

Accepted Manuscript

Title: Mesenchymal Stem Cell Exosomes

Author: Ruenn Chai Lai Ronne Wee Yeh Yeo Sai Kiang Lim

PII: S1084-9521(15)00044-0

DOI: <http://dx.doi.org/doi:10.1016/j.semcd.2015.03.001>

Reference: YSCDB 1741



To appear in: *Seminars in Cell & Developmental Biology*

Received date: 2-12-2014

Revised date: 2-3-2015

Accepted date: 3-3-2015

Please cite this article as: LAI RC, YEO RWY, LIM SK, Mesenchymal Stem Cell Exosomes, *Seminars in Cell and Developmental Biology* (2015), <http://dx.doi.org/10.1016/j.semcd.2015.03.001>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Mesenchymal Stem Cell Exosomes

Ruenn Chai LAI^{1,#}, Ronne Wee Yeh YEO^{1,#} and Sai Kiang LIM^{1,2,*}

¹ Institute of Medical Biology, Agency for Science, Technology and Research, Singapore.

² Department of Surgery, Yong Loo Lin School of Medicine, National University of Singapore, Singapore.

[#] Contribute equally

*Corresponding author

Sai Kiang Lim, Ph.D.

Institute of Medical Biology

8A Biomedical Grove, #05-05 Immunos

Singapore 138648

DID: +65 6407 0161; Tel: +65 6407 0150; Fax: +65 6464 2048

Email: saikiang.lim@imb.a-star.edu.sg

Key words: Mesenchymal stem cell, exosome, homeostasis

Abstract

MSCs are an extensively used cell type in clinical trials today. The initial rationale for their clinical testing was based on their differentiation potential. However, the lack of correlation between functional improvement and cell engraftment or differentiation at the site of injury has led to the proposal that MSCs exert their effects not through their differentiation potential but through their secreted product, more specifically, exosomes, a type of extracellular vesicle. We propose here that MSC exosomes function as an extension of MSC's biological role as tissue stromal support cells. Like their cell source, MSC exosomes help maintain tissue homeostasis for optimal tissue function. They target housekeeping biological processes that operate ubiquitously in all tissues and are critical in maintaining tissue homeostasis, enabling cells to recover critical cellular functions and begin repair and regeneration. This hypothesis provides a rationale for the therapeutic efficacy of MSCs and their secreted exosomes in a wide spectrum of diseases. Here, we give a brief introduction of the biogenesis of MSC exosomes, review their physiological functions and highlight some of their biochemical potential to illustrate how MSC exosomes could restore tissue homeostasis leading to tissue recovery and repair.

Download English Version:

<https://daneshyari.com/en/article/8480453>

Download Persian Version:

<https://daneshyari.com/article/8480453>

[Daneshyari.com](https://daneshyari.com)