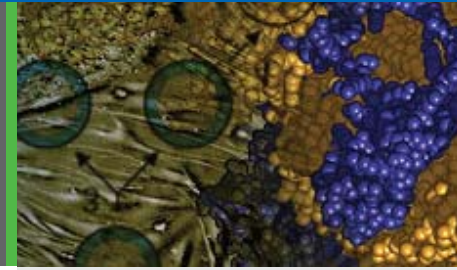


Minicircle DNA and mc-iPS Cells

Nonviral and non-integrating minicircle (MC) DNA technology to create iPS Cells Certified for Pluripotency

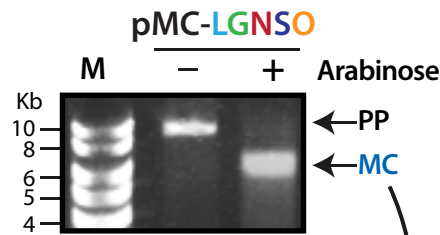
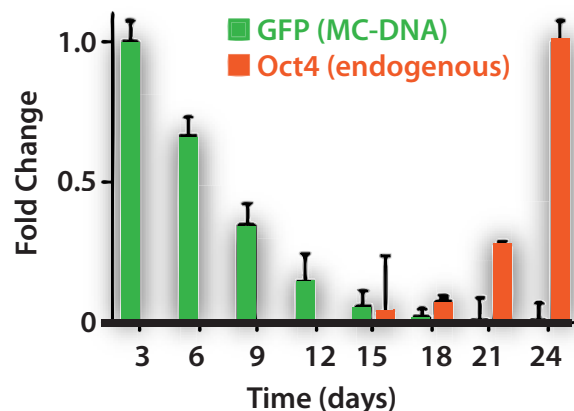


The Minicircle DNA technology

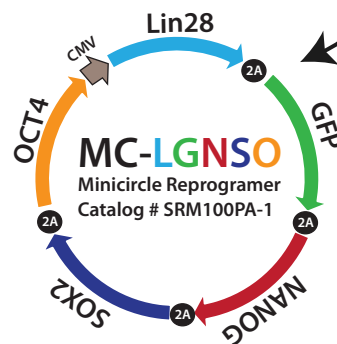
Minicircles (MC) are circular non-viral DNA elements that are generated by an intramolecular (cis-) recombination from a parental plasmid (PP) mediated by Φ C31 integrase. The full-size MC-DNA construct is grown in a special host E. coli bacterial strain. This strain harbors an Arabinose-inducible system to express the Φ C31 integrase and the I-SceI endonuclease simultaneously. The Φ C31 integrase produces the MC-DNA molecules as well as PP-DNA from the full-size MC-DNA construct. The PP-DNA contains several engineered I-SceI restriction sites that ultimately lead to the destruction of the PP-DNA but not the MC-DNA.

The difference between MC and standard plasmid vectors is that the MC no longer contains the bacterial origin of replication or the antibiotic resistance markers.

SBI's pre-made MC-LGNSO DNA features easy-to-transfect molecules that have an extended expression lifespan in mammalian cells to efficiently reprogram somatic cells to the pluripotent state.



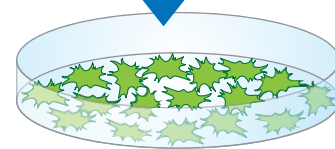
Agarose gel showing the induction and production of Minicircle DNA with Lin28+GFP+Nanog+Sox2+Oct4



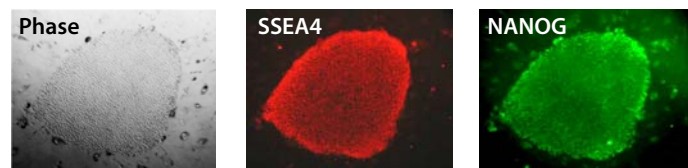
Highlights

- Proven nonviral, non-integrating reprogramming method
- Make certified pluripotent mc-iPS cells with Lin28, Nanog, Sox2, Oct4
- Track GFP positive cells for 21 days and then monitor colony formation
- Human mc-iPS Cells from adipocytes show multiple lineage potential

Transfect Source Cells to Induce Pluripotency



Create Nonviral iPS Cells



Colonies with morphologies similar to hESC colonies were clearly visible by day 18 after transfection. At day 26–28 after transfection, GFP-negative mc-iPSC colonies were individually picked for further expansion and analysis. The GFP signal decreases over time correlating with the disappearance of the minicircle DNA with simultaneous increase of the endogenous pluripotency marker expression.

