Want to explore teaching as a career?
Interested in STEM Outreach?

*This **Spring 2018** Take…*

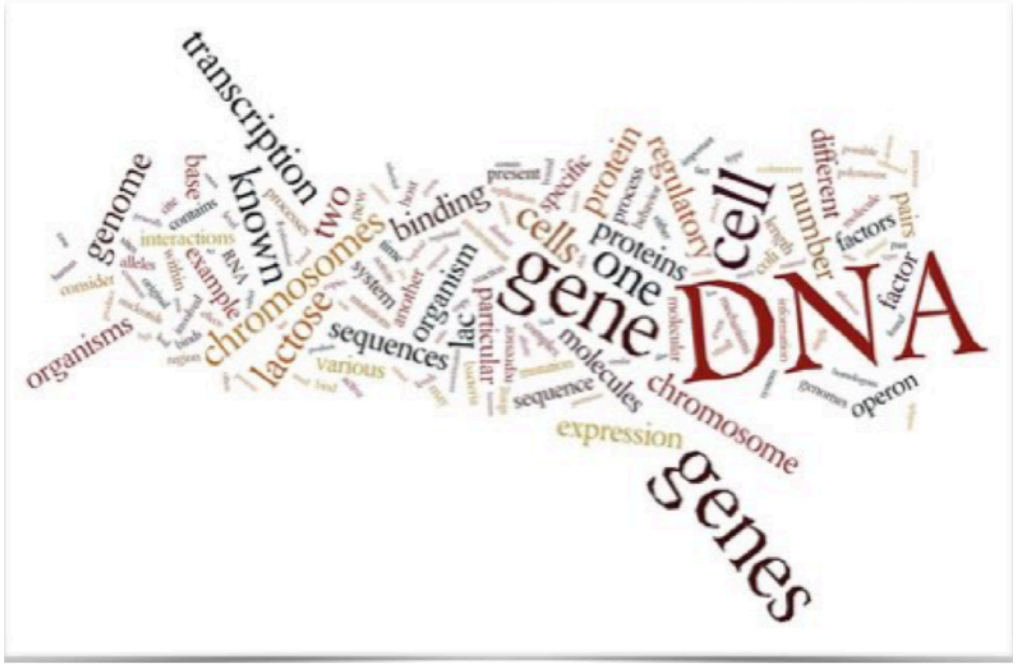
Step 1: EDUC 2020 (1 credit)

- Real experience teaching real kids, in Elementary school
- Registration priority for math, science, engineering & open option majors
- Scholarships, fellowships and internships available

