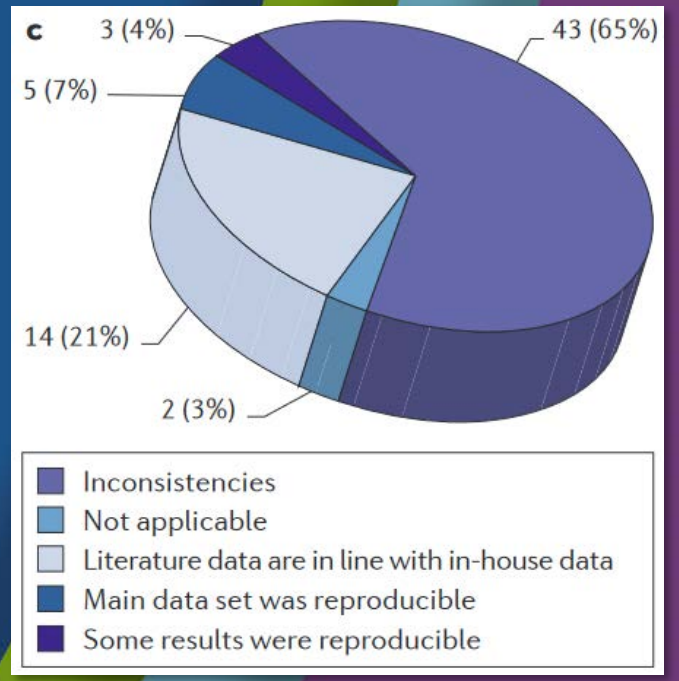
R3PEATS Program: Rigor, Replicability, and Reproducibility to Promote Excellence, Accuracy, and Translation in Science



May 2026

R3PEATS Co-Chairs

Common Fund Concept Proposal



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

DOI: 10.1038/nrd3439-c1

R3PEATS Program (REVISED)

- **Concept Clearance:** New (REVISED) Common Fund Program
- **Title:** Rigor, Replicability, and Reproducibility to Promote Excellence, Accuracy, and Translation in Science (R3PEATS) Program (e.g., U01, U24, U54)
- **Objective:** R3PEATS will address the critical need for increased rigor, replicability, and reproducibility in biomedical research by integrating research, partnership, engagement, and coordination within R3PEATS and with the broader scientific community to foster culture change
- **Funds Available & Anticipated Number of Awards:** $161.71M phased over 5 yrs for 9 awards (contingent on availability of funds and number of meritorious applications)
- **Award Project Period:** 5 years
- **Council Action:** Vote for approval of the R3PEATS concept

NIH-wide Proposal Preparation Group

Co-Chairs:

Michael Chiang, NEI

Richard Hodes, NIA

Amy Adams, NINDS (current)

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

Responses to Council

- **Stronger emphasis on rigor of primary research as a prerequisite for replicability and reproducibility**
  - Rigor is bolstered in all Initiatives.
- **Importance of culture change and incentive structures**
  - Culture change is bolstered in all Initiatives.
  - See **new cohort-based development program** ("Rigor Scholar Awards") in Initiative 3.
- **Missing outcomes from prior NIH initiatives**
  - See **new table** (slide 7).
- **Potential staggering/staging of different programmatic components**
  - Subcomponents of Initiatives do not all start at the same time.
  - Synergies have been clarified (slide 14).
- **Limited number of replication projects/investigators**
  - See **new "Innovation Awards"** in Initiative 4.
- **Limited detail, definitions, and metrics for identifying rigor and replicability**
  - See proposal and Initiative 2 for more detail.

