

# Cell reprogramming tools

## Products and services for non-integrating reprogramming

### Gibco™ CytoTune™ -iPS 2.0 Sendai Reprogramming Kit

The CytoTune -iPS 2.0 kit offers the highest efficiency for iPSC generation. Non-integrating Sendai virus particles efficiently deliver the Yamanaka factors to somatic cells, including blood, in just one overnight incubation.

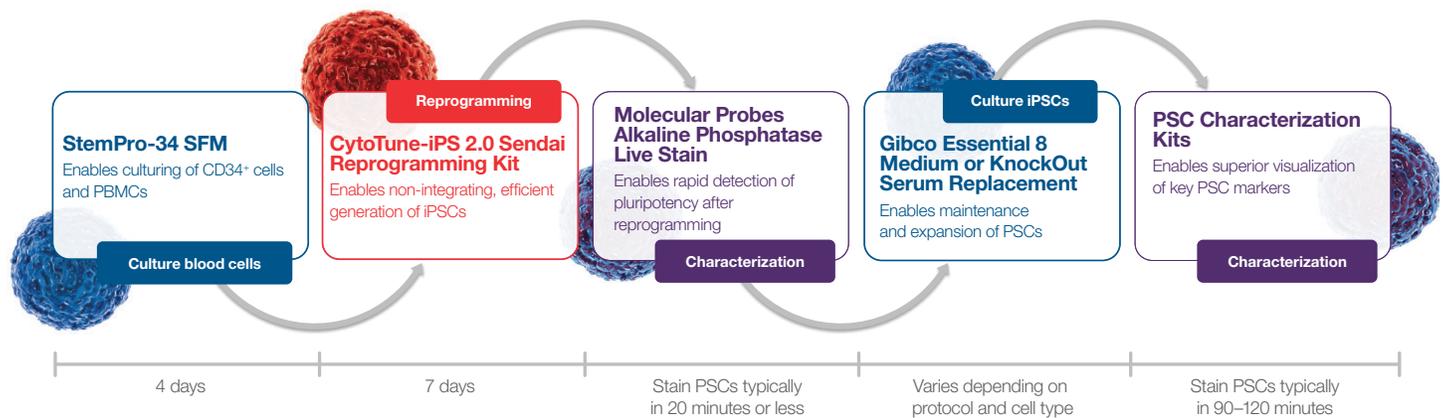
The 2.0 version offers:

- The highest reprogramming efficiency, for more colonies than other reprogramming technologies
- Lower cytotoxicity to allow for smaller starting cell populations
- Faster clearance to get to your induced pluripotent stem cell (iPSC) experiments sooner

The CytoTune-iPS 2.0 kit utilizes a polycistronic vector that allows for increased reprogramming efficiencies with a low multiplicity of infection (MOI), smaller starting populations, and a faster clearance rate of the Sendai virus backbone and transgenes for cell types such as BJ fibroblasts, PBMCs, and CD34<sup>+</sup> blood cells.



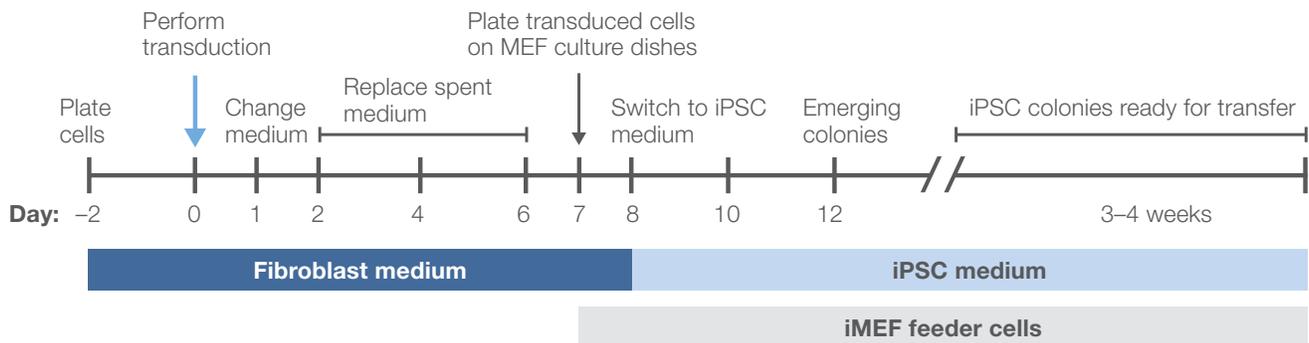
This system utilizes non-integrating Sendai virus particles to deliver the Yamanaka factors and continues to be extremely easy to use, requiring only one overnight incubation compared to the multiple days of transductions required for mRNA reprogramming. Sendai reprogramming vectors do not integrate into chromosomes of the target cells and therefore do not potentially disrupt important genes. They are capable of transducing a wide range of cell types in proliferative and quiescent states.



