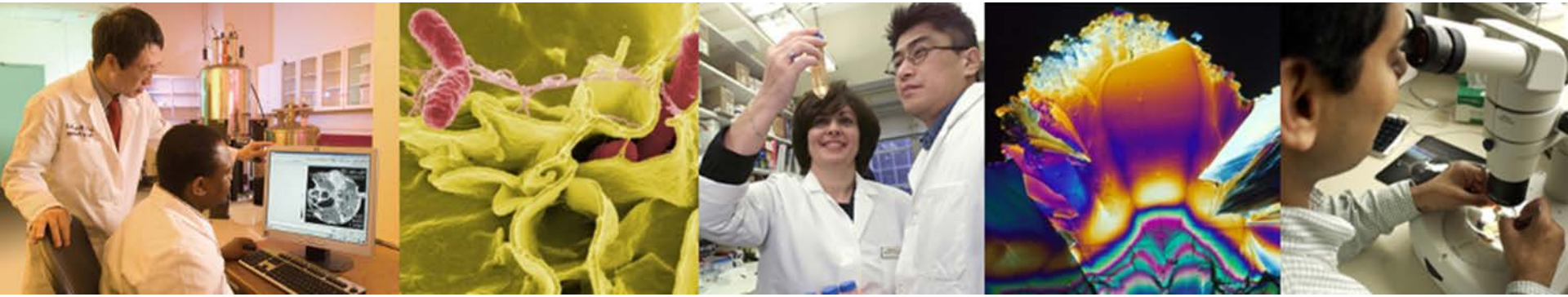
Exceptional Opportunities in Biomedical Research

Council of Councils Meeting

January 29, 2016



Lawrence A. Tabak, DDS, PhD
Principal Deputy Director, NIH
Department of Health and Human Services

NIH Priorities and Initiatives
Topics

- Budgetary context
- NIH-Wide Strategic Plan
- Environmental Influences on Child Health Outcomes

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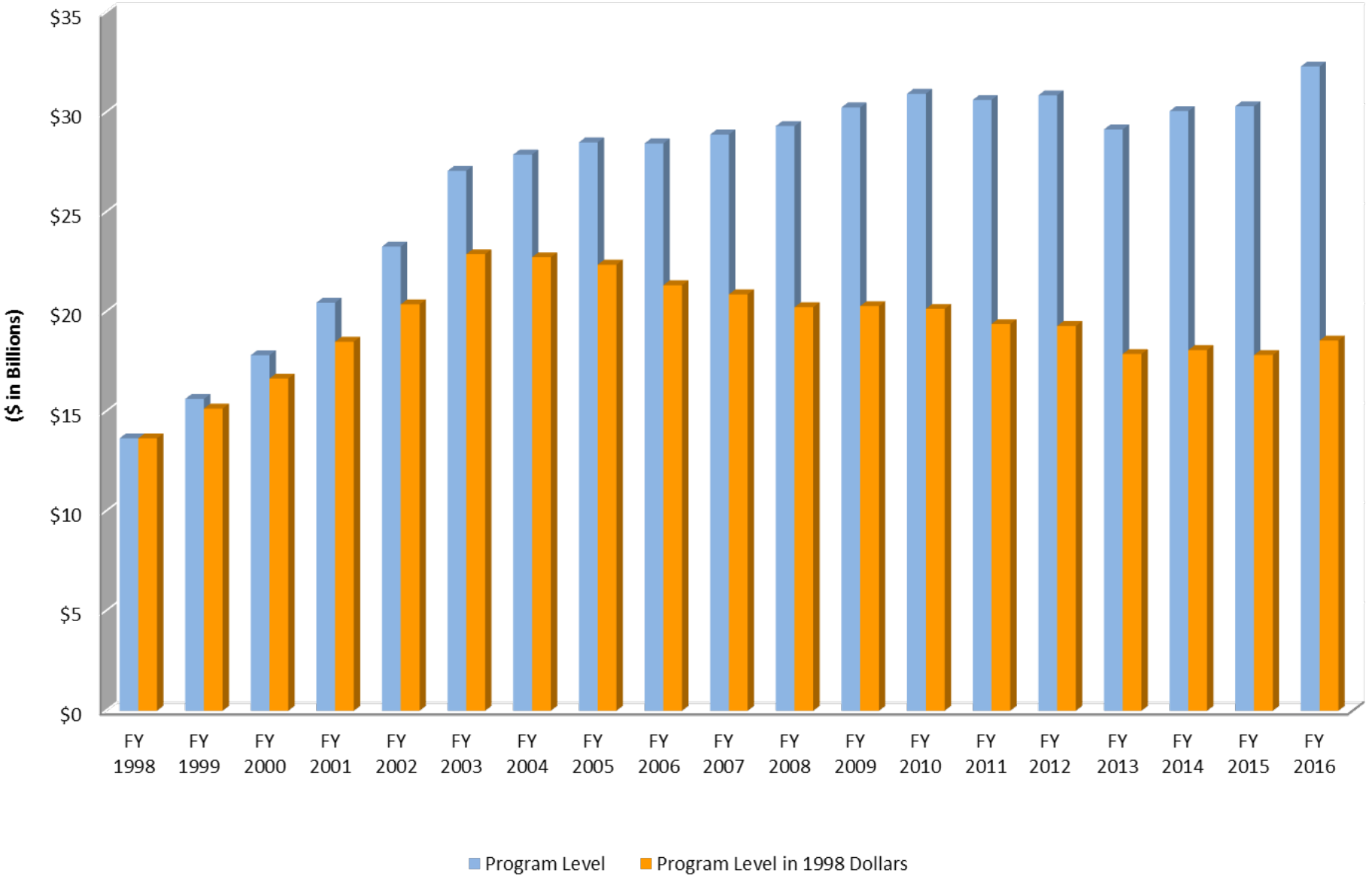
NIH Program Level in Nominal Dollars and Constant Dollars

