

## Product Specification Sheet

<b>Product Name</b>	StemRNA™ 3 <sup>rd</sup> Gen Reprogramming Kit
<b>Catalog Number</b>	00-0076
<b>Size</b>	1 kit
<b>Kit Contents</b>	1 vial each of: <ul style="list-style-type: none"><li>• OKSMNL NM-RNA (Part No. 05-0040), 30 µg at 100 µg/mL</li><li>• EKB NM-RNA (Part No. 05-0041), 20 µg at 100 µg/mL</li><li>• NM-microRNAs (Part No. 05-0042), 15 µg at 285 µg/mL</li></ul>
<b>Description</b>	<p>The Stemgent StemRNA 3<sup>rd</sup> Gen Reprogramming Kit contains three essential component reagents for non-integrating reprogramming that have been functionally validated to support the generation of induced pluripotent stem (iPS) cell colonies from fibroblasts, blood-outgrowth endothelial progenitor cells (EPCs), and urine derived progenitor cells (UPCs).</p> <p><i>OKSMNL NM-RNA</i> - A mixture of six mRNAs encoding for the reprogramming factors Oct4, Sox2, Klf4, cMyc, Nanog, and Lin28.</p> <p><i>EKB NM-RNA</i> - A necessary addition to the reprogramming medium to reduce the cellular interferon response to exogenous mRNAs. The combined use of EKB NM-RNA with the Stemgent StemRNA 3<sup>rd</sup> Gen Reprogramming Kit prevents apoptosis and supports productive RNA reprogramming.</p> <p><i>NM-microRNAs</i> - A mixture of microRNAs that enhance the reproducibility and efficiency of RNA-based reprogramming methods using EPCs, UPCs, or fibroblasts.</p>
<b>Storage and Stability</b>	Store the box containing the vials at or below -70 °C. Kit components are stable for a minimum of three months from date of receipt when stored as directed
<b>Quality Control</b>	Individual mRNAs are tested for size and integrity. The Stemgent® StemRNA™ 3 <sup>rd</sup> Gen Reprogramming is functionally tested for successful RNA-based reprogramming of human umbilical vein endothelial cells (HUVECs), adult fibroblasts, urine-derived progenitor cells (UPCs) and blood-derived endothelial progenitor cells (EPCs). Complete reprogramming if iPS cell colonies is confirmed by expression of pluripotency markers and appropriate colony morphology. All components are sterile and have tested negative for mycoplasma.



**Recommended Usage**

For use with associated StemRNA 3rrd Gen Reprogramming Kit protocols for the generation of iPS cells.

**References**

1. Yoshida Y; Takahashi K; Okita K; Ishisaka T; Yamanaka S. "Hypoxia enhances the generation of induced pluripotent stem cells." *Cell Stem Cell* 5:237-41 (2009).
2. Poleganov MA; Eminli S; Beissert T; Herz S; Moon JI; Goldmann J; Beyer A; Heck R; Burkhardt I; Barea Roldan D; Türeci Ö; Yi K; Hamilton B; Sahin U. Efficient Reprogramming of Human Fibroblasts and Blood-Derived Endothelial Progenitor Cells Using Non modified RNA for Reprogramming and Immune Evasion. *Human Gene Therapy* 26:751 (2015)

**Limited Use Licenses**

This product is intended for research use only. This product uses technology exclusively licensed from BioNTech AG, as described in WO 2009/077134. This product may also be covered by one or more of WO 2007/036366, WO 2008/157688, WO 2012/072269, and WO 2014/072061, licensed from BioNTech AG.