CU BOULDER Teach

Science•Engineering•Math

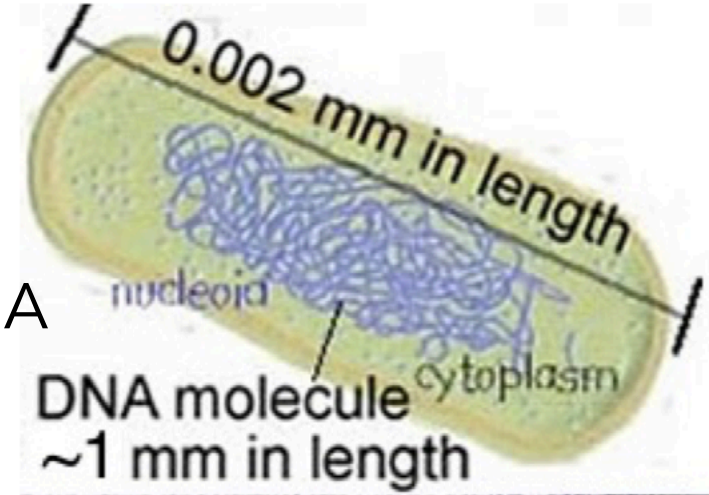
www.colorado.edu/cuteach

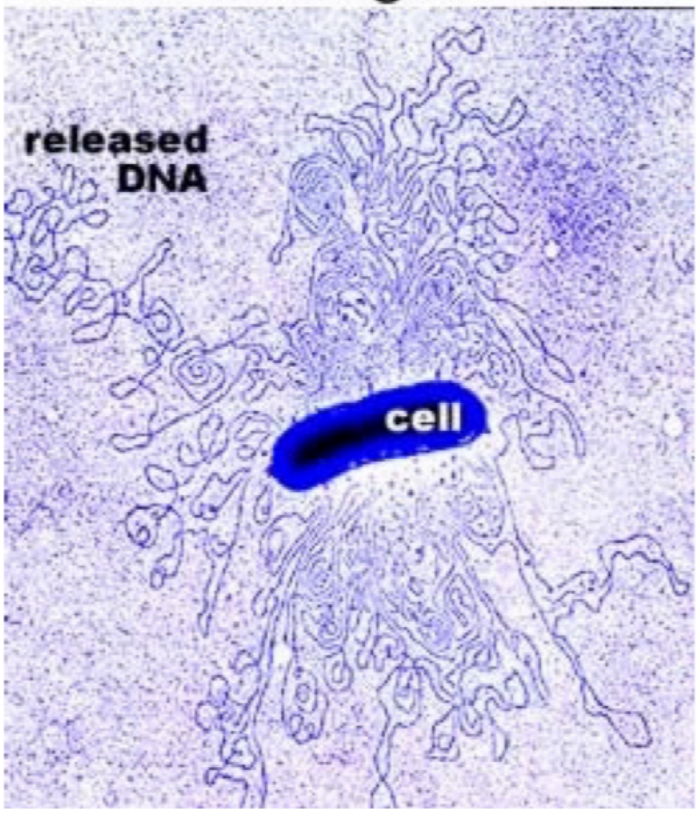


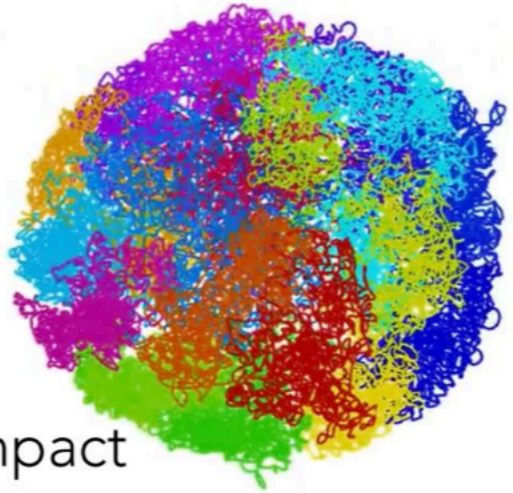
chapter 9
pp. 210-216

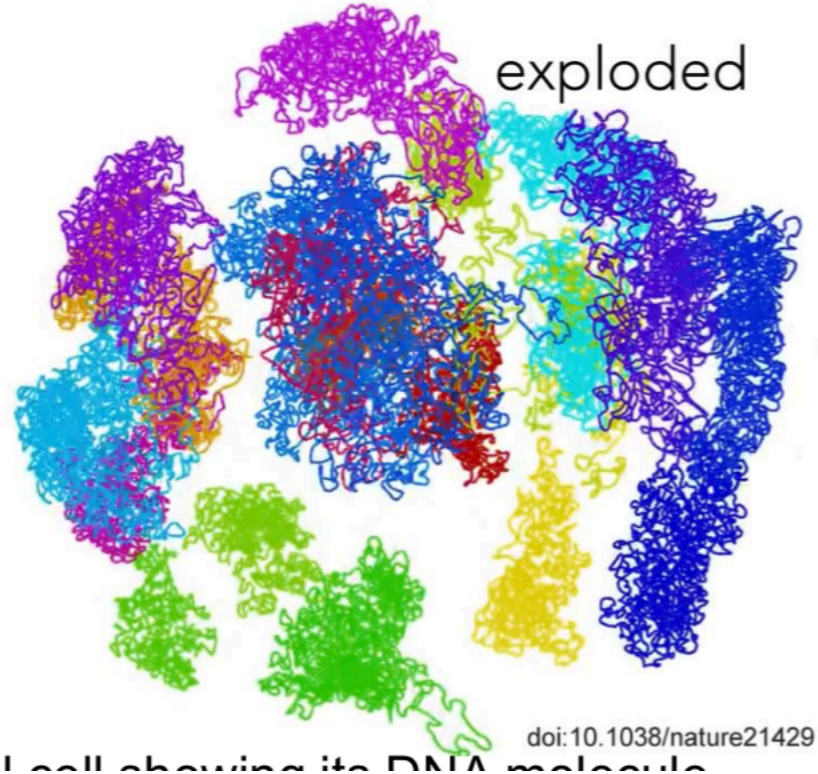
check syllabus (link)

