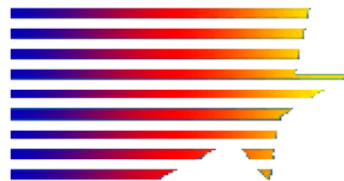# Corridor Talk:
necessary informal inside information

NIH, Its Institutes, and Its Funding Mechanisms
for Medical Research

Terry S. Yoo

Office of High Performance Computing and Communications
National Library of Medicine
National Institutes of Health
U.S. Department of Health and Human Services
United States of America, North American Continent, Earth

cor - ri -dor talk *n* **1:** the practice of passing on tips, insights, and strategies about the means of production of academic work (as at professional conferences, where, it is frequently remarked, the most important business takes place "out in the corridor" rather than inside the meeting rooms) **2:** nonascribable (off-the-record) but necessary information; practical gossip **3:** common-sense, informal (not publicly taught) mentoring; the unsaid , but frequently said anyway (though not to everyone).

Survey:

Computer scientists?

Computer Engineers?

Graduate Students?

Postdoctoral Fellows?

Assistant Professors?

NSF Funding?

DOE?

DARPA?

NIH?

How many of you know your project officer's name? On sight?

An experiment:

1. Raise your hand.
2. If I get to a term you don't know, please lower your hand.

Grant

RFP (Request for Proposals)

Research Contract

Cooperative Agreement

PAR (Program Announcement)

BAA (Broad Agency Announcement)

RFA

SBIR

STTR

R01

P41

CRADA

P01, R03, R21, R33, U01, U54, T32, T15, K13, …

Goals

1. Overview of NIH.
2. Briefly cover NIH procedures.
3. Describe the NIH peer-review process.
4. Survey NIH funding opportunities past and present.

Provide researchers new to NIH with information to help improve the overall quality of new proposals in biomedical engineering research.

Chance favors the prepared mind.

- *Louis Pasteur*

Luck is when preparation meets opportunity.

- *Seneca (quoted by Roy Williams)*

Acknowledgements:

NSF:

Debbie Crawford

Slides:

Helen Fraser

Lee Rosen

The Government is a very big place.
NIH is a pretty big place.

Give a basic introduction to the National
Institutes of Health.

Give a basic introduction to the NIH funding
picture and some basic differences from
NSF

DARPA: $3.048 Billion   NSF: $7.768 Billion
NASA: $18.724 Billion   DOE: $29.547 Billion
NIH: $31.829 Billion

Source: the 2012 Presidential budget request

Some basic notes across Feds:

1. Grants - Proposals
   - Panel has less time to think through your idea than you do.
   - Proposal writing as story telling
   - Volunteer

2. Budgets - rising in science and technology
   - DOE is optimistic (2012 Presidential request +4%)
   - NSF is optimistic (2012 Presidential request +5%)
   - NIH is cautious (2012 Presidential request +3%)
   - Funding is a zero sum game?

   Domestic spending capped planned for 2012 doesn't seem to have happened?

