STEMdiff™ Kidney Organoid Kit

Serum-free culture medium kit for differentiation of human pluripotent stem cells (hPSCs) into kidney organoids

Catalog #05160 1 Kit

STEMCELL™ TECHNOLOGIES
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Product Description

STEMdiff™ Kidney Organoid Kit is a complete, serum-free cell culture medium system that supports highly efficient and reproducible generation of human pluripotent stem cell (hPSC)-derived kidney organoids in a simple two-stage differentiation protocol. hPSCs are differentiated in a stepwise manner through stages of late primitive streak, intermediate, and metanephric mesoderm to give rise to pretubular aggregates, then renal vesicles that ultimately form self-organizing kidney organoids. These kidney organoids are composed of convoluted tubular structures with typical nephron-like segmentation marked by the expression of podocyte (podocalyxin [PODXL]), proximal (lotus tetragonolobus lectin [LTL]), and distal tubule (E-cadherin [ECAD]) markers. Furthermore, kidney organoid cultures contain associated CD31 (platelet endothelial cell adhesion molecule)-expressing endothelial cells and mesenchymal cells double-positive for MEIS1/2/3 (Meis homeobox 1/2/3) and VIM (vimentin). The kidney organoids provide a relevant and convenient model for developmental studies, disease modeling, and phenotypic high-throughput assays such as nephrotoxic compound screening.

STEMdiff™ Kidney Organoid Kit was developed based on the differentiation protocol by Freedman et al. It has an optimized, quality-controlled formulation to increase reproducibility and efficiency across multiple hPSC lines. The kit has been optimized for the differentiation of hPSCs previously cultured in mTeSR™1 (Catalog #85850). It is also compatible with hPSCs maintained in mTeSR™ Plus (Catalog #100-0276), provided that mTeSR™1 is used for the first three days of the protocol.

Product Information

The following components are sold as a complete kit (Catalog #05160) and are not available for individual sale.

COMPONENT NAME	COMPONENT #	SIZE	STORAGE	SHELF LIFE
STEMdiff™ Kidney Basal Medium	05161	100 mL	Store at -20°C.	Stable until expiry date (EXP) on label.
STEMdiff™ Kidney Supplement SG (100X)	05162	200 µL	Store at -20°C.	Stable until expiry date (EXP) on label.
STEMdiff™ Kidney Supplement DM (50X)*	05163	1.6 mL	Store at -20°C.	Stable until expiry date (EXP) on label.

*This component contains material derived from human plasma. Donors have been tested and found negative for HIV-1 and -2, hepatitis B, and hepatitis C prior to donation. However, this product should be considered potentially infectious and treated in accordance with universal handling precautions.

Directions for Use

For complete instructions, refer to the Technical Manual: Generation of Human Kidney Organoids Using STEMdiff™ Kidney Organoid Kit (Document #10000005460), available at www.stemcell.com or contact us to request a copy.

Related Products

For related products, including specialized culture and storage media, supplements, antibodies, cytokines, and small molecules, visit www.stemcell.com or contact us at techsupport@stemcell.com.

References

Freedman BS et al. (2015) Modelling kidney disease with CRISPR-mutant kidney organoids derived from human pluripotent epiblast spheroids. Nature Communications 6: 8715.