chapter 9
folding DNA





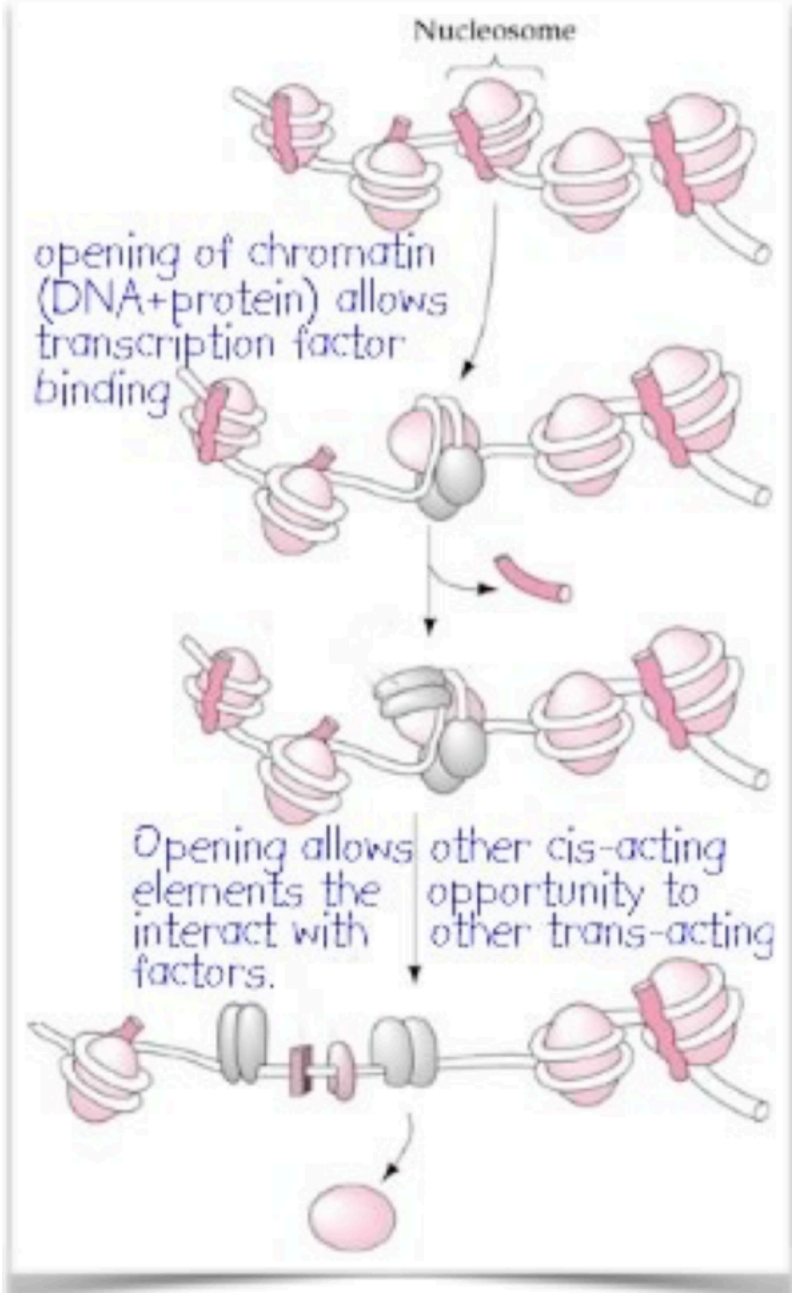


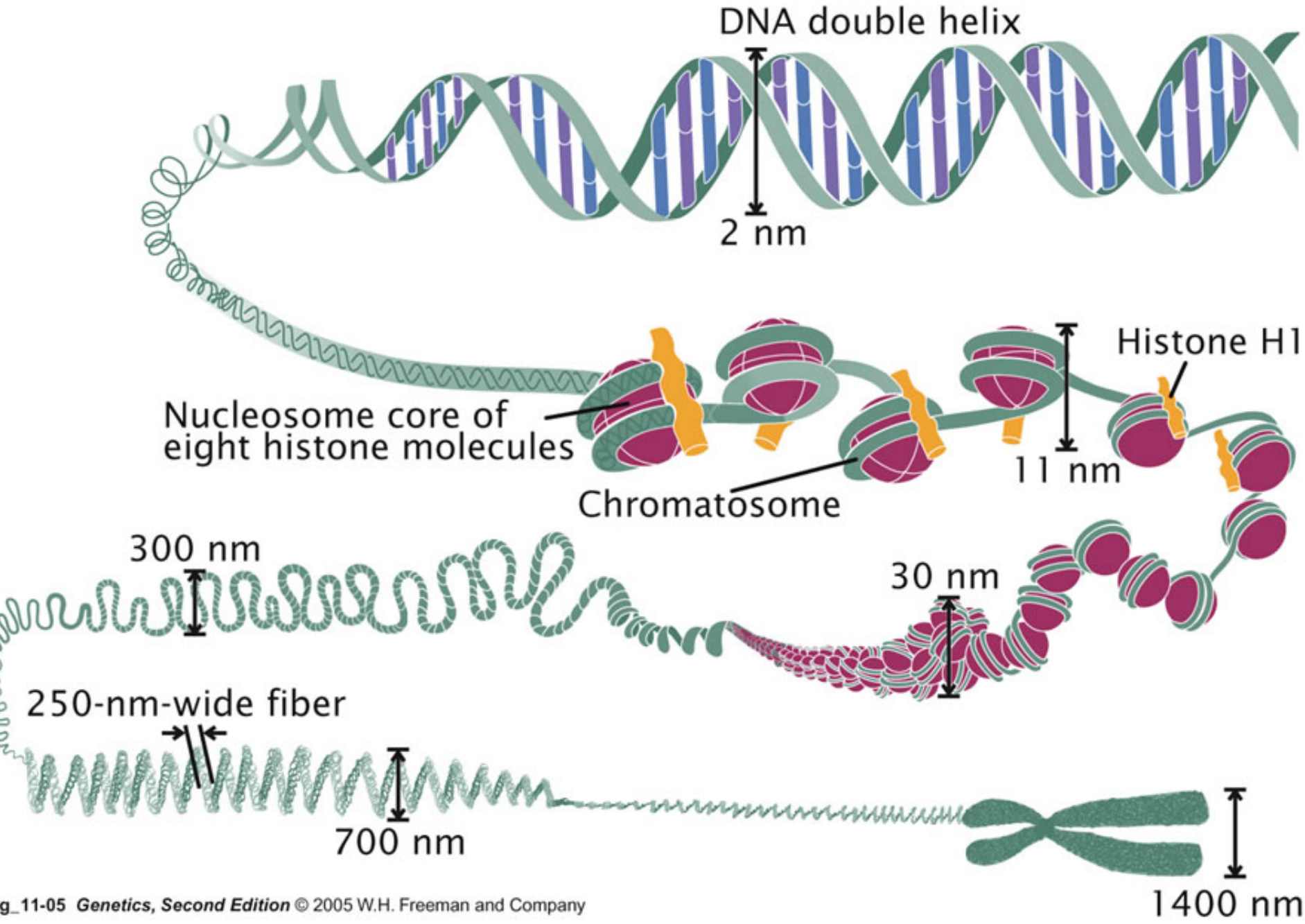


doi:10.1038/nature21429

Top left: a diagram of a bacterial cell showing its DNA molecule

How to pack DNA (so it can be used) and how is it used?





X-inactivation (just in passing):

count / choice (stochastic) / inactivate

How might you tell which X chromosome was inactivated in a particular cell of a female person?

gene expression PhET applet: link

Make a model for how a transcription factor determines which DNA strand will be transcribed.