**iPS Academia Japan, Inc.**

Definitions:

1. SG: Stemgent, Inc.
2. iPS-AJ: iPS Academica Japan, Inc.
3. User: The person or entity who purchased Products(s) from SG or its authorized distributor.
4. Product: The iPS cells (iPSCs) or the product comprising one of more components to produce iPSCs, which SB provides with or sells, and are claimed in the patents and patents applications mentioned below.
5. Pluripotent Cells: iPSCs provided from SG, iPSCs regenerated or derived by User with the Product provided by SG.
6. Progeny: Cells derived by User from the Pluripotent Cells which retain the ability to self-replicate, retain the ability to differentiate into cell types from all three germ layers and remain in an undifferentiated state whether or not said cells are genetically

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modified and further including cell lines cloned from such cells so long as the cells retain the ability to self-replicate, retain the ability to differentiate into cell types from all three germ layers and remain in an undifferentiated state.

7. Modification: Cells which are created by Use or created through the use of the Pluripotent Cells or Progeny, but which (i) do not differentiate into cells types from all three germ layers and (ii) are in a partially or terminally differentiated state.
8. Materials: Pluripotent Cells, Progeny and Modification.
9. Commercial Use: Any activity by a User consisting of at least one of the following activities: (i) use of the Pluripotent Cells or Progeny, for manufacture of related products distributed and/or sold to a third party including but not limited to culture medium and equipment, (ii) use of the Pluripotent Cells, Progeny or Modifications to provide a service, information or data to a third party for financial gain, provided, however, that in case a non-for-profit organization provides a service, information or data on behalf of a third party having an appropriate license for AJ, such non-for profit organization's activity shall not be considered Commercial Use (ii), (iii) use of the Pluripotent Cells, Progeny of Modifications for screening small molecular compounds, antibodies, proteins, peptides and large-molecular compounds as potentially marketable compounds, provided, however, that (1) use of the Pluripotent Cells, Progeny or Modifications for target discovery, target validation or assay development are not considered Commercial Use (iii), and (2) use of the Pluripotent Cells, Progeny or Modifications for screening by a not-for-profit solely for its internal research use for noncommercial purposes shall not be considered as Commercial Use (iii), (iv) sale, lease, distribution or transfer of Pluripotent Cells, Progeny or Modifications to third party(ies) for financial gain, provided, however that transfer of Pluripotent Cells, Progeny or Modifications by a not for-profit organization to another not-for-profit organization solely for its internal research purposes is not considered Commercial use (iv), or (v) sale, lease, distribution or transfer of Pluripotent Cells and Progeny to for-profit organization not for financial gain. Note: "financial gain" here means any

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financial benefit or gain earned by User which consideration or revenue of a transaction exceeds its cost of operating the transaction.

User Restrictions:

1. The Product and its use are the subjects to one or more of US Patent Nos. 8048999; 8058065; 8129187; and corresponding foreign patents and/or other pending US Patents and corresponding foreign patent applications which iPS-AJ have been granted the license right with sub-licensable right.
2. The purchase of the Product conveys to User the limited, non-exclusive and non-transferable right (without the right to sell, repackage, or further sublicense) under the patents set out in Section 1 above to use the purchased amount of the Product and the derivatives of the Product in internal research conducted by User (whether User is non-for-profit organization or for-profit organization). No other right is granted to User whether expressly, by implication, by estoppels or otherwise. In particular, the purchase of the Product does not include nor carry any right or license to use, develop or otherwise exploit the Product commercially, and no rights are conveyed to User to use the Product for any other purpose.
3. User may use Materials for its internal research in its laboratories located in the country and area specified, provided, however that Commercial Use of Materials by User shall be restricted and be required with appropriate license or sub-license from iPS-AJ or SG. For clarity, in case that User is a non-for profit organization, including academia, governmental body and other non-for profit organization, internal research use of Materials by User for academic, educational and other non-commercial purpose and transfer of Materials between non-for-profit organizations for noncommercial purposes is not restricted.



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4. User agrees to use Materials in compliance with all applicable statutes and regulations, but not to use Materials for application and use for human/animal therapeutic, diagnostic and/or prophylactic purposes including but not limited to clinical applications, cell therapy, transplantation and/or regenerative medicine without appropriate license.
5. In case of Commercial Use, Category (iii), SG has the right to sublicense under agreed to terms with AJ. Please contact SG for details.
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