Which way is up?
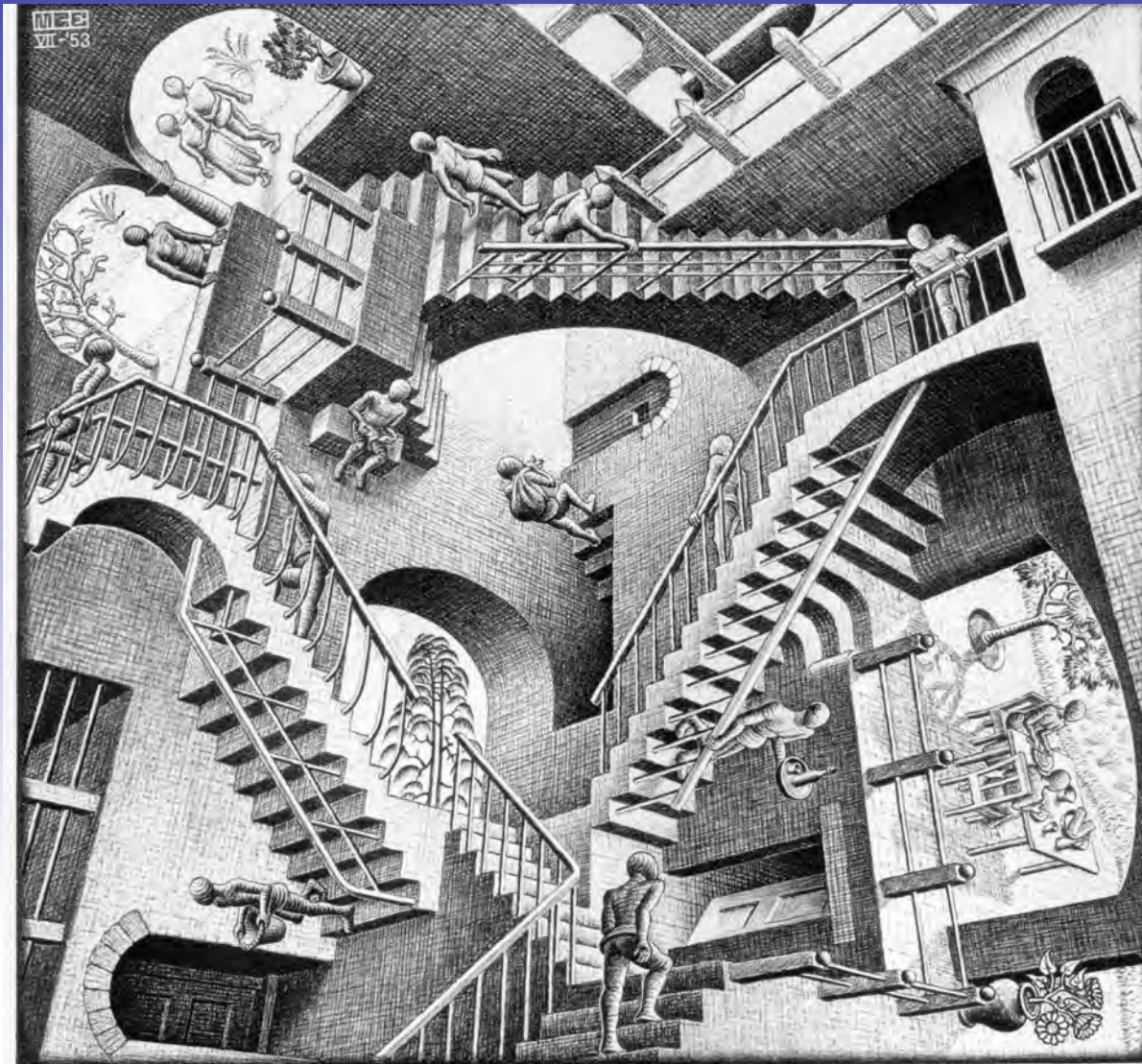
NIH Mission

Improve human health through biomedical and behavioral research, research training and communications.

A mistaken view…

NIH is 27 separately funded Institutes and Centers…

Bethesda, MD:
- NIH Campus

Rockville, Poolesville, MD
- NCI, NINDS, NIBIB, NIMH, NCRR

Baltimore, MD
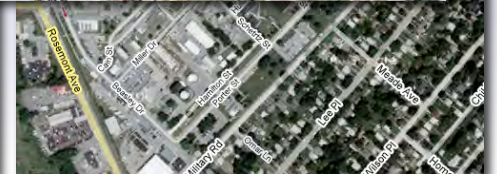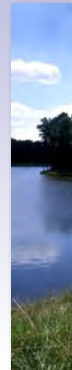- Bayview Campus: NIDA, NIA

