PEER-REVIEW REPORT

Name of journal: World Journal of Stem Cells

Manuscript NO: 48901

Title: Predicting the differentiation potentials of human pluripotent stem cells: possibilities and challenges

Reviewer's code: 02931898

Reviewer's country: France

Science editor: Fang-Fang Ji

Reviewer accepted review: 2019-05-10 09:35

Reviewer performed review: 2019-05-14 06:50

Review time: 3 Days and 21 Hours

SCIENTIFIC QUALITY	LANGUAGE QUALITY	CONCLUSION	PEER-REVIEWER STATEMENTS
[ ] Grade A: Excellent	[Y] Grade A: Priority publishing	[ ] Accept (High priority)	Peer-Review:
[Y] Grade B: Very good	[ ] Grade B: Minor language polishing	[ ] Accept (General priority)	[Y] Anonymous
[ ] Grade C: Good	[ ] Grade C: A great deal of language polishing	[Y] Minor revision	[ ] Onymous
[ ] Grade D: Fair	[ ] Grade D: Rejection	[ ] Major revision	Peer-reviewer's expertise on the topic of the manuscript:
[ ] Grade E: Do not publish		[ ] Rejection	[Y] Advanced
			[ ] General
			[ ] No expertise
			Conflicts-of-Interest:
			[ ] Yes
			[Y] No

SPECIFIC COMMENTS TO AUTHORS

The authors write a review about the various possibilities to test the differentiation potentials of human pluripotent stem cells. This manuscript is clear and well written and well documented. I have two remarks: - Roughly speaking, the two major utilizations of

human pluripotent cells are cell therapy on the one hand and in vitro modeling of monogenic disease on the other hand. Because monogenic disease will very probably interfere with the differentiation capacities of hiPSc lines isolated from patients, prediction of differentiation capacities of hiPSCs in such a case is directly the research subject and not a prerequisite. The authors should clarifiy this point, predicitive diffferentiation makes sense in the context of cell therapy. - the authors should add comments on the expending litterature about organoid formation. These new experiments should be very informative in the future about the differentiation capacities of human PSCs.

INITIAL REVIEW OF THE MANUSCRIPT

Google Search:

[   ] The same title

[   ] Duplicate publication

[   ] Plagiarism

[Y] No

BPG Search:

[   ] The same title

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[   ] Plagiarism

[Y] No

PEER-REVIEW REPORT

Name of journal: World Journal of Stem Cells

Manuscript NO: 48901

Title: Predicting the differentiation potentials of human pluripotent stem cells: possibilities and challenges

Reviewer's code: 02446120

Reviewer's country: Argentina

Science editor: Fang-Fang Ji

Reviewer accepted review: 2019-05-10 12:41

Reviewer performed review: 2019-05-14 16:55

Review time: 4 Days and 4 Hours

SCIENTIFIC QUALITY	LANGUAGE QUALITY	CONCLUSION	PEER-REVIEWER STATEMENTS
[ ] Grade A: Excellent	[Y] Grade A: Priority publishing	[ ] Accept (High priority)	Peer-Review:
[Y] Grade B: Very good	[ ] Grade B: Minor language polishing	[Y] Accept (General priority)	[Y] Anonymous
[ ] Grade C: Good			[ ] Onymous
[ ] Grade D: Fair	[ ] Grade C: A great deal of language polishing	[ ] Minor revision	Peer-reviewer's expertise on the topic of the manuscript:
[ ] Grade E: Do not publish	[ ] Grade D: Rejection	[ ] Major revision	[Y] Advanced
		[ ] Rejection	[ ] General
			[ ] No expertise
			Conflicts-of-Interest:
			[ ] Yes
			[Y] No

SPECIFIC COMMENTS TO AUTHORS

COMMENTS TO AUTHORS   The manuscript by Li-Ping Liu, Yun-Wen Zheng describe the different selection methods to choose hPSC lines for the different clinical or research applications, with the aim of saving time and costs. The authors noticed that there is a

significant variation in the differentiation potential and efficiency of various human induced pluripotent stem cell (iPSC) lines and embryonic stem cells (ESCs). Also, they highlight the fact that stem cells do not uniformly differentiate into the cell linage required. To circumvent these problems the authors, propose to carefully look for specific genes which could be useful to predict the differentiation potential of the hPSC. In their manuscript, the authors also propose to check the pluripotency effectiveness of iPSC lines by performing a teratoma assay or by detecting the expression of a set of marker genes by microarray assays. Noteworthy, the authors evaluate the different occurring methods to check malignancy potential in hPSC. This issue is of maximal relevance considering the high risk of developing tumors after treating patients with stem cells. In general, the authors provide comprehensive review of the methods currently available to select the appropriate hPSC according to the intended applications required, addressing the cautions and limitations of the described methods. The manuscript is important, and, giving the growing relevance of the therapeutic use of stem cells, the present work could be useful for researchers and physicians, which must choose one or more methods.

