



> X-Gal

<i>cat. no.</i>	<i>amount</i>	<i>note</i>
STS-XGAL1	1g	powder
STS-XGAL5	5g	powder
STS-XGAL10	10g	powder

In gene cloning, X-gal is used to indicate whether a cell expresses the β -galactosidase enzyme, which is encoded by the lacZ gene, in the blue/white screening technique. Therefore, the lacZ gene may be used as a reporter in combination with media containing X-gal.

X-gal is cleaved by β -galactosidase yielding galactose and 5-bromo-4-chloro-3-hydroxyindole. The latter is then oxidized into 5,5'-dibromo-4,4'-dichloro-indigo, an insoluble blue product. Thus, if X-gal and an inducer of β -galactosidase (usually IPTG) is contained within an agar medium on a culture plate, colonies which have a functional lacZ gene can easily be distinguished. This is used when cloning genes as a technique to see whether plasmids have acquired foreign genetic material. E. coli bacteria which do not produce β -galactosidase (coded by lacZ) are transformed with a plasmid, some of which contain an insert in the lacZ open reading frame. For bacteria harboring plasmids with the insert in lacZ, this gene is disrupted and they are unable to make beta-galactosidase. For bacteria without the insert, β -galactosidase is produced, resulting in a blue colony.

Chemical Name

5-Bromo-4-Chloro-3-indoyl- β -D-galactoside [X-Gal]

Formula

$C_{14}H_{15}BrClNO_6$

Molecular Weight

408,629

Purity: <99% (HPLC). Water Content: 0.5% (K. Fisher).

Solubility

Soluble in :DMF and DMSO

Storage

Store at 0-5°C. Protect from light and moisture.

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