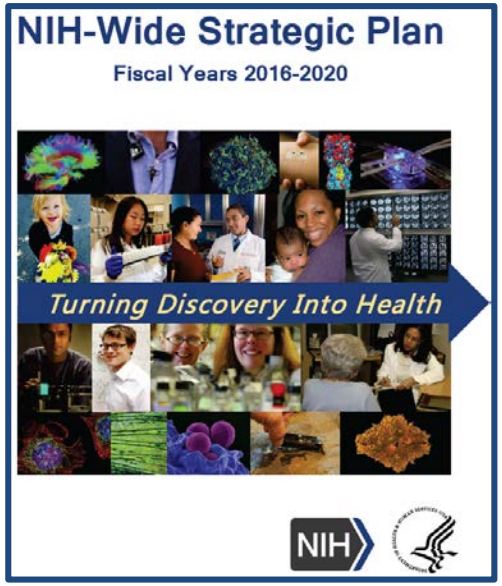


NIH Priorities and Initiatives
Topics

- Budgetary context
- NIH-Wide Strategic Plan
- Environmental Influences on Child Health Outcomes

Goals of the NIH-Wide Strategic Plan

- The strategic plan clearly articulates the highest trans-NIH priorities and how to achieve them
- The strategic plan is a living document that will require refinement throughout its lifecycle
- The strategic plan does **not** describe all the many important things that NIH does and will do in the future
- The strategic plan does **not** address priorities of the individual ICOs, since each has its own strategic plan



Development Process

- Extensive consultation with NIH Leadership
  - NIH Director and his Deputies
  - Institute, Center, and Office (ICO) Directors
- Formation of NIH working group with ICO representatives
- Public presentations to and feedback from the Advisory Council to the NIH Director (ACD)
  - http://acd.od.nih.gov/07202015_transcript.pdf
  - http://acd.od.nih.gov/slides/NIH_Strategic_Plan_ACD.pdf

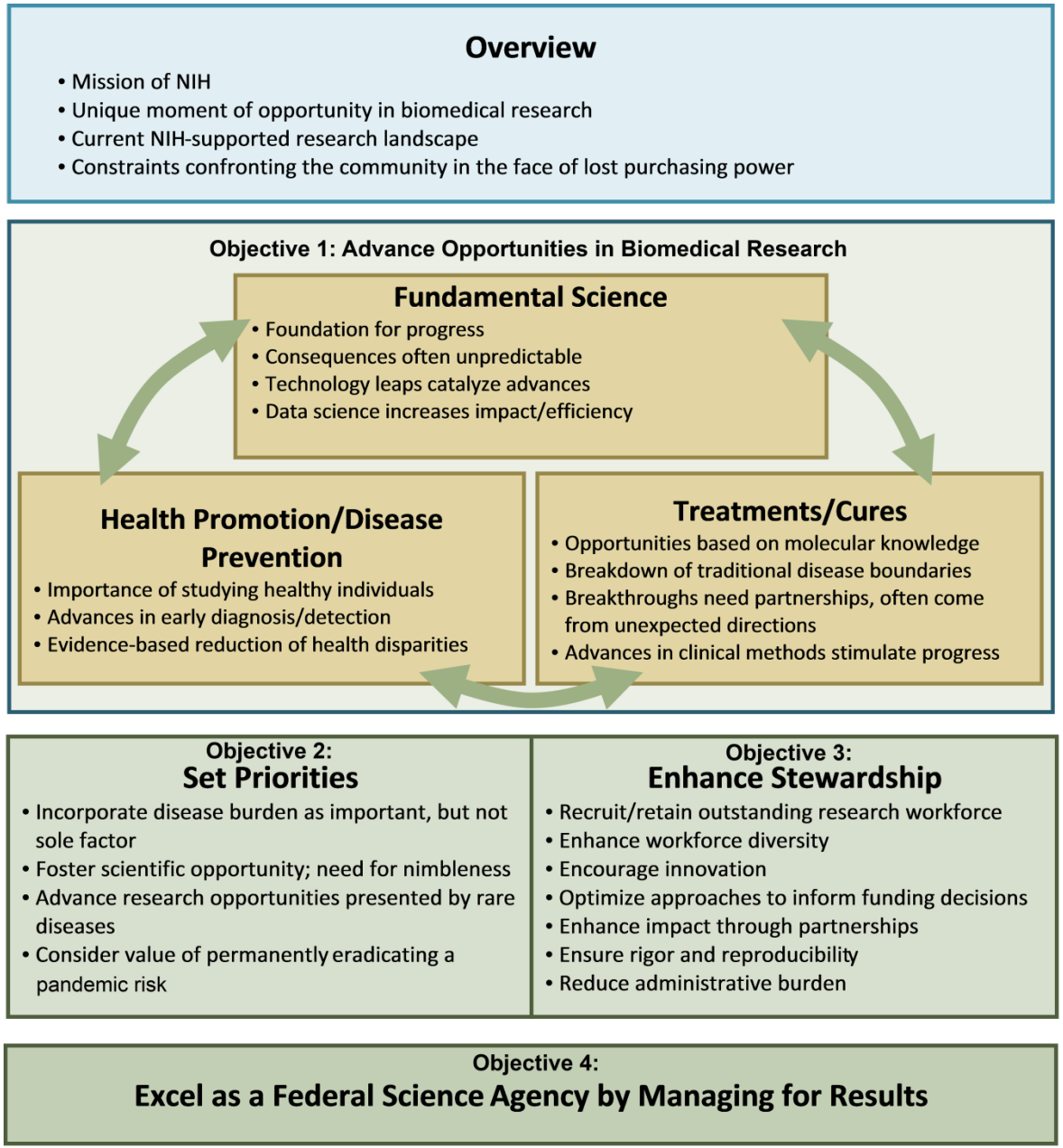
Outreach and Public Feedback

- Solicited feedback through an RFI [NOT-OD-15-118]
- Conducted 3 interactive webinars with ACD members

