R3PEATS Program: Research Rigor and Replication to Promote Excellence, Accuracy, and Translation in Science

29 January 2026

R3PEATS Co-Chairs

Concept Proposal for Council of Councils

National Institutes of Health
Office of Strategic Coordination–The Common Fund

NIH-wide Proposal Preparation Group

Co-Chairs:

Michael Chiang, *NEI*

Richard Hodes, *NIA*

Walter Koroshetz, *NINDS* (former)

Coordinators:

Tiffany Cook, *NEI*

Devon Crawford, *NINDS*

Rebecca Krupenevich, *NIA*

Other Contributors:

Respondents, *NIH-wide survey on potential replication projects*

Subject Matter Experts, *Replication to Enhance Research Impact Initiative*

OSC Staff:

LeShawndra Price, *Re-Engineering the Research Enterprise Assistant Director*

Michelle Hamlet, *Program Leader*

Sahana N. Kukke, *Program Leader*

Alicia Cavanaugh, *Scientific Program Analyst*

Rachel Diamond, *Policy, Reporting and Legislative Coordinator*

Katelynn Milora, *Strategic Planning, Evaluation, and Communications Analyst*

Jason Shockey, *Operations Analyst*

After concept clearance, we invite broader ICO participation

R3PEATS Program

- **Concept Clearance:** New Common Fund Program
- **Title:** Research Rigor and Replication to Promote Excellence, Accuracy, and Translation in Science (R3PEATS) Program
- **Objective:** R3PEATS will address the critical need for increased rigor and replicability in biomedical research through a multi-pronged approach integrating research, partnership with the broader community, and education and outreach to foster culture change
- **Anticipated Funds and Number of Awards:** ~$35M per year for 6-8 awards (contingent on availability of funds and number of meritorious applications)
- **Program Duration:** 5 years
- **Council Action:** Vote for approval of the R3PEATS concept

Replicability in Biomedical Research

Why Replicate?

- Ensure credibility of findings to expedite innovation
- Validate and standardize novel tools, technologies, and methods
- Hasten bench-to-bedside precision medicine efforts
- Save time and resources
- Encourage public discourse

Mixed Results from Prior Replications

NATURE REVIEWS | DRUG DISCOVERY

© 2011

Believe it or not: how much can we rely on published data on potential drug targets?

Florian Prinz, Thomas Schlange and Khusru Asadullah

Experimental Neurology 233 (2012) 597–605

Replication and reproducibility in spinal cord injury research

Oswald Steward [a,b,c,d,*], Phillip G. Popovich [e,f], W. Dalton Dietrich [g,h], Naomi Kleitman [i]

Raise standards for preclinical cancer research

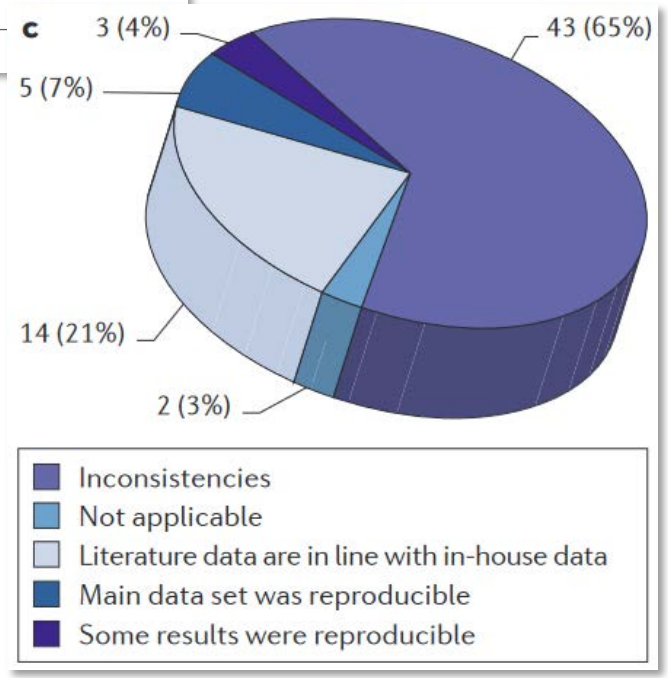
C. Glenn Begley and **Lee M. Ellis** propose how methods, publications and incentives must change if patients are to benefit.