INITIAL REVIEW OF THE MANUSCRIPT

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[   ] Plagiarism

[Y] No

BPG Search:

[   ] The same title

[   ] Duplicate publication

[   ] Plagiarism

[Y] No

PEER-REVIEW REPORT

Name of journal: World Journal of Stem Cells

Manuscript NO: 48901

Title: Predicting the differentiation potentials of human pluripotent stem cells: possibilities and challenges

Reviewer's code: 03810998

Reviewer's country: China

Science editor: Fang-Fang Ji

Reviewer accepted review: 2019-05-10 14:30

Reviewer performed review: 2019-05-15 02:58

Review time: 4 Days and 12 Hours

SCIENTIFIC QUALITY	LANGUAGE QUALITY	CONCLUSION	PEER-REVIEWER STATEMENTS
[ ] Grade A: Excellent	[ ] Grade A: Priority publishing	[ ] Accept (High priority)	Peer-Review:
[ ] Grade B: Very good	[Y] Grade B: Minor language polishing	[ ] Accept (General priority)	[ ] Anonymous
[Y] Grade C: Good	[ ] Grade C: A great deal of language polishing	[Y] Minor revision	[Y] Onymous
[ ] Grade D: Fair	[ ] Grade D: Rejection	[ ] Major revision	Peer-reviewer's expertise on the topic of the manuscript:
[ ] Grade E: Do not publish		[ ] Rejection	[Y] Advanced
			[ ] General
			[ ] No expertise
			Conflicts-of-Interest:
			[ ] Yes
			[Y] No

SPECIFIC COMMENTS TO AUTHORS

This editoral is well writtern and readable for this journal. The proof reading and adding the newest references are necessary, especially the ones published in this journal, before it can be formally accepted.

INITIAL REVIEW OF THE MANUSCRIPT

Google Search:

[   ] The same title

[   ] Duplicate publication

[   ] Plagiarism

[Y] No

BPG Search:

[   ] The same title

[   ] Duplicate publication

[   ] Plagiarism

[Y] No

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PEER-REVIEW REPORT

Name of journal: World Journal of Stem Cells

Manuscript NO: 48901

Title: Predicting the differentiation potentials of human pluripotent stem cells: possibilities and challenges

Reviewer's code: 00397384

Reviewer's country: United Kingdom

Science editor: Fang-Fang Ji

Reviewer accepted review: 2019-05-10 07:32

Reviewer performed review: 2019-05-16 15:46

Review time: 6 Days and 8 Hours

SCIENTIFIC QUALITY	LANGUAGE QUALITY	CONCLUSION	PEER-REVIEWER STATEMENTS
[ ] Grade A: Excellent	[Y] Grade A: Priority publishing	[ ] Accept (High priority)	Peer-Review:
[Y] Grade B: Very good	[ ] Grade B: Minor language polishing	[ ] Accept (General priority)	[Y] Anonymous
[ ] Grade C: Good			[ ] Onymous
[ ] Grade D: Fair	[ ] Grade C: A great deal of language polishing	[Y] Minor revision	Peer-reviewer's expertise on the topic of the manuscript:
[ ] Grade E: Do not publish	[ ] Grade D: Rejection	[ ] Major revision	[ ] Advanced
		[ ] Rejection	[Y] General
			[ ] No expertise
			Conflicts-of-Interest:
			[ ] Yes
			[Y] No

SPECIFIC COMMENTS TO AUTHORS

The authors provide a good editorial on the topic, predicting the differentiation of human iPS. The editorial covers the quality control of iPS, differentiation potentials and malignancy potential detection. The only concern from the reviewer is that the author

may included partially reprogrammed iPS, which has the potential to differentiate to specific cell types more easily and its malignancy is lower as compared to routine iPS cells.