Frederick, MD
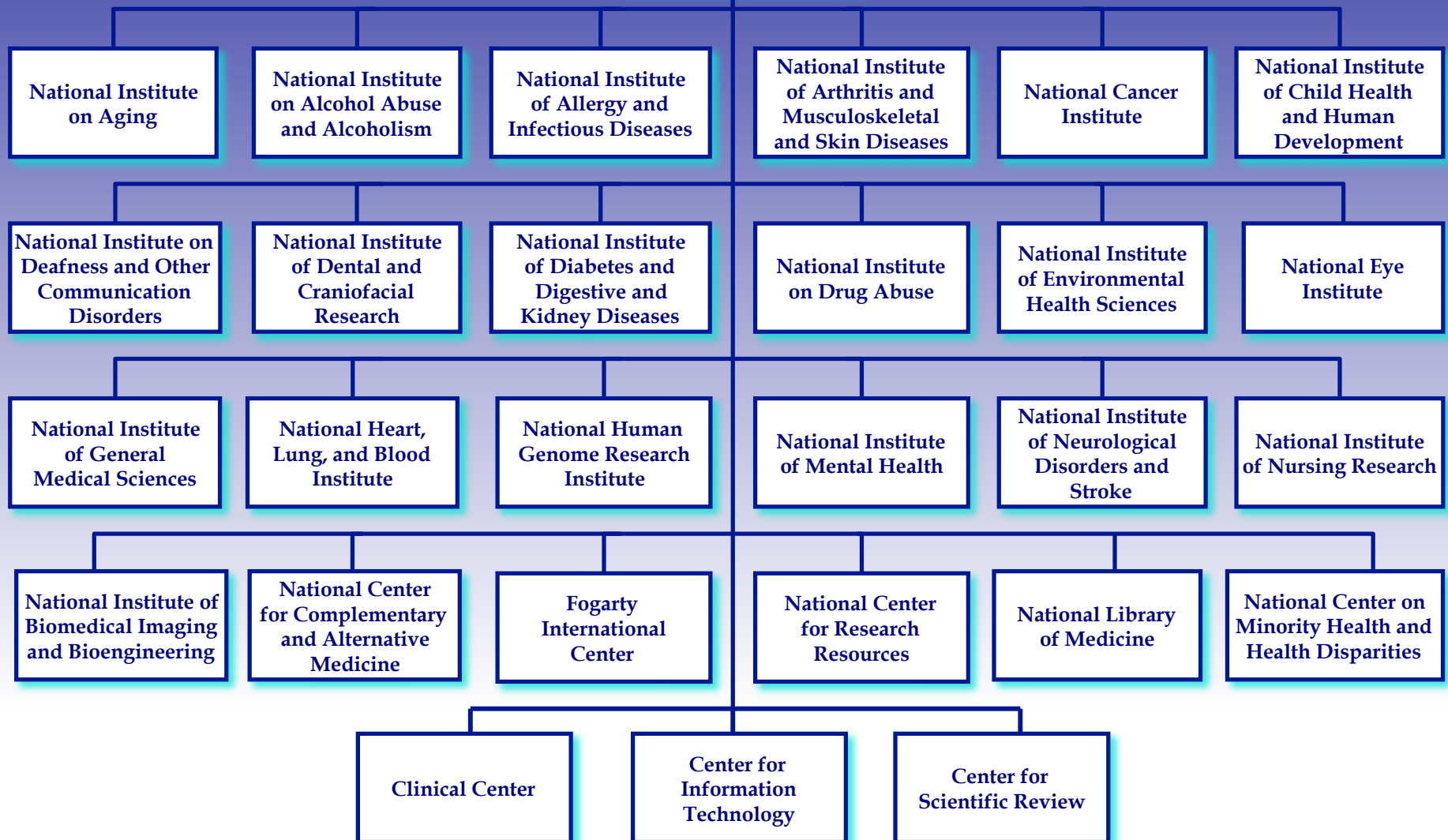- Frederick Cancer Research Center

