SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Training Networking Connecting Learning Volunteering

Society of Research Administrators International Webinars

What's New at the NIH? Requirements to Address Rigor and Reproducibility in Research

22 June 2016, 2:00 p.m., ET

©Society of Research Administrators International

www.srainternational.org

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Presenter

Kathy Doyle Grzech, M.A.

Associate Director, Proposal Development Office

University of Kentucky

UK Proposal Development Office

http://www.research.uky.edu/pdo/

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Learning Objectives

1. Understand revisions to NIH proposal content requirements and peer review criteria to include assessment of rigor and reproducibility in research.
2. Become familiar with diverse resources available to help investigators meet new requirements to address key aspects of rigor and reproducibility in grant applications.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Views expressed in this workshop and in workshop materials are those of the speaker and are not intended to represent the views, positions, or opinions of the University of Kentucky or of the Society for Research Administrators International. Mention of trade names, commercial practices, or organizations does not imply endorsement by any organization with which the speaker is affiliated.

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Agency Perspective

- One of NIH's four stated goals in its mission…
  - To exemplify and promote the highest level of scientific integrity, public accountability, and social responsibility in the conduct of science (https://www.nih.gov/about-nih/what-we-do/mission-goals)
- Today's session covers topics that are integral to this goal.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Preliminary Understandings

- What do we mean by *rigor* in research?
  - Close adherence to robust scientific standards/ methods in the *design* of studies and experiments
  - Careful application of the scientific method in the *conduct* of research
  - But even *before* these two facets…
    - Careful attention to *the rigor with which prior research has been conducted.*

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Preliminary Understandings

- What is *reproducibility?*
  - The ability to redo a study (either one's own or someone else's) and achieve comparable results.
- Replication of study results provides validity!

"Science has long been regarded as 'self-correcting', given that it is founded on the replication of earlier work."

http://www.nature.com/news/policy-nih-plans-to-enhance-reproducibility-1.14586
(Collins and Tabak, 2014)

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

More on Reproducibility

- But, reproducibility is highly dependent on *transparency* of the research…
  - The scientific detail in both the proposal and the published research outcomes!
- Transparency relies on rigorously established lab procedures…
  - Careful *documentation* of study methods and processes
  - Careful *data handling* and *interpretation*.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

More on Reproducibility

- Transparency (of rigorous, unbiased research) is critical not only in the *proposal detail* but also in the *reporting processes*!
  - Progress reports to the sponsor
  - Publications reporting the discoveries
- Transparency lays the foundations to advance to later stages of research.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

What's Up with Research?

- Intensive ongoing 4+ year 'conversation'…
  - Focused on issues at play in the…
    - *Inability to reproduce or extend research findings* reported in some peer-reviewed literature
  - Commentary by NIH Director, Principal Deputy Director on possible causes and NIH actions
    - www.nature.com/news/policy-nih-plans-to-enhance-reproducibility-1.14586 (Collins and Tabak, 2014)
  - Commentary by NINDS convened stakeholders
    - www.nature.com/nature/journal/v490/n7419/full/nature11556.html (Landis, et al., 2012)

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Why the Alarm?

- The *inability to reproduce or extend research findings* based on reported study details…
  - Has been frustratingly widespread
  - Has ranged across the spectrum of research
  - Has even extended to efforts by the original study team to replicate their own studies
  - Has hindered advancement of promising research results to the next stages of discovery.

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

The Results?

- New initiatives to develop strategies to address *rigor and reproducibility* in research, particularly on the part of the *National Institutes of Health* and *Agency for Healthcare Research and Quality*…
  - Workshops
  - Videocasts and training modules
  - Successful NIH pilots to inform new proposal and review guidelines.

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

The Results?

- These collective efforts…
  - All culminated in implementation of *new requirements to address rigor and reproducibility* in *research* applications…
    - Submitted on or after January 25, 2016.

Landis, et al, 2012

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

What is NIH Saying? (What's Not New)

- *Cornerstones* of science advancement are….
  - Rigor in designing and performing scientific research for…
    - Robust and unbiased design
  - The ability to reproduce biomedical research findings for…
    - Validity of the results and readiness to progress to the next phase of research

https://www.nih.gov/research-training/rigor-reproducibility

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

What is NIH Saying? (What's Not New)

- Newly revised research grant application instructions…
  - *Clarify* long-standing expectations to ensure that *NIH funds the best and most rigorous science*.
  - *Highlight* the need for…
    - Applicants to describe details that may have been previously overlooked
    - Reviewers to consider such details in their review.

https://www.nih.gov/research-training/rigor-reproducibility/updated-application-instructions-enhance-rigor-reproducibility

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

So What's New?

