1. Record Nr. UNINA9910298320803321

Autore	Zhao Xiaoyang
Titolo	Studies of Pluripotency in Embryonic Stem Cells and Induced Pluripotent Stem Cells / / by Xiaoyang Zhao
Pubbl/distr/stampa	Dordrecht : , : Springer Netherlands : , : Imprint : Springer, , 2014
ISBN	94-017-8819-7
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (104 p.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	571.6
Soggetti	Stem cells Cell culture Regenerative medicine Tissue engineering Developmental biology Stem Cells Cell Culture Regenerative Medicine/Tissue Engineering Developmental Biology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"Doctoral thesis accepted by University of Chinese Academy of Sciences, Beijing, China."
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Abstract -- Introduction -- Establishment of highly efficient somatic cell reprogramming system to generate iPSC lines- Establishment of highly efficient somatic cell reprogramming system and establishment of iPSC lines -- Pluripotency of iPSC and underlining mechanism -- Developmental potential of mouse iPSC -- Conclusions.
Sommario/riassunto	Stem cells have the ability to differentiate into all types of cells within the body, thus have great therapeutic potential for regenerative medicine to treat complicated disorders, like Parkinson’s disease and spinal cord injury. There will also be many applications in drug development. However, several roadblocks, such as safety issues and low efficiency of pluripotent stem cell (PSC) line derivation need to be resolved before their clinical application. This thesis focuses on these two areas, so as to find methods to overcome the limitation. It covers

deriving embryonic stem cells (ESCs) from several different species, and reports an efficient system to generate induced pluripotent stem cells (iPSCs), and the first iPSC mice in the world. The results in this thesis confirm that somatic cells can be fully reprogrammed with the four Yamanaka factors. In addition, we have found that the Dlk1-Dio3 region can be a potential molecular marker to distinguish the fully reprogrammed iPSCs from partially reprogrammed ones. All of these results will help improve the safety of PSCs in the clinical applications, and increase the current low induction efficiency of their production.