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Crafting a Data Policy to Uphold Scientific Excellence at ACS

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May 7, 2019

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Who is ACS?

- **World's largest scientific society**
- **Chartered by Congress in 1876**
- **Provides educational, science policy, and career programs in chemistry**
- **Publish 56 journals as well as symposia-based books**
- **Editors are active research scientists**

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Upholding excellence at ACS Publications

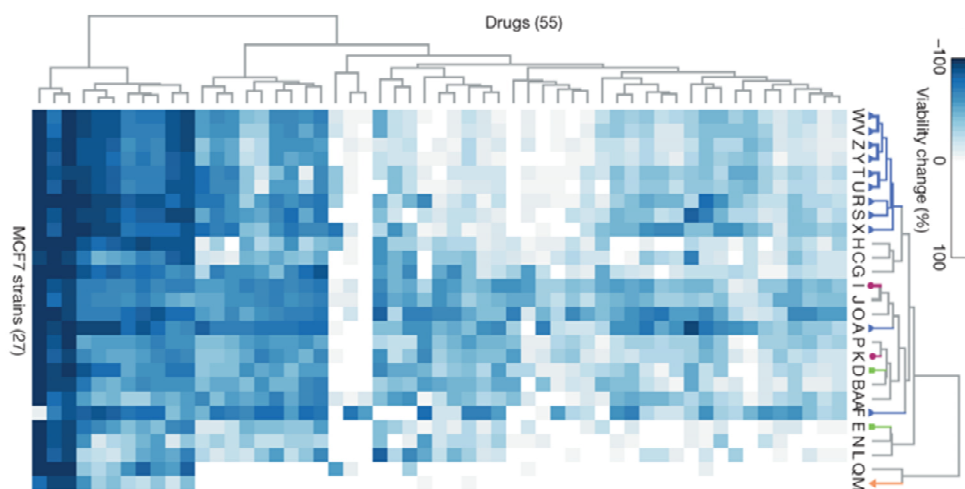


Goals for ACS Data Guidelines:

- Promote transparency and clarity in data collection and analysis
- Ensure reproducibility of published results
- Provide guidance to authors for reporting methods, data, and statistics
- Align journals with funder requirements for data



Issues of reproducibility in chemistry and biology

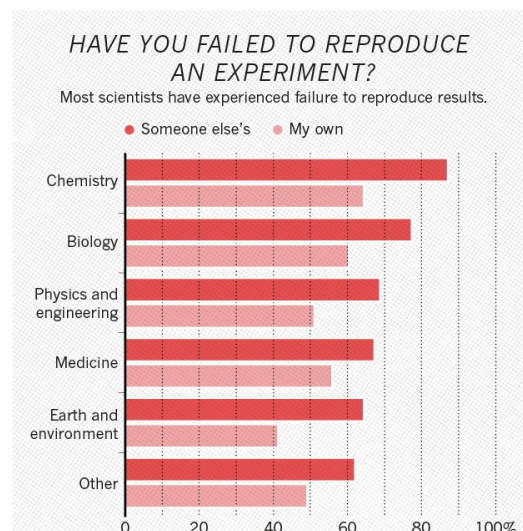


Nature **560**, 325–330 (2018)

Issues of reproducibility in chemistry and biology



- 1500 scientists polled
- >80% of chemists could not reproduce reported results
- >60% of chemists could not reproduce their own results



Nature 533, 452–454 (2016)

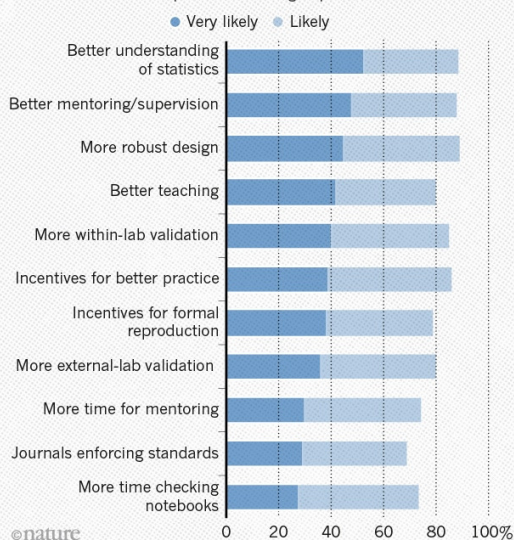
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WHAT FACTORS COULD BOOST REPRODUCIBILITY?

Respondents were positive about most proposed improvements but emphasized training in particular.



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What can publishers do?

- Journals can set requirements for reproducibility that must be met for publication
- Provide clear guidelines for data analysis and representation as well as methodology reporting
- Provide resources to authors for properly performing statistical tests, validating reagents, and visualizing data

Nature 533, 452–454 (2016)

ACS taskforce for biological data guidelines



Prof. Laura Kiessling
Massachusetts Institute of Technology
Editor-in-Chief, *ACS Chemical Biology*



Prof. Shana Sturla
ETH Zurich
Editor-in-Chief, *Chemical Research in Toxicology*



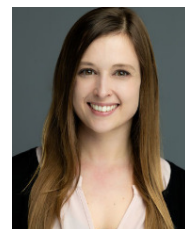
Prof. Courtney Aldrich
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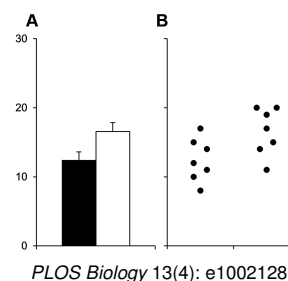
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ACS Biological Data Guidelines Policy



- Enforce proper use of statistical tests and require explanation of methods
- Require database identifiers for reagents and materials, and deposit new materials in repositories
- Require reporting of sources for reagents (cell lines, antibodies) and validation where possible
- Promote transparency and accuracy in data representation and visualization



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Next steps and challenges

- Expand policy to all 56 titles currently published at ACS
- Develop data guidelines for other core areas of chemistry, beyond biological data
- Strike a balance: be informative and clear about new standards, without being too prescriptive
- Effectively communicate standards to the chemical research community

Questions?