

# Technical Data Sheet

Small Molecules

## Trans-ISRIB

<b>Catalog Number(s)</b>	SML22B
<b>Synonyms</b>	ISRIB (trans-isomer)
<b>Size</b>	10 mg
<b>Description</b>	<p>Trans-ISRIB (ISRIB trans-isomer) is an integrated stress response (ISR) inhibitor that acts downstream of PERK to target interactions between eIF2<math>\alpha</math> and eIF2B, potentially reversing the effects of eIF2<math>\alpha</math> phosphorylation. Trans-ISRIB restores cells' translation capacity by substantially reversing the translational effects elicited by phosphorylation of eIF2<math>\alpha</math> and induces no major changes in translation or mRNA levels in unstressed cells. eIF2<math>\alpha</math> phosphorylation-induced stress granule (SG) formation is blocked by ISRIB<sup>2</sup>.</p> <p>Trans-ISRIB is 100-fold more potent (IC<sub>50</sub> = 5 nM) than cis-ISRIB (IC<sub>50</sub> = 600 nM), indicating that the compound's interaction with its cellular target is stereospecific.</p> <p>Trans-ISRIB promotes survival of dissociated pluripotent stem cells in culture when used in combination with Chroman 1 (Cat. No. SML20) and Emricasan (Cat. No. SML21) small molecules and in the CEPT cocktail<sup>1</sup>.</p>
<b>Molecular Weight</b>	451.34
<b>Molecular Formula</b>	C <sub>22</sub> H <sub>24</sub> Cl <sub>2</sub> N <sub>2</sub> O <sub>4</sub>
<b>Chemical Name</b>	N,N'-trans-1,4-cyclohexanediylbis[2-(4-chlorophenoxy)acetamide]
<b>CAS Number</b>	1597403-47-8
<b>Target</b>	PERK
<b>Appearance</b>	White to off-white (solid)
<b>Purity</b>	≥98% by HPLC

### Solubility & Reconstitution

Stock Concentration	Compound Mass		
	1 mg	5 mg	10 mg
0.5 mM	4.431 mL	22.16 mL	44.31 mL
1 mM	2.216 mL	11.08 mL	22.16 mL
5 mM	0.443 mL	2.216 mL	4.431 mL
10 mM	0.222 mL	1.108 mL	2.216 mL

Solvent Volume



**Solvent & Solubility**

**DMSO:** Soluble to 5 mg/mL (11.08 mM) max concentration.  
Gentle warming (40°C to 60°C) and sonication may be needed for complete solubilization.  
Insoluble in ethanol or water.

**Storage**

<b>Powder:</b>	20°C	3 years
	4°C	2 years
<b>In solvent:</b>	-80°C	6 months
	-20°C	1 month

Store as lyophilized powder or concentrated stock solutions.  
Prepare working solutions in appropriate cell culture media just prior to use.

**Pathway**

Autophagy; Apoptosis; Cell Cycle; DNA Damage

**IC<sub>50</sub>**

PERK
5 nM

**Reconstitution**

- From the lyophilized compound, prepare a concentrated stock solution using the appropriate solvent (DMSO), according to the solubility table or custom calculations. Example: To generate a 0.5 mM concentrated stock solution of Trans-ISRIB, add 4.431 mL of DMSO to 1 mg of Trans-ISRIB.
- Ensure the compound is completely dissolved in the solvent. This may require gentle warming and/or vortexing/sonication to fully reconstitute the compound.
- Aliquot the concentrated stock solution in single-use volumes, and either use immediately or freeze at -20°C or -80°C for later use. Avoid freeze/thaw cycles.
- Concentrated stock solutions are designed to be diluted just prior to use (e.g. 1:1000 dilution in cell culture medium). For use in cell culture, warm the medium just prior to adding the reconstituted compound.

**References**

- Yu Chen, et al. (2021) A Versatile Polypharmacology Platform Promotes Cytoprotection and Viability of Human Pluripotent and Differentiated Cells. Nature Methods. May; 18(5): 528-514
- C Sidrauski, et al. (2015) The small molecule ISRIB reverses the effects of eIF2 $\alpha$  phosphorylation on translation and stress granule assembly. Elife. Feb 26;4

**Related Products**

<b>Description</b>	<b>Cat. No.</b>	<b>Application</b>
Chroman 1	SML20	ROCK inhibitor, cell survival, CEPT
Emricasan	SML21	Pan-caspase inhibitor, CEPT
CET Cocktail	CET01	Enhanced stem cell survival cocktail, CEPT

