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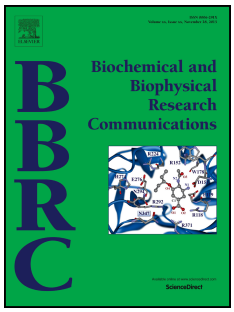

Changes in related circular RNAs following ERβ knockdown and the relationship to rBMSC osteogenesis

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PII: S0006-291X(17)31839-9

DOI: 10.1016/j.bbrc.2017.09.068

Reference: YBBRC 38513

To appear in: *Biochemical and Biophysical Research Communications*

Received Date: 11 September 2017

Accepted Date: 13 September 2017

Please cite this article as: X. Li, B. Peng, X. Zhu, P. Wang, Y. Xiong, H. Liu, K. Sun, H. Wang, L. Ou, Z. Wu, X. Liu, H. He, S. Mo, X. Peng, Y. Tian, R. Zhang, L. Yang, Changes in related circular RNAs following ERβ knockdown and the relationship to rBMSC osteogenesis, *Biochemical and Biophysical Research Communications* (2017), doi: 10.1016/j.bbrc.2017.09.068.

Changes in related circular RNAs following ERβ knockdown and the relationship to rBMSC osteogenesis

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Abstract: Recently, several studies have indicated that circular RNAs (circRNAs) play significant roles in various disease; however, Little is known about the chronology of estrogen receptor beta (ERβ) deficiency and altered circRNA expression, or their relationship with osteogenesis. Herein, we show through western-blot and quantitative real-time PCR assays, that when ERβ is silenced, the expression of osteogenesis-related proteins and mRNAs were down-regulated. We then performed RNA-Seq to analyze differential circRNA expression between the control and ERβ knockdown group. This analysis revealed that, 146 circRNAs were differentially expressed by fold-change≥2.0, p≤0.05, and, among this group, 68 circRNAs were down-regulated, while 78 were up-regulated. Gene ontology (GO), Kyoto Encyclopedia of Genes and Genomes (KEGG) and PANTHER pathway analyses were performed to predict the function of these differentially expressed circRNAs. Finally, co-expressed targets gene, and circRNA-microRNA network were constructed for predicted miRNA sponges. This research suggested that ERβ may through 2:27713879|27755789/2:240822115|240867796-miR-328-5p-mRNA axis to regulate osteogenic differentiation.

Key word: CircRNA; Estrogen receptor beta; Osteogenesis; RNA-Seq

1.Introduction