









Slide 13

**Positive Gene Regulation**

- Positive secondary control of the speed of an operon
- Sometimes lactose is present but glucose is scarce
- Catabolite Activator Protein (CAP) is activated by binding with **cyclic AMP**
- Activated CAP attaches to the promoter of the *lac* operon and increases the affinity of RNA polymerase, thus accelerating transcription
- When glucose levels increase, CAP detaches from the *lac* operon, and transcription returns to a normal rate
- CAP helps regulate other operons that encode enzymes used in catabolic pathways

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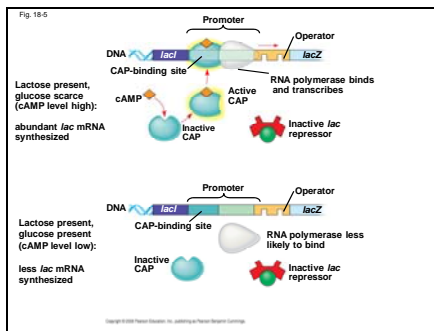
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Slide 14



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Slide 15

**Differential gene expression in multicellular development and cell specialization**

- Regulation of Chromatin Structure
- Regulation of Transcription Initiation
- Mechanisms of Post-Transcriptional Regulation
- Mechanisms of Post-Translational Regulation

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