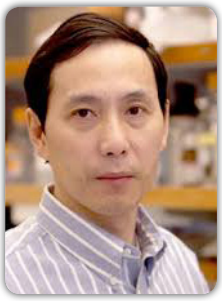

Shaoguang Li

University of Massachusetts Medical School, USA

LTB4 as a biomarker for monitoring leukemia stem cells

Although a significant improvement was made in slowing cancer growth and progression during last several decades, the failure to eradicate cancer stem cells has become a major roadblock for curing some cancers. In general, to better understand how cancer stem cells survive and proliferate, it is critical to develop biomarkers for monitoring cancer stem cells during disease initiation, progression and treatment. In this study, we aim to develop leukotriene B4 (LTB4) as a novel biomarker for monitoring the presence and function of leukemia stem cells (LSCs) in chromic myeloid leukemia (CML) induced by the BCR-ABL oncogene. BCR-ABL tyrosine kinase inhibitors are effective in treating chronic phase CML but are unlikely to cure the disease as they do not eradicate LSCs. For developing curative therapeutic regimens for CML, a biomarker is needed for monitoring LSCs to evaluate the efficacy of new therapies. We have previously found that the arachidonate 5-lipoxygenase (5-LO) gene (Alox5) is a key survival-regulatory gene in LSCs (Chen et al. Nature Genetics 41:783-792, 2009). Because a known function of 5-LO (encoded by Alox5) is to produce leukotrienes with leukotriene B4 (LTB4) as a major form, LTB4 may serve as a novel biomarker for monitoring LSCs in CML. Importantly, Alox5 is not required by normal hematopoietic stem cells, suggesting that LTB4 could be a specific biomarker for LSCs. It is worth pointing out that a method for monitoring LSCs in CML has not been developed, and LTB4 would be the first biomarker for monitoring LSCs. Here we intend to determine: 1) LTB4 is an indicator for the presence and function of LSCs; 2) LTB4 can be used for monitoring CML remission, relapse and response to an anti-LSC therapy and 3) LTB4 serves as a biomarker for indicating the presence and function of human CML stem cells.

Speaker Biography

Shaoguang Li obtained his PhD degree from Tulane University, USA. He did his postdoctoral studies at Harvard Medical School. He is currently a professor at University of Massachusetts Medical School, USA. He has published some seminal work related to leukemia stem cells in highly competitive journals such as Nature Genetics, JCI, PNAS, Blood, Leukemia, etc.

e: Shaoguang.Li@umassmed.edu

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