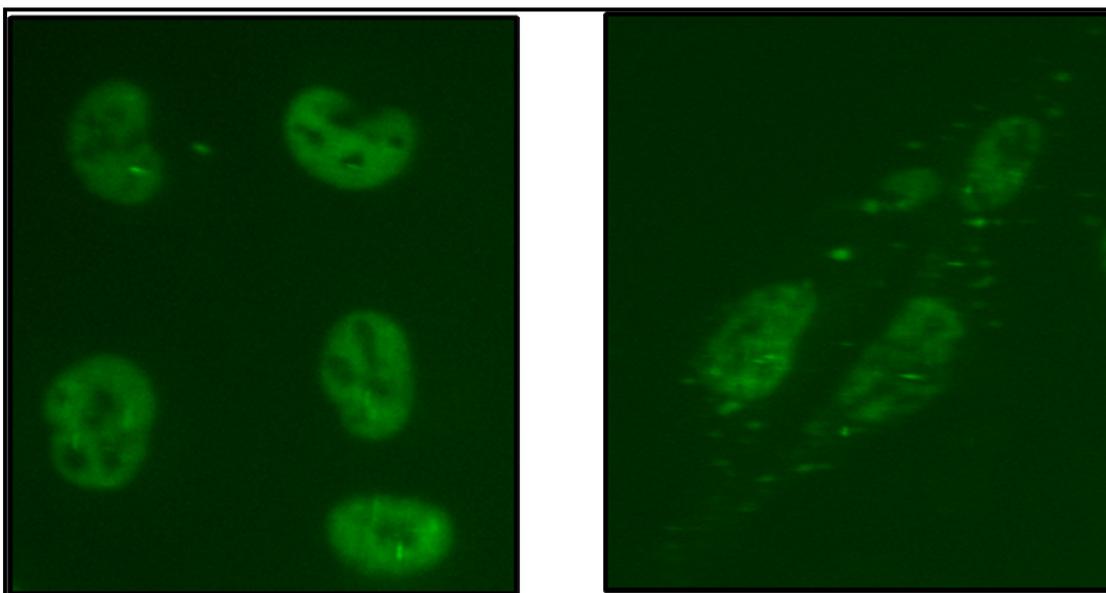


- ALS IN VITRO MODELS -
- FLUORESCENT TDP43 TRANSLOCATION ASSAY CELL LINE -

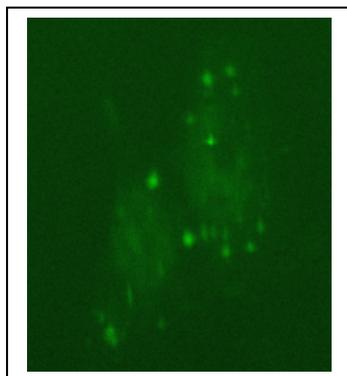


Product name: hTDP43-tGFP / U2O2 cell line

Z': 0.62+/- 0.01

TDP-43 NUCLEAR TRANSLOCATION ASSAY

HUMAN TDP-43 ASSAY CELL LINE



Product Name: TDP43-tGFP/ U2O2

Official Full Name: TAR DNA-binding protein 43

DNA Accession Number: GenBank NM_000176

Host Cell: U2OS

Format: Cryopreserved vials

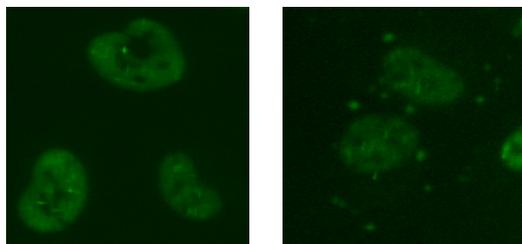
References:

📄 **P30710:** 2 vials of 3×10^6 proliferative cells

📄 **Assay Briefly description**

Each vial of P30710 contains U2OS cells stably expressing human TAR DNA-binding protein 43 (TDP-43) tagged with tGFP.