gene expression PhET applet: link

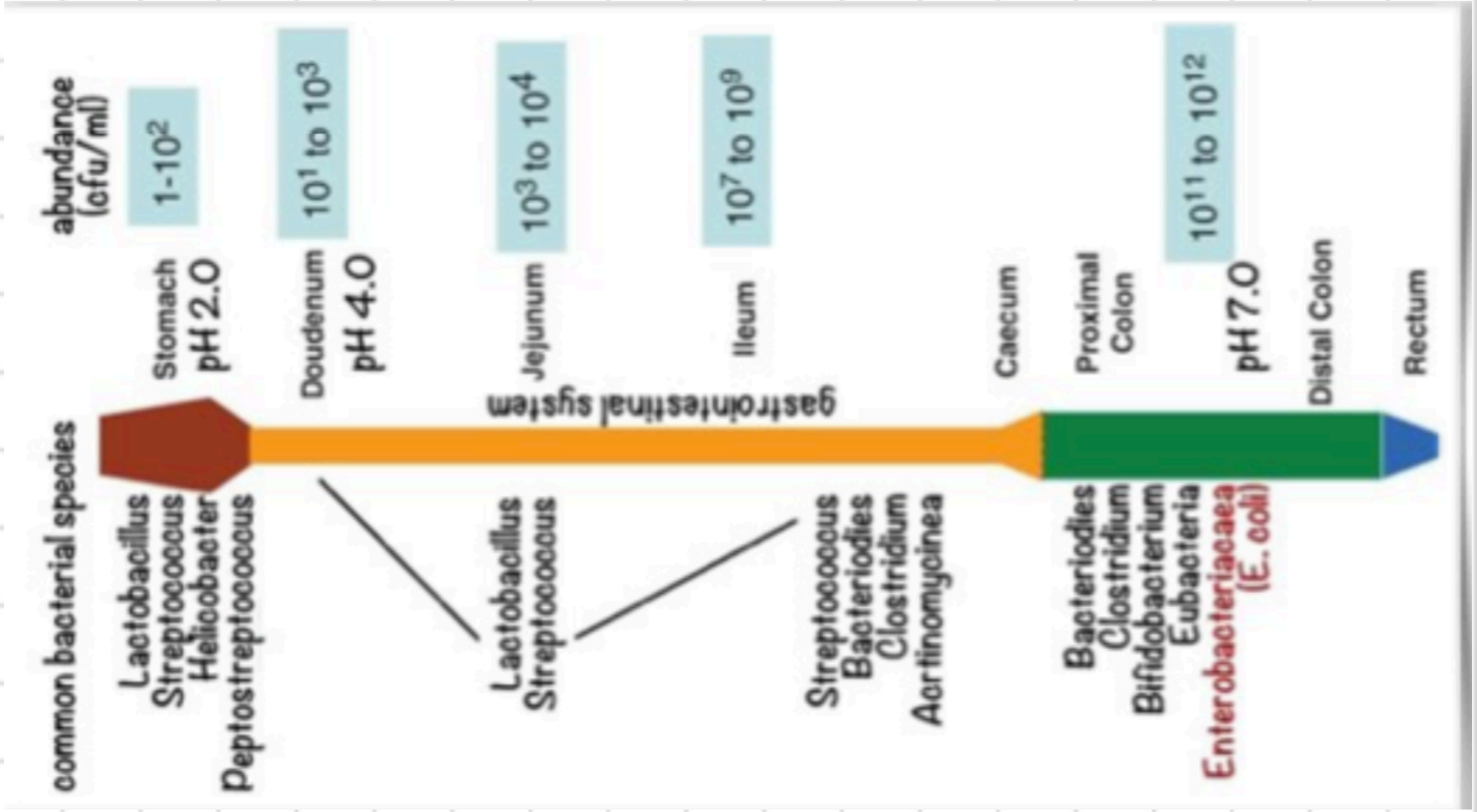
Predict how the number of transcripts made per unit time changes if one vs two or more transcription factors are required to active gene expression. ?

Describe the possible effects of mutations that alter i) the DNA-binding specificity of a transcription factor