- While NIH *expectations* for rigor and reproducibility have not changed…
  - Application requirements have for…
    - National Institutes of Health
    - Agency for Healthcare Research and Quality
  - Revisions to 2 of 5 peer review criteria – Significance and Approach
- New NIH and other resources

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

What Exactly Has Changed?

- Within SF424 Application Guide (currently "Forms-D")
  - Updated *application instructions* for Research Strategy
  - Updates to peer review – Significance, Approach
  - New 'Authentication Plan'
  - New Additional consideration for review – Authentication
- PIs *"strongly encouraged"* to discuss revised instructions with NIH program staff prior to submitting an application

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Implementation

- Who?
  - PIs submitting *research* proposals to NIH and AHRQ, but stay tuned!
    - New training and fellowship application requirements!
- When?
  - Effective for due dates on or after January 25, 2016
- Why?
  - To enhance rigor + transparency ⟶ reproducibility

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Four New Requirements

- New requirements in grant applications…
  - Scientific premise forming the basis of the proposed research
  - Rigorous experimental design for robust and unbiased results
  - Consideration of relevant biological variables
  - Authentication of key biological and/or chemical resources
- Research Strategy page limit has *not* changed!

NOT-OD-15-103 – Enhancing Reproducibility through Rigor and Transparency

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Updates to Research Strategy

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Updates to *SF424* On *Significance*

1. **Significance**
   - Explain the importance of the problem or critical barrier to progress in the field….
   - Describe the scientific premise for the proposed project, including consideration of the strengths and weaknesses of published research or preliminary data crucial to the support of your application.

SF424 instructions '***map'*** to the review criterion – "Describe the scientific premise…."

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Updates to *SF424* On *Significance*

1. **Significance (cont.)**
   - Explain how the project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields
   - Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed….

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Review Criterion – Significance

- ***Significance***
  - Does the project address an important problem or a critical barrier to progress in the field?
  - Is there a strong scientific premise for the proposed project?
  - If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved?

NEW!

SF424 instructions '***map'*** to the review criterion – "Describe the scientific premise…."

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Review Criterion – Significance

- ***Significance (cont.)***
  - How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

Existing review questions still apply!

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

A Word about Scientific Premise

- *Scientific premise* refers to two aspects…
  - Prior research that is *crucial* to the support the proposed research
    - Preliminary data
    - Published literature
  - NIH expects applicants to describe…
    - Strengths and weaknesses of prior research cited, such as rigor of previous experimental designs.

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

A Word about Scientific Premise

- Strengths and weaknesses may include…
  - Appropriate statistical power
  - Justified sample sizes
  - Use of control groups
  - Important biological variables, e.g., both sexes
  - Authentication of key resources, e.g., cell lines
  - Data handling – missing data, outliers
  - Blinding/ randomization

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

More on Scientific Premise

- *Not identifying strengths and/or weaknesses* could be considered a weakness in review.
- Conclusions based on flawed prior research may not support the next phase of research.
- See more on value of scientific premise and core reporting standard…

www.nature.com/nature/journal/v490/n7419/full/nature11556.html (Landis, et al., 2012)

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Updates to *SF424* on *Approach*

3. Approach

- Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. Describe the experimental design and methods proposed and how they will achieve robust and unbiased results. Unless addressed separately in Item 15 (Resource Sharing Plan), include how the data will be collected, analyzed, and interpreted….
- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Updates to *SF424* on *Approach*

3. Approach (cont.)

- If the project is in the early stages of development, describe any strategy to establish feasibility….
- Explain how relevant biological variables, such as sex, are factored into research designs and analyses for studies in vertebrate animals and humans. For example, strong justification from the scientific literature, preliminary data, or other relevant considerations, must be provided for applications proposing to study only one sex.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Updates to *SF424* on *Approach*

3. Approach (cont.)

- If your study(s) involves human subjects, the sections on the Inclusion of Women and Minorities and Inclusion of Children can be used to expand your discussion and justify the proposed proportions of individuals (such as males and females) in the sample, but it must also be addressed here…

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Updates to *SF424* on *Approach*

3. Approach (cont.)

- Please refer to NOT-OD-15-102 for further consideration of NIH expectations about sex as a biological variable.
- Point out any procedures, situations, or materials that may be hazardous to personnel and precautions to be exercised.
- If research on Human Embryonic Stem Cells (hESCs) is proposed but an approved cell line…cannot be identified, provide a strong justification….

