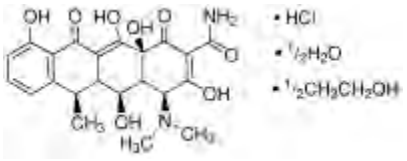
Product Specification Sheet

Product Name	Stemolecule™ Doxycycline hyclate
Description	Stemolecule™ Doxycycline hyclate (Dox) is a broad spectrum antibiotic derivative of tetracycline and an inhibitor of matrix metalloproteinases *in vivo*. Tetracycline-controlled transcriptional activation is a method of inducible expression whereby transcription is reversibly turned on or off in the presence of tetracycline or one of its derivatives such as Dox[1]. Dox-inducible lentiviral reagents such as the Stemgent® iPSC Generation Dox Inducible Lentivirus products are used to induce the expression of virally transduced genes and generate induced pluripotent stem (iPS) cells from somatic cells (in a process referred to as reprogramming[2,3]) by adding Dox to the cell culture medium[4-9]. Stemolecule™ Doxycycline hyclate is the recommended inducer for all of the Stemgent® iPSC Generation Dox Inducible products. In the protocol, addition of Dox to the culture medium of transduced cells induces the reverse tetracycline transactivator (rtTA) to bind to the Tet response element and results in the transcriptional activation for each of the factors implicated in the reprogramming process. Conversely, Dox can be removed from the medium to suppress transcriptional activation of the reprogramming factors.
Catalog Number	04-0016
Lot Number	1203
Quantity	10 mg
Alternate Names	(4*S*,4a*R*,5*S*,5a*R*,6*R*,12a*S*)-4-(dimethylamino)-3,5,10,12,12a-pentahydroxy-6-methyl-1,11-dioxo-1,4,4a,5,5a,6,11,12a-octahydrotetracene-2-carboxamide; Doxycycline hydrochloride hemiethanolate hemihydrate; Dox
Chemical Formula	$C_{22}H_{24}N_2O_8 \cdot HCl \cdot ½(H_2O) \cdot ½(C_2H_6O)$
Structure	
Molecular Weight	512.94
CAS Number	24390-14-5
Purity	≥98% (TLC)
Formulation	Yellow to yellow with a green cast powder
Solubility	Soluble in water
Storage	Store at 4°C. Protect from light. Following reconstitution, store aliquots at -20°C.
Stability	Stock solutions stable at -20°C for 6 months. Avoid multiple freeze-thaw cycles.
Quality Control	The purity of Stemolecule™ Doxycycline hyclate was determined by HPLC analysis. The accurate mass and structure was determined by mass spectrometry and NMR, respectively. Cellular toxicity was tested on mouse embryonic stem cells.

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Recommended Usage

For induction and expression using Stemgent® iPSC Generation Dox Inducible Lentivirus prodcucts, treat cells with 2 µg/ml final concentration in growth medium.

References

1. Bujard, H., Gossen, M. (1992) Tight Control of Gene Expression in Mammalian Cells by Tetracycline-Responsive Promoters. Proc Natl Acad Sci 89: 5547-5551.

2. Takahashi, K., Yamanaka, S. (2006) Induction of pluripotent stwem cells from mouse embryonic and adult fibroblast cultures by defined factors. Cell 126: 663-676.

3. Yu, J., Vodyanik, M.A., Smuga-Otto, K., Antosiewicz-Bourget, J., Frane, J.L., Tian, S., Nie, J., Jonsdottir, G.A., Routti, V., Stewart, R., Slukvin, I.I., Thompson, J.A. (2007) Induced pluripotent stem cell lines derived from human somatic cells. Science 318: 1917-1920.

4. Wernig, M., Meissner, A., Foreman, R., Brambrink, T., Ku, M., Hochedlinger, K., Bernstein, B.E., Jaenisch, R. (2007) In vitro reprogramming of fibroblasts into a pluripotent ES-cell-like state. Nature 448: 318-324.