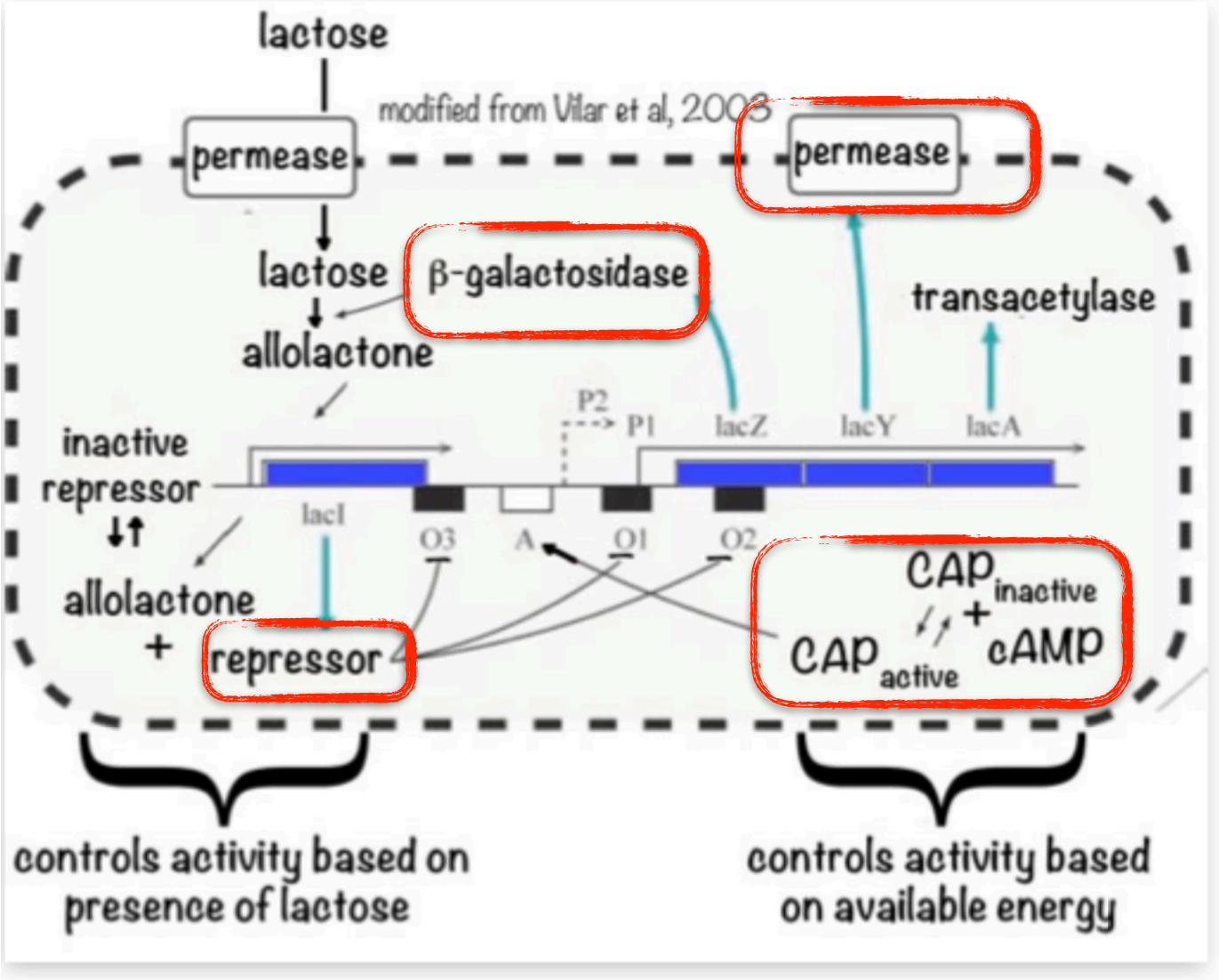
ii) the DNA sequence normally recognized by that transcription factor

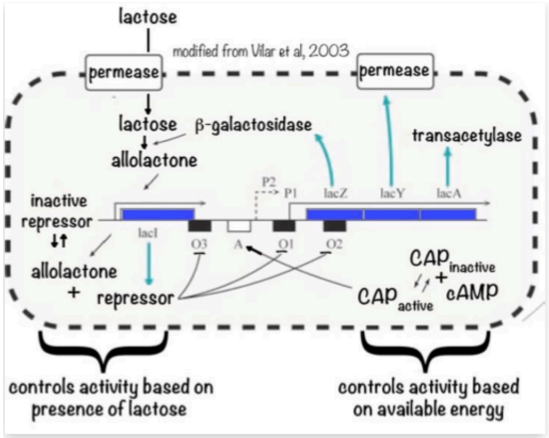
or iii) the level of transcription factor gene expression.

