

# IPTG Solution

Product	Con.	Cat#	Size
IPTG Solution	0.1M	IBS-BI001	20ml

**Components :** 0.1M IPTG (Isopropyl  $\beta$ -D-1-thiogalactopyranoside) Solution

**Storage Conditions :** As supplied, these products should be stored at -20 °C and will have shelf-lives of 5 years.

**Preparation Instructions :** IPTG is soluble at 0.1M in water and may be sterilized by filtration through a 0.22 mm filter. The solution may be aliquoted and stored at -20 °C. IPTG solutions can be stored at room temperature for up to one month. When preparing culture plates, aliquots of X-Gal and IPTG may be added to the agar solution after it has been cooled to ~45 °C.

**Description :** IPTG is a non-metabolizable galactose analog that induces expression of the lac operon in *Escherichia coli*. IPTG functions by binding to the lac repressor and altering its conformation. This inactivation prevents the repression of the *b*-galactosidase coding lac gene. While not a substrate for *b*-galactosidase, it is a substrate for thiogalactoside trans-acetylase and has been reported to be an inducer of penicillinase activity in bacteria. IPTG is a commonly used reagent in cloning procedures that require induction of *b*-galactosidase activity and is used in conjunction with X-Gal, in blue-white color selection of recombinant bacterial colonies.

In cloning experiments, colonies that have been transformed with the recombinant plasmid rather than a non-recombinant need to be identified. X-gal is a substance that can be metabolised by beta-galactosidase to produce a blue product. Thus cells expressing beta-galactosidase grown in the presence of X-gal and IPTG (to induce the expression) will turn blue. Where a DNA fragment has been inserted into the LacZ (one of the genes for beta-galactosidase) there will be no action upon X-gal and the cells will not turn blue, thus identifying the cells that carry recombinant plasmid rather than non-recombinant plasmid