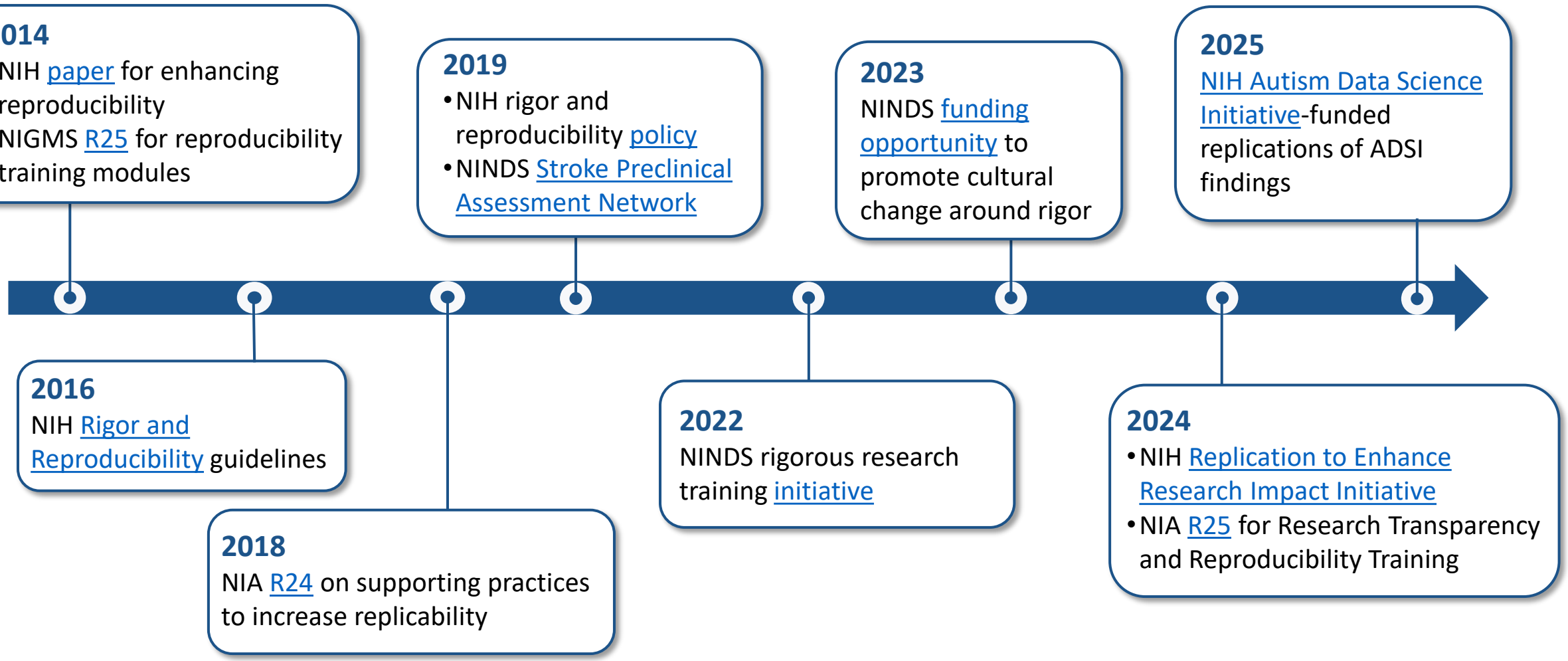
Reproducibility & Replicability Lessons Learned

R3PEATS Landscape Analysis*:

- Insufficient rigor, reproducibility, replicability, and **infrastructure** impede **knowledge acquisition** and **translation from bench-to-bedside**, ultimately affecting human health
- Impacts of **experimental factors** and **transparency** on replicability remain unclear
- Current **academic culture** and **high costs** of sufficiently powered and well-designed studies **disincentivize** replications
- Systematic and coordinated **education**, **metrics**, **accountability,** and **communication** 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

Sample* of Prior NIH Replication Activities



*Selection from initiatives across ICOs

Building on NIH Efforts: Informing R3PEATS

Focus Area	Outcomes of Prior NIH Activities	Lessons Learned Addressed by R3PEATS
Policy & Review	• Refocused BioSketch on broader contributions • Integrated rigor training requirement into T32s • Iteratively updated grant application instructions	**Initiative 1:** evidence base (experimental factors) **Initiative 2:** direct test of policies (outside NIH) **Initiatives 3-4:** broader engagement (outside NIH)
Culture Change	• Landis 4 Reporting Guidelines • Updated publisher reporting checklists • Ongoing awards/activities (outcomes TBD) • Ongoing Replication Prize (outcomes TBD)	**Initiative 1:** direct funding of research **Initiative 2:** direct test of incentives **Initiatives 3-4:** dissemination of successful strategies, institutional accountability
Training & Workforce	• Clearinghouse of training modules • Ongoing development of rigor educational resources • Training in reproducibility and transparency	**Initiative 1:** knowledge to disseminate **Initiative 2:** test of implementation strategies **Initiative 3:** coordinated access, skill-building, mentor & institutional accountability, incentives, communication **Initiative 4:** dissemination support
Resources	• 11 compounds tested in preclinical network • 8 replication projects completed by one CRO • Ongoing Replication Prize • 2 validation centers for 11 primary projects	**Initiative 1:** direct resources, coordination & SOP development **Initiatives 2-3:** structure & resources optimization **Initiative 4:** funding for smaller replications, knowledge integration