29 MARCH 2012 | VOL 483 | NATURE | 531

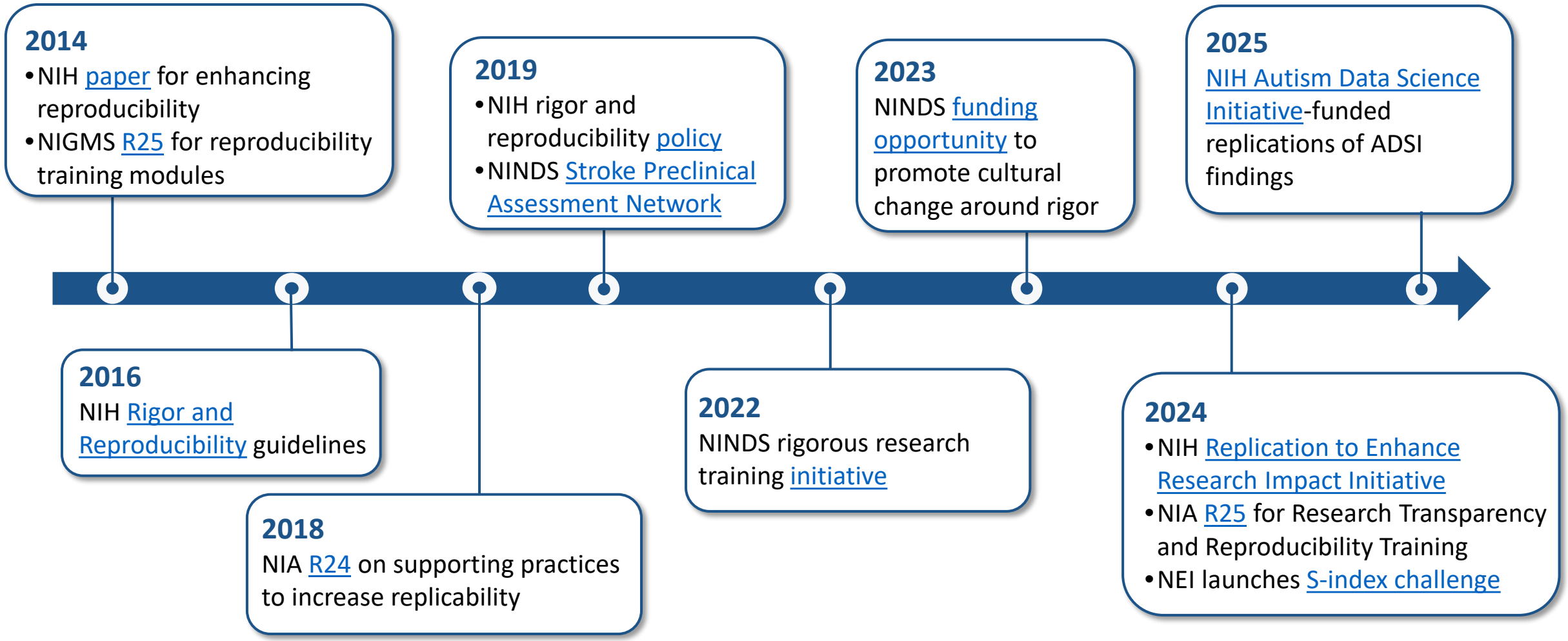
Investigating the replicability of preclinical cancer biology

Timothy M Errington[1]*, Maya Mathur[2], Courtney K Soderberg[1], Alexandria Denis[1†], Nicole Perfito[1‡], Elizabeth Iorns[3], Brian A Nosek[1,4]

eLife 2021;10:e71601. DOI: https://doi.org/10.7554/eLife.71601



Sample* of Prior NIH Replication Activities



*Selection from initiatives across NIH ICOs

Planning Activities Conducted

Lessons Learned from Landscape Analysis*

- Insufficient rigor, reproducibility, and replicability impede **knowledge acquisition** and **translation from bench-to-bedside**, ultimately affecting human health
- Impacts of **experimental factors** and **transparency** on replicability remain unclear
- Systematic and coordinated **education**, **metrics**, and **accountability** are needed for long-term **culture change**

*Sources: Prior NIH programs, NIH ICO survey, literature review, published replication efforts, established educational initiatives, research bibliometrics and other indices, NASEM- and NIH-endorsed reports

R3PEATS Program Goals

- **Deliver a knowledgebase of factors/practices** that influence replicability along with well-documented, high-priority replication studies
- **Leverage public partners** (e.g., academic, publishing, industrial, nonprofit) to test interventions that incentivize rigorous research and replicable results
- **Educate researchers** and **engage the general public** about replicability to facilitate and sustain culture change

Initiative 1: Replication Centers

Initiative 2: Metascience Testbed

Initiative 3: Education and Outreach Center

Initiative 4: Coordinating Center

Initiative 1: Replication Centers

- **Critical Gap:** Limited prior efforts to replicate NIH-funded research studies or to identify critical components of replicable biomedical research
- **Goals:**
  - Perform **independent, rigorous replications** of high-impact biomedical studies via multi-site consortia
  - Identify **sources of experimental robustness** and compile **best practices** for the scientific community
  - Model scalable **transparent, rigorous practices**
- **Scope:** $20M per year for 5 years (3-5 awards)
  - Teams organized around **methodological expertise**
    - E.g., big data, *in vitro* assays, human studies
  - **High-priority studies** relevant to the NIH mission
    - Selected after merit review by the scientific community
  - **Project scale**: method variability, confounder impacts, direct replication, triangulation

