

Authentication of Key Biological and/or Chemical Resources

As of January 25, 2016, the NIH requires investigators to attach a separate document called Authentication of Key Biological and/or Chemical Resources. This requirement is explained as follows:

Key biological and/or chemical resources include, but are not limited to, cell lines, specialty chemicals, antibodies and other biologics. Key biological and/or chemical resources:

1. may differ from laboratory to laboratory or over time;
2. may have qualities and/or qualifications that could influence the research data;
3. are integral to the proposed research; and
4. are not limited to resources generated with NIH funds.

The quality of resources used to conduct research is critical to the ability to reproduce the results. Each investigator will have to determine which resources used in their research fit these criteria and are therefore key to the proposed research.

Reagents: In general, applicants should briefly describe how they plan to authenticate key reagents based on their scientific experience and judgment, referencing relevant standards where applicable. Approaches will vary depending on the reagent/resource and the experimental context in which it will be used.

NIH hopes that relevant groups in the scientific community will establish standards and best practices that can be cited by applicants.

Applicants are encouraged to discuss their research strategy with a program officer in the appropriate scientific area to learn whether additional resources are available on the NIH web site or elsewhere that can be used to guide their plans for a rigorous experimental design and/or plans for resource authentication.

Source: <http://grants.nih.gov/reproducibility/faqs.htm#4715>

Tips on other resources:

Chemicals: Chemicals purchased commercially come with an authentication sheet identifying the purity and contaminant.

Cell lines: Human cell lines acquired from ATCC (American Type Tissue Collection, a major provider of cell lines to research scientists) and other commercial cell line providers assess all of their lots of their cell lines by Short Tandem Repeats, which allows one to distinguish one DNA sample from another and allows the unique identification of specific cell lines. The non-human lines have interspecies analysis performed on each lot of cell lines. All of this information is readily available to their customers on the company's website.

Primary cell lines: Primary cell lines that are isolated in individual labs or from commercial facilities are identified by surface markers which are unique to each isolated primary cell line. These markers are identified by flow cytometry or by immunohistochemistry, which are techniques with high sensitivity to accurately identify expression markers that identify specific cells

Antibody specificity: The specificity for individual antibodies are identified by western blot analysis, where antibodies to specific antigens can be visualized on a electrophoresis gel.