

Rigor and Transparency: Main Goals

To support the highest quality science, public accountability, and social responsibility in the conduct of science, NIH's Rigor and Transparency efforts are intended to clarify expectations and highlight attention to four areas that may need more explicit attention by applicants and reviewers:

- Scientific premise
- Scientific rigor
- Consideration of relevant biological variables, such as sex
- Authentication of key biological and/or chemical resources

A. Scientific Premise: Ensure that the underlying scientific foundation--concepts, previous work, and data (when relevant)--of the project is sound.

Some examples of good ways to comment on premise may include language such as:

1) "The proposed research question has a strong scientific premise given the large body of research that demonstrates..."

2) "There is a strong scientific premise supported by a sound theoretical framework and extensive preliminary data."

3) "The scientific premise for focusing on X is quite weak given that the relationship between X and Y is not well-supported by the background literature."

4) "The weak preliminary data do not establish a sufficient scientific foundation for the hypotheses."

B. Rigor: Ensure a strict application of scientific method that supports robust and unbiased design, analysis, interpretation, and reporting of results, and sufficient information for the study to be assessed and reproduced. Give careful consideration to the methods and issues that matter in your field.

If the methods are not fully rigorous, examples of appropriate language might include:

1) "The methods are moderately rigorous. The planned statistical analyses are well-conceptualized, but the important aspect of treatment of missing data is not discussed."

2) "The planned analytic methods are rigorous in XXX, but the lack of attention to YYY raises concern that the results may be biased."

3) "The scientific rigor of this proposal is not well-established because is unclear how the X and Y are to be modeled using the proposed analytic framework."

C. Relevant biological variables: Ensure that the research accounts for sex and other relevant biological variables in developing research questions and study designs. The way in which sex and other biological variables needs to be accounted for will differ across research questions and fields of study.

D. Plan for Resource Authentication: Ensure processes are in place to identify and validate key resources used in research and avoid unreliable research as a result of misidentified or contaminated resources.