MICHIGAN STATE UNIVERSITY

NIH Rigor and Reproducibility:

Use of Animals in Research

F. Claire Hankenson, Director of CAR and Attending Veterinarian

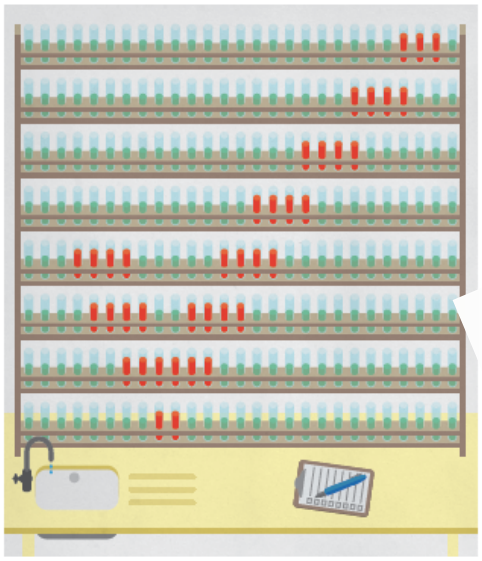
J.R. Haywood, Assistant Vice President for Regulatory Affairs

Rigor and Reproducibility of Research

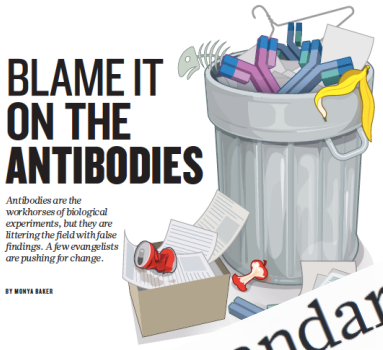
Essay

Why Most Published Research Findings Are False

John P. A. Ioannidis

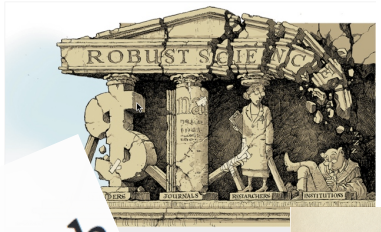


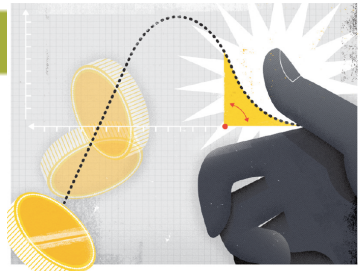
NIH plans to enhance reproducibility



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.





STATISTICAL ERRORS

NIH to balance sex in cell and animal studies

Validation BY THE SCIENCE EXCHANGE NETWORK

Reproducibility Initiative

Reproducibility: changing the policies and culture of cell line authentication

NIH Review Criteria

- **Scientific Premise**
- **Rigorous Experimental Design**
- **Consideration of Sex and Other Relevant Biological Variables**
- **Authentication of Key Biological and/or Chemical Resources**

From: NIH Notice – Enhancing Reproducibility through Rigor and Transparency (NOT-OD-15-103)

Recent Publications and Comments

Make mouse studies work

More investment to characterize animal models can boost the ability of preclinical work to predict drug effects in humans, says **Steve Perrin**.

NIH to balance sex in cell and animal studies

Janine A. Clayton and **Francis S. Collins** unveil policies to ensure that preclinical research funded by the US National Institutes of Health considers females and males.

Core Reporting Standards: Animal Studies

- **Randomization**
- **Blinding**
- **Sample size estimation**
- **Data handling (inclusion/exclusion criteria)**
  - **Landis, et al *Nature* 490:187-191, 2012**
- **Standards**
- **Replicates**
- **Statistics**

Professional Society Recommendations

Biophysical *Journal*

Guidelines for the Reproducibility of Biophysics Research

Enhancing Research Reproducibility:

Recommendations from the Federation of American Societies for Experimental Biology

FASEB

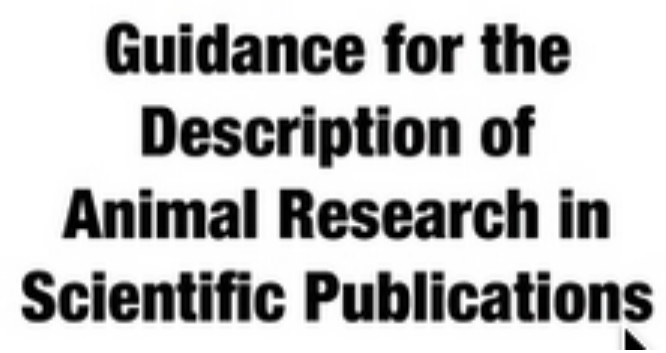
ascb
the american society for cell biology

How Can Scientists Enhance Rigor in Conducting Basic Research and Reporting Research Results?