Innoprot's TDP43 Translocation Assay cell line has been designed to assay compounds or analyze stimuli for their ability to modulate TDP-43 translocation, following cytosolic translocation process and quantifying the fluorescence aggregation inside the cells.



This highly reproducible assay allows monitoring TAR DNA-binding protein 43 translocation in High Content Analysis and fluorescence microscope applications.

📄 **Background**

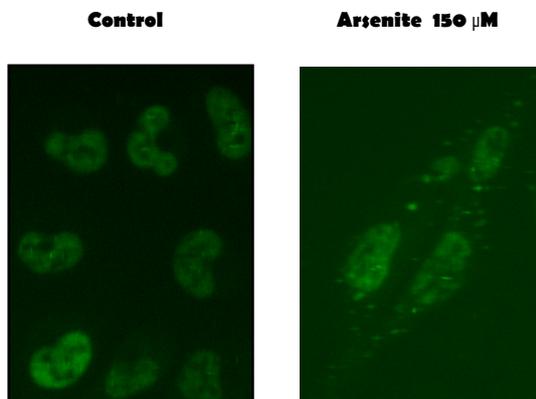
TAR DNA-binding protein 43, also known **TDP4**, is encoded by the **TARDBP gene**. TARDBP was originally identified as a transcriptional repressor that binds to chromosomally integrated TAR DNA and represses HIV-1 transcription. It was also reported to regulate alternate splicing of the CFTR gene and the apoA-II gene. Later it was discovered that hyper-phosphorylated, ubiquitinated and cleaved form of TARDBP, known as pathologic TDP43, is the major disease protein in ubiquitin-positive, tau-, and alpha-synuclein-negative frontotemporal dementia (FTLD-U now referred to as FTLD-TDP) and in Amyotrophic lateral sclerosis (ALS). Elevated levels of the TDP-43 protein have also been identified in individuals diagnosed with chronic traumatic encephalopathy, a condition that often mimics ALS and that has been associated with athletes who have experienced multiple concussions and other types of head injury.

Applications

- Cellular Translocation Monitoring

Trafficking of tGFP-hTDP43

In the absence of an oxidative insult, TDP43 protein is predominantly localized in the nucleus. It has been described that in response to oxidative stress and to environmental insults of different types TDP-43 is capable to assemble into stress granules (SGs), ribonucleoprotein complexes where protein synthesis is temporarily arrested. In addition, it has been speculated that an altered control of mRNA translation in stressful conditions may trigger motor neuron degeneration at early stages of the disease (Colombrita C, 2009). When TDP43 inducible cell model is insulted with sodium arsenite, the protein TDP43 translocates and accumulates into aggregates in the cell cytoplasm. The fluorescent aggregates of hTDP43 can be detected in live cells using an epifluorescence microscope.



Assay Details

U2O2 cells stably expressing human TAR DNA-binding protein 43 (TDP-43) were induced with IPTG 5mM during 48h to produce the hTDP43-tGFP protein. Subsequently, the cellular model was stimulated with different concentrations of sodium arsenite during 90min. After that, the TDP43 cytosolic aggregates were detected by fluorescence using image analysis algorithms.

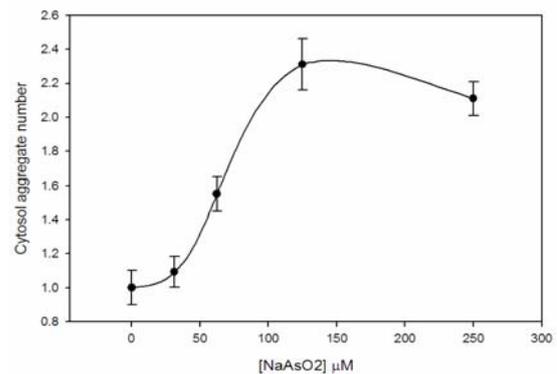


Fig.3. Sodium arsenite concentration; response in the inducible TDP43-tGFP nuclear translocation assay. Cells were treated with 5 dilution series (n=6). **Z' = 0.62 +/- 0.01 for High Content Screening.**

Use Restriction

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