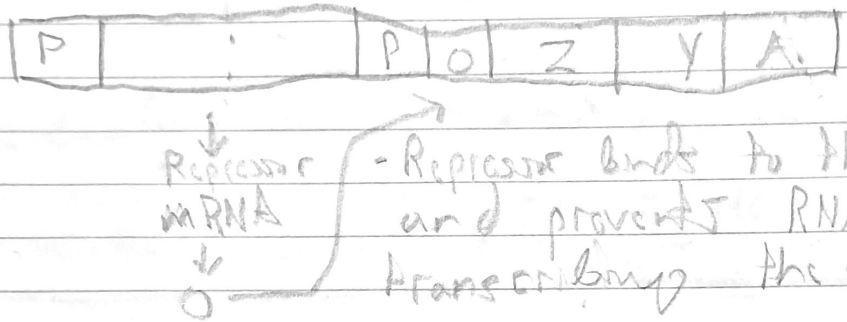
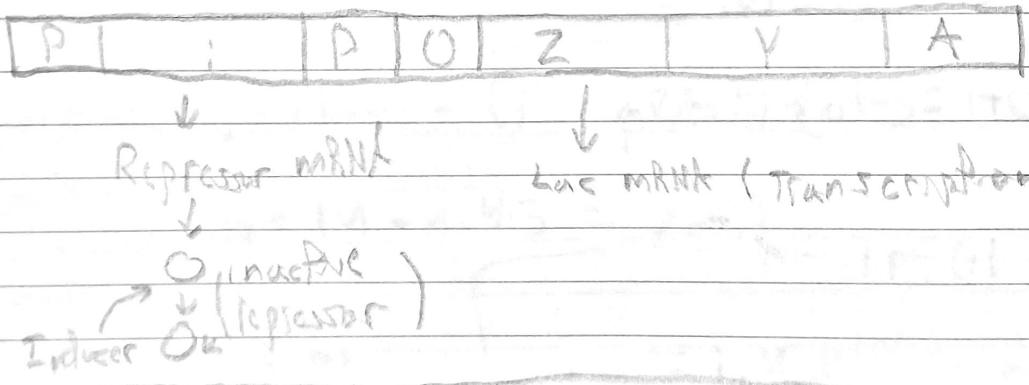
Lac Operon

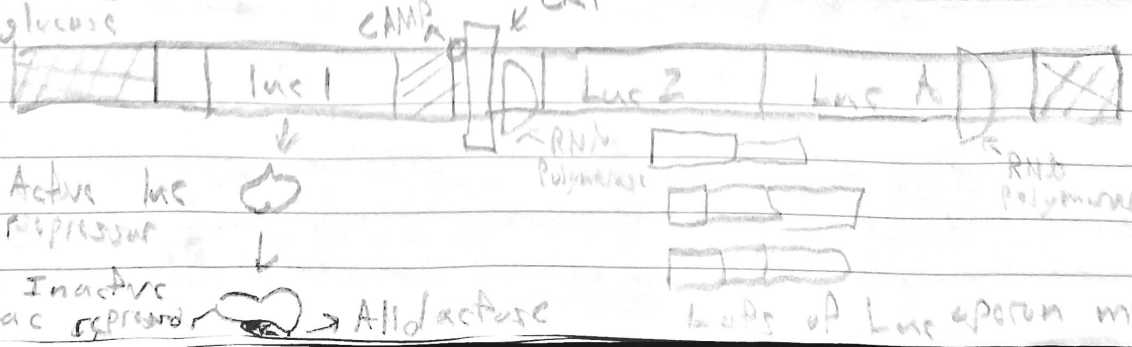
When lactose is absent the lac repressor loses it ability to bind to DNA. In the absence of lactose the lac repressor binds to the operator.



When lactose is present the lac repressor loses the ability to bind to DNA. This allows RNA polymerase to be transcribed the operon.

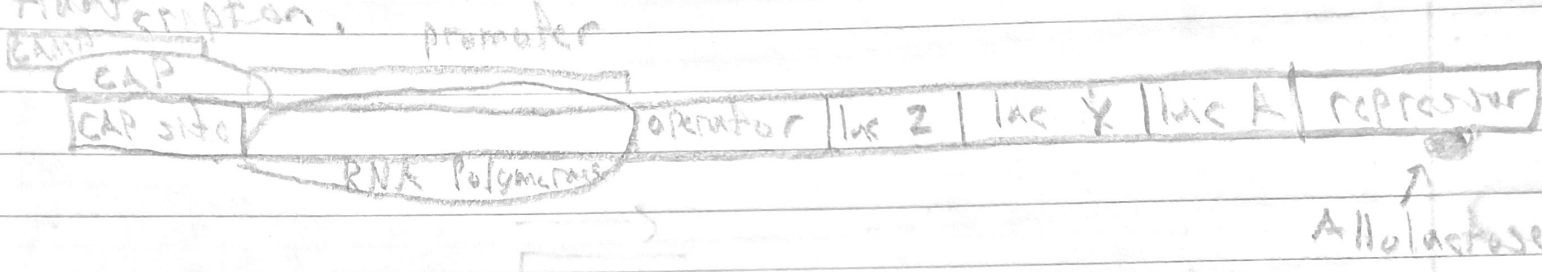


When glycose is absent, the lac operon can be activated if the lac i repressor is turned off by lactose binding. The E. Coli will switch from glycose use to lactose use depending on the presents of both cAMP and CAP.



Lac Operon

4) In the absence of glucose and the presence of lactose strong transcription of the lac operon occurs. The lac repressor is released from the operator because the inducer allolactose is present. cAMP levels are high because glucose is absent so CAP is active and bound to DNA. CAP helps RNA polymerase bind to the promoter. This promotes high levels of transcription.



5) Lac genes are organized into operons which means they are in the same direction adjacent to the chromosome and are co-transcribed into a single polycistronic mRNA molecule. So during transcription.