Institute of Molecular and Cell Biology
A*STAR

SEMINAR ANNOUNCEMENT

We would like to invite you to attend this seminar hosted by Prof Hong Wanjin:

Date: Tuesday, 14 January 2020
Time: 11:00AM – 12:00NN
Venue: Level 3, IMCB Seminar Room 3-46, Proteos, Biopolis

Therapeutic potential of MSC exosomes: promises and challenges



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Abstract

Mesenchymal stromal/stem cells (MSCs) is presently the most tested regenerative cell type with >1000 registered clinical trials. They are reportedly efficacious against >30 diseases and have an established record of safety in human patients. However, it is now widely accepted that MSCs exert their therapeutic potency through small extracellular vesicles (sEVs) of 50 to 200 nm diameter such as exosomes. Replacing living MSCs with their non-living secreted sEVs will not only be much safer but will also significantly lower the highly prohibitive cost of cell therapy through simplified manufacturing, storage, transport and administration, making MSC-based therapy more universally accessible. However, there are inherent challenges in translating the promise of MSC-sEVs into therapeutic products. A critical challenge is the manufacture of MSC-sEV with reproducible identity and potency. MSC-sEVs are complex biological products that have equally complex identities and exert their therapeutic potency through a disease-specific mechanism of action. Therefore, identifying quantifiable product attributes that define their identity and potency is challenging. I shall describe how my group has been addressing these two issues and using our experience to develop international consensus on the identity and potency of MSC-sEVs.

Biography

I graduated with B.Sc (Hons in Biochemistry) from National University of Singapore in 1985 and a PhD (Molecular Biology) from SUNY at Buffalo in 1992. My PhD thesis was on the metabolism of thalassemic mRNA under the mentorship of Prof Lynne Maquat (Dept. of Human Genetics, Roswell Park Cancer Institute). Based on this work, I was awarded the Most Meritorious Student Research Award by Sigma Xi Society in 1989, NY State Predoctoral Fellowship (1989-91). In 1992, I started postdoctoral training on erythroid

differentiation with Prof Frank Constantini (Dept. of Genetics and Development College of Physicians & Surgeons, Columbia University) first as a Cooley's Anemia Foundation Research Fellow (1992-94) and then as a Leukemia Society of America Special Fellow (1994-96). After postdoctoral training, I led independent research groups at NUMI, NUS (1996-2001), Genome Institute of Singapore (2002-2007) and then Institute of Medical Biology (2007). My research focus has always been disease-related with emphasis on the elucidation of the underlying molecular and cellular mechanisms in diseases and development of therapies. Presently, my major research interests are in natural and synthetic nano lipid vesicles with respect to their synthesis and purification, biochemical and biophysical characterisation, and diagnostic and therapeutic applications. My two most notable scientific achievements are the discovery of stable eukaryotic mRNA decay intermediates in mammalian cells and discovery of therapeutic MSC exosomes. As of Aug 2019, my patent portfolio consists of 8 families: 71 granted patents and 32 pending applications. I have also founded two start-ups, Paracrine Therapeutics and Vesiderm. I am a founding member of SSCR (founding president), SOCRATES and ISEV, Co-chair of ISCT Exosome Committee (2018-present), IOC member for ISCT Annual Meeting organising committee, 2018 & 2019, and ISEV Annual Meeting 2019. I was also the lead organizer for two SOCRATES, ISCT, ISEV and ISBT Joint MSC-sEV workshops in Singapore (2018 and 2019).

ALL ARE WELCOME *(No registration required)*

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