SfN SOCIETY *for* NEUROSCIENCE

Research Practices for Scientific Rigor: A Resource for Discussion, Training, and Practice

General Guidelines and Standards



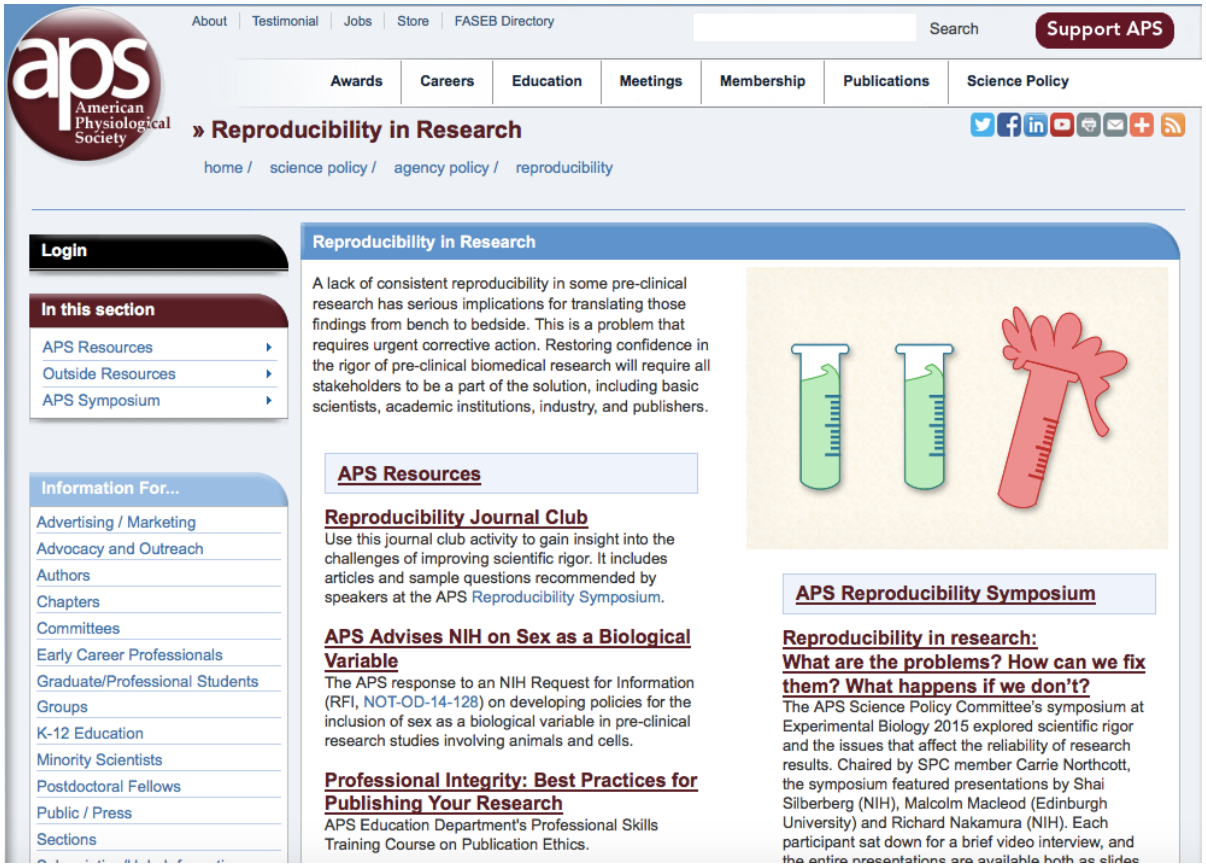
Institute for Laboratory Animal Research. Guidance for the Description of Animal Research in Scientific Publications. 2011. The National Academies Press

Improving Bioscience Research Reporting: The ARRIVE Guidelines for Reporting Animal Research

Carol Kilkenny[1]*, William J. Browne[2], Innes C. Cuthill[3], Michael Emerson[4], Douglas G. Altman[5]

http://www.plosbiology.org/article/fetchObject.action?uri=info:doi/10.1371/journal.pbio.1000412&representation=PDF

Workshops on the Topic



http://www.the-aps.org/mm/SciencePolicy/Agency-Policy/Reproducibility

Workshops on the Topic

http://nas-sites.org/ilar-roundtable/roundtable-activities/reproducibility/

Discussion of parameters to be considered for in vivo work