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PEER-REVIEW REPORT

Name of journal: *World Journal of Stem Cells*

Manuscript NO: 90031

Title: Advances in the differentiation of pluripotent stem cells into vascular cells

Provenance and peer review: Unsolicited manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 05521432
Position: Peer Reviewer
Academic degree: MS
Professional title: Associate Professor
Reviewer's Country/Territory: Italy
Author's Country/Territory: China

Manuscript submission date: 2023-11-21

Reviewer chosen by: AI Technique

Reviewer accepted review: 2023-11-21 17:28

Reviewer performed review: 2023-11-25 09:41

Review time: 3 Days and 16 Hours

Scientific quality	[ ] Grade A: Excellent [ ] Grade B: Very good [Y] Grade C: Good [ ] Grade D: Fair [ ] Grade E: Do not publish
Novelty of this manuscript	[ ] Grade A: Excellent [Y] Grade B: Good [ ] Grade C: Fair [ ] Grade D: No novelty
Creativity or innovation of this manuscript	[ ] Grade A: Excellent [Y] Grade B: Good [ ] Grade C: Fair [ ] Grade D: No creativity or innovation

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Scientific significance of the conclusion in this manuscript	[ ] Grade A: Excellent [Y] Grade B: Good [ ] Grade C: Fair [ ] Grade D: No scientific significance
Language quality	[ ] Grade A: Priority publishing [Y] Grade B: Minor language polishing [ ] Grade C: A great deal of language polishing [ ] Grade D: Rejection
Conclusion	[ ] Accept (High priority) [ ] Accept (General priority) [ ] Minor revision [Y] Major revision [ ] Rejection
Re-review	[Y] Yes [ ] No
Peer-reviewer statements	Peer-Review: [Y] Anonymous [ ] Onymous
	Conflicts-of-Interest: [ ] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

I have thoroughly reviewed the manuscript titled "Advances in the differentiation of pluripotent stem cells into vascular cells." The manuscript offers a comprehensive overview of the current state of research in the differentiation of induced pluripotent stem cells (iPSCs) into various vascular cell types. Here are my detailed suggestions for revision: 1. Clarity and Organization: o The manuscript is generally well-organized, but it would benefit from a clearer delineation between sections. Consider adding subheadings within the larger sections to guide the reader through the various aspects of iPSC differentiation. o The introduction could be more impactful by briefly highlighting the main challenges in the field and how this review addresses them. 2. Depth and Coverage: o While the manuscript does a good job of summarizing various methods of iPSC differentiation, it could benefit from more in-depth discussion of the challenges and limitations associated with these methods. For instance, issues of scalability, cost, and replicability in different lab settings could be addressed. o The applications section is informative but could be expanded to include more recent advancements in iPSC technology in vascular disease modeling and regenerative medicine. 3. Technical

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Accuracy and Updates: o Ensure that all the cited studies are accurately represented. In a few instances, the description of the studies seemed overly simplified. Expanding on these descriptions would help the reader appreciate the nuances of the research. o Consider including the latest developments in the field, especially those from 2023 and early 2024, to ensure the review is up-to-date. 4. Figures and Tables: o The manuscript would benefit from the addition of more figures and tables that summarize key points, such as a table comparing different differentiation protocols or a figure illustrating the stepwise process of differentiation. o Ensure that all figures have clear, descriptive legends. 5. References: o Double-check all references for accuracy and completeness. Ensure that all cited works are relevant and current. o Consider adding more recent references to support statements, especially in rapidly evolving areas of the field. Where possible, include recent studies to demonstrate the manuscript's alignment with current research trends. In particular, consider including additional references to support the discussion and to provide context to the study’s findings. I suggest adding data related to recent bulk transcriptomics studies which could represent a strong substrate to enforce the role of described molecular mechanisms, such as the recent PMID: 36490268, PMID: 27737651, PMID: 26115622 and PMID: 32184807. 6. Language and Style: o The manuscript is generally well-written but could benefit from proofreading to correct minor grammatical errors and improve sentence structure for better readability. o Use consistent terminology throughout the manuscript to avoid confusion (e.g., consistently use either "iPSCs" or "induced pluripotent stem cells"). 7. Ethical Considerations: o While the manuscript mentions the ethical advantages of using iPSCs over embryonic stem cells, it could further discuss the ethical considerations in more detail, particularly concerning patient consent and the use of genetic material. 8. Conclusion and Future Directions: o Strengthen the conclusion by summarizing the key findings more concisely and offering insights into future research directions. o Highlight any potential

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breakthroughs or innovative methods that could significantly impact the field.