Research Triangle Park, NC
- NIEHS

Hamilton, MT
- Rocky Mountain Laboratory
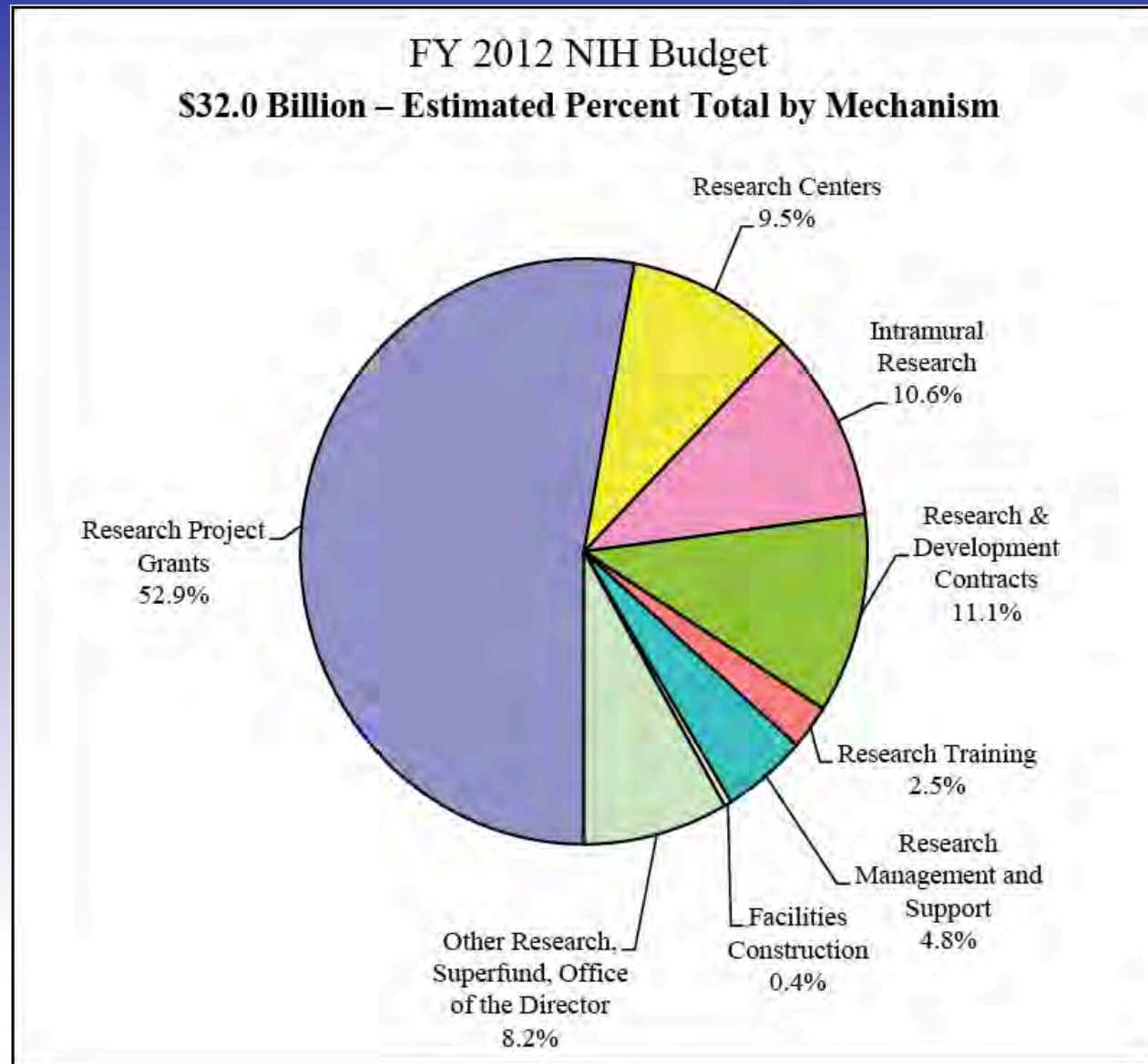
National Institutes of Health

Office of the Director

- **National Institute on Aging**
- **National Institute on Alcohol Abuse and Alcoholism**
- **National Institute of Allergy and Infectious Diseases**
- **National Institute of Arthritis and Musculoskeletal and Skin Diseases**
- **National Cancer Institute**
- **National Institute of Child Health and Human Development**

- **National Institute on Deafness and Other Communication Disorders**
- **National Institute of Dental and Craniofacial Research**
- **National Institute of Diabetes and Digestive and Kidney Diseases**
- **National Institute on Drug Abuse**
- **National Institute of Environmental Health Sciences**
- **National Eye Institute**

- **National Institute of General Medical Sciences**
- **National Heart, Lung, and Blood Institute**
- **National Human Genome Research Institute**
- **National Institute of Mental Health**
- **National Institute of Neurological Disorders and Stroke**
- **National Institute of Nursing Research**

- **National Institute of Biomedical Imaging and Bioengineering**
- **National Center for Complementary and Alternative Medicine**
- **Fogarty International Center**
- **National Center for Research Resources**
- **National Library of Medicine**
- **National Center on Minority Health and Health Disparities**

- **Clinical Center**
- **Center for Information Technology**
- **Center for Scientific Review**

Another view…

Check out: http://deathandtaxesposter.com

A Little more reality?

A zero sum game?

