ALS Model: TDP-43 Stress Granules Assay Cell Line Culture Instruction Manual

Materials & Reagents Required

DMEM/Nutrient Mixture F-12 Ham (D8437 from Sigma-Aldrich)
Fetal Bovine Serum (FBS)
Puromycin
Hygromycin
DPBS (Ca^{2+} & Mg^{2+} free)
Incubator, 37 °C/5% CO_2.
Tissue culture vessels
Water Bath, 37 °C
15 mL tubes.
Centrifuge
Pipette
Ice
IPTG

Complete Growth Medium

DMEM/Nutrient Mixture F-12 Ham (D8437 from Sigma-Aldrich)
Fetal Bovine Serum (10%)
Puromycin (5 µg/ml)
Hygromycin (80 µg/ml)
* IPTG (5 mM) – This compound should be added only when the culture reaches 50% confluence to induce fluorescent TDP-43 expression.

Any changes in the experimental conditions may have negative effects on cell survival and may yield abnormal cell experiment. For more information and for a complete list of Innoprot's reagents and products contact our customer service.

General Considerations: The protocols included in this manual are intended to serve as a guide only, and optimization of culture protocols is encouraged to ensure success.

1.0 IMMEDIATELY UPON DELIVERY	
1.1	Remove vial from shipping container to check that it is still frozen.
1.2	Transfer frozen vial to liquid nitrogen until you are ready to thaw and begin cell culture.
2.0 THAWING CELLS	
2.1	Prepare necessary "***Thawing medium***" and warm prior to plating cells: • DMEM/Nutrient Mixture F-12 Ham (D8437 from Sigma-Aldrich) • 10% FBS
2.2	**Thaw cells rapidly**. Place the vial in a 37ºC waterbath, hold and rotate the vial gently until the contents are completely thawed. Do not allow sample to warm to 37ºC. Cryovials should be cool to the touch when removed from bath. Passive thaw is not recommended.
2.3	Remove the vial from the waterbath immediately, wipe it dry, and transfer it to a sterile field.
2.4	Rinse the vial with 70% ethanol, and then wipe to remove excess. Remove the cap, being careful not to touch the interior threads with fingers. Using 1 ml eppendorf pipette gently resuspend the contents of the vial.
2.5	Add warm media to a 15 mL tube until the 8 ml demarcation.
2.6	Immediately transfer contents of vial to the 15 mL tube. Gently invert the tube to distribute contents.
2.7	Centrifuge at 1.500 r.p.m. for 5 minutes. Remove supernatant and resuspend cell pellet in warm medium
2.8	Count the cells and dispense the contents of the tube into a T-25 flask.
2.9	Place the flask to the incubator
2.10	For best result, do not disturb the culture for 24 hours after the culture has been initiated. Change the growth medium (including Puromycin 10µg/ml and Hygromycin 80 µg/ml)) the next day to remove unattached cells, then every other day thereafter.

3.0 MAINTENANCE OF THE CULTURE	
3.1	Change the medium to fresh supplemented medium the next morning after establishing a culture from cryopreserved cells. For subsequent subcultures, change medium 48 hours after establishing the subculture.
3.2	Once the culture reaches 50% confluence, change medium every day until the culture is approximately 80% confluent.
3.3	Subculture the cells when they are over 90% confluent.
4.0 SUBCULTURING	
4.1	Warm medium, trypsin/EDTA solution and DPBS to room temperature. We do not recommend warming the reagents and medium at 37 ºC waterbath prior to use.
4.2	Rinse the cells with DPBS.
4.3	Add 1 ml of trypsin/EDTA solution into flask (in the case of T-25 flask); gently rock the flask to make sure cells are covered by trypsin/EDTA solution; incubate the flask at 37ºC incubator for 1 to 2 minutes or until cells are completely rounded up (monitored with inverted microscope). During incubation, prepare a 15 ml conical centrifuge tube with 5 ml of FBS; transfer trypsin/EDTA solution from the flask to the 15 ml centrifuge tube (a few percent of cells may detached); at the end of trypsinisation, with one hand hold one side of flask and the other hand gently tap the other side of the flask to detach cells from attachment; check the flask under inverted microscope to make sure all cells are detached, add 5 ml of complete medium to the flask and transfer detached cells to the 15 ml centrifuge tube; add another 5 ml of complete medium to harvest the residue cells and transfer it to the 5 ml centrifuge tube. Examine the flask under inverted microscope to make sure the cell harvesting is successful by looking at the number of cells left behind. There should be less than 5%.
4.4	Centrifuge the 15 ml centrifuge tube (harvested cell suspension) at 1200 rpm (Beckman Coulter Allegra 6R centrifuge or similar) for 5 min; re-suspend cells in growth medium.

5.0 PROTEIN EXPRESSION INDUCTION	
5.1	Once the culture reaches 50% confluence, add complete medium containing 5mM of IPTG.
5.2	24 hours after induction with IPTG, fluorescent TDP43 is visible

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