- Presentations to and feedback from HHS, and 20 National Institute and Center Advisory Councils
- NIH webportal to share information
- Final presentation to the ACD – December 10th
- Plan transmitted to Congress and released to the public – December 15th and 16th

http://www.nih.gov/about/strategic-plan

NIH-Wide Strategic Plan Framework

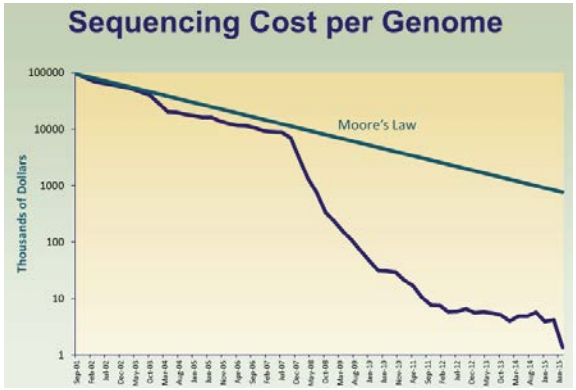


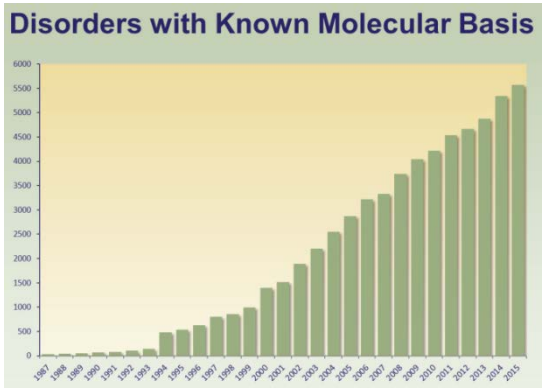
NIH-Wide Strategic Plan: Overview

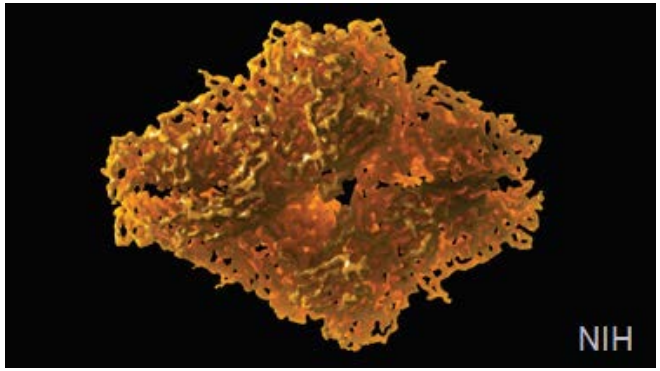
Overview

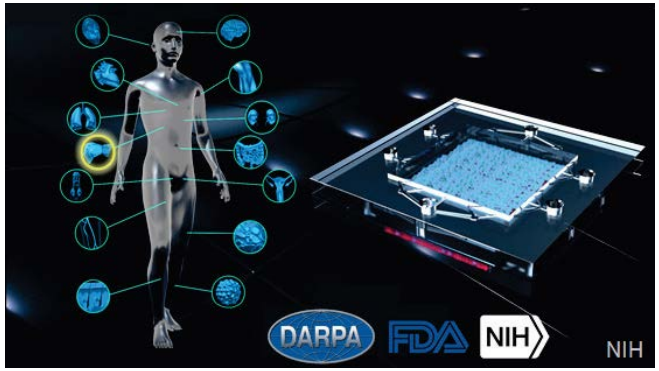
- Mission of NIH
- Unique moment of opportunity in biomedical research
- Current NIH-supported research landscape
- Constraints confronting the community in the face of lost purchasing power

A Unique Moment of Opportunity in Biomedical Research: Fueled by Advances in Technology, Increased Molecular Knowledge, and Interdisciplinary Approaches to Problem Solving

