

Preosteoblast-Enriched Lnc-Evf2 Facilitates Osteogenic Differentiation by Targeting Notch

Han Xia and Yuan Xue*

Department of Orthopedic Surgery, Tianjin Medical University General Hospital, China

Abstract

Ossification of ligaments (OL) and osteoporosis (OP) are multifactorial disorders without definitive clinical biomarkers. Long non-coding RNAs (lncRNAs) are known to involve in regulating pathogenesis. Here, we have identified a preosteoblast-enriched lnc-Evf2 that was overexpressed in ossified ligamentum flavum (OLF) and down-expressed in OP. lnc-Evf2 is gradually upregulated during osteogenic induction, correlating with the enhanced expression of osteogenic marker genes and matrix mineralization. Moreover, knockdown of lnc-Evf2 significantly inhibits the expression of osteogenic differentiation markers and delays the osteoblastic mineralization process, indicating that this molecule is involved in osteogenesis. Mechanistically, we demonstrated that silencing of lnc-Evf2 decreases the protein level but not the mRNA levels of Notch2, Notch3, and Hes1, all of which correlate with osteogenesis. Taken together, our data demonstrate that lnc-Evf2 promotes osteogenic differentiation and bone formation through the Notch signaling, revealing that lnc-Evf2 may serve as a novel potential clinical target of OL and OP.

Recent Publications

1. Harper Zhen Zhang, Haixia Q, Han Xia, Qi Liu, Yi Ren, et al. (2021) Preosteoblast-enriched lnc-Evf2 facilitates osteogenic differentiation by targeting Notch. *Acta Biochim Biophys Sin (Shanghai)* 53:179-188.
2. Yutao Tang, Han Xia (2019) Effects of Intermittent Parathyroid Hormone 1-34 Administration on Circulating Mesenchymal Stem Cells in Postmenopausal Osteoporotic Women *Med Sci Monit* 25:259-268.
3. Yawei Han, Kun Zhang, Yuheng Hong, Jingzhao Wang, Qi Liu, et al. (2018) miR-342-3p promotes osteogenic differentiation via targeting ATF3. *FEBS Lett* 592: 4051- 4065.
4. Yawei Han, Yuheng Hong, Liandong Li, Tengshuai Li, Zhen Zhang (2018) A Transcriptome-Level Study Identifies Changing Expression Profiles for Ossification of the Ligamentum Flavum of the Spine. *Mol Ther Nucleic Acids* 12: 872-883.

5. Jiaming Zhou (2018) Clinical efficacy of calcitonin compared to diclofenac sodium in chronic nonspecific low back pain with type I Modic changes: a retrospective study. *J Pain Res* 11:1335-1342.

Biography

Han Xia has his expertise in evaluation and passion in improving the health and wellbeing. In the current study, he showed that lnc-Evf2 is a preosteoblast-enriched lncRNA that is overexpressed in OLF and during osteogenic differentiation, but was down-expressed in OP. Knockdown of lnc-Evf2 significantly inhibits the expression of osteogenic differentiation marker genes and the ALP activity and delays the osteoblastic mineralization process. Mechanistically, we demonstrated that silencing of lnc-Evf2 decreases the protein levels but not the mRNA levels of Notch2, Notch3, and Hes1 in preosteoblasts and mouse embryonic fibroblasts, suggesting that lnc-Evf2 promotes osteogenesis via the Notch signaling. Focusing.

*Corresponding author: Yuan Xue, Department of Orthopedic Surgery, Tianjin Medical University General Hospital, China

Received: 01-Sep-2022, Manuscript No: jpgb-22-131, **Editor assigned:** 05-Sep-2022, Pre QC No: jpgb-22-131(PQ), **Reviewed:** 19-Sep-2022, QC No: jpgb-22-131, **Revised:** 26-Sep-2022, Manuscript No: jpgb-22-131 (R), **Published:** 30-Sep-2022, DOI: 10.4172/jpgb.1000131

Citation: Xia H, Xue Y (2022) Preosteoblast-Enriched Lnc-Evf2 Facilitates Osteogenic Differentiation by Targeting Notch. *J Plant Genet Breed* 6: 131.

Copyright: © 2022 Xia H, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.