CDB SEMINAR

Speaker: Kazuhiro Sakurada

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Title: "Isolation of non-hematopoietic stem cells from mouse bone marrow osteoblastic zone"

Date:	Monday, July 5, 2004
Time:	16:00 P.M.～17:00 P.M.
Place:	7th floor Conference Room of Building A

Summary:

Bone marrow contains hematopoietic stem cells (HSCs), mesenchymal stem cells (MSCs), and endothelial progenitor cells (EPCs). Primitive HSCs can be isolated prospectively using specific antibodies that recognize the cell surface antigens or by SP phenotype. In contrast MSCs can be enriched from whole bone marrow on their basis of their ability to adhere to plastic dish and form colony forming unit-fibroblast (CFU-F). Cells known as multipotent adult progenitor cells (MAPCs) which have the capacity to differentiate into three germ layer lineage also identified after expansion in specific culture condition. However, the in vivo characteristics of non-hematopoietic stem cells in the bone marrow are poorly documented. Bone marrow can morphologically divide into vascular zone and osteoblastic zone. In the osteoblastic zone some cells are tightly bound to complicated structure. Therefore cells in osteoblastic zone would be escaped from isolation in normal flush out or aspirate procedure. To isolate these tightly bound cells, the bones after flush out have been clashed followed by collagenase digestion. The cells eluted by enzyme extraction (term bone marrow extracted cells; BMECs) include high ratio of non-hematopoietic cells and primitive hematopoietic cells compare to cells eluted by normal flush out (term bone marrow cells; BMCs). In addition, we have identified novel non-hematopoietc stem cells (CD34 positive, c-kit negative, Sca-1 positive, CD90 positive, CD45 negative) that have the ability to generate multiple mesodermal lineage cells and migrate into multiple tissues.

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