

International Conference on Transcriptomics

July 27-29, 2015 Orlando, USA

NDRG2, a new estrogen-targeted gene

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Human N-myc downstream regulated gene 2 (NDRG2) has been proved to be a multifunctional protein associated with cell proliferation, differentiation, transmembrane transportation and stress response. The expression of NDRG2 is transcriptionally regulated by Myc, TNF α , IGF-1, hypoxia, DNA damage and many hormones including dexamethasone, insulin, androgens and aldosterone. In this study, we analyzed the promoter region flanking 5' of NDRG2 and found a potential ERE (estrogen response element). Moreover, we revealed that estrogen can up-regulate the expression of NDRG2 in both dose and time-dependent manners. In addition, we demonstrated that ER β but not ER α , bound specifically to the ERE at position of -1455 to -1131 bp of NDRG2 promoter and trans-activated NDRG2 promoter. These data mean that estrogen as an important circulating hormone also plays a regulative role in NDRG2 expression. In our previous studies we found that NDRG2 interacts with β 1-subunit of Na⁺/K⁺-ATPase and is involved in estrogen-mediated Na⁺ and Cl⁻ transport in some epithelial cells. Therefore, characterization of the novel estrogen/NDRG2/Na⁺/K⁺-ATPase β 1 regulation pathway will broaden the understanding of the regulatory role of estrogen on Na⁺/K⁺-ATPase and distribution of this pathway may potentially provide a basis for the intervention of isohydria and internal environment homeostasis in some pathological conditions.

Biography

Yan Li has completed her PhD from the Fourth Military Medical University (China) in 2009 and she used to be a Visiting Scholar for Postdoctoral research in Purdue University (USA). Now she is an Associate Professor of the department of Biochemistry and Molecular Biology, the Fourth Military Medical University (China). She has published more than 20 papers in academic journals including *J BiolChem*, *Mol Ther*, *Breast Cancer Res and Cell Death Dis*.

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