

PRODUCT DESCRIPTION

STEMcircles™ provide a non-viral, non-integrating approach to reprogramming somatic cells to induced pluripotent stem cells (iPSCs)¹. STEMcircles™-LGNSO plasmid DNA contains four factors capable of reprogramming somatic cells: LIN28, NANOG, SOX2 and OCT3/4 as well as a GFP reporter. Minicircle vectors afford higher transfection efficiencies and more persistent expression compared to regular plasmid-based reprogramming techniques.^{2,3}

Patent pending.

COMPONENTS

05820 STEMcircles™-LGNSO, 100µg

Contains:
Purified DNA in TE buffer, sterility-tested
Lot specific concentration = 1 mg/mL

STABILITY AND STORAGE

This product has been aseptically manufactured.

Storage at -20°C to -80°C or below is recommended upon receipt. Before use, product can be thawed and aseptically aliquoted into convenient amounts and refrozen. Short-term storage of aliquots (up to two weeks) at 2°C to 8°C is acceptable. Avoid multiple freeze thaw cycles.

DIRECTIONS FOR USE

Users should refer to the Nature Methods publication¹ for directions for use. STEMcircles™-LGNSO plasmid DNA must be electroporated or transfected into the starting cells using protocols specifically optimized for that cell type.

NOTES

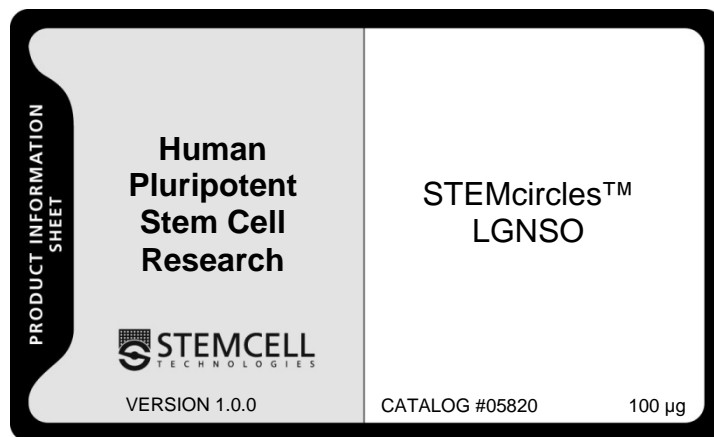
Optimization of the transfection step will be necessary and will vary depending on the starting cell population. Transfection efficiency is generally dependent on cell number, amount of DNA and amount of transfection reagent. Users should follow instructions provided with their chosen reagent and optimize their protocol by varying one parameter at a time, keeping other parameters constant. For guidance on use with human fibroblasts and human adipose stem cells, please refer to the Nature Methods publication.¹

In cells that are difficult to transfect, access to an automated cell sorter may be necessary to select transfected cells to facilitate the calculation of the frequency of reprogramming.

Several publications describe morphological and functional criteria by which one can identify fully reprogrammed bona fide iPSCs^{4,5}.

STEMcircles™-LGNSO has been functionally validated by transiently transfecting 293 cells with the DNA and observing GFP expression. Expression of LIN28, NANOG, SOX2 AND OCT3/4 were also confirmed in transfected 293 cells at both the protein and RNA level by western blot analysis and RT-PCR.

Refer to Material Safety Data Sheet for more information.



RELATED PRODUCTS

PRODUCT	CATALOG #
mTeSR®1	05850
TeSR™2	05852
AggreWell™ plates	27845/27945/27865/27965
mFreSR®	05855/05854
CryoStor™ CS10	07930
ACCUTASE®	07920
Dispase (1 mg/mL)	07923
Anti-Oct 3/4 antibody	01550/01551
Anti-SSEA-1 antibody	01552
Anti-SSEA-3 antibody	01553
Anti-SSEA-4 antibody	01554
Anti-TRA-1-60 antibody	01555
Anti-TRA-1-81 antibody	01556

REFERENCES

1. Jia F.J., Wilson, K., Sun, N., Gupta, D.M., Huang, M., Li, H., Panetta, N.J., Chen, Z.Y., Robbins, R.C., Kay, M.A., Longaker, M.T., Wu, J.C., 2010. A non-viral minicircle vector for deriving human iPSCs. *Nature Methods* 7(3): 197-9.
2. Chen, Z.Y., He, C.Y., Ehrhardt, A., Kay, M.A., 2003. Minicircle DNA vectors devoid of bacterial DNA result in persistent and high-level transgene expression in vivo. *Mol. Ther* 8(3):495-500.
3. Chen, Z.Y., He, C.Y., Kay, M.A., 2005. Improved production and purification of minicircle DNA free of plasmid bacterial sequences and capable of persistent transgene expression in vivo.
4. Chan E.M., Ratanasirintraooot, S., Park, I.H., Manos, P.D., Loh, Y.H., Huo, H., Miller, J.D., Hartung, D., Rho, J., Ince, T.A., Daley, G.Q., Schlaeger, T.M., 2010. *Nature Biotechnology*: 27(11): 1033-77.
5. Marherali, N. and Hochedlinger, K., 2008. Guidelines and techniques for the generation of induced pluripotent stem cells. *Cell Stem Cell* 3: 595-605.

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