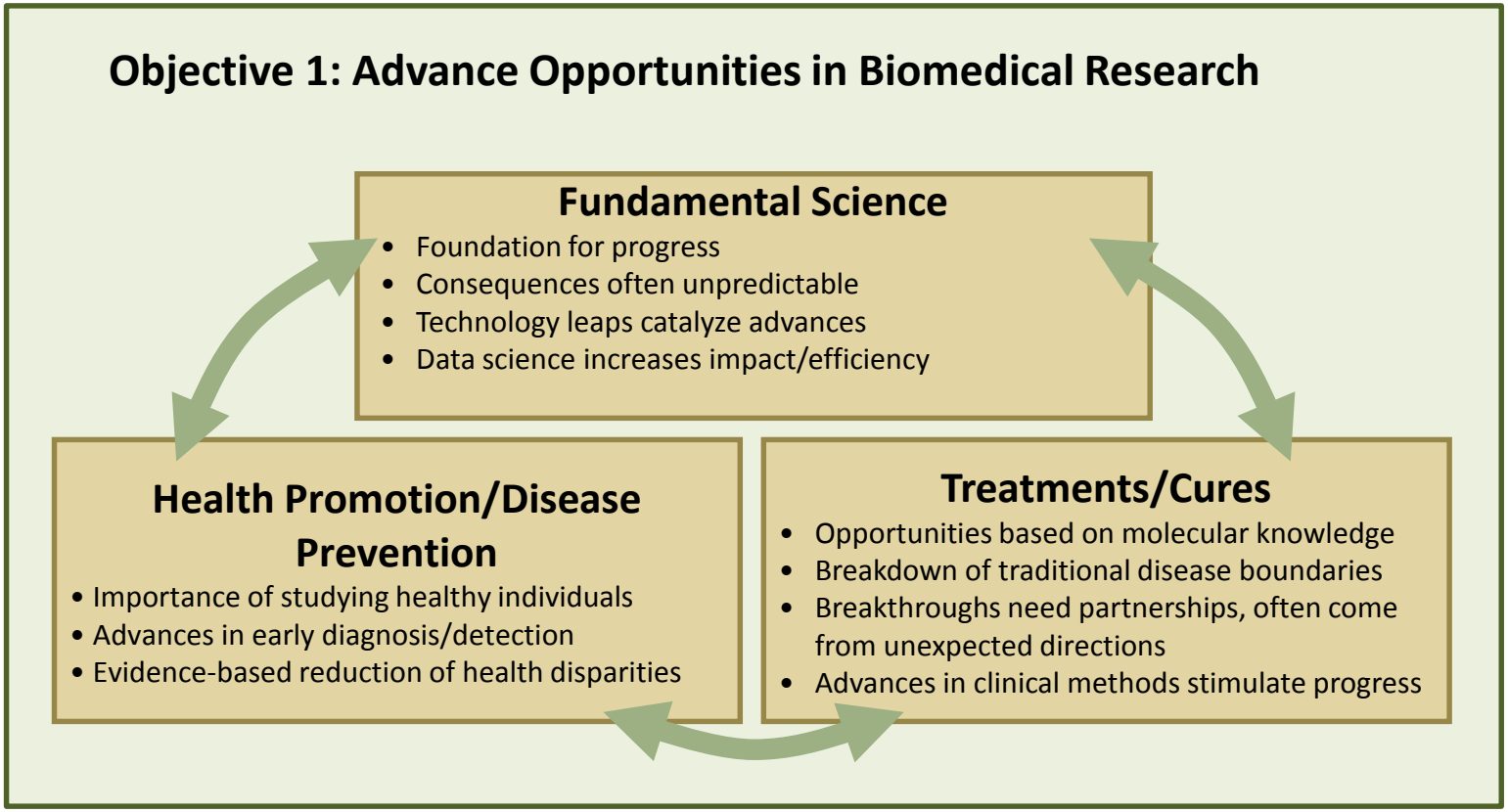




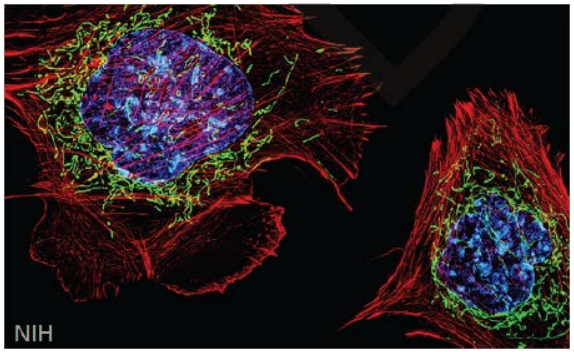


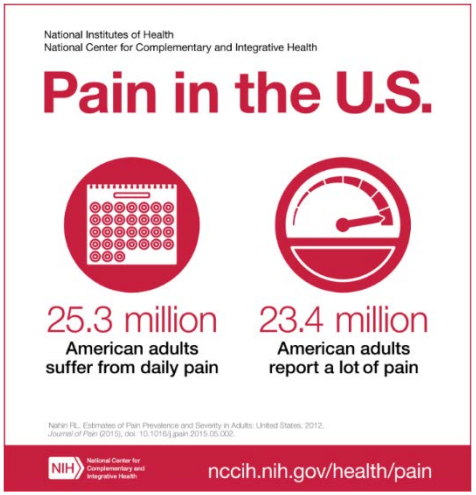


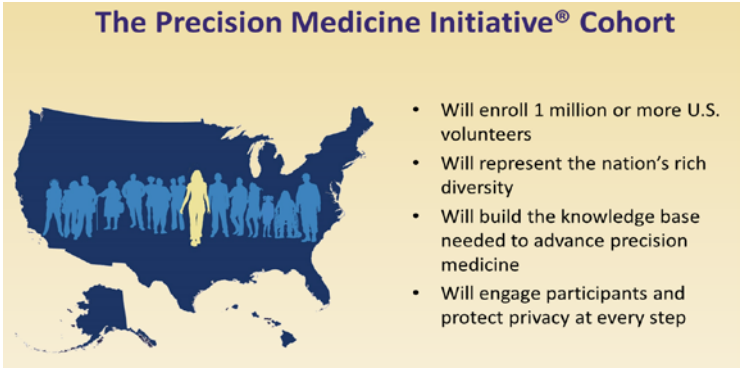
NIH-Wide Strategic Plan: Advance Opportunities in Biomedical Research

