STEM CELL SOCIETY
SINGAPORE

STEM CELL CLUB

Thursday, 28th May 2009 • Duke-NUS KTP building

** One-way transportation, from Biopolis to the KTP Building, will be provided courtesy of the Singapore Stem Cell Consortium. Please meet at the Immunos/Neuros Drop-Off Point at 4 pm.

PROGRAMME

16.30-17.30	:	Irving L. Weissman "Normal and Neoplastic Stem Cells"
17.30 onwards	:	Refreshments
Host	:	David Virshup

SPEAKER

Irving L. Weissman, M.D.

Abstract

Self renewal is the principal property that distinguishes stem cells from their daughter cells; when stem cells divide they give rise to stem cells (by self-renewal) and progenitors (by differentiation). The balance between self-renewal and differentiation is what generates and then maintains tissues and enables them to respond to injury or other stressors. Studies identifying hematopoietic stem cells (HSC) and progenitors have made hematopoiesis one of the best systems for studying the molecular changes in cell fate decision-making and oncogenesis. Further, it serves a paradigm for finding preclinical and clinical platforms for tissue and organ replacement and regeneration, Stem cell isolation and transplantation is the basis for regenerative medicine. Self-renewal is dangerous, and therefore strictly regulated. Poorly regulated self-renewal can lead to the genesis of cancer stem cells (CSC), the only cells within a tumor or leukemia that have the ability to self renew and therefore, the cells that maintain the cancer. Thus, it is predicted that CSC elimination is required for cure. This prediction necessitates profoundly different approaches to cancer research, compelling investigators to prospectively isolate CSCs and to characterize the molecular pathways regulating their behavior in order to identify targeted and truly effective therapies.

Biography

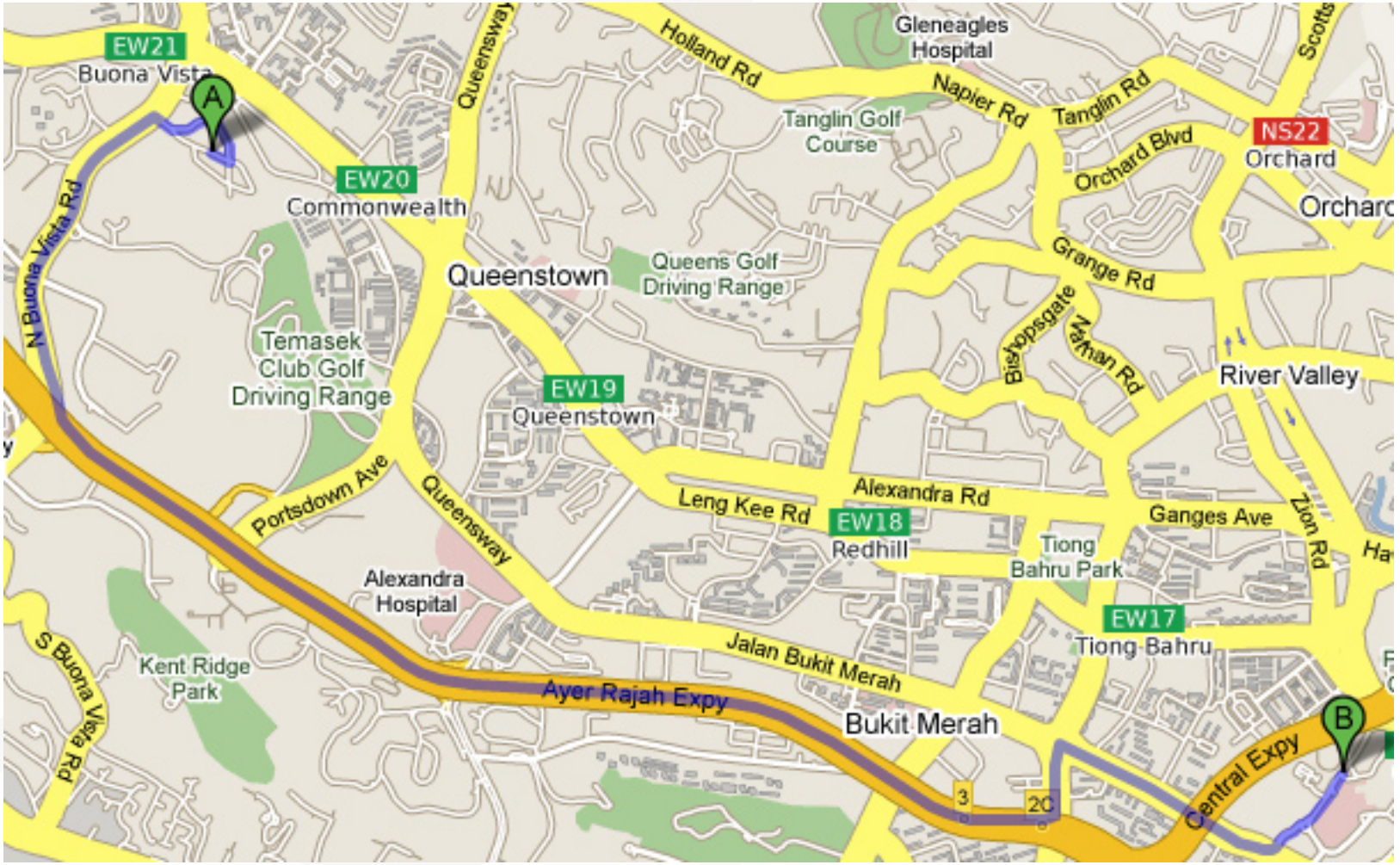
Irving L. Weissman, M.D., is the Director of the Stanford Institute for Stem Cell Biology and Regenerative Medicine, Director of the Stanford Ludwig Center for Stem Cell Research, as well as Professor of Pathology, Developmental Biology and, by courtesy, of Biological Sciences and Neurosurgery. Dr. Weissman was a member of the founding Scientific Advisory Boards of Amgen, DNAX, and T-Cell Sciences. He co-founded several companies, SyStemix, StemCells and Cellerant Therapeutics, in 2001. Dr Weissmand did is undergraduate work at Montana State College (now a University), and was awarded his medical degree from Stanford University in 1965. Dr. Weissman has many first discoveries to his credit that opened fields in which he has participated. His most important achievement is developing the general method to identify and to isolate stem and progenitor cells. Using that method he and his lab and collaborators were first to isolate prospectively any stem cell from any tissue in any species. That was the mouse blood-forming (hematopoietic) stem cells (HSC), followed by the isolation of the human HSC at SyStemix, and at StemCells, Inc., he co-discovered a human central nervous system stem cell. Functionally, the mouse HSC could be transplanted to conditioned hosts and replace the host blood forming system with the donor's, leading to permanent cure of blood deficiency diseases like severe combined immunodeficiency,