FY 2012 NIH Budget
$32.0 Billion – Estimated Percent Total by Mechanism

- Research Centers 9.5%
- Intramural Research 10.6%
- Research & Development Contracts 11.1%
- Research Training 2.5%
- Research Management and Support 4.8%
- Facilities Construction 0.4%
- Other Research, Superfund, Office of the Director 8.2%
- Research Project Grants 52.9%

Mission of the NIH

## Promoting the nation's health through research.

1. Intramural research (NIH labs) - 10% of the budget, 6,000 scientists
2. Extramural research (grants) - 80-90% of the budget

Not a monolithic Agency - 28 Institutes and Centers

NCI	NIAID	NHLBI	NIDDK	NINDS	NIMH
$5.2B	$4.9B	$3.1B	$2.0B	$1.7B	$1.5B
NICHD	NIA	NIDA	NEI	NIEHS	NIAMS
$1.4B	$1.1B	$1.1B	$0.7B	$0.7B	$0.5B
NIAAA	NIDCD	NIDCR	NCMHD	NCCAM	NINR
$0.5B	$0.4B	$0.4B	$0.2B	$0.1B	$0.1B
NIGMS	NCRR	NHGRI	NLM	NIBIB	
$2.1B	$1.3B	$0.5B	$0.4B	$0.3B	

CC   CIT   CSR   FIC   OD

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NICHD $1.4B	NIA $1.1B	~~NIDA $1.1B~~	NEI $0.7B	NIEHS $0.7B	NIAMS $0.5B
~~NIAAA $0.5B~~	NIDCD $0.4B	NIDCR $0.4B	NCMHD $0.2B	NCCAM $0.1B	NINR $0.1B
NIGMS $2.1B	~~NCRR $1.3B~~	NHGRI $0.5B	NLM $0.4B	NIBIB $0.3B	NCATS
CC	CIT	CSR	FIC	OD	

Merge

Research Project Grants
Applications, awards, and success rates
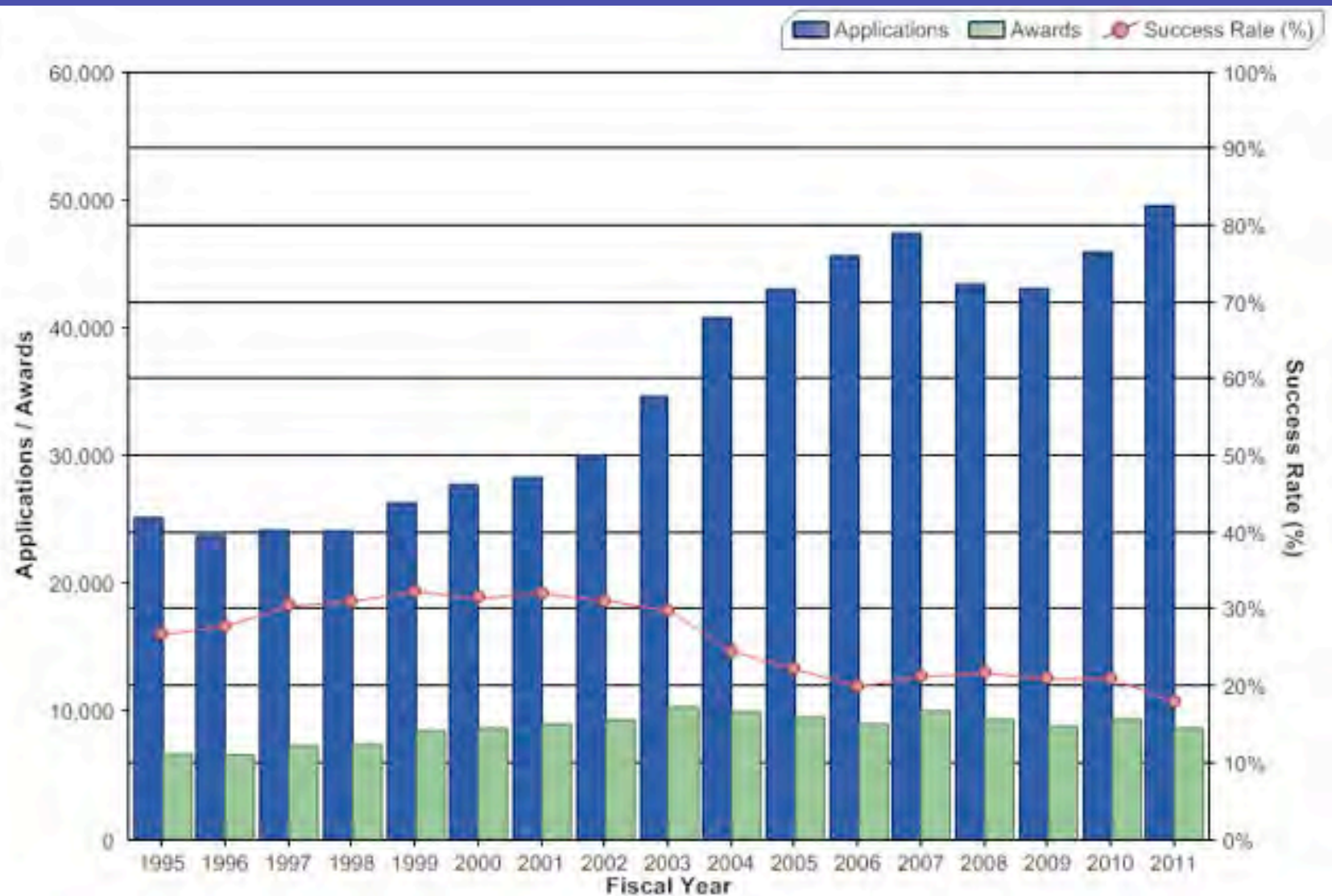
NIH is PEOPLE