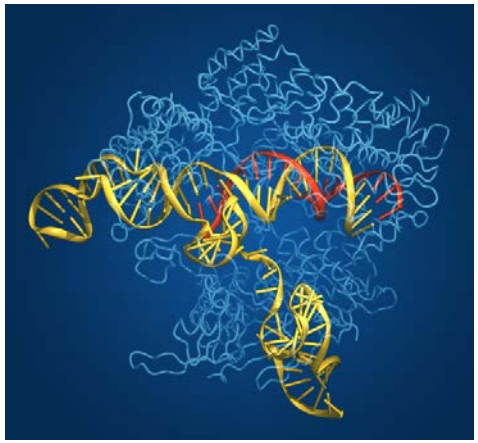


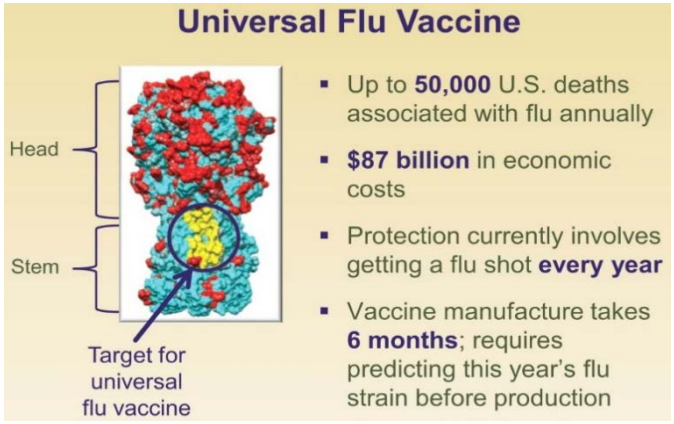
Advance Opportunities in Biomedical Research: Select Examples

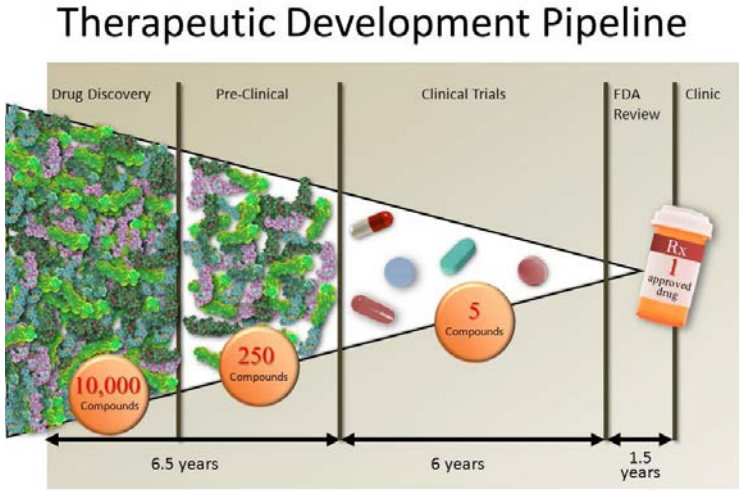








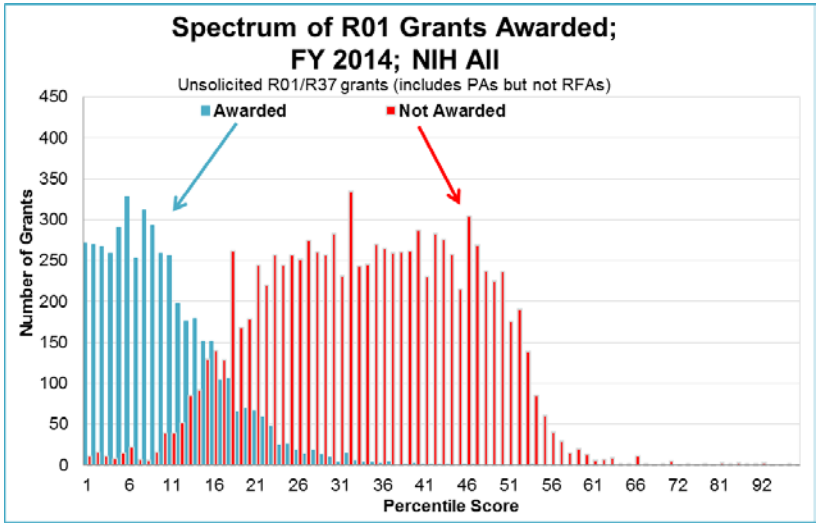




NIH-Wide Strategic Plan: Set Priorities and Enhance Stewardship

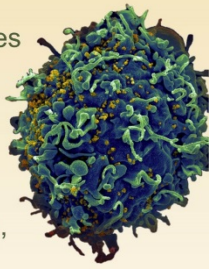
Objective 2	Objective 3
Set Priorities • Incorporate disease burden as important, but not sole factor • Foster scientific opportunity; need for nimbleness • Advance research opportunities presented by rare diseases • Consider value of permanently eradicating a pandemic risk	**Enhance Stewardship** • Recruit/retain outstanding research workforce • Enhance workforce diversity • Encourage innovation • Optimize approaches to inform funding decisions • Enhance impact through partnerships • Ensure rigor and reproducibility • Reduce administrative burden • Employ risk management strategies

Set Priorities and Enhance Stewardship: Select Examples



HIV/AIDS Research Priorities

- Reduce incidence, including vaccines
- Safer, easier-to-use therapies
- Work toward a cure
- HIV-associated comorbidities, co-infections
- Cross-cutting areas: Basic research, health disparities, training



Clinical Trials Data Sharing

- Provide a way for patients and the public to find trials of interest to them
- Inform future research, improve study design, enhance the evidence base, and prevent duplication of unsafe or unsuccessful trials
- Fulfill an ethical responsibility to people who volunteer to participate in research
- Affirm public trust in clinical research