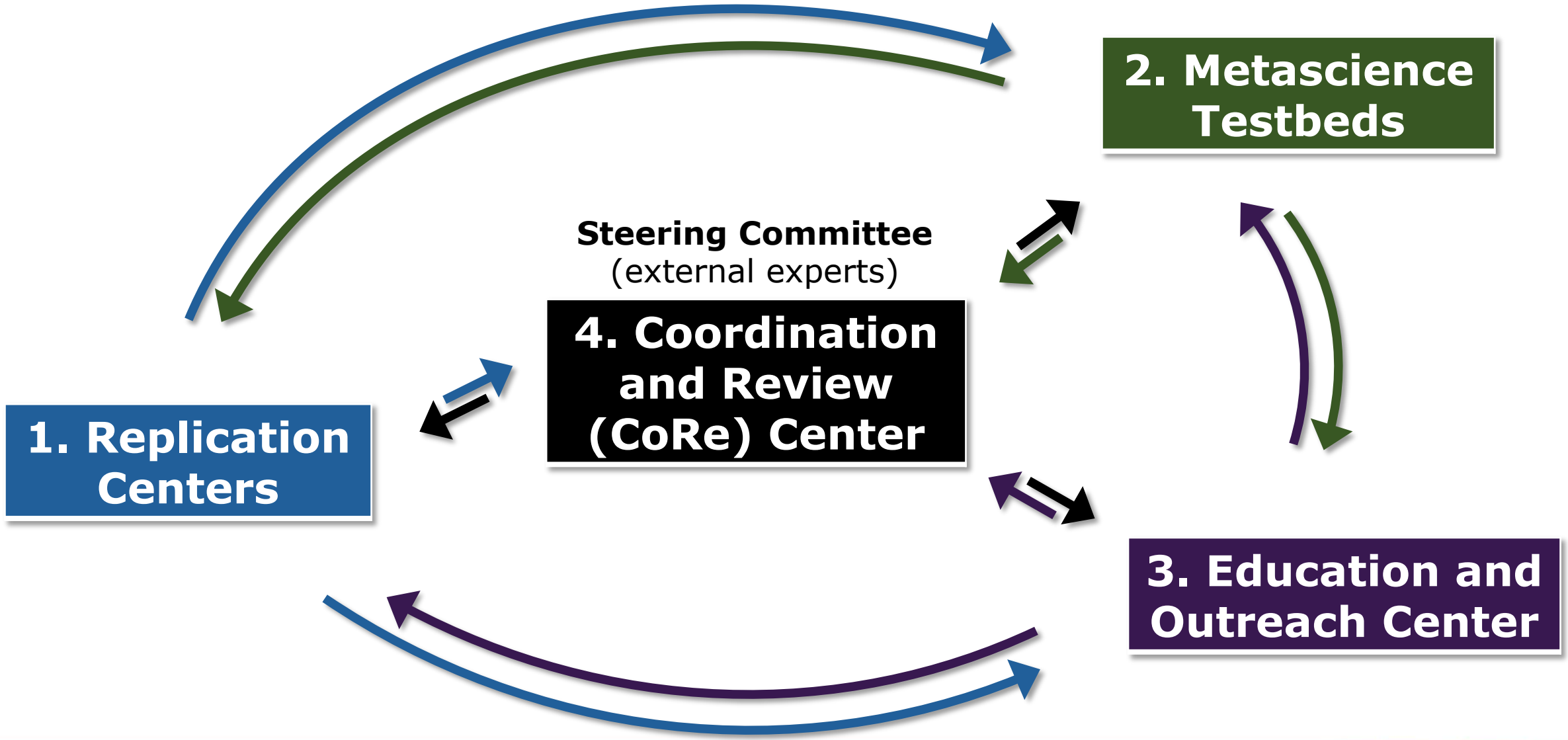
R3PEATS Vision:

Enable an adaptable, sustainable research enterprise where rigor, replicability, and reproducibility are the norm

R3PEATS Goals:

