

P-25 Gene Expression Pattern of XIC Related Genes in Mouse Preimplantation Stage by Single Cell analysis

Jeong KS, Park JH, Lee HC, Cha KY, Lee SH, Lee SM

*Genome Research Center for Reproductive Medicine and Infertility & Department of Urology,
CHA General Hospital, College of Medicine, Pochon CHA University, Seoul, Korea*

Background & Objectives: Previous research showed that the X-chromosome inactivation initiated in pre-implantation stage. We analyzed the differential expression of the X-chromosome inactivation (XCI) related genes in mouse preimplantation stage from one cell embryo to blastocyst. We analyzed the expression of Xist, Tsix, Histone modification enzymes (SUV39H1, SET7) and DNA methylation Transferase (DNMT1) genes in mouse preimplantation cells.

Method: We injected PMSG (1cc) into ICR female mouse (6 weeks), and then added HCG (1cc) to after 48 hr when injected PMSG. Then male (8 weeks) and female mouse (6 weeks) were mated. We acquired single embryos by mouse oviduct flushing at each time point after injection of HCG, and purified mRNA by dynabeads mRNA direct kit. Purified mRNA was treated with DNaseI-RNase free, and each RT-PCR product was confirmed the size on 3% agarose gel and the sequence by restriction enzyme mapping analysis. We determined the sex of each embryo by Zfy gene expression.

Results: Xist is continuously expressed from 2 cell embryo to blastocyst in female embryo. Tsix gene was detected both mouse male and female embryo. As a result of Tsix expression is not concerned with Xist expression. SUV39H1, SET7 and DNMT1 were continuously expressed, independently to sex, from one cell to blastocyst.

Conclusions: Our results demonstrated that X-chromosome inactivation begins at the cell proliferation process after the fertilization. The genes related to Histone modification (SUV39H1 and SET7) and DNA methylation process (DNMT 1) which need for X inactivation were expressed from single cell embryo to blastocyst regardless of sex and Xist expression.