SPEAKER Irving L. Weissman, M.D.

Biography (cont.)

and reversal of genetic autoimmune diseases, e.g., type 1 diabetes and lupus erythematosus. The human HSC could be isolated from patients free of any other cells in the blood forming organs, including invading cancer cells and resident and recirculating T cells. In clinical studies, self (autologous) transplantation of cancer-free HSC in stage IV breast cancer and poorly treatable lymphomas led to prompt regeneration of the blood system, and favorable remission frequencies and intervals. Using the same methodology, his Stanford lab isolated most of the progenitors between HSC and mature blood cells of each type in mouse and in human systems. The neural stem cell is currently being investigated in clinical trials for treatment of a lethal lysosomal storage disorder, Batten's disease. In addition, the Weissman laboratory has pioneered the study lymphocyte homing to lymphoid organs in vivo, either as a normal function or as events involved in malignant leukemic metastases. His current research encompasses the biology and evolution of stem cells and progenitor cells, mainly blood-forming and brain-forming. He is also engaged in a large effort to isolate and characterize the cancer stem cells from a wide variety of solid tumors and leukemia. Professor Weissman has received numerous prestigious awards during his career, including the following. He is a member of the National Academy of Sciences, the Institute of Medicine at the National Academy, the American Association of Arts and Sciences and the American Academy of Microbiology. He has received the Outstanding Investigator Award from the National Institutes of Health, the Pasarow Award in Cancer Research the Irvington Institute Immunologist of the Year Award, the California Scientist of the Year Award, the J. Allyn Taylor International Prize in Medicine, the American Diabetes Association Elliott Proctor Joslin Medal, the Rabbi Shai Shacknai Memorial Prize in Immunology and Cancer Research, the New York Academy of Medicine Award for Distinguished Contributions to Biomedical Research, the Linus Pauling Medal for Outstanding Contributions in Science, the "Dare to Dream" award from the Jeffrey Modell Foundation, the John Scott Award from the City of Philadelphia, the American Italian Cancer Foundation Prize for Scientific Excellence in Medicine, and the Commonwealth Club of California 18th Annual Distinguished Citizen Award and in 2008 he was awarded the Robert Koch Award. Dr. Weissman has also been awarded Honorary Doctorates from Montana State University, Columbia University, and Mount Sinai School of Medicine.

Driving directions from Biopolis to KTP Building, (DUKE-NUS)




Duke-NUS KTP Building
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Singapore Gamma Knife Centre
National Heart Centre
Singapore National Eye Centre
Macalister Rd
College Rd
Singapore General Hospital
Third Hospital Ave
Second Hospital Ave
First Hospital Ave
Outram Polyclinic
Outram Rd
EW16 NE3
Outram Park
Hospital Dr
Central Circuss
National Cancer Centre Singapore
Eu Tong Sen St
New Bridge Rd
Neil Rd
Jalan Bukit Merah