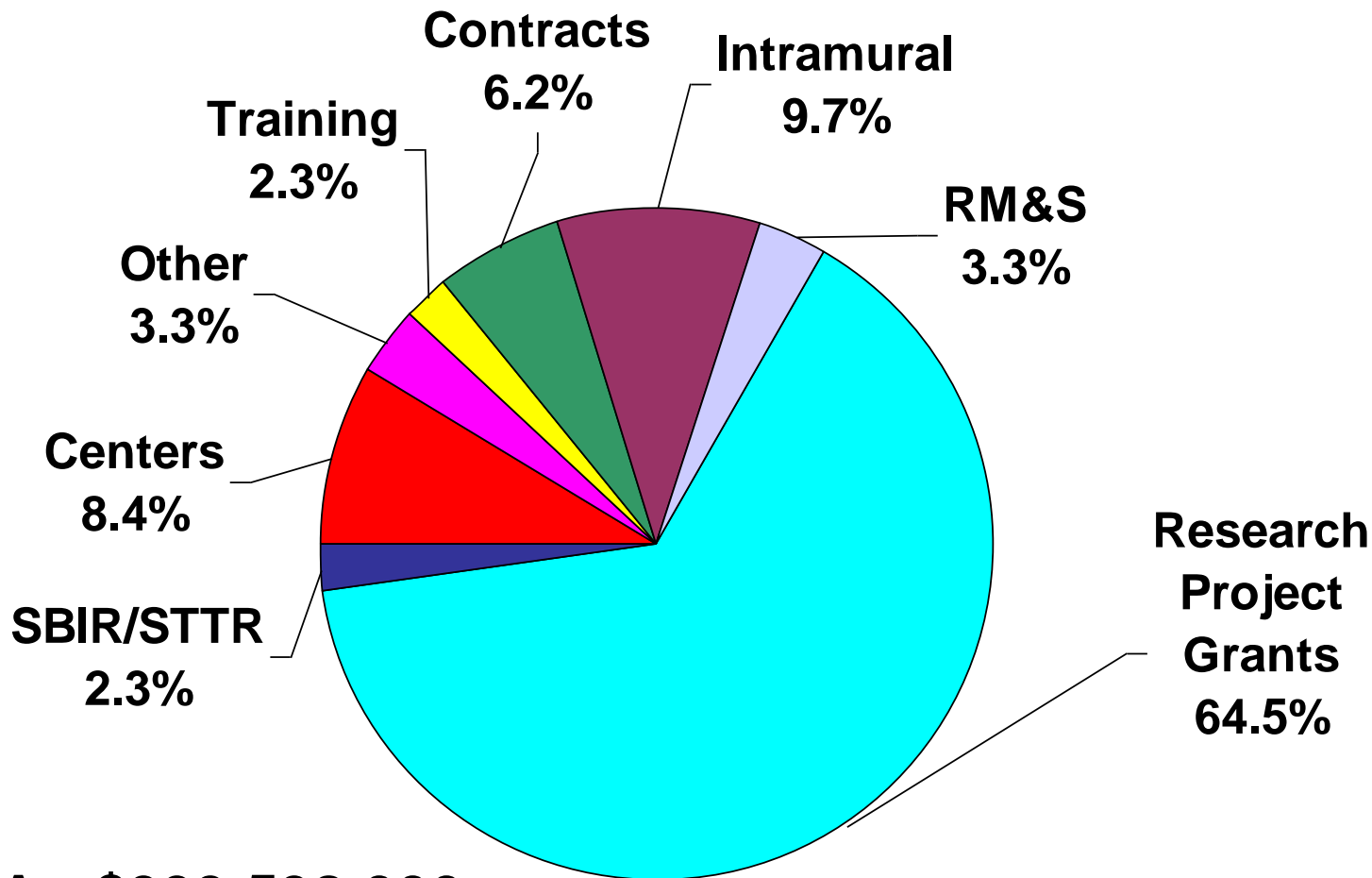
Total NIA: $993,598,000
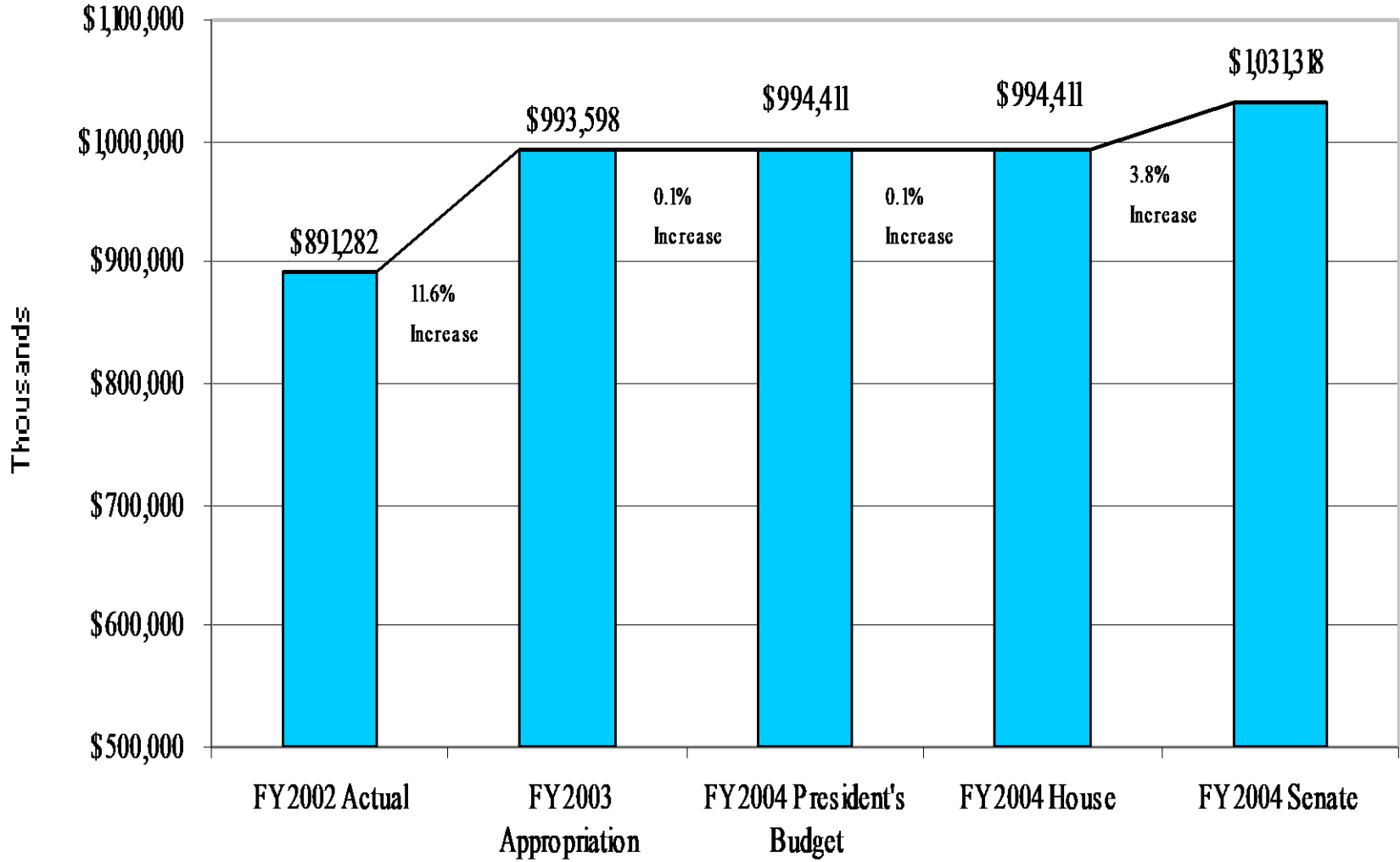FY 2003 appropriations post rescission

NIA Budget May 2003

NIH Growth in Budget and Full-Time Employees

Overstaffed? Despite the recent doubling of NIH's budget since 1993, the Administration aims to trim NIH's staff.

Science

NATIONAL INSTITUTE ON AGING

Thousands

$1,100,000

$1,031,318

$1,000,000

$993,598 $994,411 $994,411

$891,282

0.1%   0.1%   3.8%
Increase   Increase   Increase

$900,000

11.6%
Increase

$800,000

$700,000

$600,000

$500,000

FY 2002 Actual   FY 2003   FY 2004 President's   FY 2004 House   FY 2004 Senate
                  Appropriation   Budget

NIH

Ideas
People
Resources

Roadmap Implementation: Considerations

- **Is the initiative truly transforming -- will it dramatically change how or what biomedical research is conducted in the next decade?**

- **Would the outcomes from the initiative be used by and synergize the work of many ICs?**

- **Can the NIH afford <u>NOT</u> to do it?**

- **Will the initiative be compelling to our stakeholders, especially the public?**

- **Does the initiative position the NIH as unique -- doing something that no other entity can or will**