NIH-Wide Strategic Plan: Manage for Results

Objective 4

Excel as a Federal Science Agency by Managing for Results

Manage for Results:
Select Examples

Cold Spring Harbor Laboratory

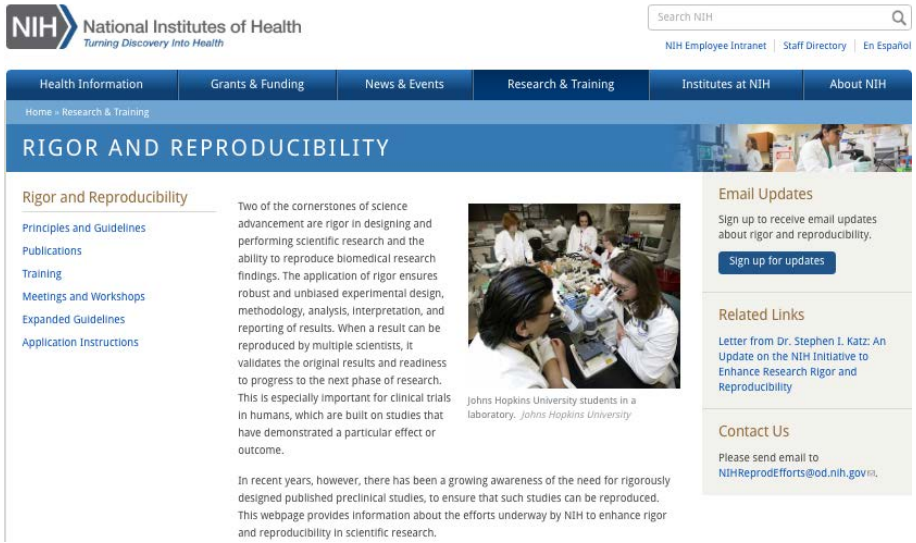
bioRxiv beta
THE PREPRINT SERVER FOR BIOLOGY

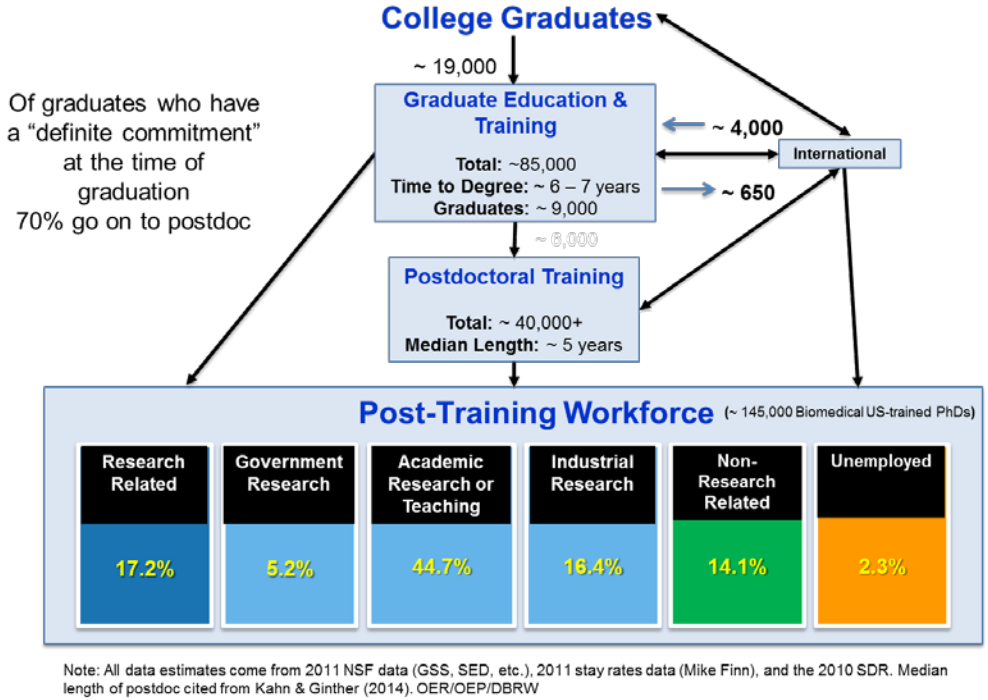
New Results

Relative Citation Ratio (RCR): A new metric that uses citation rates to measure influence at the article level

Bruce Ian Hutchins, Xin Yuan, James M Anderson, George M Santangelo

doi: http://dx.doi.org/10.1101/029629





Note: All data estimates come from 2011 NSF data (GSS, SED, etc.), 2011 stay rates data (Mike Finn), and the 2010 SDR. Median length of postdoc cited from Kahn & Ginther (2014). OER/OEP/DBRW

A Few (Select) Bold Predictions for 2020

- Many thousands of cancer patients will experience enhanced survival from application of precision medicine
- NIH-supported research will identify effective tailored behavioral and social interventions to promote health and prevent illness in populations that experience health disparities
- NIH-supported clinical trials will show that at least a half-dozen interventions thought to be clinically beneficial actually have no value
- Application of certain mobile health (mHealth) technologies will provide rigorous evidence for their use in enhancing health promotion and disease prevention
- NIH will be known as the model agency for applying the scientific method to itself—for learning and implementing, in a rigorous way, how best to support biomedical research

NIH Priorities and Initiatives
Topics

- Budgetary context
- NIH-Wide Strategic Plan
- Environmental Influences on Child Health Outcomes

ECHO Program: Overview

- **Overarching Goal**
  - Investigate the longitudinal impact of pre-, peri-, and postnatal environmental exposures on pediatric development and health outcomes with high public health impact through leverage of extant cohorts and other available resources
- **Core Elements to be Collected From all Participants**
  - Demographics
  - Typical early health and development descriptors
    - Optional Sub-Element: Microbiome
  - Genetic influences on early childhood health and development
    - Optional Sub-Element: Epigenetics
  - Environmental exposures (e.g., behavioral, biological, chemical, social)
  - Patient/Person (parent and child) Reported Outcomes (PROs)

