1. In the presence of lactose:

When there is a presence of lactose, there is a rearrangement of lactose called Allolactose. Even though LacI transcribed a repressor protein, allolactose will also bind to the repressor protein. When allolactose binds to the repressor protein, it would the shape of the repressor protein and will be unable to be bind to the operator. This allows the RNA polymerase to transcribe lacZ, lacY, and lacA and will allow these three lac genes to be expressed.

Presence of Lactose Drawing:

A white board with writing on it

Description automatically generated