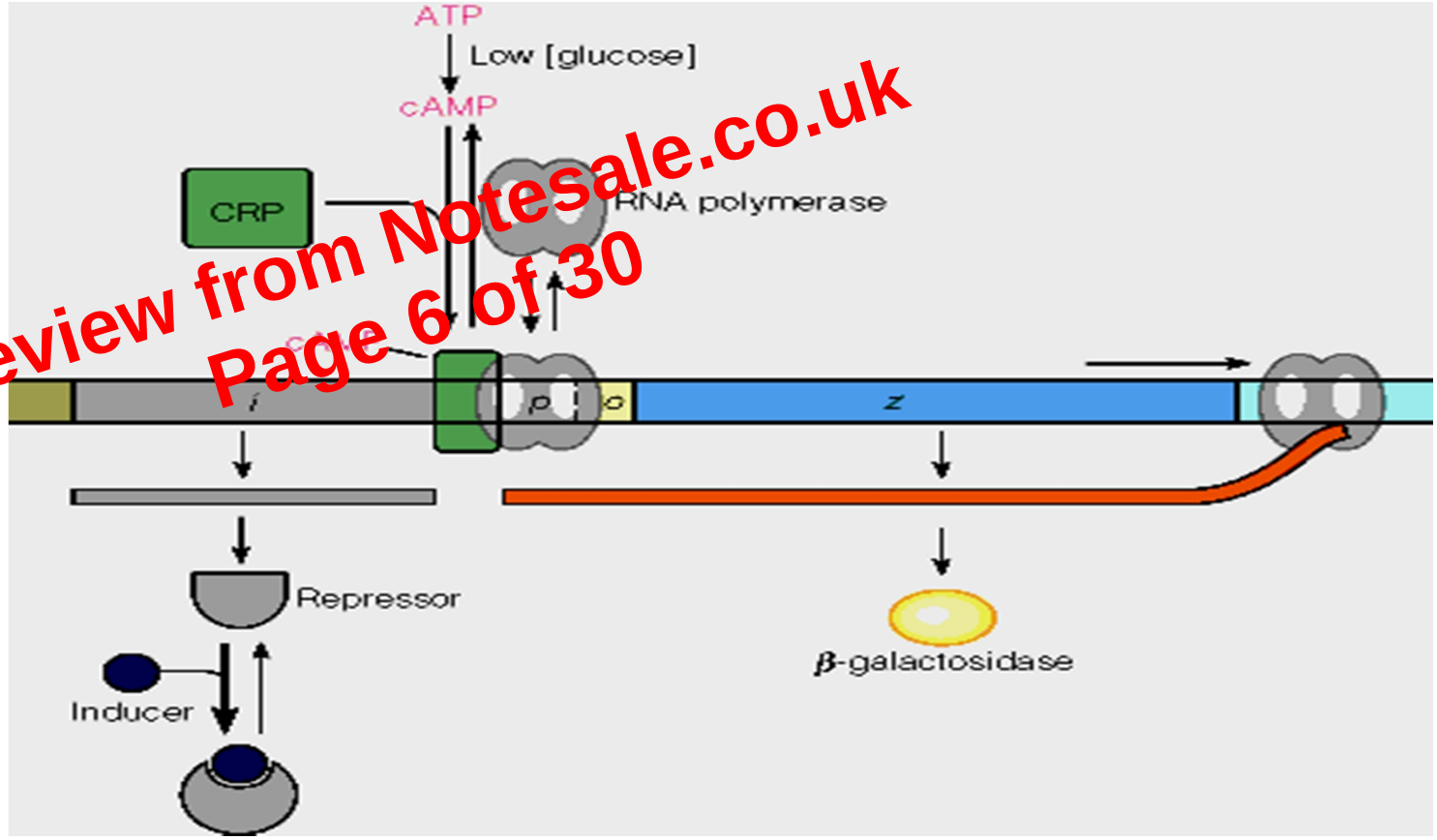
Catabolite activation

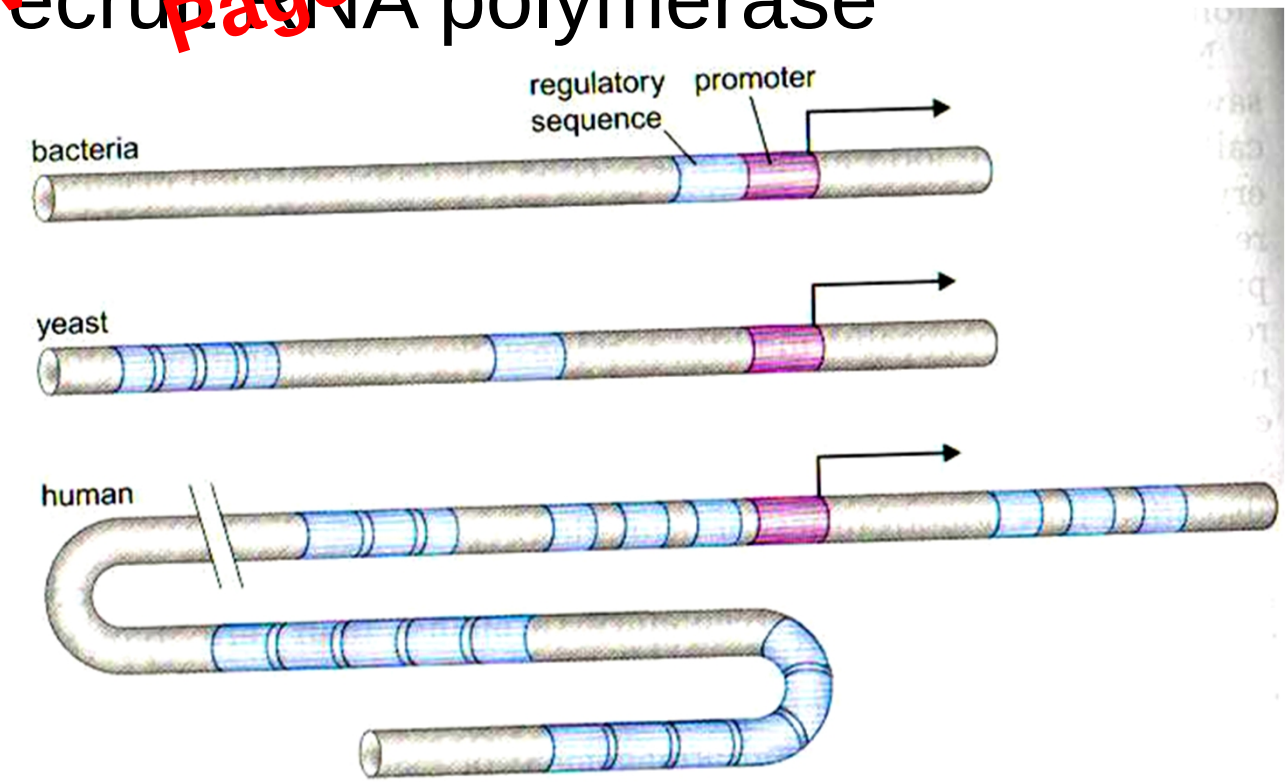


- Second layer of control
- Cells prefer glucose so use that up first
- Low glucose results in high cAMP

