

A Simple Method for Mid-scale Expansion of hPSCs



A reproducible and versatile system for the dynamic expansion of human pluripotent stem cells in suspension

Elanzew *et al.*. Published Oct, 2015: *Biotechnol. J.* 2015, 10, 1589–1599.

DOI: <https://DOI.10.1002/biot.201400757> (1)

CERO, (aka BioLevigator*) is a 3D benchtop suspension incubator / bioreactor keeping cells floating with hardly any shear forces. Culture chambers control CO₂, pH, temperature and tube rotation.

At the Institute of Reconstructive Neurobiology and LIFE&BRAIN GmbH in Bonn, Germany, CERO was evaluated for parallel expansion of hPSCs as undifferentiated aggregates.

STUDY

CERO was evaluated as a 3D cell culture technology allowing simple, robust, cost-efficient and parallel propagation of hiPSC as 3D aggregates.

RESULTS

Pluripotent Stem Cell Aggregates

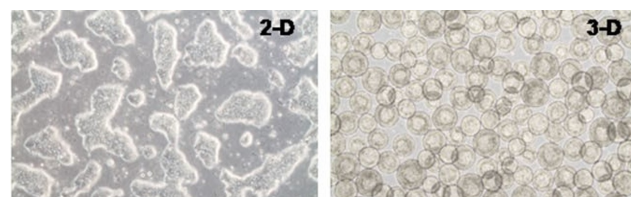
hPSCs were expanded for extended periods of time (10 passages) in mTeSR or E8 medium. The cells preserved a normal karyotype, three-germ-layer differentiation potential and high expression of pluripotency-associated markers. Expansion was feasible from low inoculation densities (0.3×10^5 cells/ml).

Downstream Applications

Seamless transition between 2D and 3D culture conditions was shown, enabling implementation of various differentiation protocols for downstream applications.

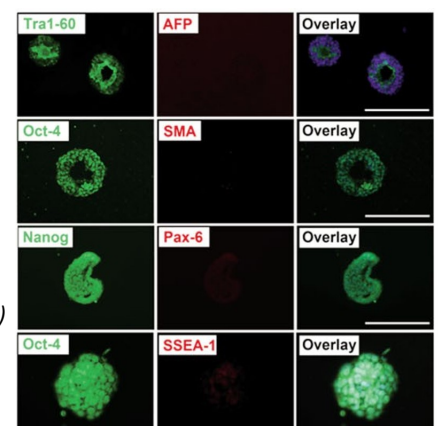
Conclusion

The authors identified CERO 3D cell culture as an ideal system for mid-scale hPSC expansion in medical research, biobanking, disease modeling or cell therapy.



Adherent hiPSC aggregates (left) and homogeneous aggregates from cultivation in CERO (right). From Elanzew *et al.*, (1)

Immuno-fluorescence analysis of pluripotency (green) and differentiation (red) at passage 10. From Elanzew *et al.*, (1)



* CERO was introduced in 2018 by OLS as a successor of BioLevigator