Reprogramming system for blood cells, beginning with the culture of blood cells using StemPro-34 SFM and continuing through reprogramming with the CytoTune-iPS 2.0 Sendai Reprogramming Kit and to expansion and characterization of derived PSCs.

## CytoTune-iPS 2.0 Sendai Reprogramming Kit workflow

The major steps required for reprogramming human neonatal foreskin fibroblasts, using the CytoTune-iPS 2.0 Sendai Reprogramming Kit to generate iPSCs cultured on MEF feeder cells, are shown below. The CytoTune Kit requires only one overnight incubation, compared to the multiple days of transductions required for mRNA reprogramming.



## Product selection guide

Reprogramming somatic cells to iPSCs is a critical and potentially time-intensive step in your stem cell research. That's why we offer choices for integration-free reprogramming technologies and services that fit your research and resource needs—you can do it yourself or let us do it for you.

	Episomal iPSC Reprogramming Vectors*	Epi5 Episomal iPSC Reprogramming Kit†	CytoTune-iPS 2.0 Sendai Reprogramming Kit
	Proven technology for virus-free iPSC generation	High-efficiency, viral-free system requiring no small molecules	Highest-efficiency, integration-free reprogramming system
Reprogramming efficiency with BJ fibroblasts	0.002–0.08%	0.04–0.3%	0.02–1.2%
Genes utilized	Thomson/Yamanaka factors	Yamanaka factors + Lin28	Yamanaka factors
Basic steps for fibroblast reprogramming	Grow fibroblasts in DMEM + 10% FBS Reprogram via electroporation using Neon system with N-2/B-27 Supplement + small molecules Day 15 transfer to Essential 8 Medium	Grow fibroblasts in DMEM + 10% FBS Reprogram via electroporation using Neon system with N-2/B-27 Supplement Day 15 transfer to Essential 8 Medium	Grow fibroblasts in DMEM + 10% FBS Reprogram by adding CytoTune-iPS 2.0 kit components to cells in fibroblast medium Day 7 transfer to Essential 8 Medium or KSR-supplemented medium
Genomic integration-free	✓	✓	✓
Virus-free reprogramming	✓	✓	–
Blood cell reprogramming	✓	✓	✓
Transfection products	Neon Transfection System or similar device	Neon Transfection System or Lipofectamine 3000 reagent	None
Viral clearance	NA	NA	Up to 5 passages
Wells of fibroblasts per kit	50 wells (in 6-well plates)	20 wells (in 6-well plates)	5 wells (in 6-well plates)
Available in CellModel Services	–	✓	✓

## Complementary products to support CytoTune Sendai technology

### Will Sendai work with your cells?

#### Gibco™ CytoTune™ EmGFP Sendai Fluorescence Reporter

This reporter allows you to determine if the Sendai virus particles that are used in the CytoTune kits can transduce your cell type of interest.

Find out more at [thermofisher.com/cytotunegfp](https://www.thermofisher.com/cytotunegfp)

### Need to verify Sendai clearance?

#### Applied Biosystems™ TaqMan™ iPSC Sendai Detection Kit

The detection kit contains 5 TaqMan assays for detecting the presence of Sendai virus and exogenous transcription factors (OCT3/4, SOX2, KLF4, and c-Myc) delivered to cells using the CytoTune-iPS Sendai Reprogramming Kit.

Find out more at [thermofisher.com/sendaiclearance](https://www.thermofisher.com/sendaiclearance)

### Invitrogen™ Epi5™ Episomal iPSC Reprogramming Kit†

The Epi5 Episomal iPSC Reprogramming Kit provides an easy-to-use set of 5 Invitrogen™ Episomal iPSC Reprogramming Vectors with efficiencies in the range of 0.04 to 0.3%, depending upon the cell type being reprogrammed.

