

Council of Councils

NIH Update

September 24, 2013

Lawrence A. Tabak, DDS, PhD

Principal Deputy Director, NIH

Department of Health and Human Services



NIH Update

- Budget Update
- Biomedical Research Workforce
- BRAIN
- Big Data

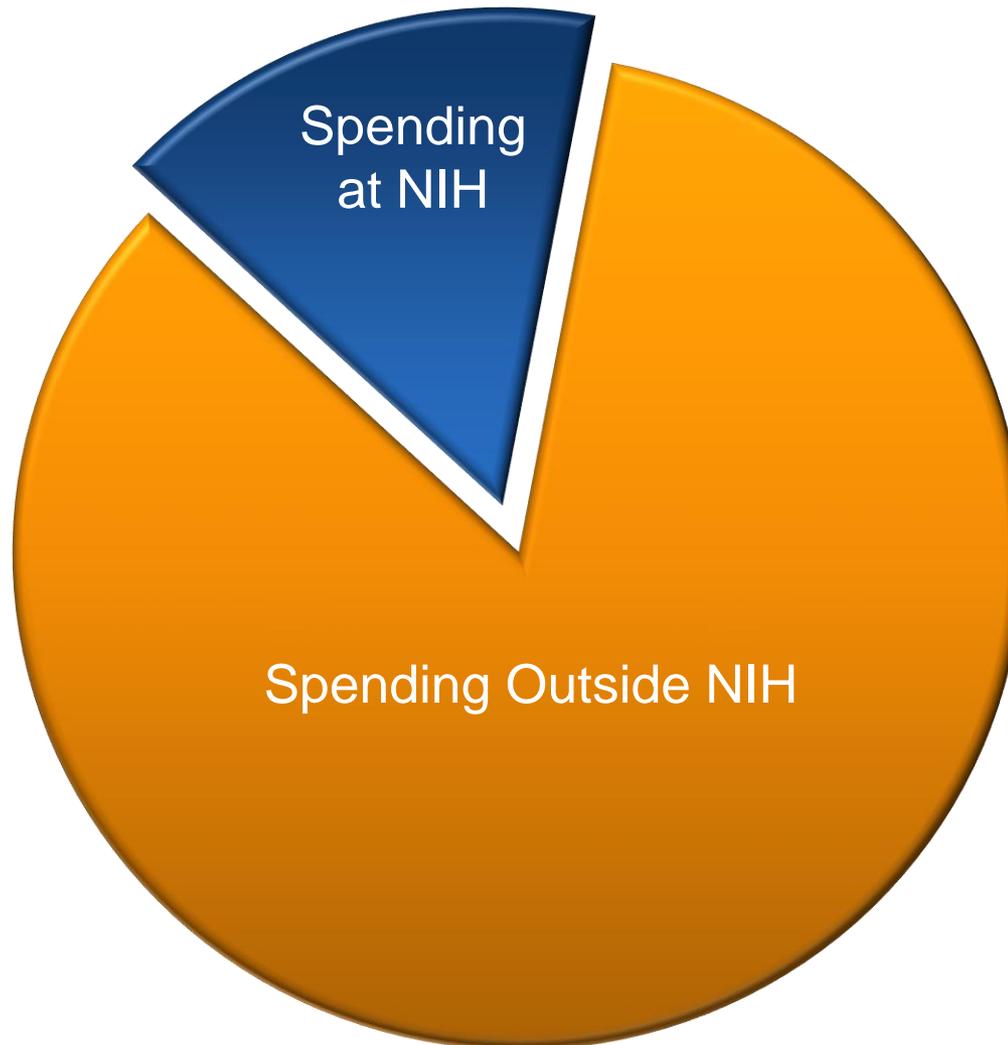


NIH Update

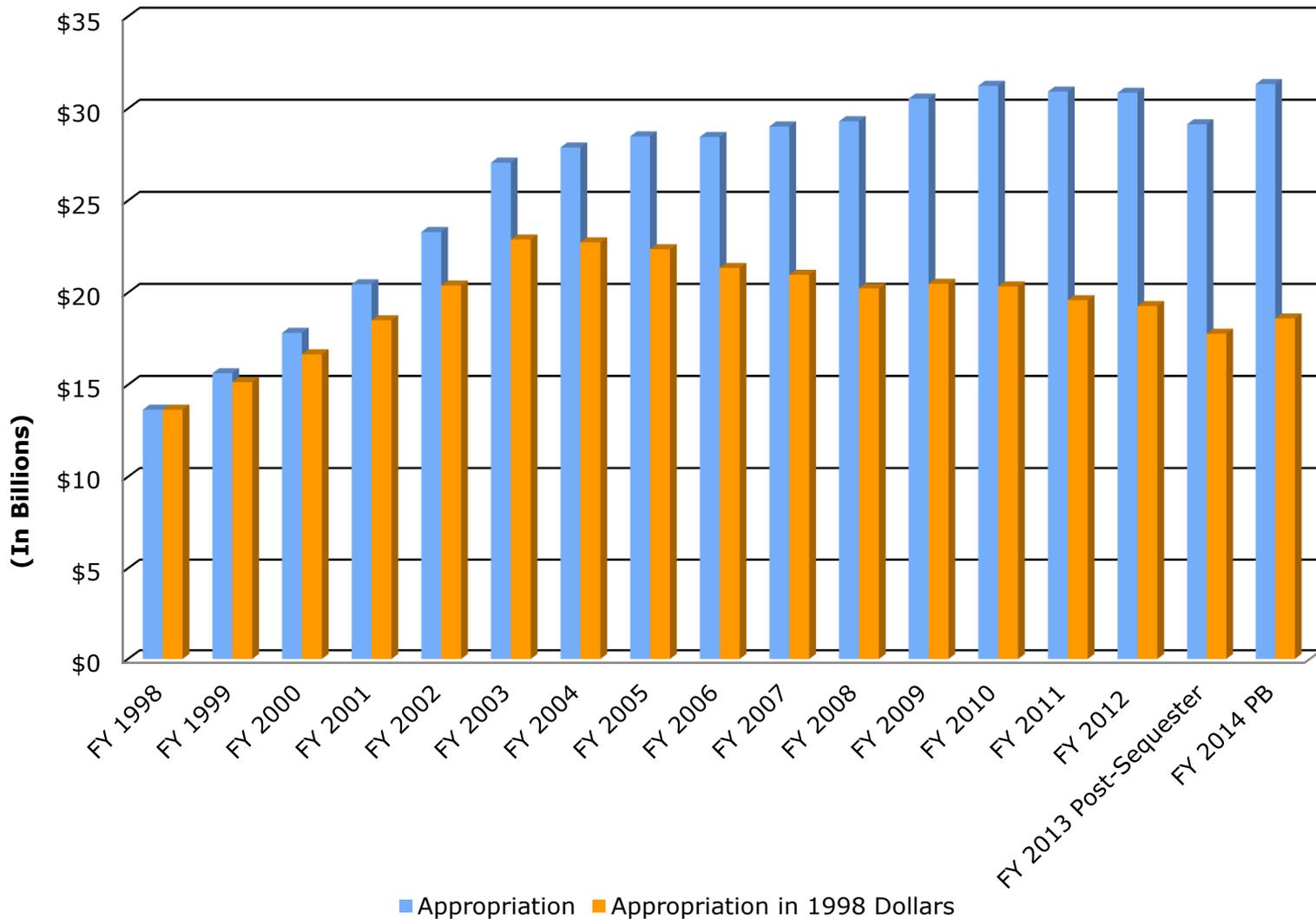
- Budget Update
- Biomedical Research Workforce
- BRAIN
- Big Data