- There is a human being on the other end.
- There is an institute at the other end.
- GET TO KNOW THEM.

Types of NIH Grants

- Mentored Quantitative Research Career Development Award (K25)
- NIH Research Project Grant (Investigator Initiated) (R01)
- NIH Small Business Innovation Research (SBIR)
- NIH Small Business Technology Transfer (STTR) Programs
- NIH Small Grant Program (R03)
- NIH Support for Conferences and Scientific Meetings (R13 and U13)
- NIH Project Grants (P01)
- NIH Biotechnology Resource Grant (Biotechnology Resource Center) (P41)
- NIH Cooperative Agreements (U01 and U54)
- NIH Academic Research Enhancement Award (AREA) Grants – (R15)
- NIH Exploratory/Developmental Research Grant Award (R21)
- NIH Clinical Trial Planning Grant (R34) Program
- NRSA Institutional Research Training Grants (T32)
- NRSA Short–Term Institutional Research Training Grants (T35)
- NRSA Predoctoral Fellowship Minority Students (F31)
- NRSA Predoctoral Fellowship Students w/Disabilities (F31)
- NRSA Individual Postdoctoral Fellowships (F32)
- NRSA Senior Fellowships (F33)

Alphabet soup!

- K - implies career development grant
  Mentored, individual awards
- R - implies research grant
- U - implies cooperative agreement
- T - implies training grant
- F - implies fellowship
- P - implies project grant

Example: R13 is a conference grant. U13 is a conference cooperative agreement.

Examples

- NAMIC (NCBC) - U54 with NIBIB

- LIDC - U01 with NCI

- MIP - P01

- BTRCs - P41 with NCRR

- P50 - Center for Systems Biology

Go to:

http://grants.nih.gov/grants/oer.htm

Computer Retrieval of Information on Scientific Projects
http://crisp.cit.nih.gov

also

http://grants.gov

Notes:

R21/R33 - Technology development programs

Can be two linked grants… when the R21 finishes, the R33 can be automatic.

Not renewable

Short - R21 is at most 3 years

U01 and U54s - Cooperative agreements

Uncooperative agreements?

Why? When you see NIH coming, it means more work!

NIH doesn't contribute value, just administration, so why cooperate?

Pis want to be left alone, and thus resist direction from NIH.

A GOOD cooperative agreement - both NIH and PI contribute.

P20 - Center planning grants

BISTI and the NIH Roadmap ran P20 grants

Significant difference between Center of Exellcence and Program of Excellence - EDUCATION comopnent.

P41 - Centers of Excellence

require site visits

Big projects - lots of administration, almost not worth the trouble.

R01 - renewable, individual, PI-guided

Notes (continued):

1. R13 - Conference grant
   1. Reviewed internally within an institute.
   2. Possibly multiple years.
   3. Up to $30K. Takes almost a year to obtain funding.

2. SBIR - Small Business Innovation Research
   1. Submitted by a Small Business
   2. Usually linked with a university program.
   3. Phase 1 v. Phase 2

3. STTR - Small Business Technology Transfer Research
   1. Submitted by a university program.
   2. ALWAYS linked with a small business
   3. Phase 1 v. Phase 2

4. See: http://www.zyn.com/sbir/

Peer Review of NIH Support Mechanisms

Who Reviews What ?

