Cite this as: Qing-guo LAI Shao-long SUN,Xiao-hong ZHOU, Chen-ping ZHANG, Kui-feng YUAN, Zhong-jun YANG, Sheng-lei LUO, Xiao-peng TANG, Jiang-bo CI, 2014. Adipose-derived stem cells transfected with *pEGFP-OSX* enhance bone formation during distraction osteogenesis. *Journal of Zhejiang University-SCIENCE B (Biomedicine & Biotechnology)*, 15(5):482-490. [doi:10.1631/jzus.B1300203]

Adipose-derived stem cells transfected with *pEGFP-OSX* enhance bone formation during distraction osteogenesis

Key words: Adipose derived stem cells, Distraction osteogenesis, Transcription factor, Gene transfection

The experimental hypothesis

- ADSCs constitute an abundant and easily accessible resource of stem cells and have pluripotent lines able to differentiate into adipogenic, osteogenic, myogenic and chondrogenic cells
- Overexpression of gene *osterix* (*OSX*) has been shown to be sufficient to induce differentiation of ADSCs towards osteoblastic cells in vitro
- we hypothesized that the local delivery of ADSCs transfected with *OSX* would increase the numbers of osteoblasts in distracted areas and promote osteogenesis in distraction regions.

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* Group A: rabbits were treated with ADSCs transfected with *pEGFP-OSX*
* Group B: rabbits were treated with ADSCs transfected with *pEGFP-N1*
* Group C: rabbits were treated with physiological saline.

Results and conclusion

- Good bone generation in the distraction areas was found in group A, which had the highest BMD, TNT and NBV in the distraction zones among the groups. There was no significant difference in bone generation in the distraction areas between groups B and C.

- The transplantation of ADSCs transfected with *pEGFP-OSX* can effectively promote bone generation during distraction.