NIH Extramural & Intramural Funding FY 2013 Full-Year CR Level: \$29.1 Billion



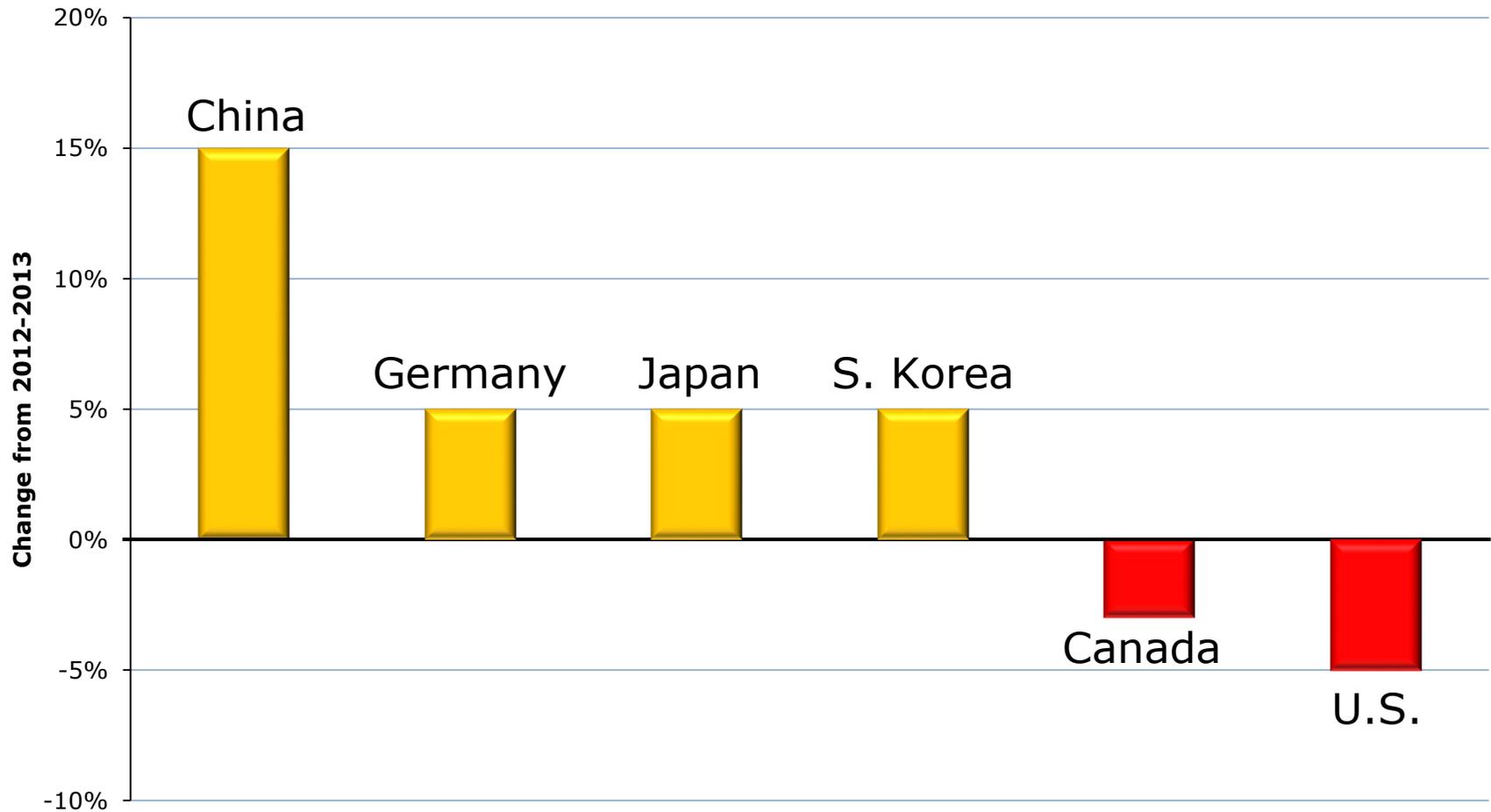
NIH Program Level in Appropriated Dollars and Constant 1998 Dollars



Grant Success Rates FY 1978-2013



Scientific Research & Development Spending Change from 2012 to 2013



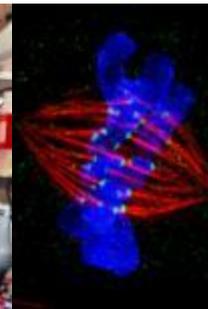
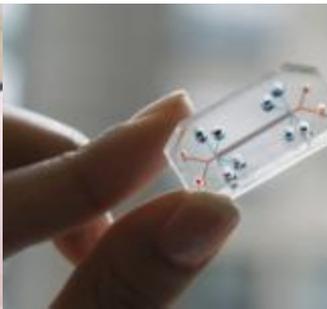
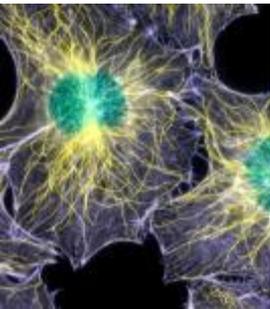
NIH Update