ECHO Plan: Overview (cont'd)

- **Pediatric Health Outcome Focus Areas**
  - Upper and lower airway
  - Obesity
  - Pre-, peri-, and postnatal outcomes
  - Neurodevelopment
- **Additional Opportunity**
  - Create an IDeA States Pediatric Clinical Trials Network
    - Address access gaps for rural children through a national network for pediatric research embedded at IDeA locations
    - Link existing IDeA state centers with experts in clinical trials

ECHO Plan: Potential Research Questions that Could be Addressed

- What are the specific relative contributions of genetic and environmental (behavioral, biological, chemical, social, etc.) influences on child health?
- What factors render individuals or populations subjected to the same exposures as resilient or susceptible to disease? Do these differ over time, and by sex/gender, race/ethnicity, and/or SES?
- What are the inflection points at which the body's normal physiologic homeostasis becomes dysregulated, leading chronic disease(s)?
- What are the molecular and behavioral mechanisms involved in maintaining a healthy weight across the lifespan?
- What are the genetic, biomarker, and environmental predictors of risk for the key focus areas of childhood outcomes?

ECHO Program Elements

- Extant Pediatric Cohorts
- Coordinating Center (CC)
- Data Analysis Center (DAC)
- PRO Core – leveraging PEPR (started in FY15 with NCS funds)
- CHEAR Core – leveraging CHEAR (started in FY15 with NCS funds)
- Genetics Core

- IDeA States Pediatric Clinical Trials Network
  - IDeA Clinical Sites
  - IDeA Data Coordinating and Operations Center (DCOC)

FOAs released on December 7, 2015

ECHO Program Element: Extant Cohorts [RFA-OD-16-004]

- **Characteristics of cohorts (not limited to):**
  - Cohorts initiated in pregnancy or post-partum that continue to follow offspring outcomes
  - Cohorts that ended data collection on pregnant women and offspring, but can demonstrate the capability to recontact
  - Cohorts that are currently recruiting and/or assessing pregnant or post-partum women and their offspring
- **Additional items that may be considered by applicants:**
  - EHRs are encouraged, but not required
  - Basic mechanistic studies that can only be done using human cohorts are encouraged
- **Two phases:** UG3/UH3
- **Anticipated Combined Cohort Size:** ~50,000

ECHO Program Element: Coordinating Center [RFA-OD-16-006]

- Responsible for:
  - Administrative coordination, training, and communication
  - Developing standard Core Elements
  - Coordinating statistical analysis with DAC/CHEAR/PRO Cores
  - Assisting DAC administratively
  - Developing and implementing policies (e.g., data sharing)
  - Coordinating with existing bio-repositories
  - Administering the Opportunities and Infrastructure Fund
  - Coordinating the functions of the Steering Committee and the External Scientific Board
- 4 Components
- Applicants are encouraged to apply for the CC and DAC

ECHO Program Element: Data Analysis Center [RFA-OD-16-005]

- Responsible for:
  - Developing and applying novel analytic methods for combining and analyzing existing and new longitudinal data from disparate extant cohorts
  - Data quality control and assurance, and validation
  - Conducting multi-level analyses on pooled consortium data
  - Bioinformatics and statistical analysis with the help of the CC to coordinate with the CHEAR, PRO, and Genetics Cores
  - Building and maintaining data dictionaries and databases
  - Developing a data sharing, security, and dissemination plan
- Applicants are encouraged to apply for the CC and DAC

ECHO Program Element: PRO Core [RFA-OD-16-003]

- Responsible for:
  - Providing expertise in selecting, developing, and validating child Patient Reported Outcomes (cPROs)
  - Updating existing and validating emerging cPROs
  - Assisting with the incorporation of cPROs into study design (i.e., Core Elements)
  - Coordinating the mode of administration
  - Performing initial quality control and assessment of cPRO data
  - Assisting the DAC with cPRO data analysis, where applicable
  - Integrating Validation of Pediatric Patient Reported Outcomes in Chronic Diseases (PEPR) derived knowledge and resources with the ECHO PRO Core

ECHO Program Element: CHEAR Core [PA-16-046]

- Expand upon an existing resource – Children's Health Exposure Analysis Resource (CHEAR)
  - Network of laboratory hubs supporting comprehensive exposure analysis of biological samples
- Responsible for:
  - Conducting targeted and untargeted analysis of stored and prospectively collected biological samples
  - Providing statistical and data flow support and coordination with the DAC
  - Assisting with the incorporation of exposure assessment into study design (i.e., Core Elements)
  - Coordinating workflow with the CC and DAC

ECHO Program Element: Genetics Core

- Responsible for:
  - Coordinating the standardized collection and measurement of genetic samples for SNP-chip analysis through state-of-the-art techniques
  - Collaborating with the CC and DAC on data workflow
  - **To be released in FY17**

ECHO Program Element: IDeA Clinical Sites and DCOC [RFA-OD-16-001/002]

IDeA Clinical Sites

- Expand pediatric clinical trials initiated by other entities
- Studies initiated within the Network are encouraged
- Local teams will receive training on conducting trials
- Open to organizations in IDeA states

