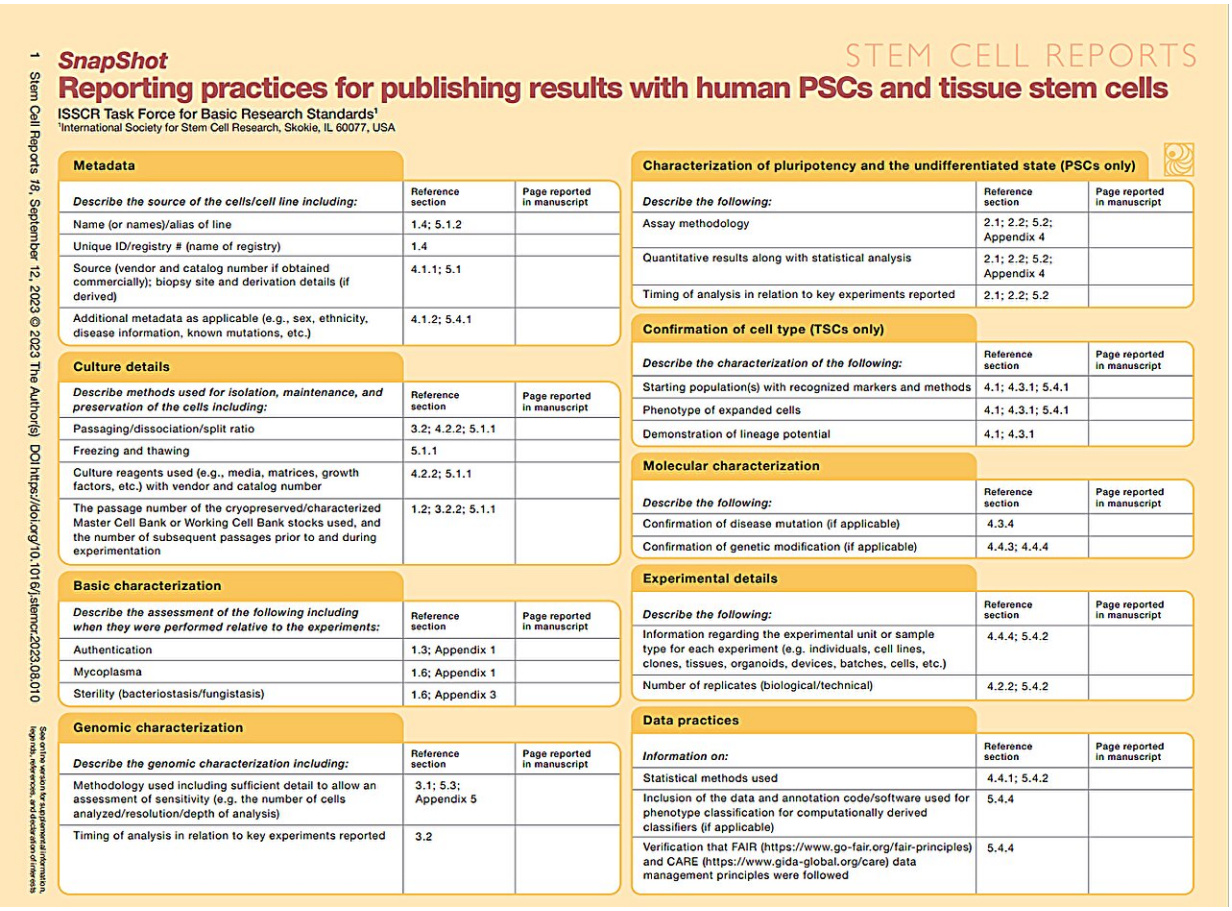
'Checklist' introduced to promote global best practices for human stem cell research

September 14 2023



SnapShot

STEM CELL REPORTS

Reporting practices for publishing results with human PSCs and tissue stem cells

ISSCR Task Force for Basic Research Standards[1]
[1]International Society for Stem Cell Research, Skokie, IL 60077, USA

1 Stem Cell Reports 18, September 12, 2023 © 2023 The Author(s) DOI https://doi.org/10.1016/j.stemcr.2023.08.010

Metadata

Describe the source of the cells/cell line including:	Reference section	Page reported in manuscript
Name (or names)/alias of line	1.4; 5.1.2	
Unique ID/registry # (name of registry)	1.4	
Source (vendor and catalog number if obtained commercially); biopsy site and derivation details (if derived)	4.1.1; 5.1	
Additional metadata as applicable (e.g., sex, ethnicity, disease information, known mutations, etc.)	4.1.2; 5.4.1	

