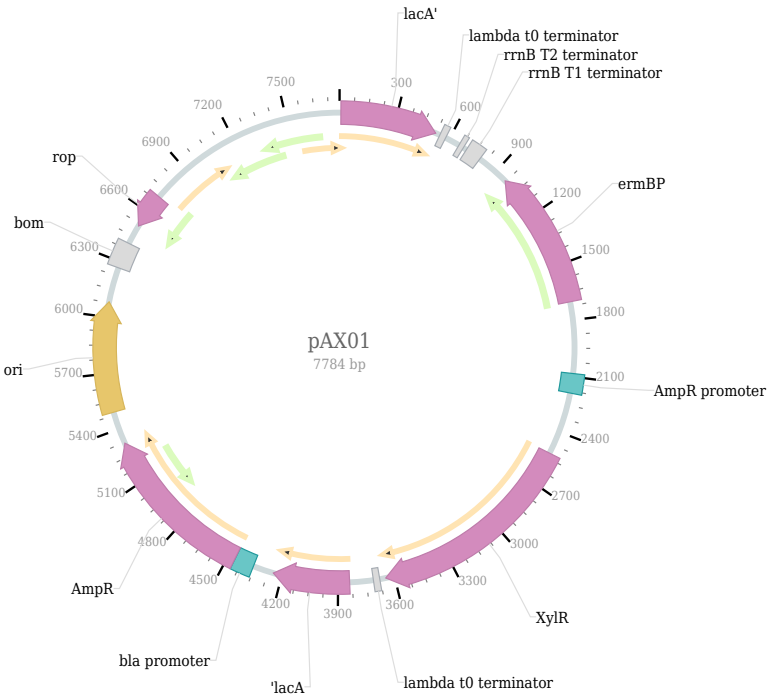
pAX01

Vector ID	V000803
Antibiotic Resistance	Ampicillin, Erythromycin
Length	7784 bp
Vector Type	Bacillus subtilis expression vectors

Product Information

Replication Origin	ori
Selection Marker	Erythromycin
Growth Strain(s)	DH10B
Growth Temperature	37℃
Comment	pAX01 is a versatile integrative expression vector specifically designed for targeted gene insertion and regulated expression in Bacillus subtilis. It features a modular structure that enables flexible replacement of key components, including its integration arms, expression cassettes, and selectable markers—for instance, the erythromycin resistance gene (erm) can be removed via NotI digestion, and the xylose-inducible expression cassette (with the PxylA promoter and xylR repressor) can be excised using SacI. This vector targets the lacA locus of Bacillus subtilis (a weakly expressed gene encoding β-galactosidase) for stable DNA integration through double-crossover homologous recombination, ensuring minimal interference with host physiological functions. To prevent readthrough transcription, its xylose-inducible cassette is fused to the t0 transcription terminator from phage DNA, resulting in tight regulation: no target gene expression is detected without xylose, while full induction is achieved with 0.5% xylose, and sustained high-level expression can be maintained with 2% xylose. Notably, pAX01 is a non-replicating vector in Bacillus subtilis (lacking replication elements for this host) and relies on the ColE1 replicon for propagation in E. coli. It also carries an ampicillin resistance gene (bla) for selection in E. coli and an erythromycin resistance gene (erm) for identifying integrants in Bacillus subtilis, making it a robust tool for controlled gene expression studies in this bacterium.

Vector Map



Plasmid Resuspension Protocol

1. Centrifuge at 5,000×g for 5 min.
2. Carefully open the tube and add sterile water to dissolve the DNA: add 20 µl for 5 µg plasmid, and 100 µl for 100 µg plasmid.
3. Close the tube and incubate for 10 minutes at room temperature.
4. Briefly vortex the tube and then do a quick spin to concentrate the liquid at the bottom. Speed is less than 5000×g.
5. Store the plasmid at -20 ℃.