CSR

Research Project Grant (R01)
Postdoctoral Fellowship (F32)
Senior Fellowship (F32)
Fogarty International Center
   Fellowship (F05, F06)
Short-Term Training (T35)
Small Business Grants (R41, R42
    R43, R44)
Academic Research Enhancement
    Award (R15)
Biomedical Research Support
Shared Instrumentation
    Grant (S10)

Institutes

Program Project Grant (P01)
Center Grant (P30, P50, P60)
Institutional Fellowship (T32)
Academic Career Award (K07)
Mentored Clinical Scientist
  Development Award (K08)
Conference Grant (R13)*
Marc Fellowships (F34, F36, T34)
Minority Biomedical Support
  Grant (S06)
Resource Grant (P40, P41, R24,
  R26, R28)
RFA - Request for Applications
R&D - Contracts

The best way to predict the future
is to invent it.

- *Alan Kay*

Care and Feeding of the Young Grant Proposal

1. Normal pathway for a grant proposal
2. Roles of NIH
3. Roles of PI
4. Ways you can help in process
5. Things not to do

REVIEW PROCESS FOR NIH RESEARCH GRANTS

Research Grant Application (PI)

Principal Investigator Initiates Research Idea

School or Other Research Center (Applicant)

Submits application

National Institutes of Health

Center for Scientific Review

Assign to — IC and IRG

Scientific Review Group

Review for — Scientific Merit

Institute

Evaluate for — Relevance

Advisory Council or Board

Recommends — Action

Institute Director

Takes final action for NIH Director
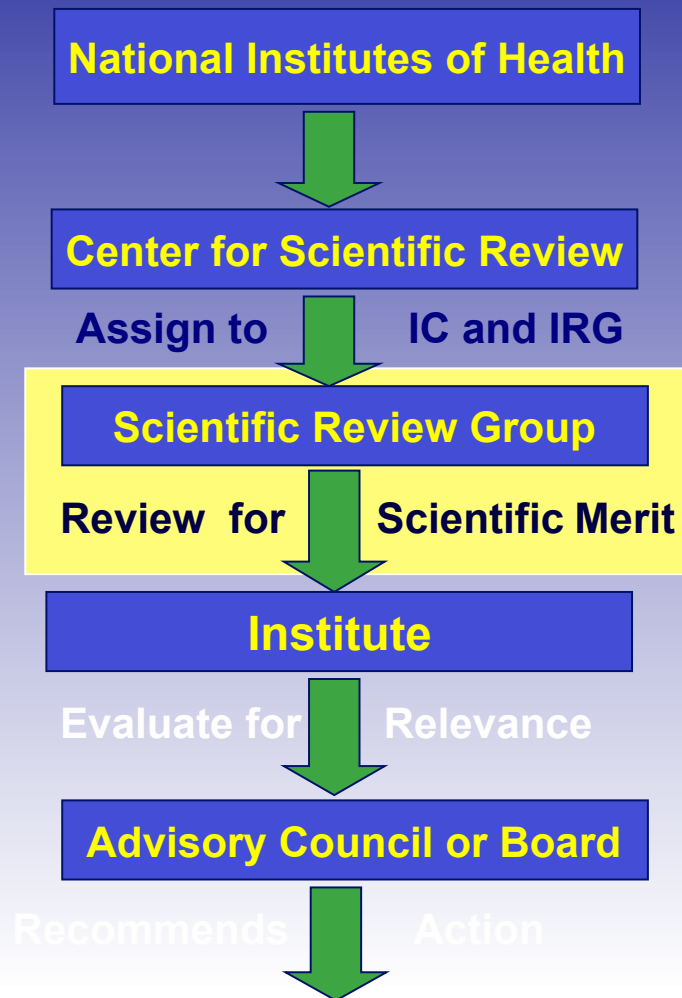
Allocates Funds $$

Applications Submitted to NIH

1. Approximately 80,000 grant applications were submitted to NIH in FY2003, of which 25-30% are funded

2. Competing grant applications are received for three review cycles per year

3. Applications are now sent online:

    grants.gov

STANDARD RECEIPT DATES AND REVIEW AND AWARD CYCLES

TYPES OF APPLICATIONS

	CYCLE I	CYCLE II	CYCLE III
Application Receipt Dates *			
All (new, competing, revised, and supplemental)			
Program Project and Center Grants	February 1	June 1	October 1
Competing Continuation, Supplemental, and Revised Grants	March 1	July 1	November 1
Individual NRSA (Standard) ***	April 5	August 5	December 5
Review and Award Schedule			
Scientific Merit Review	June-July	October-November	February-March
Advisory Council Review	September-October	January-February	May-June
Earliest Project Start Date	December	April	July

