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cMyc and its new viral co-factor kaposin B modulate endothelial cell non-coding RNA traits to elicit angiogenesis

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MicroRNAs (miRNAs) have emerged as master regulators of angiogenesis and other cancer-related events. Discovering new microRNAs regulating angiogenesis (angiomiRs) will eventually help in developing new therapeutic strategies for tumor angiogenesis and cardiovascular diseases. Kaposi's sarcoma (KS) which is induced by the etiological infectious agent KS-associated herpes virus (KSHV) is a peculiar neoplasm expressing both blood and lymphatic endothelial markers and possessing extensive neovasculature. Using KSHV and its viral proteins as baits will be an efficient way to discover new angiomiRs in endothelial cells. Kaposin B is one of the few latent viral genes and is expressed in all KSHV tumor cells. Since kaposin B is a nuclear protein with no DNA-binding domain, it may regulate gene expression via incorporating into a transcription complex. We found here that cMyc and kaposin B form a transcription complex to bind to microRNA promoters. By small RNA sequencing (smRNA-Seq) we disclosed that cMyc and kaposin B co-repress anti-angiogenic miRNAs such as miR-221/-222 while inducing pro-angiogenic miRNAs such as miR-210. 64.9% (213/328) of kaposin B up-regulated miRNAs and 62.0% (181/292) of kaposin B down-regulated miRNAs were regulated by cMyc. Our study thereby illustrates new angiomiRs regulated by cMyc and a cMyc-orientated program is coordinated by kaposin B in KSHV-infected cells.

Biography

Ting-Yu Chang has obtained his PhD degree in July 2011 from Institute of Microbiology and Immunology from National Yang-Ming University. He is now a Post-doctoral Research Fellow in Dr. Hsei-Wei Wang's lab and is in charge of dry-lab NGS data analysis and translational research. He is an experienced Molecular Biologist and Bioinformatitician with a great interest in genomics as well as a Statistical Genetics Analyst with extensive bioinformatics skills. He involves in a wide range of research projects from a transcriptomic viewpoint-viral-host interaction, cancer pathology, cancer stem cell biology, endothelial cell biology and more.

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