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ESPS PEER REVIEW REPORT

Name of journal: World Journal of Stem Cells
ESPS manuscript NO: 12988
Title: The Vital Roles of Stem Cells and Biomaterials in Skin Tissue Engineering
Reviewer code: 00007250
Science editor: Xue-Mei Gong
Date sent for review: 2014-08-01 20:23
Date reviewed: 2014-08-24 08:41

CLASSIFICATION	LANGUAGE EVALUATION	RECOMMENDATION	CONCLUSION
[ ] Grade A: Excellent	[ ] Grade A: Priority publishing	Google Search:	[ ] Accept
[ ] Grade B: Very good	[Y] Grade B: Minor language polishing	[ ] Existing	[ ] High priority for publication
[ ] Grade C: Good	[ ] Grade C: A great deal of language polishing	[ ] No records	[ ] Rejection
[Y] Grade D: Fair	[ ] Grade D: Rejected	BPG Search:	[Y] Minor revision
[ ] Grade E: Poor		[ ] Existing	[ ] Major revision
		[ ] No records	

COMMENTS TO AUTHORS

General Comments The quality and readability of the manuscript is high, and the discussion of skin-resident stem cells is interesting. Major areas of deficiencies are: 1) The interaction between the discussed stem cell source and various biomaterials is lacking. 2) The review fails to cover in sufficient detail the composition and application of tissue engineered skin products currently used clinically (as shown in Table 1.) Expansion of the review to detail and discuss these clinically applied products, their advantages and disadvantages as well as clinical outcomes would significantly improve the manuscript and increase interest to the readers. The main and short titles are appropriate, while the short title neglects to mention biomaterials, which seem to be a main point of this manuscript The abstract contains appropriate information for the review, however some topics are raised in the abstract but not discussed in the review (eg. Fabrication methods, storage, cost, use of serum etc.). A clear link between biomaterials and stem cells and the advantages of each (together and separate) is not clearly stated. Figure 2 does not support the authors comments that HFSC are rapidly proliferating, with the figure apparently showing a single cell (of many) dividing once over 12 hours. Figure 3. Is not self explanatory and it is not clear why this example was used when there are many successful clinical examples. The Table is appropriate, but would benefit from additional information, such as separating the biomaterial and cell types (currently both listed under "biomaterial source" and perhaps comparison of the clinical outcomes for each of these products. More information and clear descriptions for the tables and figures could be included, as described

above. Figures and tables are not adequately explained in captions or in the text.

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ESPS PEER REVIEW REPORT

Name of journal: World Journal of Stem Cells
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CLASSIFICATION	LANGUAGE EVALUATION	RECOMMENDATION	CONCLUSION
[ ] Grade A: Excellent	[ ] Grade A: Priority publishing	Google Search:	[ ] Accept
[ ] Grade B: Very good	[Y] Grade B: Minor language polishing	[ ] Existing	[ ] High priority for publication
[Y] Grade C: Good	[ ] Grade C: A great deal of language polishing	[ ] No records	
[ ] Grade D: Fair		BPG Search:	[ ] Rejection
[ ] Grade E: Poor	[ ] Grade D: Rejected	[ ] Existing	[ ] Minor revision
		[ ] No records	[Y] Major revision

COMMENTS TO AUTHORS

This review is titled as "The vital roles of stem cells and biomaterials in skin tissue engineering". The content of this manuscript collectively deals with several types of somatic stem cells such as EpiSC, HFSC, etc. Scope of this review article seems to be rather diverse in many technical aspects. Reader of this manuscript cannot figure out the solid image of this reviews. In which point the author want to focus? Tissue engineering of skin? Stem cell biology? Cell transplantation therapy about skin in dermatology or that in plastic surgery? Biomaterials and biopolymers? Artificial epidermis consisting of cultured keartinocytes, and artificial dermis consisting of cultured fibroblasts on the suitable scaffold are two major categories of tissue-engineered medical products (TEMPs) in a clinical use. Therefore I suggest that the author should focus on cell biological aspect of EpiSC derived from ectodermal lineage, and also on the induction of fibroblasts from cells of mesodermal lineage much more in detail. In my impression, HFSC is also an important actor in stem cell biology field, but still is not in tissue engineering for clinical application. Hair itself can be substituted by wigs or also by other bio-mimetic technologies. However severe burns and would of the skin should be absolutely treated with cell-based artificial skin for keeping the life of patients. If the authors have a strong interest in cell transplantation therapy using various types of stem cells contained in the skin, rather than in the artificial skin, it is also necessary to describe various types of stem cells contained in the skin tissues as described briefly in line 3-12 of page 6 in much more detail (see a review article; J. Li et al., Inter. J. Mol. Sci. 14, 11626-11642 in Open Access, as

an example). The author summarized cell-based artificial skin in Table 1. However the information is not comprehensive and does not cover all the products in the World (for example, only products of companies in USA, UK, Switzerland, Malaysia were cited). Name of company should be written in the Table 1. The author wrote as described below in line 8-10 from bottom of page 4. "Stem cells that are able to differentiate into one cell type are known as unipotent stem cells, such as epidermal stem cells (EpiSC) which regenerate differentiated epidermis.4" However usually unipotent immature cell is called as "progenitor cell", rather than the stem cell. Somatic stem cell (tissue stem cell) is defined as the cell having both self-renewal activity and multipotency. The author wrote as described below in line 3-7 from top of page 10. "Currently, fish skin, seaweed, jellyfish and other marine sources are in high demand for isolating collagen and are the ideal sources for skin tissue engineering because prion disease transmission to humans is eliminated if marine-based sources are used compared with mammalian-based sources." However it is not true. Seaweed does not contain collagen, as same as in case of other plants.