- Easy to use and highly efficient—when used with Invitrogen™ Lipofectamine™ 3000 Transfection Reagent, enables highly efficient reprogramming of somatic cells without the need for electroporation
- Transgene- and virus-free reprogramming allows use in basic to preclinical research
- Flexibility in media systems—can be used in either feeder-free or feeder-based media systems

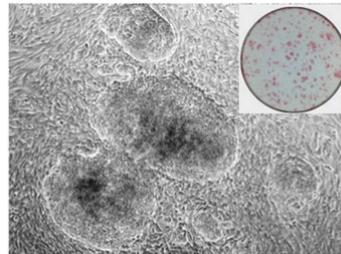
### Episomal iPSC Reprogramming Vectors\*

Episomal iPSC Reprogramming Vectors are designed to provide the optimal system for generating transgene- and virus-free iPSCs in a feeder-free environment.

- Transgene- and virus-free reprogramming allows use in basic to preclinical research
- Shown to be effective with a variety of somatic cell types
- Optimized for feeder-free reprogramming—allows for defined and feeder-free reprogramming when used with Essential 8 Medium

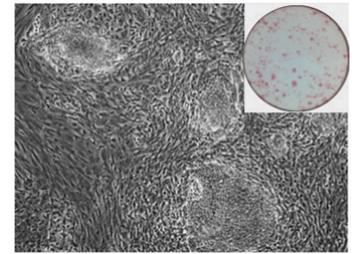
### A

Lipofectamine 3000 reagent



### B

Electroporation (Neon system)



Results obtained, via brightfield microscopy, for (A) Lipofectamine 3000 reagent and (B) the Neon Transfection System indicate that reprogramming was successful in generating iPSC colonies. A terminal stain was performed with red alkaline phosphatase.

## Let us do it for you.

### CellModel™ Services

Our CellModel Services team can reprogram human fibroblasts or blood cells and provide iPSCs to you in as little as 4 to 6 months. Reprogramming methods available include the CytoTune-iPS Sendai Reprogramming Kit, CytoTune-iPS 2.0 Sendai Reprogramming Kit, and the Epi5 Episomal iPSC Reprogramming Kit.

- Top clone delivered cryopreserved and characterized
- Many options available to customize your stem cell reprogramming project
- Ability to continue your project with downstream applications such as differentiation, assay development, and screening
- Exceptional support and frequent project communication provided by a team with extensive experience delivering custom services

To request a quote, go to [thermofisher.com/cellmodel](https://www.thermofisher.com/cellmodel)

## Ordering information

Product	Unit size	Cat. No.
CytoTune-iPS 2.0 Sendai Reprogramming Kit	1-pack	A16517
CytoTune-iPS 2.0 Sendai Reprogramming Kit	3-pack	A16518
CytoTune-iPS Sendai Reprogramming Kit	1-pack	A1378001
CytoTune-iPS Sendai Reprogramming Kit	3-pack	A1378002
CytoTune EmGFP Sendai Fluorescence Reporter		A16519
TaqMan iPSC Sendai Detection Kit	75 reactions/assay	A13640
Episomal iPSC Reprogramming Vectors	1 tube	A14703
Epi5 Episomal iPSC Reprogramming Kit	1 kit	A15960
Lipofectamine 3000 Transfection Reagent (0.75 mL)	.75 mL	L3000008
Neon Transfection System	1 each	MPK5000
StemPro-34 SFM (1X)	500 mL	10639-011
Essential 8 Medium	500 mL	A1517001
Alkaline Phosphatase Live Stain	50 $\mu$ L	A14353
Pluripotent Stem Cell 4-Marker Immunocytochemistry Kit	40 tests	A24881
Pluripotent Stem Cell Immunocytochemistry Kit (OCT4, SSEA4)	40 tests	A25526
Pluripotent Stem Cell Immunocytochemistry Kit (SOX2, Tra-1-60)	50 tests	A25525
TRA-1-60 Alexa Fluor 488 Conjugate Kit for Live Cell Imaging	50 tests	A25618
TRA-1-60 Alexa Fluor 555 Conjugate Kit for Live Cell Imaging	50 tests	A24879
TRA-1-60 Alexa Fluor 594 Conjugate Kit for Live Cell Imaging	50 tests	A24882
CD44 Alexa Fluor 488 Conjugate Kit for Live Cell Imaging	50 tests	A25528
Gibco Mouse (ICR) Inactivated Embryonic Fibroblasts	1 mL	A24903

\*Commercialized in partnership with Cellular Dynamics International.

†Designed by Dr. Okita in the laboratory of Professor Yamanaka at the Center for IPS Cell Research and Application (CiRA), Kyoto University.

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[thermofisher.com/reprogram](http://thermofisher.com/reprogram)

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