INITIAL REVIEW OF THE MANUSCRIPT

Google Search:

[   ] The same title

[   ] Duplicate publication

[   ] Plagiarism

[Y] No

BPG Search:

[   ] The same title

[   ] Duplicate publication

[   ] Plagiarism

[Y] No

PEER-REVIEW REPORT

Name of journal: World Journal of Stem Cells

Manuscript NO: 48901

Title: Predicting the differentiation potentials of human pluripotent stem cells: possibilities and challenges

Reviewer's code: 03773730

Reviewer's country: China

Science editor: Fang-Fang Ji

Reviewer accepted review: 2019-05-10 11:31

Reviewer performed review: 2019-05-16 21:50

Review time: 6 Days and 10 Hours

SCIENTIFIC QUALITY	LANGUAGE QUALITY	CONCLUSION	PEER-REVIEWER STATEMENTS
[ ] Grade A: Excellent	[ ] Grade A: Priority publishing	[ ] Accept (High priority)	Peer-Review:
[Y] Grade B: Very good	[Y] Grade B: Minor language polishing	[ ] Accept (General priority)	[Y] Anonymous
[ ] Grade C: Good	[ ] Grade C: A great deal of language polishing	[Y] Minor revision	[ ] Onymous
[ ] Grade D: Fair	[ ] Grade D: Rejection	[ ] Major revision	Peer-reviewer's expertise on the topic of the manuscript:
[ ] Grade E: Do not publish		[ ] Rejection	[Y] Advanced
			[ ] General
			[ ] No expertise
			Conflicts-of-Interest:
			[ ] Yes
			[Y] No

SPECIFIC COMMENTS TO AUTHORS

The author reviewed possibilities and challenges of human pluripotent stem cells differentiation potentials, the manuscript is well-written and just minor revision need to be done before acceptance. The comments are as below: 1. Page 3, part of hPSC quality

control, I think the "gold standard" should be carefully used for pluripotency of iPSC or ESCs, because the examination of pluripotency of PSCs is tetraploid complementation assay, teratoma assay is the typical of pluripotency evaluation method. 2. As we know, different culture conditions such as the culture media component, feeders or without feeders or even xeno-free culture system are still vary from different lab or the commercial product, I think these part also need to be addressed or   discussed in the manuscript.   3. Is there any probes or even strategy can be used to predict the pluripotency or differentiation directly, because the sequencing and microarray is the laboring stuff, I think the author can give us more information or give use new directions to the further research.

INITIAL REVIEW OF THE MANUSCRIPT

Google Search:

[   ] The same title

[   ] Duplicate publication

[   ] Plagiarism

[Y] No

BPG Search:

[   ] The same title

[   ] Duplicate publication

[   ] Plagiarism

[Y] No

PEER-REVIEW REPORT

Name of journal: World Journal of Stem Cells

Manuscript NO: 48901

Title: Predicting the differentiation potentials of human pluripotent stem cells: possibilities and challenges

Reviewer's code: 00567975

Reviewer's country: Austria

Science editor: Fang-Fang Ji

Reviewer accepted review: 2019-05-10 04:06

Reviewer performed review: 2019-05-17 12:57

Review time: 7 Days and 8 Hours

SCIENTIFIC QUALITY	LANGUAGE QUALITY	CONCLUSION	PEER-REVIEWER STATEMENTS
[Y] Grade A: Excellent	[Y] Grade A: Priority publishing	[ ] Accept (High priority)	Peer-Review:
[ ] Grade B: Very good	[ ] Grade B: Minor language polishing	[Y] Accept (General priority)	[Y] Anonymous
[ ] Grade C: Good	[ ] Grade C: A great deal of language polishing	[ ] Minor revision	[ ] Onymous
[ ] Grade D: Fair	[ ] Grade D: Rejection	[ ] Major revision	Peer-reviewer's expertise on the topic of the manuscript:
[ ] Grade E: Do not publish		[ ] Rejection	[ ] Advanced
			[Y] General
			[ ] No expertise
			Conflicts-of-Interest:
			[ ] Yes
			[Y] No

SPECIFIC COMMENTS TO AUTHORS

This is a nicely written mini-review, in which the questions of predicting the differentiation potential of human pluripotent stem cells are overviewed. Testing the differentiation potential of human PSCs is challenging and very important laboratory

task. Modern methods of testing are both time and cost consuming and therefore the development of new testing methods is highly desirable. Present review provides compact overview of the existing methods and also gives some idea about potential new methods for testing the differentiation capacity. I have no comment and can only recommend this paper for a publication.

INITIAL REVIEW OF THE MANUSCRIPT

Google Search:

[   ] The same title

[   ] Duplicate publication

[   ] Plagiarism

[Y] No

BPG Search:

[   ] The same title

[   ] Duplicate publication

[   ] Plagiarism

[Y] No