- Budget Update
- Biomedical Research Workforce
- BRAIN
- Big Data



Biomedical Research Workforce

- Unprecedented scientific opportunities; profound implications
 - For expanding our understanding of biology
 - Improving health
- Need to attract, retain, best & brightest researchers
 - Numbers sufficient to carry out exciting work
 - Broadly representative of our societies
 - Gender
 - Race
 - Specialty training
 - Well-mentored and encouraged to collaborate – and innovate



Strengthening the Workforce at NIH: Continuing Challenges

- Increasingly difficult to launch traditional, independent academic research careers
 - Rising numbers of PhDs
 - Number of established researchers staying in field longer
- Lengthier training periods, relatively low early career salaries, make profession less attractive
- Training programs offer little preparation for careers outside academia
- Efforts to increase diversity less successful than we had hoped....

NIH Advisory Council to the Director (ACD):
Working Groups assigned; recommendations coming in

Biomedical Research Workforce Working Group: Recommendations



- *Graduate Students:* enhanced training for multiple career outcomes
- *Postdoctoral Researchers:* shorten pathway to independent career; increase support for training; improve pay, benefits
- *Information Analysis:* improve tracking of career outcomes, workforce analysis
- *Staff Scientists:* promote their value, stature
- *Diversity of the Workforce:* needs urgent attention
- *Physician Scientists:* conduct further study

BEST Program:

Broadening Experiences in Scientific Training

- Seeks innovative approaches to complement traditional research training at NIH-funded institutions
- Encourages institutions to leverage funds with
 - Existing institutional offices, programs
 - Local resources outside the institution, or that partner with industry/other entities
- Must include rigorous analysis to demonstrate impact
 - Proven approaches will be widely disseminated throughout biomedical research community
 - Awardees will meet to exchange ideas
- Applications currently being reviewed
<http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-12-022.html>

Biomedical Research Workforce

Working Group: Recommendations



- *Graduate Students*: enhanced training for multiple career outcomes
- *Postdoctoral Researchers*: shorten pathway to independent career; increase support for training; improve pay, benefits
- *Information Analysis*: improve tracking of career outcomes, workforce analysis
- *Staff Scientists*: promote their value, stature
- *Diversity of the Workforce*: needs urgent attention
- *Physician Scientists*: conduct further study

Diversity Initiative: Overarching Strategy

Four interrelated approaches will be implemented:

- NIH **B**uilding **I**nfrastructure **L**eading to **D**iversity (**BUILD**) Program
- **N**ational **R**esearch **M**entoring **N**etwork (**NRMN**)
- Ensuring Fairness in Peer Review
- Increased Engagement by all NIH Leadership



Biomedical Research Workforce

Working Group: Recommendations



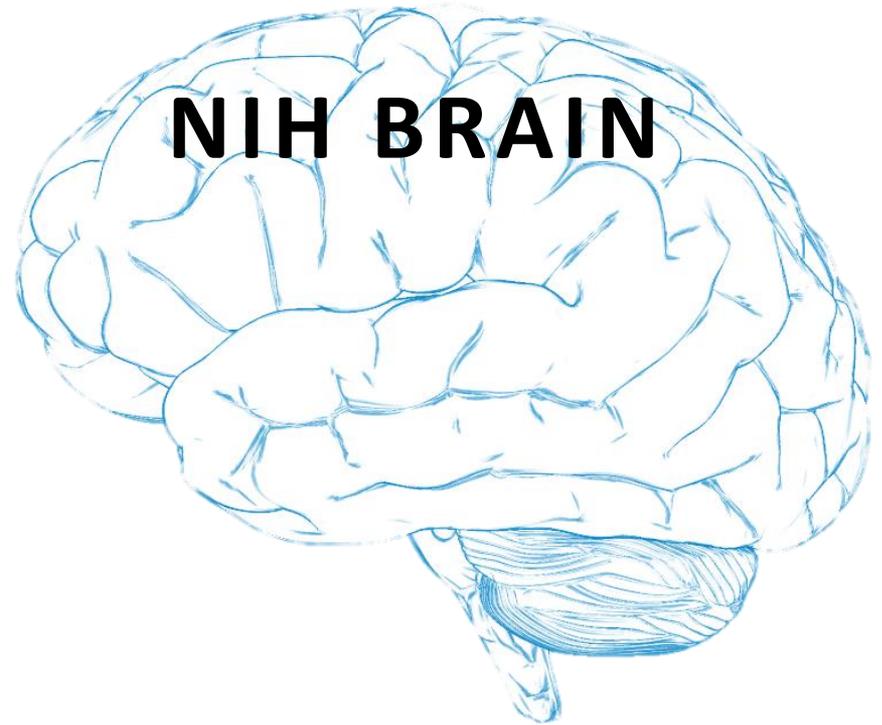
- *Graduate Students*: enhanced training for multiple career outcomes
- *Postdoctoral Researchers*: shorten pathway to independent career; increase support for training; improve pay, benefits
- *Information Analysis*: improve tracking of career outcomes, workforce analysis
- *Staff Scientists*: promote their value, stature
- *Diversity of the Workforce*: needs urgent attention
- *Physician Scientists*: conduct further study