National Institutes of Health

↓

Center for Scientific Review

Assign to   IC and IRG

↓

Scientific Review Group

Review for   Scientific Merit

↓

Institute

Evaluate for   Relevance

↓

Advisory Council or Board

Recommends   Action

↓

IRG = SRG = Panel = Study Section
Conducts the scientific review

Primary Reviewer
Secondary Reviewer
Reader

Closed ballot for scores

Reviews are penned before
(Score can seem disconnected)

Others in room, but non-voting

CSR Study Sections

1. Each CSR standing study section has 12-24 members who are primarily from academia

2. CSR standing study sections convene face-to-face meetings

3. As many as 60-100 applications are reviewed by each study section

Perceived Study Section

CSR Standing Study Sections

CSR Standing Study Section Rosters

National Institutes of Health

Center for Scientific Review

Assign to   IC and IRG

Scientific Review Group

Review for   Scientific Merit

Institute

Evaluate for   Relevance

Advisory Council or Board

Recommends   Action

Institute Council makes funding decision

Score
Relevance
Mission concerns

Program Officer often in room, but non-voting

If you win: you get an award letter

1. ## Start date might be flexible

   At times sooner is better for the Institute

2. ## If you don't win: you get a sad letter

   Revise or start over?

   Introduction is key
   (3 pg summary of revision)

   AS OF 2009 - APPLICANTS ARE ONLY PERMITTED A
   SINGLE RESUBMISSION!

So who are the people who help you through this process at the NIH?

1. Program Officer

2. Scientific Review Officer

   Your number one goal must be to become a
   face or name, rather than a proposal
   number!

How do you decide where to send your grant?

- **Many institutes to choose from**
  - Which one is right?
    - Look at mission statements of likely institutes
    - Does your research fit?
- **Is there a PA or RFA on your research area?**
  - How to find out about these?
    - Use the NIH website to search them
    - www.nih.gov
- **No PA or RFA? OK if no RFA ("Investigator Initiated" R01)**
- **Which institute(s) is right?**
  1. Mission statements
  2. How to narrow them down?
     - Look at portfolio for those institutes
  3. Perhaps it is better not to narrow them down
     - Double listing can be best
     - Paylines and priorities differ
- **Speak with Program Officers**

Regarding NIH…

If it was up to the NIH to cure polio through a centrally directed program instead of an independent investigator driven discovery, you'd have the best iron lung in the world, but not a polio vaccine.

Samuel Broder
Former Director of the National Cancer Institute

Ask ADVICE from the Program Officer

- **Tell him/her about your research goals**
  - What type of grant are you going for?

- **Ask:**
  - Is this the right institute?
  - Should I have a dual funding assignment?
  - What study section would be good for my grant?
  - Any comments on the science?

- **How are new PIs helped?**
  - On your PHS398, check the box for new investigators
    You are new until you get your first RO1, smaller grants don't count
  - If you have a good relationship with Program officer and he/she needs your app to fill in a gap in his portfolio
    You might get rescued from the no fund pile and put in for funding even with a worse score than others

Your number one goal must be to become a face or name, rather than a proposal number!

Investigate study section

- Make sure that someone on that panel knows your field and the techniques you will be using

- If no one is available on panel
  - Once you get your SRO and study section assignment, write a letter asking for someone in a particular field or area of expertise to be added to the study section

CSR personnel decide Institute & study section

1. From your cover letter, keywords and abstract

   (remember your abstract will go on CRISP once you are funded…
   so be discreet about prelim results and details)

2. Your cover letter can have a big impact

   - Present rationale for a particular request

   - Suggest, don't demand

   - Whenever plausible request double assignment (allows two
     different Councils to consider your grant application

3. Program Officer assigned in Institute

   May have been defined in RFA or RFP

4. SRA goes with the Panel

What not to do?

1. Never Demand
2. Never ask for snap decision (ask advice)
3. Never contact IRG members!
4. Never assume that the IRG member you don't like did you in in the meeting.
5. Never ignore comments, even from "stupid" reviewers

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