Consider the gut… estimate O2 concentration as a function of position



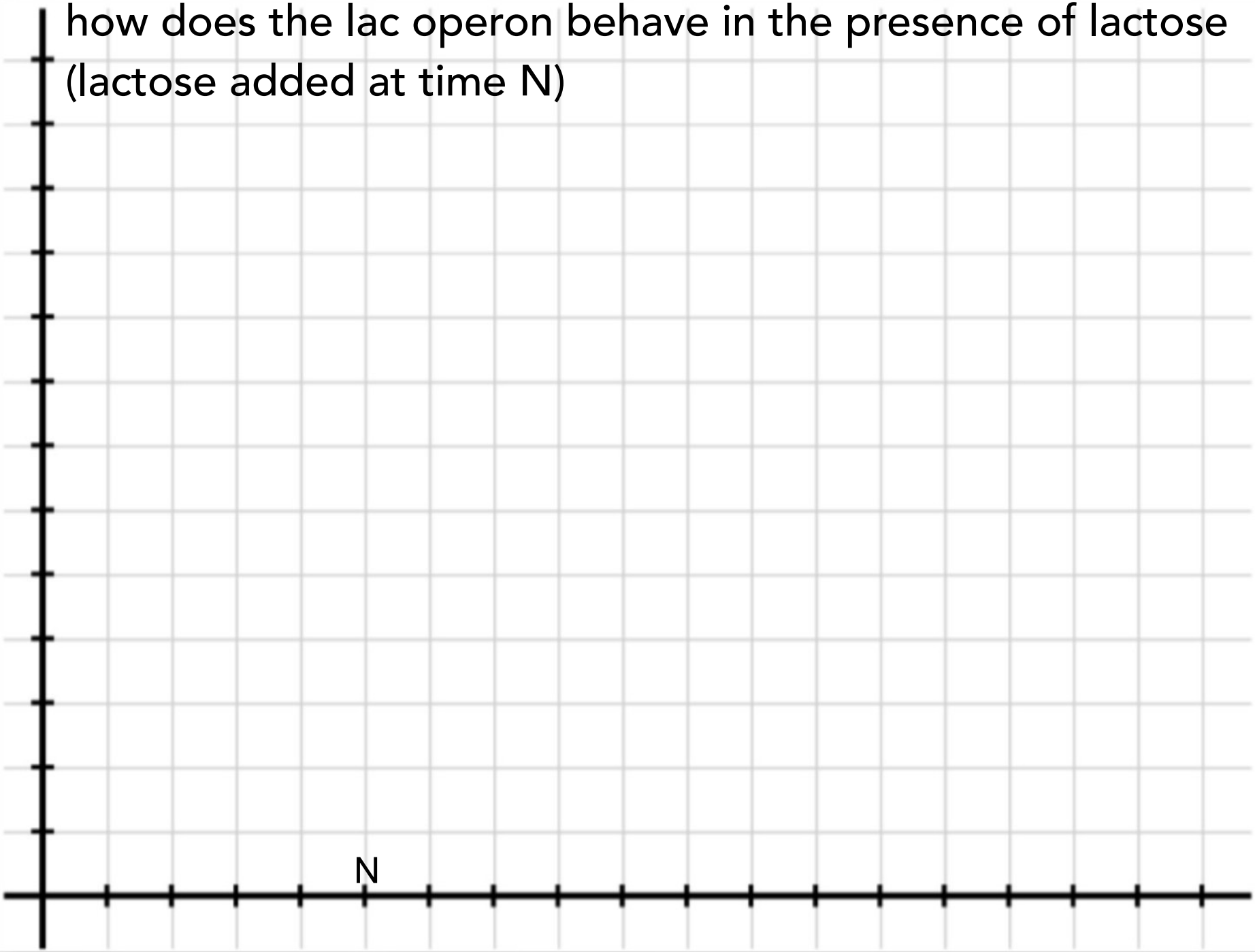
What will happen (and why) when these components are mutated? consider the presence or absence of lactose and the starvation conditions



