

SCALE UP

With 3D TeSR™ Media and the PBS-MINI Bioreactor

Expand Large Numbers of hPSCs in 3D

Suspension culture of human pluripotent stem cells (hPSCs) as 3D aggregates provides a convenient method to produce large numbers of high-quality, undifferentiated hPSCs with reduced labor and costs. hPSCs expanded in the TeSR™ family suspension culture systems have robust growth, maintain high expression of pluripotent stem cell markers, and retain trilineage differentiation ability.

TeSR™-AOF 3D

Use TeSR™-AOF 3D (Catalog #100-0720) to safely generate large numbers of high-quality hPSCs for cell banking and cell therapy manufacturing applications. TeSR™-AOF 3D supports rapid scale-up without requiring adaptation from 2D culture, while also reducing time and labor with a fed-batch feeding strategy that does not require full medium changes. And, as you might be thinking about the eventual therapeutic applications of your work, TeSR™-AOF 3D contains no materials of animal or human origin to at least the secondary level of manufacturing, eliminating the need for viral safety testing.

Why Use Suspension Culture?

- Simplify your culture system with serum-free media that do not require microcarriers or external matrices
- Rapidly generate billions of hPSCs in as few as 2 - 3 weeks
- Save time and money with a fed-batch strategy that does not require full medium changes

PBS-MINI Bioreactor

Rapidly Scale Up Your 3D hPSC Culture



Reliably and rapidly scale up your 3D cell cultures and suspensions with the PBS-MINI Bioreactor (Catalog #100-1005). The gentle yet efficient mixing provided by the Vertical-Wheel™ impeller enables the expansion of shear-sensitive cells without anti-foaming agents or shear protectants. Ideal for hPSCs cultured in the TeSR™ 3D family of media, the compact, sealed base unit and the 0.1 (Catalog #100-1006) and 0.5 (Catalog #100-1007) MAG Single-Use Vessels can be used inside incubators. Conveniently control your culture system with a speed dial and digital display, and visualize cells in low-light conditions using built-in LED lights.

Learn more at www.stemcell.com/PBS-MINI

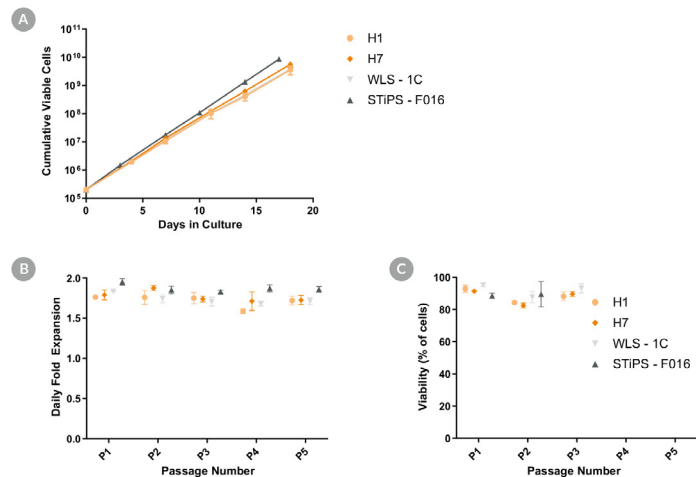


Figure 1. Growth of hPSCs in TeSR™-AOF 3D

TeSR™-AOF 3D supports the expansion and high viability of hPSCs over multiple passages in aggregate suspension culture. Shown are (A) cumulative viable cells, (B) daily fold expansion, and (C) end-of-passage viabilities in hESC (H1 and H7) and hiPSC (WLS-1C and STIPS-F016) lines over 5 passages. Error bars represent ± SD, n = 3.

Learn more at www.stemcell.com/TeSR-AOF-3D

mTeSR™3D

Based on mTeSR™1, mTeSR™3D (Catalog #03950) is optimized for the expansion and scale-up of hPSCs. It is optimized as a fed-batch culture system, in which required nutrients are added daily, eliminating the need for daily medium exchanges.