Catabolite activation

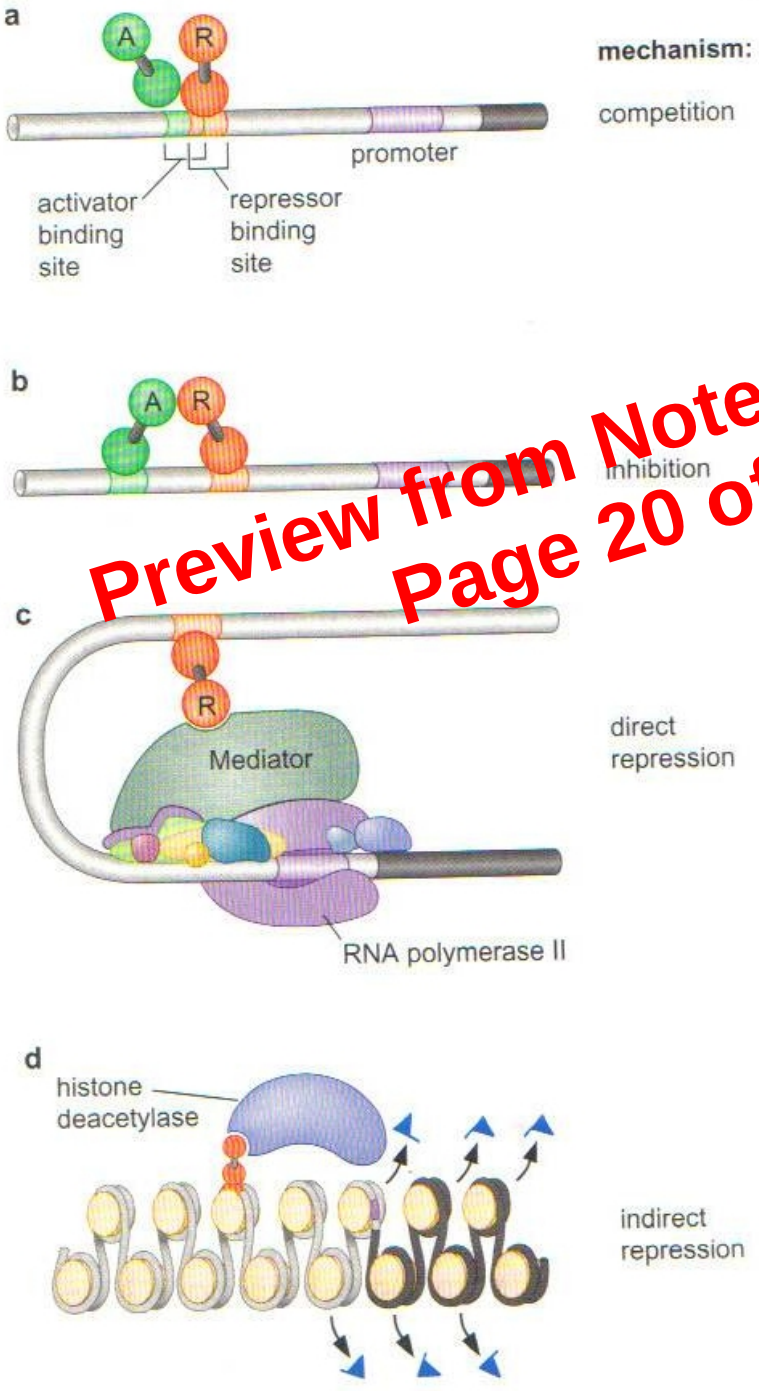
- cAMP binds to CRP (cAMP receptor protein)
  - cAMP binding induces conformational change in CRP
    - Increases CRP affinity for DNA
  - CRP is a homodimer of two 210 amino acids subunits
  - Contains a helix-turn-helix DNA binding motif
- CRP-cAMP binds to CRP-site on DNA
  - Region -65 to -55
- Aids formation of RNA poly promoter complex
- Lactose operon is turned on more efficiently

- Many factors involved in transcription
  - More binding sites & elements: greater regulation
- Additional factors, additional DNA binding sites
  - Enhancers – increase expression
  - Silencers – decrease expression
- Help recruit RNA polymerase

