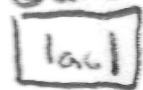


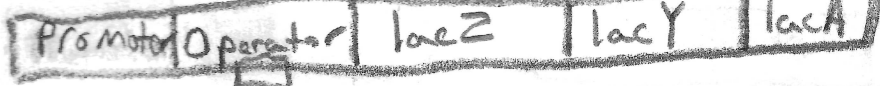
1. Absence of lactose

Repressor Gene



↓
mRNA

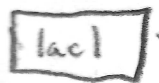
↓
Repressor Protein



If there is no lactose in the cell then the repressor protein will be bound in the operator. The structural genes lacZ, lacY, and lacA cannot be expressed.

2. Presence of lactose

Repressor Gene



↓
mRNA

↓
Repressor Protein

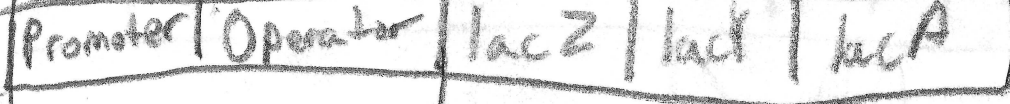
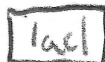


Lactose (Inducer)

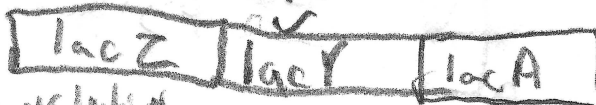


Since the lactose is available to bind to the repressor, the repressor can no longer bind to the operator so the structural genes can be expressed.

Since promoter is available transcription initiates



transcription



Translation

↓
β-galactosidase ↓
Permease ↓
Transacetylase