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Manuscript NO: 90031

Title: Advances in the differentiation of pluripotent stem cells into vascular cells

Provenance and peer review: Unsolicited manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 05577213
Position: Peer Reviewer
Academic degree: N/A

Professional title: N/A

Reviewer's Country/Territory: China

Author's Country/Territory: China

Manuscript submission date: 2023-11-21

Reviewer chosen by: AI Technique

Reviewer accepted review: 2023-11-24 00:31

Reviewer performed review: 2023-11-30 10:20

Review time: 6 Days and 9 Hours

Scientific quality	[ ] Grade A: Excellent [Y] Grade B: Very good [ ] Grade C: Good [ ] Grade D: Fair [ ] Grade E: Do not publish
Novelty of this manuscript	[Y] Grade A: Excellent [ ] Grade B: Good [ ] Grade C: Fair [ ] Grade D: No novelty
Creativity or innovation of this manuscript	[Y] Grade A: Excellent [ ] Grade B: Good [ ] Grade C: Fair [ ] Grade D: No creativity or innovation

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Conclusion	[ ] Accept (High priority) [ ] Accept (General priority) [Y] Minor revision [ ] Major revision [ ] Rejection
Re-review	[Y] Yes [ ] No
Peer-reviewer statements	Peer-Review: [Y] Anonymous [ ] Onymous
	Conflicts-of-Interest: [ ] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

This review introduced the different approaches to differentiate iPSCs into vascular cells and the applications. This topic is interesting. Some minor issues are: 1. Please provide the scope of this review at the end of the first part. 2. Please explain the differences and significance of this review with existing reviews. 3. Fig. 1, please explain more about this figure in the main text, not in the figure legends. 4. In the main text, it is not that necessary to mention about the time of the studies.

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Provenance and peer review: Unsolicited manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 00502954
Position: Editorial Board
Academic degree: PhD
Professional title: Associate Professor
Reviewer's Country/Territory: Canada
Author's Country/Territory: China

Manuscript submission date: 2023-11-21

Reviewer chosen by: AI Technique

Reviewer accepted review: 2023-11-27 14:09

Reviewer performed review: 2023-12-04 16:34

Review time: 7 Days and 2 Hours

Scientific quality	[ ] Grade A: Excellent [Y] Grade B: Very good [ ] Grade C: Good [ ] Grade D: Fair [ ] Grade E: Do not publish
Novelty of this manuscript	[ ] Grade A: Excellent [Y] Grade B: Good [ ] Grade C: Fair [ ] Grade D: No novelty
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Re-review	[Y] Yes [ ] No
Peer-reviewer statements	Peer-Review: [Y] Anonymous [ ] Onymous
	Conflicts-of-Interest: [ ] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

In transplantation, organ damage is one of the great challenges for graft survival. Using stem cell for organ repair or remodelling become an attractive approach in transplantation. This review summarizes the latest progresses in the field of the induction and differentiation of iPSCs into vascular cells. More specifically, the authors reviewed how to obtain two-dimensional vascular cells such as endothelial cells, smooth muscle cells or pericytes, as well as three-dimensional vascular organoid or tissue engineered vascular graft. This is a very good review covered the most important part of iPSCs induction. The review focused on progresses and detail technologies in induction of endothelial cells from iPSCs. Furthermore, the authors also discussed the progress in co-differentiation and co-culture of endothelial cells and myocytes, a key step for tissue engineering. Progresses in co-transplantation of endothelial cells and pericyte are very interesting. The review will certainly provide useful knowledge for transplantation researchers and other disease researchers.