Working Group on the Physician* Scientist Workforce

- Charge
 - Analyze current composition of workforce to understand consequences of current funding policies
 - Assess needs, career opportunities available to support physician-scientist trainees in diverse biomedical research sectors
 - Identify incentives, barriers to MDs, DDSs, and DVMs entering and sustaining scientific activities
 - Recommend ways to support sustainable, diverse clinical research infrastructure
- Final Report to ACD: June 2014

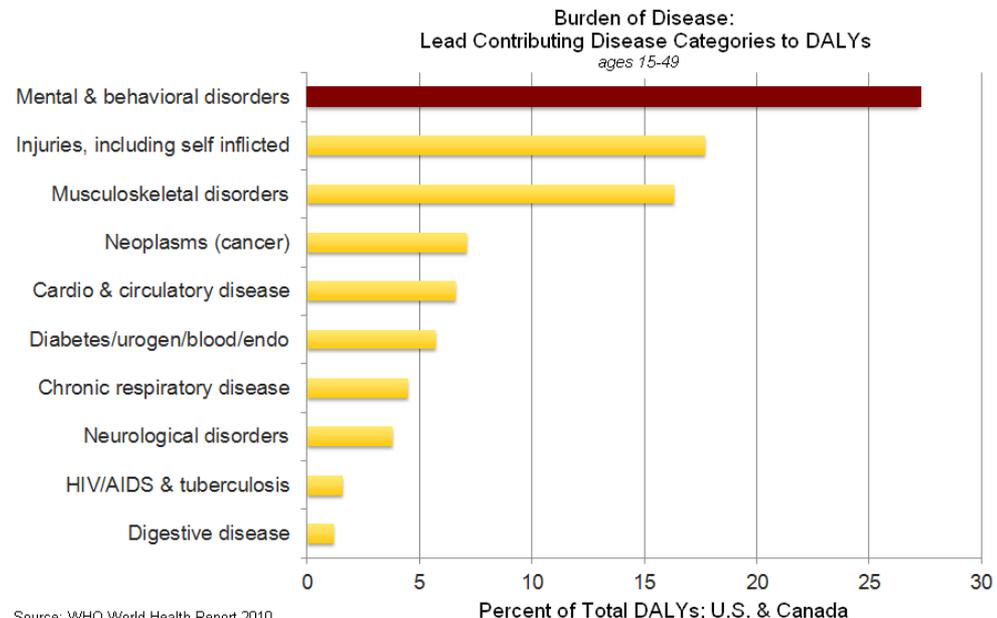
NIH Update

- Budget Update
- Biomedical Research Workforce
- **BRAIN**
- Big Data



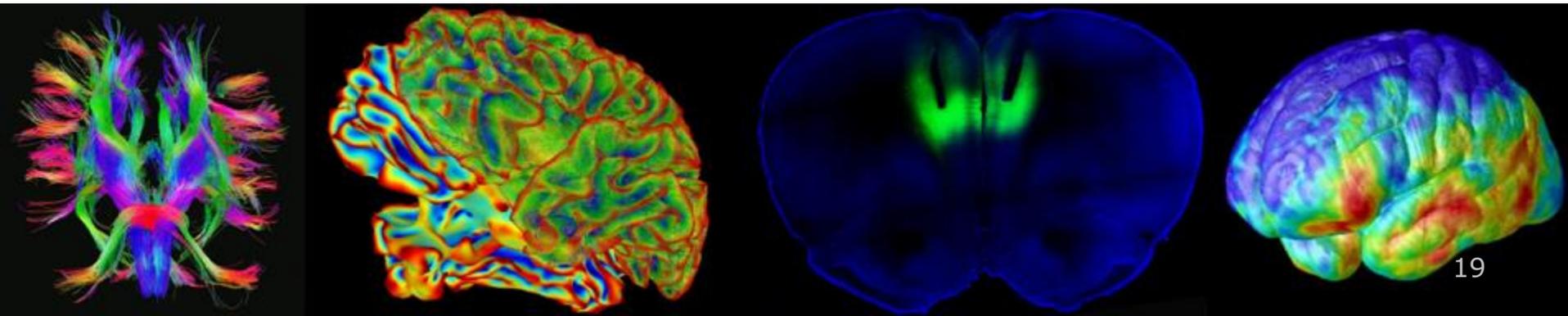
Brain Disorders: The Need Is Great

- Brain disorders: #1 source of disability in U.S.
 - > 100 million Americans affected
- Rates are increasing: autism, Alzheimer's disease, and in our soldiers PTSD and TBI
- Costs are increasing: annual cost of dementia ~\$200B
 - Already equals cost of cancer and heart disease



Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative

- Goal: Accelerate new technologies to
 - Produce real-time pictures of complex neural circuits
 - Visualize rapid-fire interactions of cells at the speed of thought
- Promise: Open new doors to understanding
 - How brain function is linked to human behavior and learning



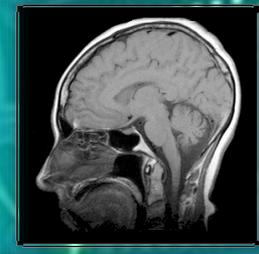
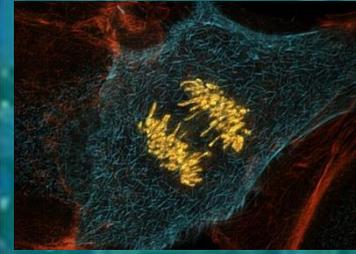
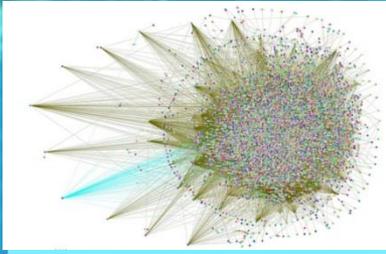
NIH BRAIN Initiative: Process

- Plan to be developed by a working group of the Advisory Committee to the Director, NIH
 - Selected for visionary leadership, expertise
 - Charged with articulating scientific goals, developing plan
 - Including timetables, milestones, costs