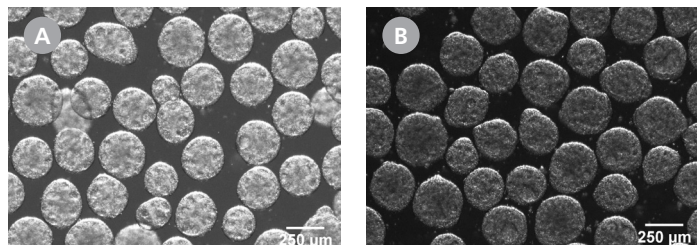


Figure 2. Morphology of hPSC Aggregates Cultured in mTeSR™3D

Characteristic morphology of suspension-cultured hPSC aggregates includes: approximately spherical shape, edges that are clear but not perfectly smooth, and a mottled or pock-marked appearance. Aggregates should be approximately 350 - 400 μm by the end of the passage. Shown are (A) human ES cell line H7 and (B) human iPSC cell line STiPS-F016 cultured in mTeSR™3D.

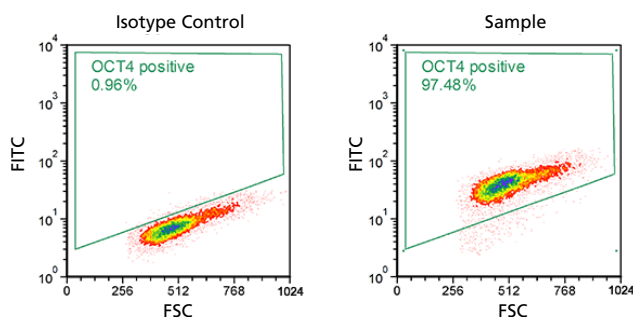


Figure 25. OCT4 Expression of hPSCs Cultured in mTeSR™3D

hPSCs expanded in mTeSR™3D maintain expression of pluripotent stem cell markers. Shown are representative plots of OCT4 expression after 7 passages in mTeSR™3D.

Learn more at www.stemcell.com/mTeSR3D



VIRTUAL TRAINING COURSE

Learn the principles of 3D suspension culture and how to scale up your hPSCs in the PBS-MINI Bioreactor in this free, on-demand course.

www.stemcell.com/psc-3d-on-demand-course

TeSR™-E8™3D

TeSR™-E8™3D (Catalog #3990) is a low protein, animal component-free medium based on TeSR™-E8™. The system contains only the most critical components for hPSCs, providing a simpler culture medium for robust, large-scale hPSC expansion. It uses a fed-batch feeding strategy that replenishes nutrients daily while reducing labor and costs.

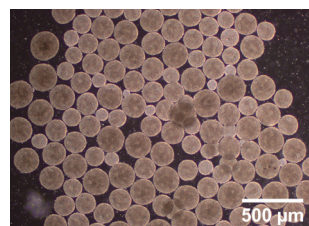


Figure 3. Morphology of hPSC Aggregates Cultured in TeSR™-E8™3D

Characteristic morphology of suspension-cultured hPSC aggregates includes: approximately spherical shape, edges that are clear but not perfectly smooth, and a mottled or pock-marked appearance. Aggregates should be approximately 350 - 400 μm by the end of the passage. Shown are human ES cell line H1 cultured in TeSR™-E8™3D.

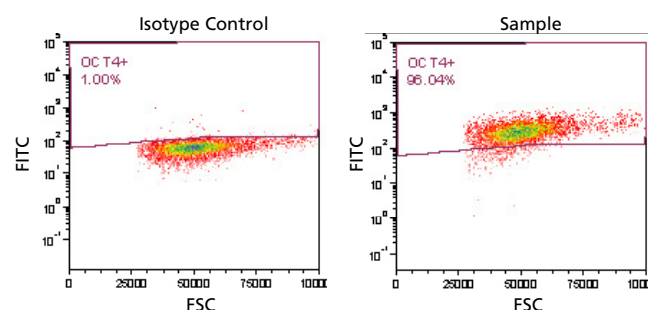


Figure 27. OCT4 Expression of hPSCs Cultured in TeSR™-E8™3D

hPSCs expanded in TeSR™-E8™3D maintain expression of pluripotent stem cell markers. Shown are representative plots of OCT4 expression after 10 passages in TeSR™-E8™3D.

Learn more at www.stemcell.com/TeSR-E8-3D

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