Product Data Sheet

Product name(s): pJY2 plasmid

Catalogue number: DW 8720
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Product information:

The AGA arginine codon is rarely used in E. coli but is common in eukaryotic genes. The low level of tRNA<sub>UCU</sub><sup>Arg</sup> can lead to low expression, and mis-incorporation of lysine for arginine, during expression of genes containing AGA codons in E. coli<sup>1</sup>. The chloramphenicol-selectable plasmid pJY2<sup>1</sup> is designed to facilitate the expression of such genes cloned into pET vectors: pJY2 encodes tRNA<sub>UCU</sub><sup>Arg</sup> (to suppress lysine mis-incorporation at AGA codons) and T7 lysozyme (to depress constitutive expression of the cloned gene).

E. coli cells harbouring pJY2 can be employed to suppress lysine mis-incorporation and achieve high-level expression of pET-encoded target genes without modification of AGA codons in the target gene sequence. For example, pJY2 allows for translationally faithful expression of pET3a-encoded mutant ubiquitins harbouring a high density of AGA codons (up to 14% of total codons)<sup>1</sup>. pJY2 can also be used as a source of tRNA<sub>UCU</sub><sup>Arg</sup> with expression systems, such as the pGEX series of vectors, that do not rely on T7 polymerase. The AGG arginine codon is also infrequently utilised in E. coli<sup>2</sup>. As tRNA<sub>UCU</sub><sup>Arg</sup> decodes AGG when over-expressed<sup>3</sup>, pJY2 is also likely to ameliorate problems associated with the expression of genes containing AGG codons<sup>1</sup>.

Recommended use<sup>1</sup>: To make a generalised host strain: transform pJY2 into competent E. coli host strain (such as BL21(DE3)) and select transformants on plates containing chloramphenicol (30 µg/ml). Make mineral-competent BL21(DE3)pJY2 cells by standard procedures<sup>4</sup>, and use as host strain for chemical transformation with target gene plasmid.

Analytical and physico-chemical data:

Purity: Determined to be ≥95% by agarose gel electrophoresis.
Form: Supplied at a concentration of 0.4mg/mL in 10mM Tris, 1mM EDTA, pH8.0, i.e. 5µg in 12.5µL.
Solubility: Soluble in aqueous buffers.

Stability, storage and specific hazard data:

Store solutions at -20°C for up to twelve months.

References: