STEM CELL SOCIETY
SINGAPORE

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Stem Cell Consortium
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STEM CELL CLUB

Co-hosting with Singapore Stem Cell Consortium, A*STAR

Tuesday 27 July 2010 • Aspiration Theatrette, Matrix Building Level 2M,
30 Biopolis Street, Singapore 138671

PROGRAMME

4.30 - 5.30pm	Prof. Dr. Meinrad Busslinger Research Institute of Molecular Pathology, Vienna Biocenter, Vienna, Austria "Elucidating the transcriptional network of early B cell development"
5.30pm onwards	Network Social Provided by Singapore Stem Cell Consortium
Hosted by	Dr Alan Colman Executive Director, Singapore Stem Cell Consortium

SPEAKER

Prof. Dr. Meinrad Busslinger

Elucidating the transcriptional network of early B cell development

Abstract

Hematopoietic stem cells develop into B cells by first differentiating to multipotent progenitors and common lymphoid progenitors (CLPs). Entry of the CLPs into the B cell lineage depends on multiple transcription factors including E2A, EBF1 and Pax5. E2A and EBF1 are essential for early specification of the B cell lineage by activating the expression of several B-cell-specific genes including Pax5. Pax5 in turn restricts the broad developmental potential of lymphoid progenitors to the B cell pathway by repressing B-lineage-inappropriate genes and simultaneously activating B-cell-specific genes. Ebf1 and Pax5 are exclusively transcribed in the B-lymphoid lineage, while Tcf3 (E2A) is broadly expressed in the lymphoid system. Here we have used ChIP-chip and ChIP-sequencing methods to identify direct target genes for all three transcription factors and to investigate the chromatin state of these target genes in early B-lymphocytes. These experiments demonstrated that Pax5 functions as an epigenetic regulator by inducing active chromatin at regulatory elements of its activated target genes and by eliminating active histone modifications at control elements of its repressed genes in committed B cells. The genome-wide identification of target genes for E2A, EBF1 and Pax5 and their dependency on transcription factor binding allowed us to establish the first generation of a transcriptional network controlling early B cell development.

Biography

Meinrad Busslinger was born on 30th July 1952 in Switzerland, studied biochemistry at the Swiss Federal Institute of Technology in Zürich and did his PhD work on sea urchin histone genes under the guidance of Prof. M. L. Birnstiel at the University of Zürich. As a postdoctoral fellow he studied the regulation of globin genes with Dr. R. A. Flavell at the National Institute for Medical Research, Mill Hill, London. In 1983, he became a group leader at the Institute of Molecular Biology in Zürich and, in 1988, a senior scientist at the Institute of Molecular Pathology (IMP) in Vienna. The research of Meinrad Busslinger is focused on the molecular mechanisms that control the commitment of lymphoid progenitors to the B and T cell pathways. He made the important discovery that Pax5 is the critical B cell lineage commitment factor. Meinrad Busslinger was awarded the Wittgenstein prize, is a member of EMBO and the Austrian Academy of Sciences and serves on editorial boards of several international journals.