Key

Ch. 18: Gene Expression and Chapter 19: Virus Study Guide

1. Draw and label the 3 parts of an operon.

2. Contrast inducible vs. repressible operons.

inducible - starts off + is turned on /catabolic/Ex lac operon

repressible - starts on + is turned off /anabolic/ Ex tryp operon

3. What is the epigenome and why is it considered "flexible?"

- factors not in DNA that control gene expression
- they allow ~~it to~~ some genes to be expressed + not others

4. How does DNA methylation and histone acetylation affect gene expression?

inhibits transcription

promotes transcription

5. What is the role of activators vs. repressors? Where do they bind to?

increase transcription → bind to control region (enhancer region)

decrease transcription

Not on test

6. Compare oncogenes, proto-oncogenes, and tumor suppresor genes.

mutation cancer causing

gene stimulates normal cell growth → inhibits cell division

7. What are the roles of the ras gene and the p53 gene?

stimulates cell cycle → tumor suppressor gene

8. What are HOX genes? Why are they evolutionarily significant?

- genes that control pattern develop
- have been highly conserved

9. What is the purpose of a PCR? When would it be used?

- to make lots of copies of a segment of DNA
- crime scenes, genetic studies etc.

10. Compare and contrast lysogenic and lytic viral cycles. Give an example of each.

lysogenic - stay in host + become part of DNA

lytic - virulent, hijact cell, make ~~ee~~ viral parts, lyse cell (host)

11. What is a retrovirus? How does it infect its host?

- RNA genetic material
- reverse transcriptase needed to convert RNA to DNA to incorporate into host DNA