

Amanda Days

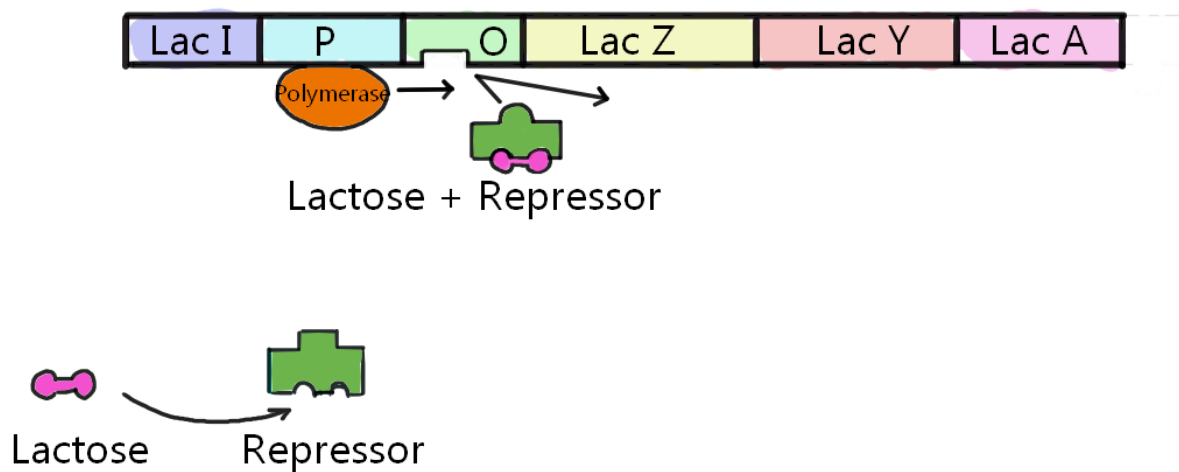
Professor Janet Rinehart-Kim

Genetics Biol 294

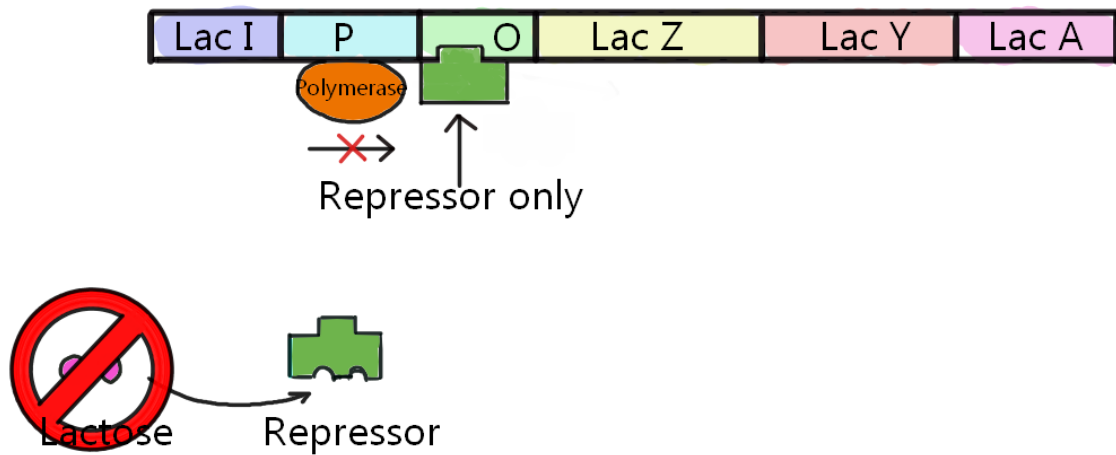
11/3/2022

“Lac Operon”

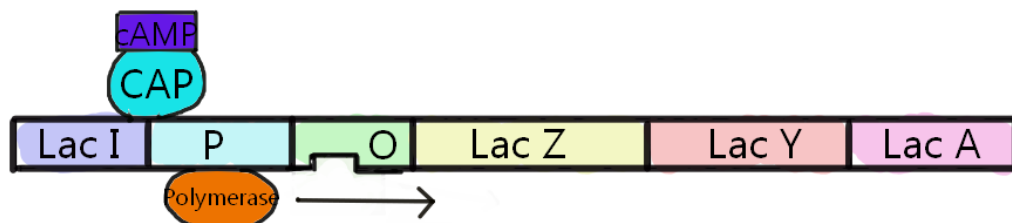
In the presence of lactose, transcription of the Lac Operon occurs because the lactose molecule binds to the repressor, changing its shape and preventing the repressor from binding to the operator which allows Polymerase to do its work.



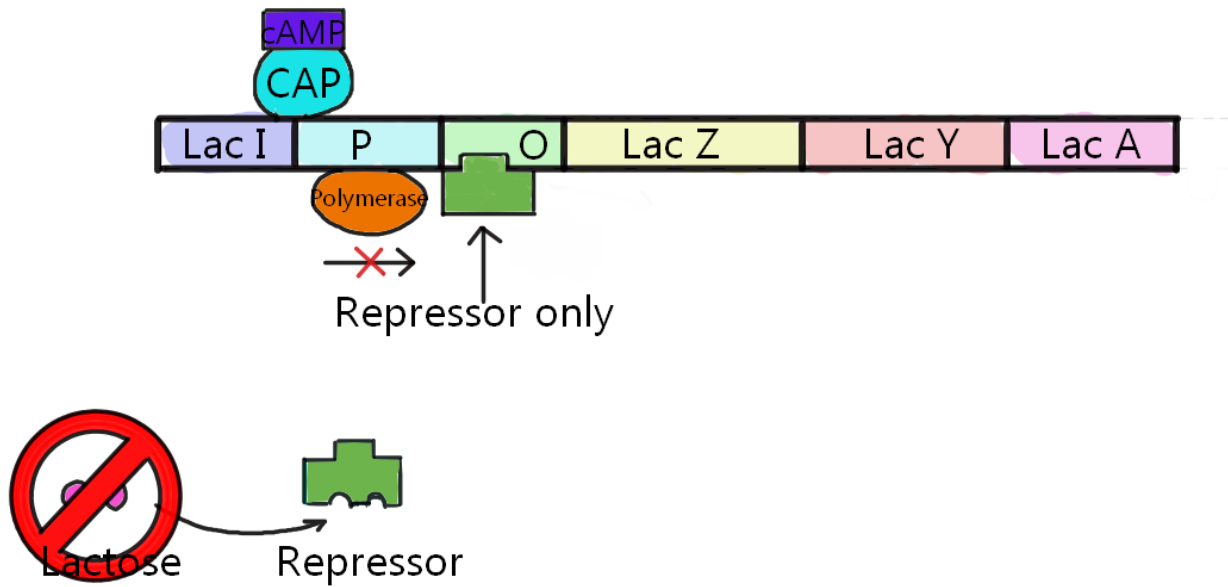
In the absence of lactose, the repressor does not change its shape and will bind to the operator, blocking the Polymerase and preventing transcription.



In the absence of glucose, cAMP levels increase and bind to CAP making it active, which helps the RNA polymerase bind to the operon promoter for synthesis.



If glucose and lactose are absent, the CAP and cAMP will bind and assist in the binding of RNA polymerase to the operon, but no synthesis will take place because the repressor will also bind to the operator, blocking the polymerase.



This form of regulation takes place in the transcriptional phase of gene regulation, by either blocking the polymerase from synthesizing or preventing the repressor from attaching.