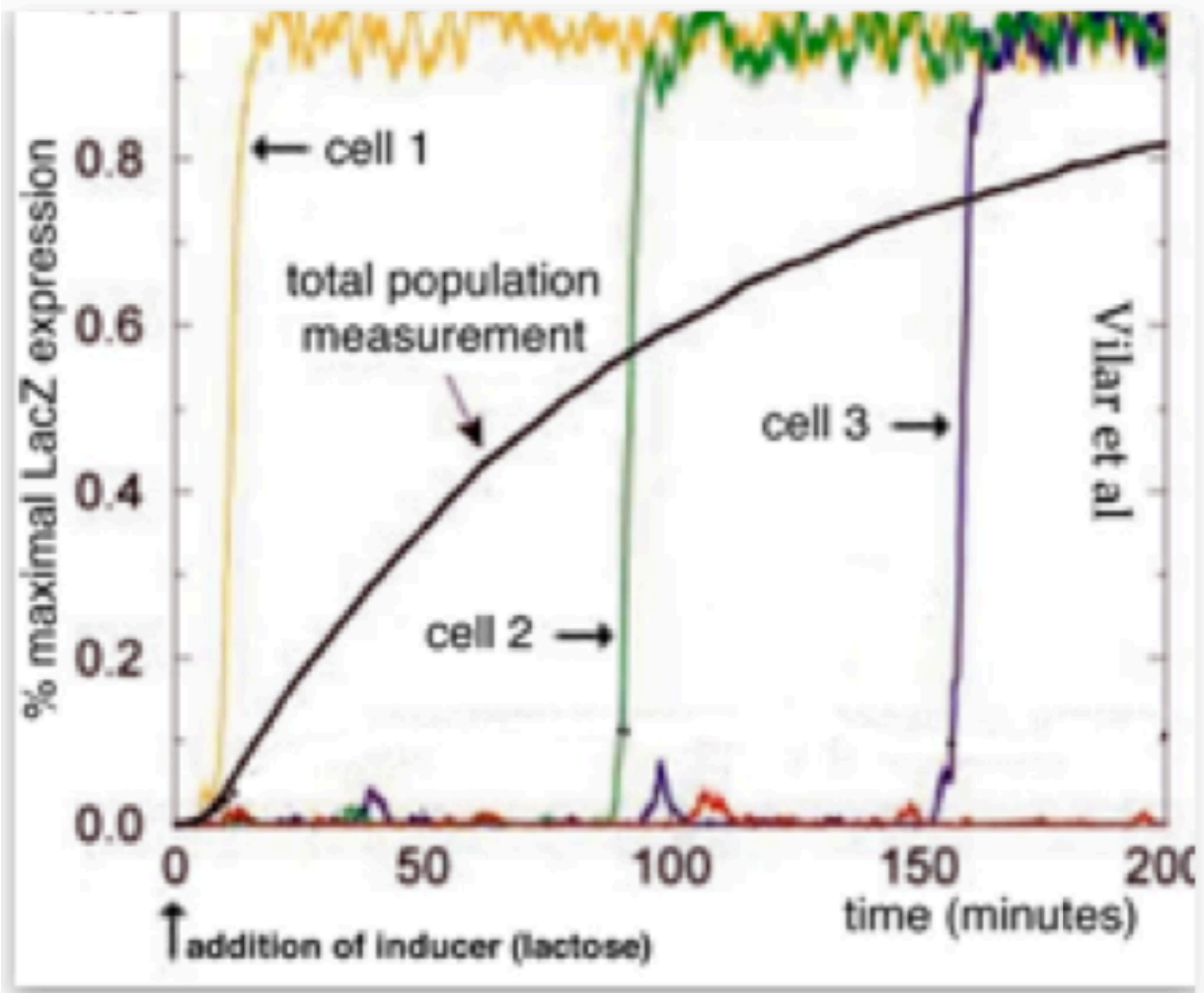


What happens (and why) when specific components are mutated? consider the presence or absence of lactose and the starvation conditions

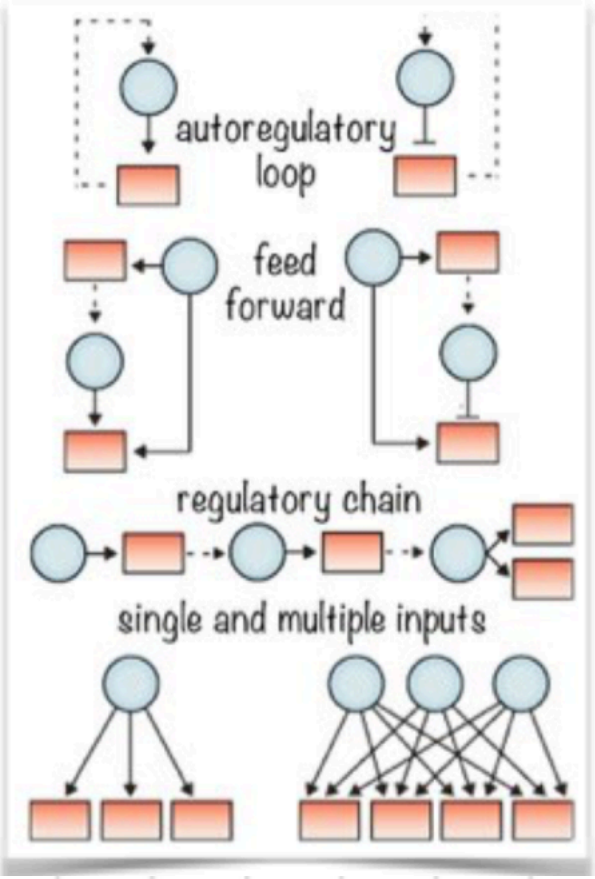
how does the lac operon behave in the presence of lactose (lactose added at time N)



Why does the lac operon behave this way (in the presence of lactose)



Design a gene regulatory circuit



start reading chapter 10
pp. 217-220