- Informed by experts across sectors and disciplines – assisted by NIH Blueprint for Neuroscience Research
- NIH BRAIN Working Group
 - Has sought broad input; hold open meetings, workshops
 - Delivered interim report on high-priority areas for FY14 funding in summer 2013; will issue final report, June 2014

Public can receive updates, contribute to discussion, at

<http://www.nih.gov/science/brain/>

Myriad Data Types



Omic

Imaging



Phenotypic



Clinical

Six Big Problems to Solve

1. Locating the data
2. Getting access to the data
3. Extending policies and practices for data sharing
4. Organizing, managing, and processing biomedical Big Data
5. Developing new methods for analyzing biomedical Big Data
6. Training researchers who can use biomedical Big Data effectively

NIH is Tackling the Big Data Problem

- New NIH Leadership Position Reporting to NIH Director
 - Associate Director for Data Science (ADDS)
- New Internal NIH Governing/Oversight Bodies
 - Scientific Data Council (ADDS)
 - Administrative Data Council (CIO)
- New Trans-NIH Initiative
 - Big Data to Knowledge (BD2K)

Big Data: Challenges for Biomedicine

- NIH's Big Data to Knowledge (BD2K) program, starting in FY 2014, will:
 - Facilitate the broad use and sharing of large, complex biomedical data sets through the development of policies, resources and standards
 - Develop and disseminate new analytical methods and software
 - Enhance training of data scientists, computer engineers, and bioinformaticians; and
 - Establish Centers of Excellence to address biomedical analytics, computational biology, and medical informatics.



NIH...

Lawrence.Tabak@nih.gov

Turning Discovery Into Health

