21st Stem Cell Club Meeting

Manipulating hematopoeitic stem cells in-vitro

(Organised by the Stem Cells Research Singapore Website Committee http://www.stemcell.edu.sg)

Date: March, 21st 2007 (Wednesday)
Time: 5:30 pm
Venue: Matrix, Level 2M, Aspiration Theatrette

Host: Gerald Udolph, CMM

Time	Title	Speakers
5:30-6:10	*Regulation of proliferation and differentiation of hematopoietic progenitor cells by the cytokine receptor CD137*	**Herbert Schwarz** *NUS*
6:10-6:50	*Immortalized but nonmalignant HSCs provide easy and robust means to manipulate the hematopoietic system*	**Klaus Karjalainen** *NTU*
6:50-	**Networking with cheese and wine**	

Regulation of proliferation and differentiation of hematopoietic progenitor cells by the cytokine receptor CD137

Herbert Schwarz, NUS

CD137 is a member of the TNF receptor family, and is involved in the regulation of activation, proliferation, differentiation and cell death of leukocytes. Bidirectional signaling exists for the CD137 receptor/ligand system as CD137 ligand which can be expressed as a transmembrane protein, can also transduce signals into the cells it is expressed on.
CD137 is expressed within the bone marrow, and CD137 ligand is found on hematopoietic progenitor cells in man and mouse and induces prolongation of survival and proliferation, synergistically with other hematopoietic factors. It further induces differentiation to myeloid cells, specifically to monocytic cells, while inhibiting granulocyte differentiation. Within the monocytic lineage, CD137 ligand signaling favors equally monocyte/macrophage and dendritic cell differentiation.

Immortalized but nonmalignant hematopoietic stem cells provide easy and robust means to manipulate hematopoietic system

Klaus Karjalainen, School of Biological Sciences, NTU

Extensive amplification of hematopoietic stem cells (HSC) in culture would greatly benefit not only clinical transplantation but also would provide a potential tool to manipulate all cellular lineages derived from HSC for gene therapy and experimental purposes. Here we demonstrate that bone marrow cultures containing cells engineered to over express NUP98-HOXB4 fusion proteins support self-renewal of HSC for several weeks leading practically unlimited expansion of HSC. This provides us wide enough window of opportunity for time consuming in vitro manipulations without sacrificing their ability to differentiate in vivo to any hematopoietic lineage.