

Research Resource Identifiers improve proper use of cell lines in biomedical studies

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Using Research Resource Identifiers (RRIDs) helps reduce the improper use of cell lines in biomedical studies, according to a study published today in *eLife*.

The findings suggest that continued use of RRIDs in the [scientific literature](#) will allow better reporting of cell lines and other research materials in publications, which would in turn aid future reproducibility efforts.

Cell lines are used widely in the biological sciences. Their ability to multiply indefinitely means that scientists can, in theory, exactly replicate previous studies and build on the results. But mislabeling or mishandling can lead to the misidentification, contamination and/or distribution of problematic cell lines, which can in turn affect the validity of research data.

"RRIDs should help reduce this improper use of cell lines," explains co-first author Zeljana Babic, a graduate student at the Center for Research in Biological Systems, University of California, San Diego, US. "These unique identifiers can be included in the methods section of a research paper to define the cell line, antibody, transgenic organism or software used. They can alert researchers to resources that flag problematic cell lines, such as the Cellosaurus database."

"The Cellosaurus database is the most comprehensive knowledge resource on cell lines," says Amos Bairoch, professor at the University of

Geneva and group leader at the Swiss Institute of Bioinformatics.
"RRIDs for cell lines are created by this authoritative database."

Amanda Capes-Davis, Chair of the International Cell Line Authentication Committee (ICLAC), adds: "Misidentified cell lines are a major problem in the scientific literature. If researchers are alerted about the misidentification of a cell line before they publish, will they still report data from such a cell line?"

In their study, the team used a [natural language](#) processing algorithm to text mine the methods sections of about two million scientific papers in PubMed Central. They used the algorithm to identify papers that included RRIDs and those that listed cell lines, and then compared how often misidentified cell lines appeared in these two samples.

They identified 305,161 unique cell-line names in 150,459 articles, and estimated that 8.6% of them were on the list of problematic cell lines. On the other hand, only 3.3% of the cell lines in the 634 papers that included RRIDs were on the problematic list. This suggests the use of RRIDs is associated with a lower reported use of problematic cell lines.

"But we must exercise caution when interpreting these results," explains senior author Anita Bandrowski, CEO of SciCrunch and Project Lead at the Center for Research in Biological Systems, University of California, San Diego. "The use of cell lines on the problematic list does not automatically mean that a given line is being employed improperly. Additionally, the list includes cell lines that have been labeled with the wrong type of cancer, but which may still be safely used if the researchers know the true identity of the line."

The team adds that it is important to review the evidence underlying the findings and make a considered judgment regarding their impact on published work. "Cell-line resources, such as Cellosaurus and the

ICLAC register of misidentified [cell lines](#), have been developed to improve awareness of cell-line information," Bandrowski concludes. "We hope that inclusion of RRIDs will result in improved use of these resources and better reporting of all research materials in future publications."

More information: Zeljana Babic et al, Incidences of problematic cell lines are lower in papers that use RRIDs to identify cell lines, *eLife* (2019). [DOI: 10.7554/eLife.41676](https://doi.org/10.7554/eLife.41676)

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