Culture details

Describe methods used for isolation, maintenance, and preservation of the cells including:	Reference section	Page reported in manuscript
Passaging/dissociation/split ratio	3.2; 4.2.2; 5.1.1	
Freezing and thawing	5.1.1	
Culture reagents used (e.g., media, matrices, growth factors, etc.) with vendor and catalog number	4.2.2; 5.1.1	
The passage number of the cryopreserved/characterized Master Cell Bank or Working Cell Bank stocks used, and the number of subsequent passages prior to and during experimentation	1.2; 3.2.2; 5.1.1	

Basic characterization

Describe the assessment of the following including when they were performed relative to the experiments:	Reference section	Page reported in manuscript
Authentication	1.3; Appendix 1	
Mycoplasma	1.6; Appendix 1	
Sterility (bacteriostasis/fungistasis)	1.6; Appendix 3	

Genomic characterization

Describe the genomic characterization including:	Reference section	Page reported in manuscript
Methodology used including sufficient detail to allow an assessment of sensitivity (e.g. the number of cells analyzed/resolution/depth of analysis)	3.1; 5.3; Appendix 5	
Timing of analysis in relation to key experiments reported	3.2	

Characterization of pluripotency and the undifferentiated state (PSCs only)

Describe the following:	Reference section	Page reported in manuscript
Assay methodology	2.1; 2.2; 5.2; Appendix 4	
Quantitative results along with statistical analysis	2.1; 2.2; 5.2; Appendix 4	
Timing of analysis in relation to key experiments reported	2.1; 2.2; 5.2	

Confirmation of cell type (TSCs only)

Describe the characterization of the following:	Reference section	Page reported in manuscript
Starting population(s) with recognized markers and methods	4.1; 4.3.1; 5.4.1	
Phenotype of expanded cells	4.1; 4.3.1; 5.4.1	
Demonstration of lineage potential	4.1; 4.3.1	

Molecular characterization

Describe the following:	Reference section	Page reported in manuscript
Confirmation of disease mutation (if applicable)	4.3.4	
Confirmation of genetic modification (if applicable)	4.4.3; 4.4.4	

Experimental details

Describe the following:	Reference section	Page reported in manuscript
Information regarding the experimental unit or sample type for each experiment (e.g. individuals, cell lines, clones, tissues, organoids, devices, batches, cells, etc.)	4.4.4; 5.4.2	
Number of replicates (biological/technical)	4.2.2; 5.4.2	

Data practices

Information on:	Reference section	Page reported in manuscript
Statistical methods used	4.4.1; 5.4.2	
Inclusion of the data and annotation code/software used for phenotype classification for computationally derived classifiers (if applicable)	5.4.4	
Verification that FAIR (https://www.go-fair.org/fair-principles) and CARE (https://www.gida-global.org/care) data management principles were followed	5.4.4	

This checklist is intended to help manuscripts include critical details relevant to work with pluripotent stem cells and tissue stem cells. Credit: ISSCR/*Stem Cell Reports*

Recommendations from the Standards for Human Stem Cell Use in Research, published in June 2023 by the International Society for Stem Cell Research (ISSCR), include a publishing "checklist" that is now being used by laboratory scientists and implemented in the review process by scientific publishers.

"The goal of this checklist is to increase clarity and transparency in the reporting of certain key quality control measures unique to the field of stem cell research," says Martin Pera, Editor in Chief of *Stem Cell Reports*, who served on the international task force that developed the standards.

"This is similar in format to editorial policy checklists already in use at many journals, enabling authors to disclose the critical experimental details of their research for review and potential replication."

While some of the recommended practices are broadly applicable to the use of cultured cells, the ISSCR Standards and the accompanying checklist additionally address issues specific to the use of tissue and pluripotent human stem cells.

The checklist has nine reporting categories and encourages shared language, consistency in materials, and clear reporting practices aimed at addressing ongoing issues shared by the stem cell scientists.

The ISSCR Standards Initiative, launched in 2021, is led by an 11-member steering committee comprising international experts. The society pursued this initiative, recognizing the opportunity to establish best practices and reporting recommendations for pluripotent and adult stem cell research to improve rigor in the field.

The basic and preclinical standards, released in June 2023, will be followed by clinical standards, likely in 2025. The committee aims to

work with the stem cell community, including scientists, funders, and journal editors, to see the standards fully adopted.

The ISSCR Standards Initiative.

More information: Tenneille E. Ludwig et al, ISSCR standards for the use of human stem cells in basic research, *Stem Cell Reports* (2023). DOI: 10.1016/j.stemcr.2023.08.003

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