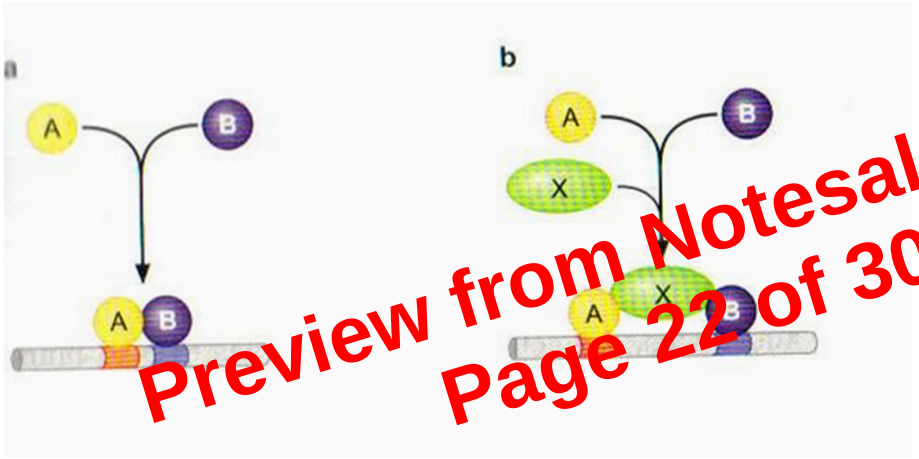


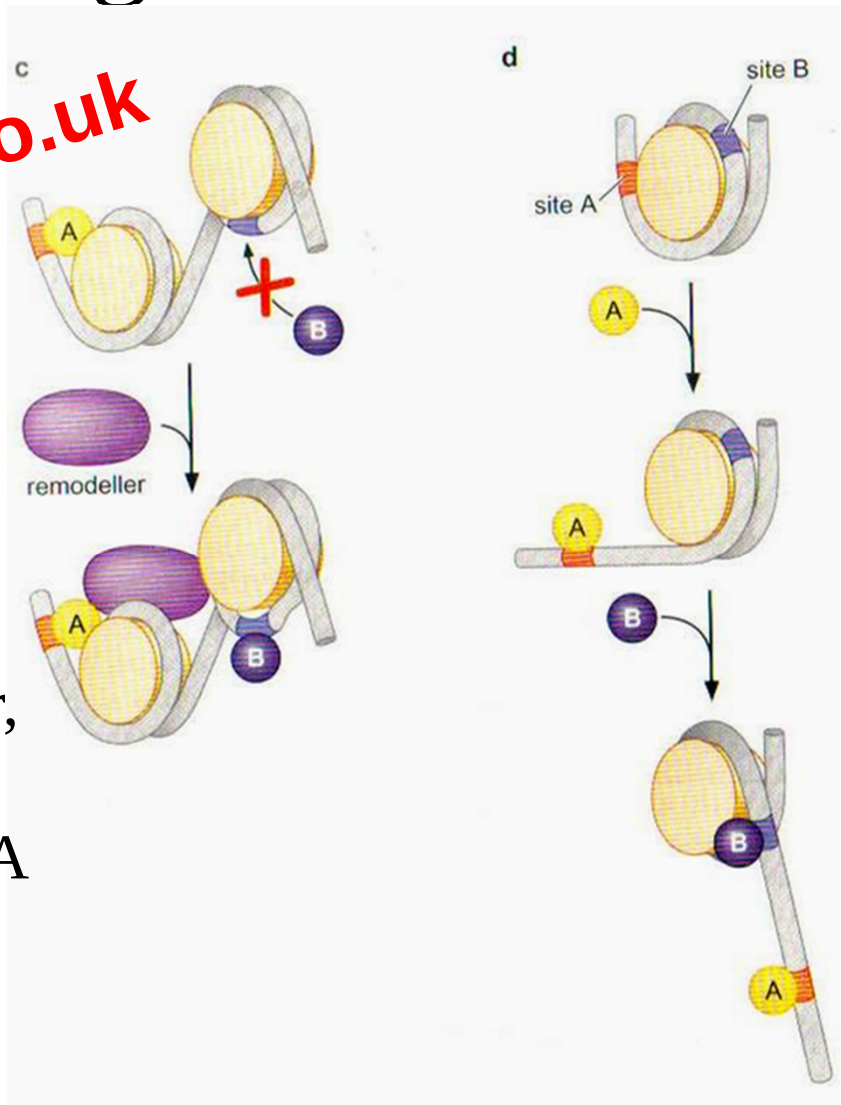
Repression

a. Steric inhibition
b. Binds activator
c. Binds RNA pol complex
d. Demethylation and repacking



Co-operative binding of factors





a. Direct, interaction
b. Direct, interaction through 3rd party
c. Indirect, A binds, recruits remodeller, B binds
d. Indirect, A binds close to where DNA exits nucleosome, causes a little unwinding, exposes B site