Editor's note

Ten years ago, Dr. Ian Wilmut and his colleagues at the Roslin Institute announced the birth of Dolly the sheep, the first mammal cloned from a somatic cell. Their work ignited the aspiration of cloning many different animals, such as mice (1998), calf (1998), pig (2000) and cat (2002). Last year, scientists at the Oregon National Primate Research Center in the US obtained the first embryonic stem cells from cloned primate embryos, bringing therapeutic cloning closer to reality for humans. All of these clonings are based on the nuclear-transfer technology, by which the nucleus is removed from a differentiated somatic cell and transplanted into an enucleated oocyte. In this way, the differentiated nuclei will be reprogrammed to ES-like pluripotent state. In this issue, Dr. Shaorong Gao and his colleagues provide a brief review of this nuclear-transfer technology.

Ten years later, a new important advance on reprogramming somatic cells again excited researchers in the stem-cell field. Dr. Shinya Yamanaka in Kyoto University for the first time introduced a technology of directed reprogramming differentiated cells, by which the somatic cells were infected with combined retroviruses expressing four exogenous transcription factors, and then the pluripotent cells, called iPS (induced pluripotent stem) cells, were selected from these infected somatic cells. In this issue Dr. Duanqing Pei and his colleagues have give a brief review on the past, present and future of iPS, and make a discussion of the challenge of this new technology. The generation of human iPS is extremely important for research community of stem cells, because it makes possible to produce patient-specific pluripotent stem cells for transplantation therapy. In this issue, Dr. Lei Xiao and his colleagues provide a narrative of the history of the progress of human iPS cells and the potential application of this technology.

One question appears due to the development of nuclear transfer and iPS technology: which way should we take for the future. It is reportedly that Dr. Ian Wilmut, the major player of nuclear transfer, said that iPS technology "is so much more practical" than nuclear transfer, after his lab worked on human direct reprogramming by use of Yamanaka's methods. In this issue Dr. Shaorong Gao also perform a comparison of these two technologies in his review paper. We deem that both technologies are important and indispensable for the future medicine.

(WU JiaRui, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences)

doi: 10.1007/s11434-009-0027-4