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New therapeutic strategies for targeting leukemia stem cells

Acute myeloid leukemia (AML) is a lethal blood cancer. The majority of AML patients experience a recurrence of their cancer after initial treatment and eventually die from their disease. Clinical evidence has supported the important role of leukemic stem cells (LSCs) in the high relapse rate of AML patients. The ability for self-renewal and drug resistance are fundamental properties of LSCs that drive disease progression and relapse. Identification of pathways and their molecular components essential for the regulation of abnormally acquired stem cell-like properties is a prerequisite for understanding the underlying mechanisms of oncogenesis and designing effective anticancer therapeutic strategies. G protein-coupled receptors have been implicated in playing critical roles in multiple cancers, where specific members of this family influence self-renewal and tumorigenesis, largely through activation of β-catenin signaling. We have recently reported an essential role for G protein-coupled receptor 84 (GPR84) in regulating oncogenic β-catenin signaling and in maintaining LSC properties in AML. Inhibition of specific G protein-coupled receptor signaling impairs LSC self-renewal, underlining its therapeutic value in developing novel LSC-targeted therapies for AML treatment.

Speaker Biography

Jenny Y Wang is Head of the Cancer and Stem Cell Laboratory at the University of New South Wales, Sydney, Australia. She received her PhD at Macquarie University in Australia and undertook Post-doctoral research in Leukemia Stem Cell Biology (2005-2011) at Children's Hospital Boston, Harvard Medical School. She has returned to Australia in 2011 and has established her independent research laboratory. The main research focus of her lab is to develop novel therapeutic strategies specifically targeting leukemic stem cells that are now believed to be the root cause for treatment failure and relapse in leukemia.

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