NOT-OD-15-102 Consideration of Sex as a Biological Variable

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Review Criterion – Approach

- ***Approach***
  - Are the overall strategy, methodology, and analyses well-reasoned and appropriate to accomplish the specific aims of the project?
  - Have the investigators presented strategies to ensure a robust and unbiased approach, as appropriate for the work proposed?

SF424 instructions '***map'*** to the review criterion – "…achieve robust unbiased results."

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Review Criterion – Approach

- ***Approach cont.***
  - Are potential problems, alternative strategies, and benchmarks for success presented?
  - If the project is in the early stages of development, will the strategy establish feasibility and will particularly risky aspects be managed?

Existing review questions still apply!

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Review Criterion – Approach

- ***Approach cont.***
  - If the project is in the early stages of development, will the strategy establish feasibility and will particularly risky aspects be managed?
  - Have the investigators presented adequate plans to address relevant biological variables, such as sex, for studies in vertebrate animals or human subjects?

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Review Criterion – Approach

- ***Approach cont.***
  - If the project involves human subjects and/or NIH-defined clinical research, are the plans for 1) Protection of Human Subjects, and 2) inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion (or exclusion) of children, justified in terms of the scientific goals and research strategy proposed?

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

A Word about Robust, Unbiased Design

- Robust and unbiased design…
  - NIH expects applicants to describe…
    - Methods designed to avoid bias
    - Well-controlled and reported experimental conditions.
  - NIH expects applicants to include full transparency in reporting experimental details so that others (and you!) may reproduce and extend the findings.

NOT-OD-15-103 – Enhancing Reproducibility through Rigor and Transparency

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

A Word about Robust, Unbiased Design

- Check for Institute-specific guidance!
  - *"Examples of the most critical elements for a well-designed study are summarized…."*
    - NINDS (NOT-NS-11-023)
      http://www.ninds.nih.gov/funding/grant_policy.htm
    - NIMH (NOT-MH-14-004)
      http://www.nimh.nih.gov/research-priorities/policies/enhancing-the-reliability-of-nimh-supported-research-through-rigorous-study-design-and-reporting.shtml
    - NIDA (NOT-DA-14-007)
      http://www.drugabuse.gov/offices/office-nida-director-od/office-translational-initiatives-program-innovations-otipi/nih-initiative-enhancing-research-reproducibility-transparency

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Example – Guidance from NIDA

- Points to consider…
  - Experimental design
    - Rationale for selected models, endpoints
    - Adequacy of the controls
    - Route, dosing and timing of treatment
    - Sample size estimates, including power calculation
    - Statistical methods to be use in analysis and interpretation…

Office of the NIDA Director: NIH Initiative on Enhancing Research Reproducibility…Transparency

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Example – Guidance from NIDA

- More points to consider…
  - Minimizing bias
    - Methods of blinding
    - Inclusion and exclusion criteria
    - Strategies for randomization and/ or stratification
    - Procedures for dealing with missing data…
    - Reporting all results (negative and positive)

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Example – Guidance from NIDA

- More points to consider…
  - Results
    - Reporting of independent validation/ replication
    - Robustness and reproducibility of observed results, including whether replicates used different lots of animals, drugs, reagents, experimenters
    - Dose-response results
    - Verification that interventional drug or biologic reached and engaged the target

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Summary - Additions to Scored Review

- Under *Significance*
  - Scientific premise: Is there a strong scientific premise for the project?
- Under *Approach*
  - Rigor: Have the Investigators presented strategies to ensure a robust and unbiased approach, as appropriate for the work proposed?
  - Biological variables: Have the investigators presented adequate plans to address relevant biological variables, such as sex, for studies in vertebrate animals or human subjects?

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

New ‘Authentication’ Attachment

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Updates to *SF424* on *'Authentication'*

- **Authentication of Key Biological and/ or Chemical Resources**
  - If applicable to the proposed science, briefly describe methods to ensure the identity and validity of key biological and/or chemical resources used in the proposed studies. No more than one page is suggested.

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Updates to *SF424* on *'Authentication'*

- Key biological and/or chemical resources may or may not be generated with NIH funds and may…
  - Differ from laboratory to laboratory or over time;
  - Have qualities and/or qualifications that could influence the research data;
  - Be integral to the proposed research.

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Updates to *SF424* on *'Authentication'*

- Key biological and/or chemical resources may or may not be generated with NIH funds and may…
  - Differ from laboratory to laboratory or over time;
  - Have qualities and/or qualifications that could influence the research data;
  - Be integral to the proposed research.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Updates to *SF424* on *'Authentication'*

- **Authentication (cont.)**
  - [These resources] include, but are not limited to, *cell lines*, *specialty chemicals*, *antibodies*, and *other biologics*.
  - Standard reagents that aren't expected to vary (e.g. buffers, and other common biologics or chemicals) need not be included in the plan.

