

## Overview

REPROCELL's Stemgent® StemRNA™-SR Reprogramming Kit is the first commercial cellular reprogramming kit combining self-replicative RNA (srRNA) and microRNA technologies to provide stem cell researchers with safe, flexible, fast and cost-effective-reprogramming of both endothelial progenitor cells (EPCs) derived from human peripheral and cord blood as well as adult human and neonatal fibroblasts.



## Key Benefits

### Flexible technology generates high quality human iPS cell lines from both blood samples and fibroblast lines.

The reprogramming kit protocol has the flexibility to use genetically stable EPCs derived from fresh or frozen human peripheral and cord blood, or neonatal and adult human fibroblasts.

### Reproducible StemRNA-SR kit protocol requires two transfections.

A two-transfection protocol includes one microRNA transfection to enhance reprogramming reproducibility and efficiency, and one srRNA transfection for OKSiM reprogramming factor delivery. Primary iPS cell colonies are generated in as few as three weeks with demonstrated patient-to-patient reprogramming efficiencies of  $\geq 70\%$  with the unmodified protocol (Table 1).

### Kit utilizes rapid, streamlined protocols for out-of-the-box reprogramming success.

The feeder-free, xeno-free protocol does not require feeders or conditioned medium, eliminating these time-consuming preparatory steps. The colonies are ready to pick and expand in as little as 10 to 14 days.

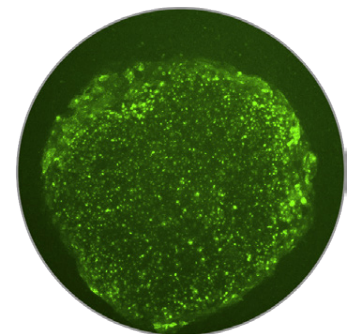
### Virus and DNA-free StemRNA-SR kit extends RNA reprogramming technology for clinical research.

Virus and DNA-free srRNA reprogramming of genetically stable EPCs combines easy clinical access to patient blood samples with integration-free RNA reprogramming technology. This facilitates the generation of clinically-relevant iPS cell lines.

Blood Source	Primary EPC Establishment Efficiency	Reprogramming Efficiency (Patient to Patient)
Peripheral Blood	18/22 = 82%	9/13 = 70%
Cord Blood	46/53 = 87%	33/41 = 81%
TOTAL	64/75 = 85%	42/54 = 78%

**TABLE 1. Efficient establishment and cellular self-replicative RNA reprogramming of EPCs derived from human blood samples.**

Primary EPC establishment efficiency for peripheral blood is cumulative of both fresh blood and cryopreserved MNC (mononuclear cell) samples. Cord blood efficiency data are from cryopreserved MNCs only. Each collagen-coated T-75 flask was seeded with a minimum of  $5 \times 10^7$  MNCs. The unmodified StemRNA-SR kit protocol demonstrated high patient-to-patient reprogramming efficiency using a single reprogramming run. Typical final yields are 10-20 iPS colonies per well in a 6-well plate format.



## Key Benefits

- Robust, validated protocol for reprogramming genetically stable EPCs from human peripheral or cord blood
- Virus- and DNA-free OKSiM reprogramming factors using self-replicative RNA
- Two-transfection protocol eliminates need for conditioned medium, co-transfections, small molecules and feeder cells
- iPS cell colonies generated from EPCs and fibroblasts in as few as 25 days
- Protocol accommodates 5 reprogramming wells in a 6-well plate format

## Product Ordering Information

Product Name	Quantity	Cat. No.
<b>Stemgent StemRNA-SR Reprogramming Kit</b> Components: <ul style="list-style-type: none"><li>OKSiM srRNA</li><li>microRNA Reprogramming Cocktail</li><li>B18R Recombinant Protein</li></ul>	1 kit with 3 components	00-0075
<b>Stemgent StemRNA 3<sup>rd</sup> Gen Reprogramming Kit</b> Components: <ul style="list-style-type: none"><li>Reprogramming RNAs (Oct4, Sox2, Klf4, c-Myc, Nanog and Lin28)</li><li>Immune-ablating RNA-cocktail (E3, K3, and B18)</li><li>Reprogramming-associated microRNAs</li></ul>	1 kit with 3 components	00-0076
<b>NutriStem<sup>®</sup> hPSC XF Culture Medium</b>	500 mL	01-0005
<b>FGF-Basic, Human Recombinant (bFGF)</b>	50 µg	03-0002
<b>StainAlive™ Tra-1-60 (Dylight™ 488), mouse anti-human</b>	100 µL	09-0068

## Related Stem Cell Products and Services

- Antibodies
- Culture media for hES/iPS cell culture and cellular reprogramming
- Services – Custom induced pluripotent (iPS) cell line generation
- Training – RNA Reprogramming

## Related Stem Cell Products and Services

Yoshioka, N. *et al.* (2013) Efficient generation of human iPSCs by a synthetic self-replicative RNA. *Cell Stem Cell*; 13(2): 246-54.

Geti, I. *et al.* (2012) A practical and efficient cellular substrate for the generation of induced pluripotent stem cells from adults: blood-derived endothelial progenitor cells. *Stem Cells Transl. Med.*; 1:855-65.

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