- Provide **comprehensive infrastructure, projects, training, incentives, and public engagement**
- Deliver a **knowledgebase of factors/practices** that influence replicability along with optimized **resources and incentives** for the broader community
- Unite **broad partners** (e.g., academic, publishing, industrial, nonprofit, public) to stimulate **culture change**

R3PEATS Initiatives



Initiative 1: Replication Centers

- **Critical Gaps:** Unknown factors that cause different experimental outcomes; limited coordination and resources for replication and reproduction

- **Goals:**
  - Coordinate **rigorous research practices** across methods-based consortium, providing an organizational model
  - Perform high-impact **multi-site, independent replications** as a broader community service
    - Delayed, staggered-start replication projects
  - Identify underappreciated **sources of experimental variability** important to refine research practice

Replication Use Cases



Resolve mismatch between results from different models



Validate AI/ML models on new datasets



Confirm high-profile results before translation to the clinic

- **Scope:** $74.4M phased over 5 years (4 awards)
  - **Replication studies** (beyond Year 1) will be selected after **merit review** by the Steering Committee of external experts (see Initiative 4) and assigned to Replication Centers

Initiative 2: Metascience Testbeds

- **Critical Gaps:** Strong cultural influences (i.e., incentives) preventing adoption of better practices; lack of clear quantitative measures of research rigor, replicability, and reproducibility

- **Goals:**
  - Develop and validate a toolbox of rigor and replicability **algorithms** and **metrics**
  - Leverage cross-sector partnerships to test novel **infrastructure, incentives,** and other **culture change efforts**
  - Perform living **landscape analyses** of the research enterprise to identify ongoing gaps and opportunities

- **Scope:** $40.25M phased over 5 years (3 awards)
  - 1 award focused on metrics/tools, 2 awards focused on interventions across different sectors

Partnership/Incentive Use Cases



Industry: develop novel metrics for rigor, replicability, & reproducibility



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



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



Science Societies: create prizes, assess rigor when choosing conference talks

Initiative 3: Education and Outreach Center

- **Critical Gaps:** Inconsistent training in rigorous and replicable research practices; lack of incentivization to reinforce learned skills; lack of public engagement
- **Goals:**
  - Centralize and optimize **research capacity building** and **communication about best practices**
  - Implement **certification programs** and **metrics** to incentivize training and expertise
  - Support **new faculty cohorts** with **Rigor Scholar Awards** to stimulate institutional buy-in, accountability, and capacity-building (Years 2-5)
  - Enhance two-way engagement with the **scientific community** and **public** to sustain **culture change**
- **Scope:** $24.37M phased over 5 years (1 award)

Education-Outreach Use Cases



Customize existing **resources** to learning context (e.g., lab, classroom)



Fill gaps with **foundational rigor curriculum,** partnering with graduate programs



Host collaborative **replication workshops,** facilitate new **guidelines**, and socialize **effective interventions** to improve practice



Launch **public awareness campaigns** about replicability

Initiative 4: Coordination and Review Center (CoRe)

- **Critical Gaps:** Insufficient coordination of information and activities across the research enterprise; limited opportunities for participation in replication efforts
- **Goals:**
  - Establish and maintain a **publicly available program website/portal** for public accountability
  - **Foster strong communication** *within* the program and *among* external stakeholders
    - **R3PEATS Consortium:** day-to-day decisions/collaboration
    - **Steering Committee:** overarching program strategy
  - Coordinate **merit review** by Steering Committee for individual proposed projects:
    - Replication projects (funded through Initiative 1)
    - Innovation Awards ("replicate and expand"; Initiative 4)
    - Rigor Scholar Awards (funded through Initiative 3)
  - Administer **Innovation Awards** each year in Yrs 2-5
- **Scope:** $18.94M phased over 5 years (1 award)