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7. Hockemeyer, D., Soldner, F., Cook, E.G., Gao, Q., Mitalipova, M., Jaenisch R. (2008) A drug-inducible system for direct reprogramming of human somatic cells to pluripotency. Cell Stem Cell 3(3): 346-353.

8. Welstead, G.G., Brambrink, T., Jaenisch, R. (2008) Generating iPS cells from MEFS through forced expression of Sox-2, Oct-4, c-Myc, and Klf4. J Vis Exp 7(14): 734.

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Notice to Purchaser

Purchaser represents and warrants that it will use the Stemolecule™ Doxycycline hyclate purely for research purposes, not for diagnostic use or resale. Stemgent will not be held responsible for patent infringement or other violations that may occur with the use of our products.

STEMGENT™

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Related Products

1. Stemgent® iPSC Generation Dox Inducible Mouse TF Lentivirus Set (Concentrated) (Cat. No. 00-0003)
2. Stemgent® iPSC Generation Dox Inducible Mouse TF Lentivirus Set: OKSM (Cat. No. 00-0004)
3. Stemgent® iPSC Generation DOX Inducible Human TF Lentivirus Set: OKSM (Cat. No. 00-0011)
4. Stemgent® iPSC Generation Dox Inducible Human TF Lentivirus Set: OKSM (Concentrated) (Cat. No. 00-0012)
5. Stemgent® iPSC Generation DOX Inducible Mouse TF Lentivirus Set: OKSM + RG (Concentrated) (Cat. No. 00-0014)
6. Stemgent® iPSC Generation Dox Inducible Mouse TF Lentivirus Set: OKSM + RG (Cat. No. 00-0021)
7. Stemgent® iPSC Generation Dox Inducible Human Lentivirus Set: OKSM + RG (Concentrated) (Cat. No. 00-0037)
8. Stemgent® Dox Inducible mSox2-Lentivirus (Concentrated) (Cat. No. 07-0002)
9. Stemgent® Dox Inducible mOct3/4-Lentivirus (Concentrated) (Cat. No. 07-0003)
10. Stemgent® Dox Inducible mc-Myc-Lentivirus (Concentrated) (Cat. No. 07-0004)
11. Stemgent® Dox Inducible mKlf4-Lentivirus (Concentrated) (Cat. No. 07-0005)
12. Stemgent® iPSC Generation Dox Inducible Mouse TF Lentivirus Sox2 (Cat. No. 07-0007)
13. Stemgent® iPSC Generation Dox Inducible Mouse TF Lentivirus Oct4 (Cat. No. 07-0008)
14. Stemgent® iPSC Generation Dox Inducible Mouse TF Lentivirus c-Myc (Cat. No. 07-0009)
15. Stemgent® iPSC Generation Dox Inducible Mouse TF Lentivirus Klf4 (Cat. No. 07-0010)
16. Stemgent® iPSC Generation DOX Inducible hTF Lentivirus Oct4 (Cat. No. 07-0031)
17. Stemgent® iPSC Generation DOX Inducible hTF Lentivirus Sox2 (Cat. No. 07-0032)
18. Stemgent® iPSC Generation DOX Inducible hTF Lentivirus Klf4 (Cat. No. 07-0033)
19. Stemgent® iPSC Generation DOX Inducible hTF Lentivirus c-Myc (Cat. No. 07-0034)
20. Stemgent® iPSC Generation Dox Inducible Human TF Lentivirus Oct4 (Concentrated) (Cat. No. 07-0035)
21. Stemgent® iPSC Generation Dox Inducible Human TF Lentivirus Sox2 (Concentrated) (Cat. No. 07-0036)
22. Stemgent® iPSC Generation Dox Inducible Human TF Lentivirus Klf4 (Concentrated) (Cat. No. 07-0037)
23. Stemgent® iPSC Generation Dox Inducible Human TF Lentivirus c-Myc (Concentrated) (Cat. No. 07-0038)