Yi-min Liu, J Community Med Health Educ 2012, 2:8
http://dx.doi.org/10.4172/2161-0711.S1.007

OMICS Group Conferences
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International Conference on
Occupational Health & Safety Summit

September 5-7, 2012 DoubleTree by Hilton Philadelphia Center City, USA

MiR-183 family regulates chloride intracellular channel 5 expression in inner ear hair cells

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The miR-183 family (miR-182, miR-96, and miR-183) operates as a rheostat for modulating the precise levels of target genes needed to either acquire or maintain a particular cell fate in both vestibular and cochlea of the inner ear, and has an important role in ensuring the proper development of sensory epithelia, particularly in fine tuning the precise number of sensory cells. Although there are not one research that linked chloride intracellular channel 5 (CLIC5) with miR-183 family, we found clues that they are co-expressed in the inner ear hair cells and have related effect on stereo cilia. Moreover, CLIC5 contains a single predicted and highly conserved miR-96/-182 binding site within its 3'-UTR. In our study, to validate whether CLIC5 is a bona fide target of miR-96/-182, co-expression of the RNAs in inner ear hair cells was detected, then the effect of miR-96/-182 on the endogenous expression of CLIC5 was further examined. Finally, the Dual-Luciferase Reporter Assay System was used to address whether CLIC5 was directly regulated by miR-96/-182 and the target sequence was located on the 760th~766th nucleotide of the CLIC5 3'-UTR as predicted. Experimental analyses demonstrate, for the first time, that miR-96/-182 of the miR-183 family can regulate the expression of the CLIC5 in mouse inner ear hair cells. Our findings will help to elucidate the functions of miR-183 family and CLIC5 and their roles in the physiological, pathological process of inner ear development and hearing loss.

Biography

Yi-min Liu has completed his M.D. from Sun Yat-sen University in 1990. He is the deputy-dean of Guangzhou Prevention and Treatment Center for Occupational Diseases, Guangzhou No.12 hospital. He is professor and master instructor in Sun Yat-sen University. He has published more than 30 papers in reputed journals and serving as an editorial board member of repute.

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