Web Portal Use Cases



Compile SOPs, best practices, and lessons learned across all Initiatives

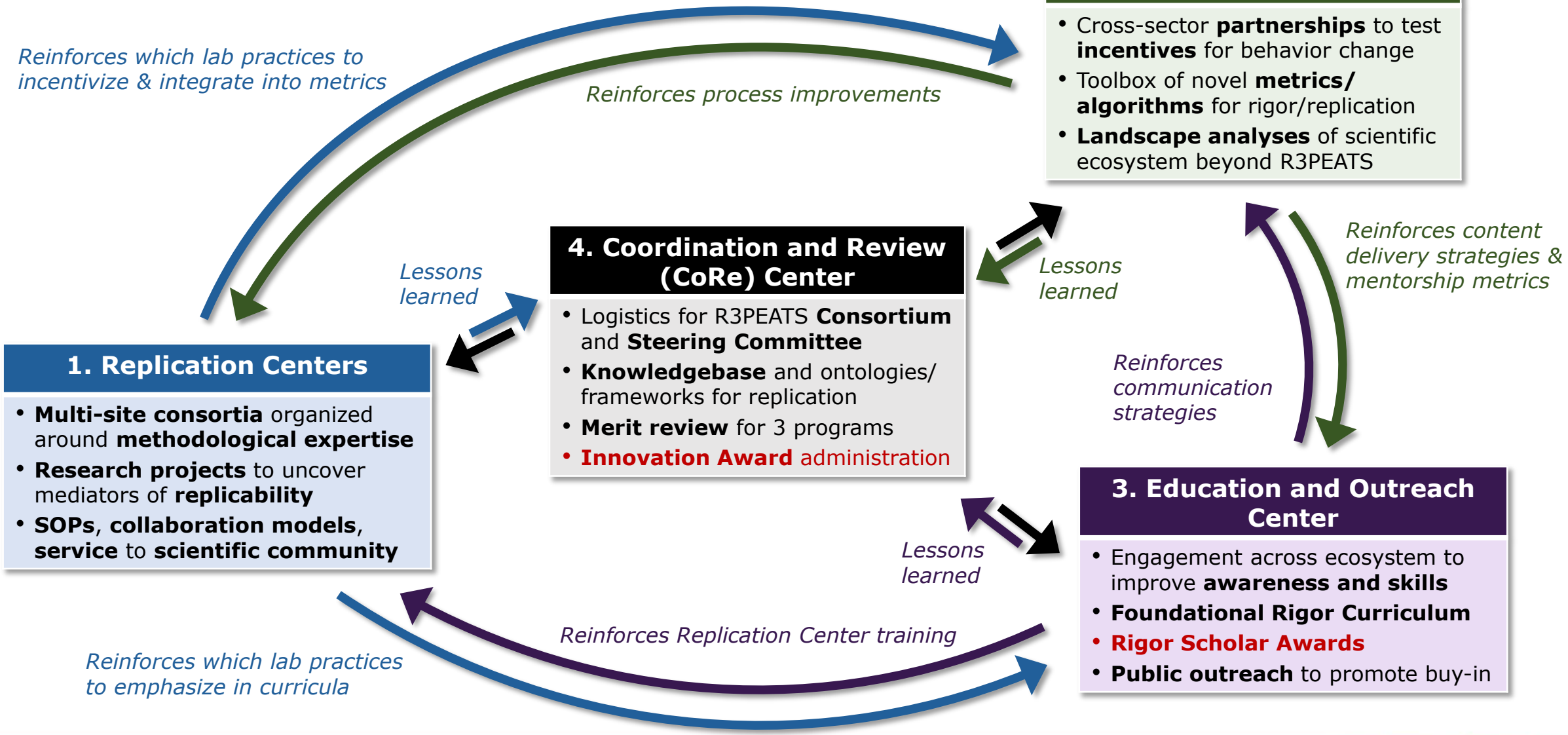


Create a knowledgebase of replication outcomes and mediators



Develop framework for standardizing R3PEATS-relevant ontologies

R3PEATS Initiatives



Anticipated Impact

Deliverables

- **Framework** for replication
  - Experimental factors, laboratory workflows, infrastructure, evaluation strategies
- **Incentives** to promote culture change
  - Metrics, recognition mechanisms, institutional accountability, dissemination strategies, cross-sector partnerships
- Upskilled **workforce**
  - Curricula, certifications, skill-building, educational resources, institutional support
- Expanded **resources**
  - Lessons learned, knowledgebase, SOPs, replication services, guidance documents

Broader Outcomes

- Empowered **scientists** and **broader partners**
  - More replication studies performed, resources for rigor and replication, alignment of values with incentives, improved awareness and appreciation
- Increased **reliability** of research
  - Better recognition/integration of important experimental design elements, more replication
- Improved **public trust**
  - Enhanced communication channels, transparent outcomes from public investment, improved understanding of scientific process & possibilities
- Faster **translation** and **public health** benefits
  - Less time spent on irreplicable results, faster confirmation of novel and innovative findings

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 best rigor practices
- **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