

## CO-TREATMENT WITH REP SOX AND LBH589 IMPROVES THE IN VITRO DEVELOPMENTAL COMPETENCE OF PORCINE SOMATIC CELL NUCLEAR TRANSFER EMBRYOS

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### **Introduction**

Accumulating evidence suggests that aberrant epigenetic reprogramming and low pluripotency of donor nuclei lead to abnormal development of cloned embryos and underlies the inefficiency of mammalian somatic cell nuclear transfer (SCNT). This study comparison analysis different histone deacetylase inhibitors (HDACis) on porcine SCNT embryo in vitro development. Demonstrated that porcine SCNT embryo treated with HDACi and combined with a small molecule RepSox on in vitro development.

### **Materials and Methods**

The protocols of IVM and SCNT were adapted from a previous study (Yin et al. *Biology of Reproduction*, 2002). Porcine embryos were treated with VPA, MGCD0103, M344 and LBH589 after SCNT respectively. The best HDACi was combined with RepSox on porcine SCNT embryos. The porcine embryo in vitro development competence, histone modification level and pluripotency-related genes expression were analyzed.

### **Results and Discussion**

LBH589 significantly increased the blastocyst formation rate compared with MGCD0103, M344 and control. In addition, co-treatment RepSox and LBH589 significantly increased the expression of pluripotency-related genes at both 4-cell and blastocyst stage, including NANOG, POU5F1, and SOX2. Moreover, co-treatment of LBH589 and RepSox improved epigenetic reprogramming by histone acetylation and methylation. In summary, combination of LBH589 and RepSox increases expression of developmentally important genes, optimizes epigenetic reprogramming, and improves the in vitro development of porcine SCNT embryos.