

Differentially Expressed Genes in Porcine Parthenogenetic 2-cell and Blastocyst Embryos

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The identification of embryo-specific genes would provide insights into early embryonic development. However, the current methods employed to identify the genes that are expressed at a specific developmental stage are labor intensive and suffer from high rates of false positives. Here we employed a new and accurate reverse transcription-polymerase chain reaction (RT-PCR) technology that involves annealing control primers (ACPs) to identify the genes that are specifically expressed in porcine blastocysts compared to 2-cell stage embryos. Using 120 ACPs, we identified and sequenced 46 of these differentially expressed genes. Basic Local Alignment Search Tool (BLAST) searches revealed that 30 were related on signal transduction, transcription, cytoskeleton, development and defence and 16 encoded ribosomal protein. Of the these genes, 6 were selected and further characterized using real-time quantitative PCR to assess their stage-specific expression in porcine embryos. This analysis suggests that the ACP system is a very good tool for the identification of stage-specific genes in small numbers of porcine embryos. Further analysis of the differentially expressed blastocyst genes we have identified will provide insights into the molecular basis of preimplantation development.

Key Words : *Blastocyst, Preimplantation, Gene expression*