pTO-sp-NLuc_FRT (control) plasmid

Catalogue number: 161757
Sub-type:
Images:

Contributor

Inventor: Andrii Domanskyi, Tina Sket
Institute: University of Helsinki
Images:

Tool details

***FOR RESEARCH USE ONLY**

Name: pTO-sp-NLuc_FRT (control) plasmid

Alternate name: pTO-sp-NLuc_FRT (control) XBP1 splicing reporter assay (XSARA) control plasmid, XSARA control plasmid

Class:
Conjugate:
Description: Endoplasmic reticulum (ER) stress is caused by the accumulation of unfolded proteins in the ER, which leads to the activation of unfolded protein response (UPR) through three transmembrane protein sensors located in the ER membrane. The sensors correspond to three branches of the UPR, namely protein kinase RNA-like endoplasmic reticulum kinase (PERK), activating transcription factor 6 (ATF6), and inositol-requiring enzyme 1 (IRE1) branches. Upon ER stress, IRE1 dimerizes and oligomerizes, and its endonuclease domain is activated. It specifically targets X-box-binding protein 1 (XBP1) mRNA, from which a 26 nt intron is spliced. This allows a complete translation of spliced XBP1 mRNA into a functional protein that acts as a transcription factor. Together with the other pathways, the UPR leads to a decrease in the protein folding load by causing a reduction in the general level of protein translation, and by inducing the expression of protein folding machinery. However, if the UPR is activated continuously for a long time, the apoptotic pathway will be triggered, and the cell will die. ER stress and UPR are associated with various disorders, such as some types of cancer, diabetes, chronic inflammatory syndromes, and particularly neurodegeneration. For example, in Parkinson’s disease, it was suggested that prolonged ER stress induces the extensive apoptosis of dopaminergic neurons in substantia nigra pars compacta region of the midbrain. The control pTO-sp-NLuc_FRT XBP1 splicing reporter assay plasmid does not contain the XBP1 intron fragment in NanoLuc luciferase gene, and thus cell transfected with this plasmid will express NanoLuc luciferase irrespectively of XBP1 splicing.
Purpose: Plasmid for creation of XSARA XBP1 reporter control cell line, by homologous recombination in HEK293 Flp-In T-Rex cells
Parental cell:

Organism:
Tissue:
Model:
Gender:
Isotype:
Reactivity:
Selectivity:
Host:
Immunogen:
Immunogen UNIPROT ID:
Sequence:
Growth properties:
Production details:
Formulation:
Recommended controls:
Bacterial resistance:
Selectable markers: Hygromycin
Additional notes:

Target details

Target:

Target alternate names:

Target background:

Molecular weight:

Ic50:

Applications

Application: Control plasmid for XBP1 reporter assay. Upon induction with doxycycline, HEK293-NLuc control cells will express NLuc protein irrespectively of XBP1 splicing, providing a control for XSARA assay. The plasmid can also be used for transient transfection.
Application notes:

Handling

Format:
Concentration:
Passage number:
Growth medium:
Temperature:

Atmosphere:
Volume:
Storage medium:
Storage buffer: Water
Storage conditions: -20° C
Shipping conditions: +4° C or dry ice

Related tools

Related tools: 160834

References

References: