"The 76th of Stem Cell Biology and Regenerative Medicine Forum"

Date：Dec 19th (Fri) 2014
Time : 16:30 ～ 18:00
Place：Auditorium in 1st Building at Institute of Medical Science in Univ. of Tokyo

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（Internal Speaker）

16:30-17:00 Douaa Dhahri (Department of Stem Cell Dynamics, Center for Stem Cell Biology and Regenerative Medicine, IMSUT)
Mesenchymal Stem Cells expansion by the fibrinolytic system: implications in the cancer microenvironment

（External Speaker）

17:00-18:00 Tetsuro Watabe（Laboratory of Oncology School of Life Sciences Tokyo University of Pharmacy and Life Sciences）
Roles of TGF-β/BMP family signals during the formation of vascular systems

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Hosted by Center for Stem Cell Biology and Regenerative Medicine

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* Please register attendance at the reception desk.
* Next forum (the77th) will be held on Jan. 29th (Thu) 18:30～ at Auditorium in 1st Building.
* Please contact tatsu-m@ims.u-tokyo.ac.jp, for Forum speaker recommendations

Mesenchymal Stem Cells expansion by the fibrinolytic system: implications in the cancer microenvironment

Douaa Dhahri (Department of Stem Cell Dynamics, Center for Stem Cell Biology and Regenerative Medicine, IMSUT)

There is a growing body of evidence pointing to similarities between stem cells niche in the bone marrow and the cancer microenvironment since they both harbor the same cell types e.g. endothelial cells, immune cells, stromal cells and mesenchymal stem cells (MSCs). We have shown recently that the tissue-type plasminogen activator factor (tPA) can expand MSCs in the bone marrow through a cytokine crosstalk with endothelial cells. Knowing that MSCs are abundant in the cancer microenvironment where they support tumor growth, angiogenesis, epithelial-to-mesenchymal transition (EMT) and metastasis, we hypothesize that tumor-derived tPA will enhance the cancer-supportive activity of MSCs. Melanoma cells expressed the highest levels of tPA compared to other cancer types. Taking advantage of the two melanoma cell lines B16F10 and B16F1 which differ in their metastatic potential and also in their tPA expression levels as we have determined, we showed a significant difference in MSCs accumulation in the tumor microenvironment. We are currently studying how tPA influences the growth and migration of cancer cells. Moreover, since tPA generates plasmin which activates TGF-beta, we are focusing on this signaling pathway.

Roles of TGF-β/BMP family signals during the formation of vascular systems

Tetsuro Watabe (Laboratory of Oncology School of Life Sciences Tokyo University of Pharmacy and Life Sciences)

Since both blood and lymphatic vessels are fundamental players in physiological (e.g. fluid homeostasis), as well as pathological (e.g. cancer metastasis) processes, understanding the molecular mechanisms that govern their formation is crucial. Blood and lymphatic vessels are composed of endothelial cells, mural cells (smooth muscle cells and pericytes) and their shared basement membrane. During embryonic development a multitude of signaling components orchestrate the formation of new vessels and maintenance of their structures. Members of the transforming growth factor β (TGF-β) protein family are strongly engaged in developmental angiogenesis and lymphangiogenesis but are also regulators of vascular integrity in the adult. In this seminar, I will illustrate our attempts to elucidate the roles of TGF-β/BMP family signals in the formation and maintenance of vascular systems using the in vitro differentiation systems from embryonic stem (ES) cells and in vivo systems.