- OPERATOR: USES REPORESOR RO INHIBIT TRANSCRIPTION
- o repressor protein binds to operator
- RNA polymerase binds to promotor but is blocked
- o Constitutively (continuously) expressed
- Lactose induces the transcription of the lac operon
- LACTOSE NEEDED FOR TRANSCRIPTION
- Presence of allolactose causes change in function
- Is an allosteric regulator (changes shape)
- Structural genes: affect only a single enzyme
- Regulatory genes: affect entire pathway (REGULATE PATHWAY)
- Inducible operon: repressor keeps the gene turned "off"
- May be reactivated by an inducer
- INDUCIBLE OPERON= INHIBITS, INDUCER= REACTIVATES
- Mostly found in catabolic pathways
- What are the parts of the operon (e.g., operator, repressor...)
- How does the *trp* operon differ from the *lac*?
 - o Repressible operons: genes always "on" except during special circumsyances (regulated by abundance of end products)
- How are they similar?
 What are some examples of positive gene regulators?
 Positive regulators:
 Stimulatorial
 - - - ar dot ton-uses both negative and positive regulation
 - Preview Recognizes absence of Succes Mathematical Sciences to use available glucose rather than making aduitional enzymes such as B-galactosidase (GALACTOSE)
 - When glucose levels are low, stimulates the binding of cAMP to CAP
 - Causes allosteric shift (CHANGE IN SHAPE/FUNCTION)
 - Allows RNA polymerase to bind efficiently
 - At times, groups of operons may be controlled by a single regulator (regulon)
- What is a posttranscriptional control mechanism?
 - Regulation after transcription
 - Translational controls: regulate rate of mRNA translation
 - Up to 1000x rate for some genes
 - Use differential ribiosme binding
 - Posttransitional controls: activate or inactivate one or more existing enzymes
- How do eukaryotes regulate their genes? •
 - Not organized into operons
 - Many genes inducible only at certain times in the life of the organism (temporal regulation)
 - Others under tissue-specific regulation
 - Gene regulation occurs at the levels of:
 - Transcription, mRNA processing, translation, the protein product

• Cline: gradual change in a species phenotype and genotypic freqs from and env gradient