Research Use Cases

Resolve mismatch between preclinical and clinical results

Validate computational models on new datasets

Confirm high-profile results before translation to the clinic

Initiative 2: Metascience Testbed

- **Critical Gap:** Unclear impact of incentive programs, resources, and similar enterprise-wide interventions on individual researcher behavior or overall replicability of research

- **Goals:**
  - Develop and test the validity and usefulness of replicability **metrics**
  - Leverage cross-sector partnerships to implement novel **infrastructure, incentives,** and **culture change interventions**
  - Quantify how such interventions influence **research rigor** and **overall scientific replicability and impact**

- **Scope:** $8M per year for 5 years (1-2 awards)
  - **Consortia of partners** with influence on research organization, incentivization, and/or dissemination

Partnership Use Cases

Industry: develop and integrate novel replication-related scientometrics (e.g., into PubMed, Google Scholar)

Publishers: incentivize publication of replications (e.g., via new dissemination formats)

Academia: reconsider researcher assessment polices (e.g., thesis work, hiring, P&T)

Funders: enforce transparency requirements, support replication studies

Initiative 3: Education and Outreach Center

- **Critical Gaps:** Lack of systematic training in rigorous and replicable research practices, scientific communication about replicability, and effective public engagement

- **Goals:**
  - Centralize and enhance research community **training** in research **best practices**
  - Integrate and communicate **lessons learned** from Replication Centers and Metascience Testbed
  - Promote communication and two-way engagement with the **scientific community** and the **public** to promote **culture change**

Engagement Use Cases

Evaluate **educational resources** to optimize offerings for each learning context (e.g., lab, classroom)

Host **workshops** to gather input and socialize effective educational and science communication interventions

Launch **public awareness campaigns** about replicability in science

- **Scope:** $5.5M per year for 5 years (1 award)
  - Standardization of training access and quality (e.g., via **certification**)
  - Partnerships with external organizations to implement/support **new training programs**

Initiative 4: Coordinating Center

- **Critical Gap:** Insufficient coordination between researcher-level, scientific enterprise-level, and public-level programs and interventions
- **Goals:**
  - Establish and maintain a **publicly available website / portal** of program outcomes and lessons learned
  - Facilitate **merit review** for proposed projects to enter the Replication Centers
    - Performed by Steering Committee of external experts
  - **Foster strong communication** *within* the program and *among* external stakeholders providing program guidance
- **Scope:** $750k per year for 5 years (1 award)
  - Includes:
    - R3PEATS Consortium, which makes day-to-day operational decisions
    - Steering Committee, which oversees the overall direction of the program

Web Portal Use Cases

Compile studies replicated as part of the program

Track and integrate replication lessons learned

Develop framework for standardizing replication ontologies

Expected Deliverables

Publicly accessible and rigorously replicated **NIH mission-relevant studies**

Evidence base of **broadly applicable experimental and biological contributors** to variability, heterogeneity, and replicability

Novel validated metrics for assessing or promoting replicability

Curated collection of effective educational resources to enhance rigorous and replicable research practices

Network of strategic partnerships aimed at better supporting replicable research and public engagement to change scientific culture

Anticipated Impact

Research Outcomes

- Insight into **experimental factors** that mediate replicability
- **Publications** and **grants** that report sufficient detail to enable replication
- Integration of more rigorous **research practices** in biomedical research
- Sustained **infrastructure** and **expertise** to support future NIH research
- Accelerated **innovation and translation** from less time spent on irreplicable results

Broader Outcomes

- Updated **incentive and assessment structures** to foster rigor and replicability and change research culture
- Core principles embedded into **education and training** to empower the next generation of scientists
- Improved **public engagement** to build understanding of how research rigor and replicability impact human health

Alignment with Common Fund Criteria

- **Transformative:** Accelerate **enhanced health outcomes** through the cultivation of rigorous, replicable, and generalizable NIH-supported research findings
- **Catalytic:** Drive confirmation of high-priority studies and identify practices that improve replicability to expedite **bench-to-bedside discoveries**
- **Goal-Driven:** Produce clear deliverables of replicated NIH-funded research, lessons learned, and dissemination strategies to foster **improved research practice** and **public engagement**
- **Synergistic:** Harness **partnerships with academia, industry, government, and nonprofit organizations** to identify and disseminate practices that promote reliable research findings
- **Novel:** Revolutionize research design and execution, broader practices within the research enterprise, and educational efforts to bolster **scientific discovery**

Council Action: Vote for approval of the concept for R3PEATS Program

commonfund.nih.gov

@NIH_CommonFund

National Institutes of Health
Office of Strategic Coordination–The Common Fund