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Review Criterion – Authentication

- Additional Review Considerations
  - Reviewers will assess the information provided in the Authentication section. Any reviewer questions associated with key biological and/or chemical resource authentication will need to be addressed prior to award.
  - Information presented in this section must focus only on authentication and/or validation of key resources to be used in the study

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

A Word on 'Authentication Plan'

- *NIH caution!*
  - Do not use this added section to circumvent the page limits of the Research Strategy.
- Attach the Plan (one page or less) where designated in the application package.
- "No clear consensus guidelines" – NIH has not defined specifically how to address authentication of specific resources but is looking to the research community to shape development.

NOT-OD-15-103 – Enhancing Reproducibility through Rigor and Transparency

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

A Word on 'Authentication Plan'

- Do not include actual authentication data; instead provide…
  - *Plans* for independent verification
  - Frequency, particularly for long-term use as regards stability.
- My caution!
  - Policy states 'biological' or 'chemical' – do not use this attachment for other types of resources.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Summary - Additional Review Criterion

- Under *Additional Review Considerations*
  - Authentication of Key Biological/Chemical Resources: Where applicable, reviewers will comment on the plans proposed for identifying and ensuring the validity of those resources.

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

The First Reviewers Report…

- Reviewer training for most programs began in June 2016…
  - Reviewers *must* use the new terms from the revised review criteria in their review comments.
    - As we might expect, reviewers are *looking to find those precise phrases* in the proposal.
  - Reviews that aren't compliant with this instruction are being returned.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Reviewers Report…

- Reviewer training varies across Institutes but covers the key points…
  - Scientific Premise – strengths, weaknesses in cited literature
  - Rigor – groups sizes, independent and blinded measurements, inclusion/ exclusion criteria, management of missing data, etc.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

What about Progress Reports?

- Annual non-competing (Type 5) *Research Performance Progress Reports* for research address rigor as of January 25, 2016.
  - Accomplishments section…
    - B.2 What was accomplished under these goals?
      - Include the approaches taken to ensure robust and unbiased results.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

What about Progress Reports?

- *Research Performance Progress Reports* ***cont.***
  - Accomplishments section…
    - B.6. What do you plan to do for the next reporting period…?
      - Discuss efforts to ensure that the approach is scientifically rigorous and results are robust and unbiased.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Stay Tuned!

- NIH has *delayed implementation* to FY 2017 of policies on rigor and reproducibility for…
  - Institutional training grants (e.g., T32, T15)
  - Institutional career development awards (e.g., K12, KL2)
  - Individual Fellowships (F31, F32)

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Stay Tuned!

- Delay is due to recognition of need for time and resources to develop…
  - Substantive, effective instructional plans and curricula in rigorous experimental design across different fields
- Training grant PD/PIs should be working on these features now!

NOT-OD-16-034 – Coming Requirements…Institutional Training Grants, etc.

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

New for 'T' and 'K' Mechanisms

- New for 'T' (training) and 'K' (career) grants…
  - Summary of the instruction planned…to ensure knowledge and skills required to design and conduct rigorous, well-controlled experiments that...
    - Consider relevant biological variables
    - Use authenticated biological/ chemical resources
    - Apply appropriate statistical tests for data analyses.
  - Separate attachment detailing instructional/ curricular content

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

New for 'F' Mechanisms

- New inclusions for 'F' (fellowship)…
  - Summary of plans (in Research Strategy) to ensure rigorous, well-controlled experiments that...
    - Consider all relevant biological variables
    - Use authenticated biological/ chemical resources
    - Apply appropriate statistical tests for data analyses.
  - Details on instruction in rigorous experimental design in Institutional Environment/ Commitment to Training section.

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Resources for Investigators

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

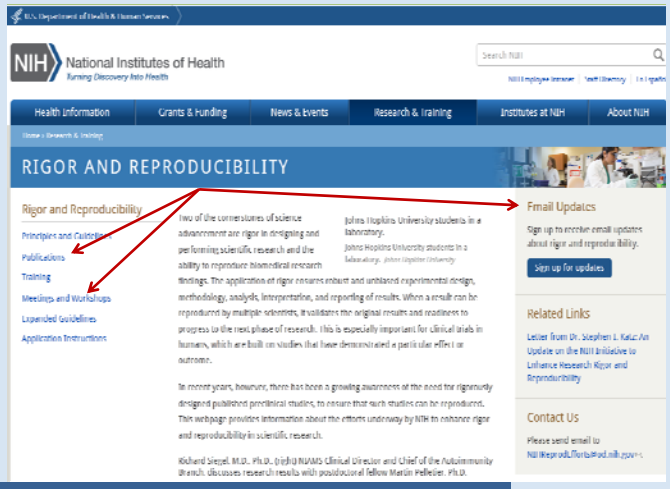
Policy Details Explained

https://grants.nih.gov/reproducibility/module_1/presentation.html

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Get to Know the NIH Rigor Web Portal!