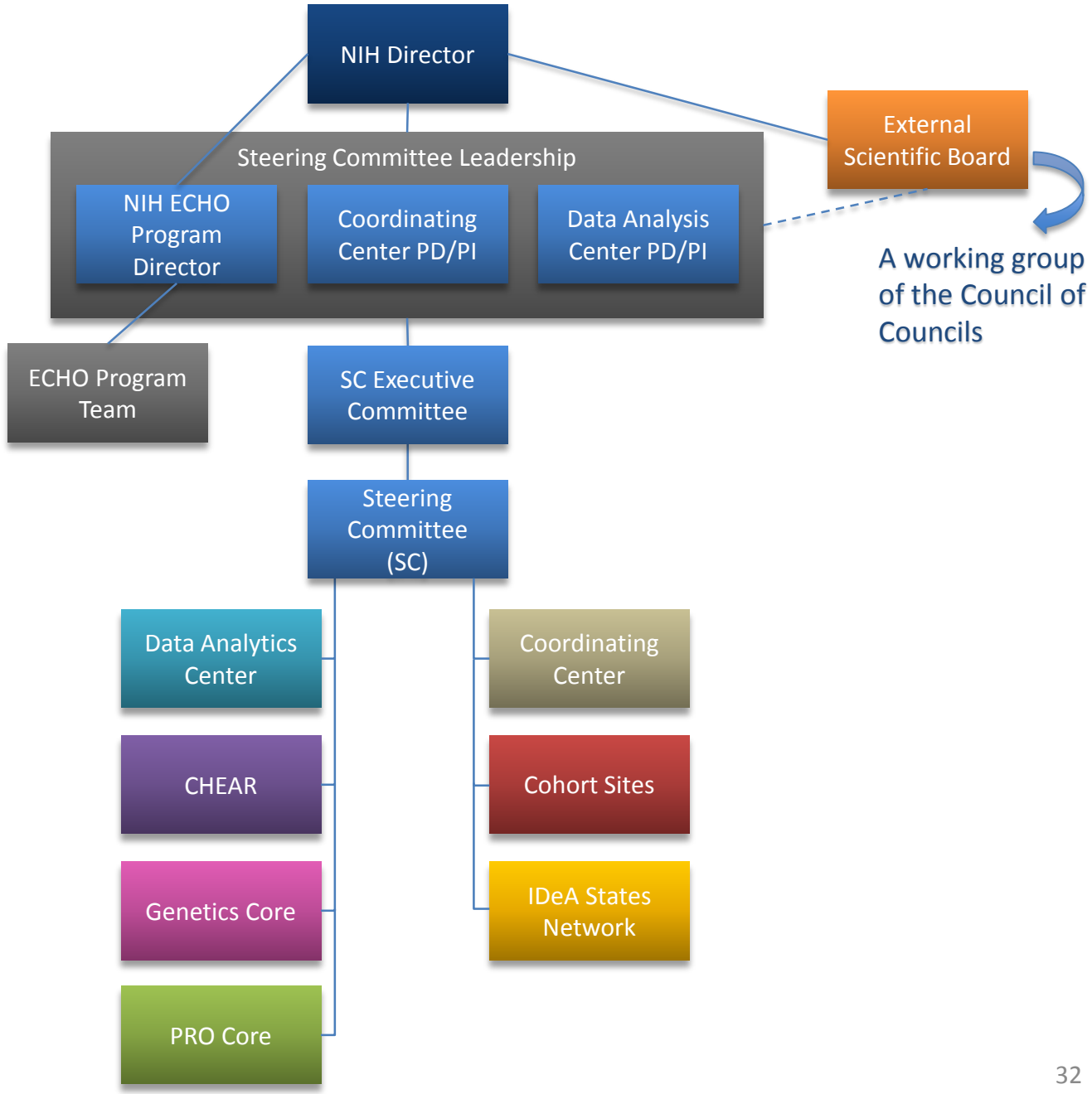
IDeA DCOC

- Point of contact, and oversight and training responsibilities
- Function as an informatics, data coordinating, and operations center for clinical trial implementation
- Funding for capitation fees and expenses
- Steering Committee
- Open to organizations with a partner in an IDeA state

ECHO Program Elements: IDeA States Pediatric Clinical Trials Network

- Linkage to ECHO
  - Prioritize research investigating the four ECHO Focus Areas
  - Prospective data collection encouraged to address the ECHO Core Elements
  - Representatives on ECHO Steering Committee and subcommittees

Structure and Governance



ECHO Program Office

- **Program Director/Office**
  - Interim Program Director – Larry Tabak, DDS, PhD
  - Interim Associate Program Director –
    Tara Schwetz, PhD
  - Recruiting a permanent ECHO Program Director
  - Additional program staff (analysts)

ECHO External Scientific Board:
A Working Group of the Council of Councils

- **Members**
  - To be determined after grant awards are made in September 2016
- **Functions:**
  - Council of Councils will perform concept clearance and secondary review for ECHO programs
  - ECHO External Scientific Board (ESB) will be a working group of the Council of Councils
    - ESB will provide recommendations for the Program Director
    - ESB reports will be reviewed by the Council, who may provide comments for the Program Director on the reports

ECHO Program Timeline

Action	Timeframe
Call with HHS	***July 10th***
Meet with stakeholder groups to solicit input	***July***
Stakeholder Roundtables	July 14-15
Conduct webinars	***July 22, 27, 29***
Craft and analyze RFI	***July***
Release/Publish RFI	July 13
Analyze RFI	Early August
Craft RFA concept/plan	***By 9/1/15***
Present concept for clearance by Council of Councils	***9/1/2015***
Craft FOAs	***September - October 2015***
All FOAs with OER for review	***11/1/2015***
Publish notices, if necessary	December-15
RFAs published in the Guide	***December 2015***
Applications due	***4/15/2016***
Peer review of applications	***Summer 2016***
Council review of applications completed	***9/30/2016***




NIH…

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Turning Discovery Into Health