Minicircle-Induced iPS Cell Line (mc-iPSC)

Reprogrammed iPS Cells using Nonviral and Non-integrative Methods

SBI offers the pre-made, ready-to-transfect 4-in-1 minicircle reprogramming DNA as well as the Human mc-iPS Cell line highlighted in Nature Methods, **A nonviral minicircle vector for deriving human iPS cells**. Jia F, *et al.*, 2010 Mar;7(3):197-9. The mc-iPS Cell Line was derived from adult human adipose stem cells (hASCs).

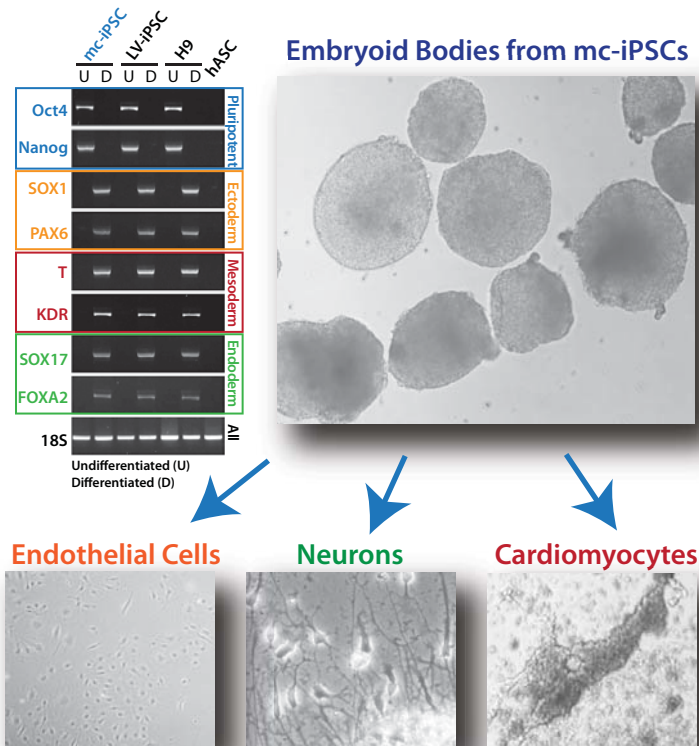
This enables you to:

- Develop directed differentiation protocols
- Make new transgenic lines and animal models
- Create new reporter animal models

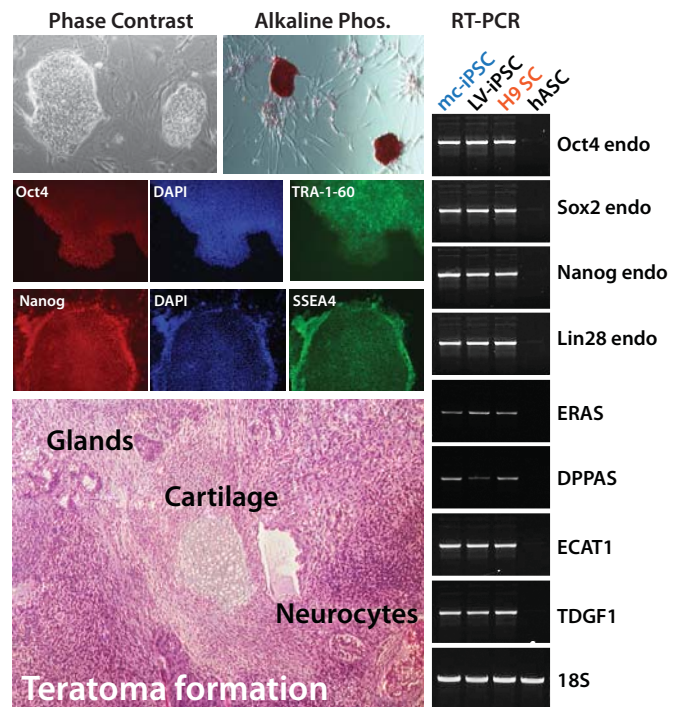
The mc-iPS Cell Line is certified positive for pluripotency protein marker immunostaining and by gene expression. The mc-iPSCs also demonstrate multiple lineage potential.

Multiple Lineage Potential of mc-iPSCs

Lineage-specific RT-PCR and Differentiation



Pluripotency of mc-iPSCs (cat#SC301A-1)



Custom iPS Cell Line Service

Gain the Expertise of SBI's Stem Cell Scientists

SBI can save you the time and trouble of reprogramming your cells into the pluripotent state. Let SBI's expert stem cell scientists accelerate your research discoveries and make the custom iPS Cell lines you need.

Custom iPS Cell Lines:

- iPS cells from your model system
- Human or Mouse iPSCs
- Reprogrammed with MC-LGNSO minicircle

Create Nonviral Disease-specific iPS Cell Lines with SBI's Custom Services!

We Also Offer Custom Services

System Biosciences offers a wide-range of custom services to support your research, allowing you to spend less time making tools, and more time making discoveries. To learn more, visit our website at www.systembio.com/service or call us at 888-266-5066.