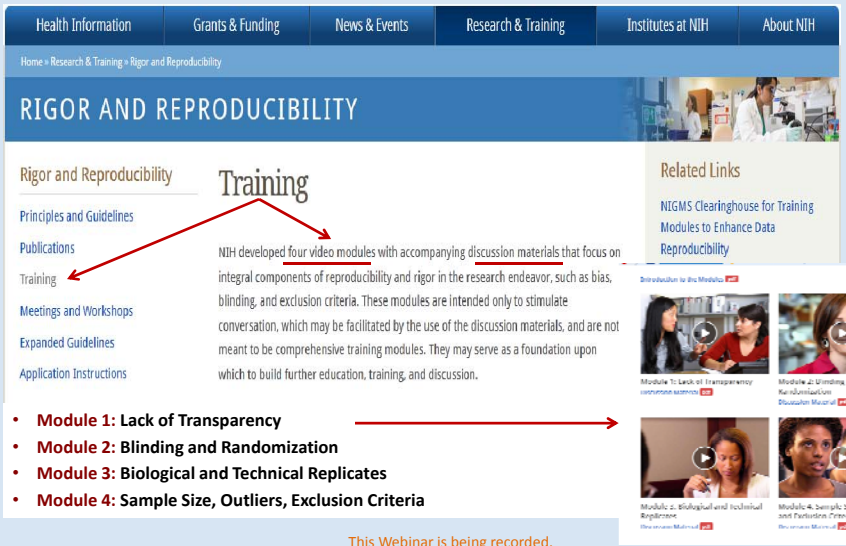


http://www.nih.gov/research-training/rigor-reproducibility

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Training Resources



- **Module 1:** Lack of Transparency
- **Module 2:** Blinding and Randomization
- **Module 3:** Biological and Technical Replicates
- **Module 4:** Sample Size, Outliers, Exclusion Criteria

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Check Out *Open Mike!*

NIH Extramural *Nexus* *blog* for clarifications on…

- Scientific Premise
- Biological Variables
- Scientific Rigor
- Authentication of Resources!

http://nexus.od.nih.gov/all/category/open-mike/

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Resources!

- Learn more…
  - Archived NIH videocasts
    http://www.nih.gov/research-training/rigor-reproducibility/meetings-workshops
  - Publications from NIH authors on…
    - the issue of reproducibility
    - NIH's actions to enhance reproducibility

    http://www.nih.gov/research-training/rigor-reproducibility/publications

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Broader Guidance

- Learn more…
  - Code of Federal Regulations
    - Food and Drug Administration 21 CFR Part 58 – Good Clinical Practice for Nonclinical Laboratory Studies
      - **Subpart F (Test and Control Articles)**
      - **Subpart J (Records and Reports)**
  - Insights from other organizations
    - Center for Open Science: Transparency and Openness Promotion (TOP) Guidelines

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Your Questions!

This Webinar is being recorded.

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

References

- Collins, Francis and Tabak, Lawrence. Policy: NIH plans to enhance reproducibility. *Nature* 505, 612–613 (30 January 2014) doi:10.1038/505612a. http://www.nature.com/news/policy-nih-plans-to-enhance-reproducibility-1.14586
- Landis, et al. A call for transparent reporting to optimize the predictive value of preclinical research. *Nature.* Oct 11, 2012; 490(7419): 187–191. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3511845/
- NIH Policy: Enhance Reproducibility through Rigor and Transparency, Module 1: General Policy Overview, (*source for images used in slides*) https://grants.nih.gov/reproducibility/module_1/presentation.html
- NIH Notices (NOT-OD-15-102, NOT-OD-15-103, NOT-OD-16-031, NOT-OD-16-034, NOT-DA-14-007, NOT-NS-11-023, NOT-MH-14-004)

SRA International
A Professional Society, Educating and Supporting Research Administrators Around the World

Thank you!

Presentation:

Kathy Doyle Grzech, M.A.
Associate Director
Proposal Development Office
University of Kentucky
kathy.grzech@uky.edu

SRA International:

Ellen Lupinski Quinn
Associate CEO
Email: equinn@srainternational.org
Phone: 703-741-0140

This Webinar is being recorded.