Induction of pluripotent stem cells from mouse fibroblasts by *trans*-acting splicing factors

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Induced pluripotent stem cells (iPSCs) artificially derived from an adult somatic cell are believed to be identical to natural pluripotent stem cells. Now, they are important in basic research and therapeutic uses, without the controversial use of embryos. iPSCs were first produced in 2006 from mouse cells and in 2007 from human cells by inducing the expression of "stem" specific transcriptional factors, like Oct4, SOX2, c-Myc and Klf4. Alternative splicing (AS) allowing single gene to encode multiple transcripts with different protein coding sequences and RNA regulatory elements increases genomic complexities. Many studies showed that up to 74% of human genes suffer AS, with noticeable variation across tissue types and developmental stages. AS are regulated by *trans*-acting splicing factors. These factors are RNA-binding proteins that include the SR proteins and the hnRNP proteins. They determine the use and/or skip of splice sites and recognize splice enhancers and silencers by combinatorial binding. Here, we want to assess candidates of splicing factor promoting "stem" characters of cell and to develop a new possible strategy to acquire iPSCs by inducing the expression of "stem" specific splicing factors.

Key words: Induced pluripotent stem cell; Alternative splicing; Splicing factor