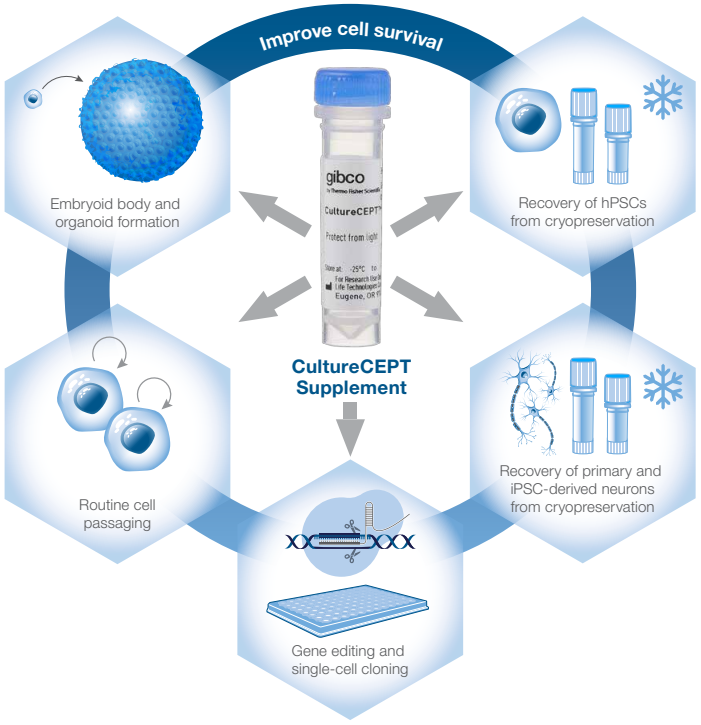
A leap forward in cytoprotection

For years researchers have turned to rho kinase (ROCK) inhibitors such as Y-27632 to limit cell death during stressful cell culture processing steps, but there is a new technology that can deliver better cell survival.

Gibco™ CultureCEPT™ Supplement is based on advancements from the Stem Cell Translation Laboratory at the NIH's National Center for Advancing Translational Sciences (NCATS) [1]. Groundbreaking research, including a screen with more than 15,000 compounds, identified a combination of small molecules that work in concert to provide significant cytoprotection. The molecules chroman 1, emricasan, polyamines, and trans-ISRIB, often referred to as CEPT, were shown to enhance cell survival during pluripotent stem cell (PSC) passaging, recovery of various cryopreserved cell types, gene editing, single-cell cloning, embryoid body creation, and organoid formation. This powerful combination of molecules protects against several stress mechanisms that a lone ROCK inhibitor, such as Y-27632, does not address.

CultureCEPT Supplement harnesses the power of CEPT and works with established media systems from Thermo Fisher Scientific, such as Gibco™ Essential 8™, StemFlex™, StemScale™, and Neurobasal™ media, to provide superior performance in a broad range of applications. The fully formulated, 1000X format is convenient to use. Simply add it to media in conjunction with stressful events.



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Recover more viable cells following high-stress events

- CultureCEPT Supplement increases PSC survival from cryopreservation

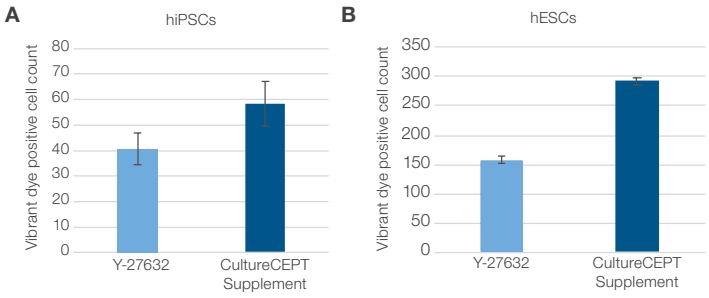
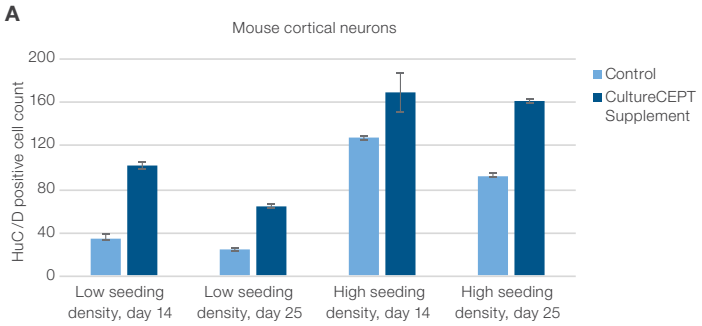


Figure 1. Cryopreserved human iPSCs (A) and human embryonic stem cells (ESCs) (B) were thawed in Essential 8 Medium (Cat. No. A1517001) containing Y-27632 or CultureCEPT Supplement. After 24 hours cells were stained with Invitrogen™ Vybrant™ DyeCycle™ Green Stain (Cat. No. V35004) and quantified.

- CultureCEPT Supplement enables healthy sphere formation

Figure 2. Cryopreserved human iPSCs were thawed and plated in StemScale Medium in round-bottom 96-well plates containing CultureCEPT Supplement, and Y-27632 or a DMSO control. Sphere formation was assessed after 24 hours.

- CultureCEPT Supplement improves survival of cryopreserved primary mouse cortical neurons, resulting in greater cell numbers sustained over duration of culture



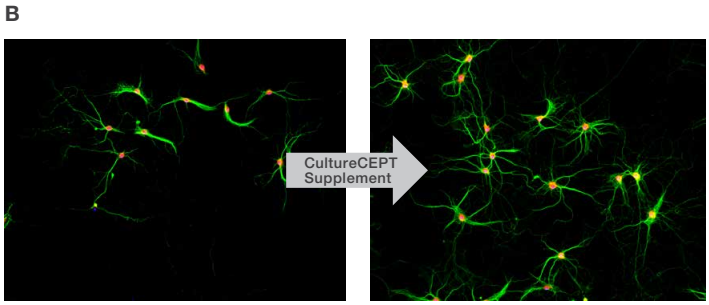


Figure 3. Cryopreserved Gibco™ Primary Mouse Cortical Neurons (Cat. No. A15586) were thawed and cultured in 96-well plates in the Gibco™ B-27™ Plus Neuronal Culture System. (A) CultureCEPT Supplement was included during the first 24 hours post-thaw. HuC/HuD positive cells were counted at day 14 and day 25 in culture. **(B)** Example images of neurons thawed with or without CultureCEPT Supplement, stained for Map2 (green), HuC/HuD (red), and DAPI (blue).

Ordering information

Product	Cat. No.
CultureCEPT Supplement, 0.5 mL	A56799
CultureCEPT Supplement, 0.1 mL	A56800

Reference

1. Chen Y, Tristan CA, Chen L, et al. A versatile polypharmacology platform promotes cytoprotection and viability of human pluripotent and differentiated cells. *Nat Methods.* 2021 May;18(5):528–541. doi: 10.1038/s41592-021-01126-2. Epub 2021 May 3. PMID: 33941937; PMCID: PMC8314867. **https://pubmed.ncbi.nlm.nih.gov/33941937/**.

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