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ANGIOGENIN AND PLEXIN-B2 INHIBITION SENSITIZES PROSTATE CANCER STEM CELLS TO CHEMOTHERAPY

Guo-fu Hu[1,2], Shuping Li[1], Kevin A Goncalves[1,2] and Baiqing Lyu[1]

[1]Tufts Medical Center, Washington, USA
[2]Tufts University, Medford, USA

Angiogenin (ANG) and its receptor Plexin-B2 (PLXNB2) has recently been shown to dichotomously regulate the stemness of hematopoietic stem and progenitor cells (HSPC). While *ANG* and PLXNB2 preserve quiescence of the primitive stem cells, they promote proliferation of more differentiated progenitor cells. Here we show that ANG-PLXNB2 also dichotomously regulates the properties of cancer stem cells (CSC) and differentiated bulk cancer cells. Prostate CSCs were cloned from PC3, LNCaP, and DU145 cells, and shown to have self-renewal, differentiation, and tumor-initiating capacities. While ANG-PLXNB2 enhance proliferation of differentiated prostate cancer cells, they restrict proliferation of CSCs and promote quiescence through specific cleavage of 5S rRNA. Monoclonal antibodies against both ANG and PLXNB2 were found to mobilize CSC out of quiescence, sensitive them to chemotherapy, and prevent disease relapse.

BIOGRAPHY

Guo-fu Hu, PhD, is currently a Professor of Medicine, Tufts University School of Medicine, and an Investigator at Tufts Medical Center. He received his PhD from Shanghai Institute ofBiochemistry, Chinese Academy of Sciences, and did his postdoctoral training in Beret L. Vallee lab located at the Center for Biochemical and Biophysical Sciences and Medicine, Harvard Medical School. He established his research program first in the Department of Radiology, Brigham and Women's Hospital, and then in the Department of Pathology, Harvard Medical School, where he raised to the rank of Associate Professor of Pathology. He moved to Tufts Medical Center in 2010.

guo-fu.hu@tufts.edu

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