



Osamu Ohneda

Faculty of Medicine

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Theme

● Regenerative Medicine and Stem Cell Biology

Keyword Stem cells, Extracellular vesicles, Hypoxia, Tumor microenvironment

Highlight

Major Scientific Interests of the Group

- 1) Identification and analysis of functional human adult stem cells for therapy
- 2) Hypoxic responses in stem cell and tumor development
- 3) Studying the relation between human adult stem cells and cancer cells

Projects for Regular Students in Doctoral or Master's Programs

- 1) Effects of diseases and aging on the functions of human adult stem cells
- 2) Functional analysis of human adult stem cell-derived extracellular vesicles
- 3) Studying the regulation of beige adipogenesis in human mesenchymal stem cells
- 4) The roles of hypoxic inducible factors (HIFs) in

stem cells and cancers

- 5) The roles of human mesenchymal stem cells in cancer development

Study Programs for Short Stay Students (one week – one trimester)

- 1) Effects of diseases and aging on human adult stem cells
- 2) Human stem cell-derived extracellular vesicles for non-cell therapy
- 3) Interaction between human mesenchymal stem cells and cancer cells

Other Faculty Members

Assistant Professor, Toshiharu Yamashita

Assistant Professor, Vuong Cat Khanh

Assistant Professor, Mizuho Fukushima

Applications and Prospects

Our lab aims to provide a next generation; stem cell-based therapy to the patients. For this purpose, we study how adult stem cells could function in our body. Our lab has also been elucidating how diseases affect stem cell function. Now that we understand the problem, we are trying to fix with stem cells using extracellular vesicles. For further read: <https://doi.org/10.21820/23987073.2019.8.51>

Literature, intellectual property, work

[Aqueous Solution for Cell Preservation](#) (Patent No. 8460926/ EP1950283B1)

1. Khanh VC, Yamashita T, Ohneda K, Tokunaga C, Kato H, Osaka M, et al. Rejuvenation of mesenchymal stem cells by extracellular vesicles inhibits the elevation of reactive oxygen species. *Sci Rep.* 2020;10(1):17315.
2. Khanh VC, Fukushima M, Moriguchi K, Yamashita T, Osaka M, Hiramoto Y, et al. Type 2 Diabetes Mellitus Induced Paracrine Effects on Breast Cancer Metastasis Through Extracellular Vesicles Derived from Human Mesenchymal Stem Cells. *Stem Cells Dev.* 2020;29(21):1382.
3. Carolina E, Kato T, Khanh VC, Moriguchi K, Yamashita T, Takeuchi K, et al. Glucocorticoid Impaired the Wound Healing Ability of Endothelial Progenitor Cells by Reducing the Expression of CXCR4 in the PGE2 Pathway. *Front Med (Lausanne).* 2018;276(5):1.
4. Kato T, Khanh VC, Sato K, Kimura K, Yamashita T, Sugaya H, Yoshioka T, Mishima H, Ohneda O. Elevated Expression of Dkk-1 by Glucocorticoid Treatment Impairs Bone Regenerative Capacity of Adipose Tissue-Derived Mesenchymal Stem Cells. *Stem Cells Dev.* 2018;27(2):85.