

Tackling the 'credibility crisis' in science

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Widespread failure to reproduce research results has triggered a crisis of confidence in research findings, eroding public trust in scientific methodology. In response, *PLOS Biology* is launching on January 4th, 2016, a new Meta-Research Section devoted to research on research.

Billions of dollars are wasted every year on research that cannot be reproduced. In an editorial announcing the launch of this new section, Stavroula Kousta and colleagues note: "With our new section on data-driven meta-research, we aim to highlight that research about research is an important area of science. By creating a prominent forum in this field, *PLOS Biology* will contribute to ongoing efforts to improve research standards in the biological sciences and beyond."

The launch of the meta-research section is marked with the publication of two articles examining issues surrounding study transparency and reporting. Shareen Iqbal at Emory University, John Ioannidis from the Meta-Research Innovation Center at Stanford (METRICS) and colleagues evaluate reproducibility and transparency practices across the biomedical sciences in a sample of articles published between 2000 and 2014. They found very poor reproducibility and transparency standards across the board. Specifically, the vast majority of studies did not share their data, did not provide protocols, claimed to report novel findings rather than replications, and did not mention funding or conflicts of interest.

In a complementary article focusing on research using mice and rats as subjects, Constance Holman at Charité Universitätsmedizin, Ulrich Dirnagl and colleagues examined hundreds of published stroke and cancer research experiments. They found that the majority of studies didn't contain sufficient information to indicate how many animals were used. What's more, many papers also contained animals that seemingly "vanished" over the course of a study, without explanation. The authors used a computer model to simulate

the effects of "vanishing" animals on the validity of the experiments. They found that the more animals lost or removed, the shakier or more biased the experimental conclusions.

The launch of the new section is accompanied by a new collection of meta-research articles that highlight key issues hindering the scientific effort and offer ways to improve research practices.

More information: Kousta S, Ferguson C, Ganley E (2016) Meta-Research: Broadening the Scope of *PLOS Biology*. *PLoS Biol* 14(1): e1002334. [DOI: 10.1371/journal.pbio.1002334](https://doi.org/10.1371/journal.pbio.1002334)

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