



***Oct4* and *Sox2* overexpression improves the proliferation and differentiation of bone mesenchymal stem cells in Xiaomeishan porcine**

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ABSTRACT. Mesenchymal stem cells derived from bone marrow (BMSCs) are a population of self-renewing multipotent cells that are capable of differentiating into various cellular lineages, and are widely employed in tissue engineering and cell therapy. Recently, clinical research involving BMSCs has become increasingly popular. In order to conduct appropriate research, it is first necessary to amplify large amounts of functional BMSCs *in vitro*. However, after several passages of expanding *in vitro*, the proliferation and differentiation potential of BMSCs gradually decline. To determine whether overexpression of *Oct4* or *Sox2* might prevent this decline, we transfected *Oct4* or *Sox2*, which are essential for the pluripotency and self-renewal of embryonic stem cells, into BMSCs of Xiaomeishan porcine by a lentivirus. The results showed that overexpression of *Sox2* or *Oct4* BMSCs in culture media containing a basic fibroblast growth factor resulted in higher proliferation

and differentiation compared to controls, suggesting that genetic modification of stemness-related genes is an efficient way to maintain the proliferation and differentiation potential of BMSCs.

Key words: *Oct4*; *Sox2*; Bone mesenchymal stem cells; Overexpression; Xiaomeishan porcine