Internet Assignment: Eukaryotic Regulation of Gene Expression

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<http://highered.mcgraw-hill.com/sites/9834092339/student_view0/chapter16/control_of_gene_expression_in_eukaryotes.html>

1. How is most of the control of gene expression in eukaryotes achieved?
2. In general, how do regulatory proteins affect transcription?
3. What do we call regulatory proteins that make RNA polymerase binding more efficient?
4. How does altering RNA splicing control gene expression?
5. What role do nuclear pores play in regulating gene expression?
6. What is ribonuclease?
7. What may alter the rate of protein synthesis?

Transcription Factors

<http://highered.mcgraw-hill.com/sites/9834092339/student_view0/chapter16/transcription_factors.html>

1. What is a transcription factor?
2. Transcription factors bind upstream or downstream?
3. Do basal factors affect the rate of transcription?
4. List all 3 types of proteins involved in this animation

Transcription Complex & Enhancers

<http://highered.mcgraw-hill.com/sites/9834092339/student_view0/chapter16/transcription_complex_and_enhancers.html>

1. List the 3 proteins that bind to the TATA Box
2. What are activators
3. Where are enhancers located
4. Are enhancers specific or can they be used for more than one gene?

Chromatin Remodeling

<http://highered.mcgraw-hill.com/sites/9834092339/student_view0/chapter16/chromatin_remodeling.html>

1. What is the basic subunit of chromatin called, and what is it composed of?
2. What role to histone proteins play in transcription activation
3. What does chromatin rearrangement do?
4. What is Swi5p, and how does it work?
5. Based on what we learned in lecture, how does adding an acetyl group to a histone affect transcription?
6. What do histone acetyltransferases and Swi/Snf do to chromatin?

RNAi

<http://highered.mcgraw-hill.com/sites/9834092339/student_view0/chapter16/rna_interference.html>

1. What is RNAi
2. Interference of gene expression in RNAi is due specifically to what molecule
3. What does complementarity between 2RNA molecules cause
4. Where can antisense RNA come from?
5. What are the 2 steps of the current model of RNAi?
6. What happens to double stranded RNA in a eukaryotic cell?

RNAi <http://www.nature.com/nrg/multimedia/rnai/animation/index.html>

1. what 2 types of RNA are introduced in this animation
2. These small RNA molecules are used to direct what?
3. Inside the nucleus most genes that code proteins are transcribed by what?
4. What are siRNA’s derived from?
5. Where can these siRNA’s come from (2 places)
6. Where do most microRNAs come from
7. What is dicer?
8. What is RISC
9. What does RISC do?
10. What has greater specificity, siRNA or microRNA’s? Explain.

How Glucocorticoid Hormones Work

<http://highered.mcgraw-hill.com/sites/9834092339/student_view0/chapter16/action_of_glucocorticoid_hormone.htm>

1. What type of hormones are glucocorticoid hormones
2. Where are the receptors for glucocorticoid hormones found?
3. What doe glucocorticoid hormones control? List some examples.
4. What kind of gland secretes glucocorticoid hormones
5. Where do glucocorticoid hormones get secreted?
6. What do glucocorticoid receptors function as when bound by ligand?
7. What is the role of the NLS in this mechanism?
8. What is a GRE, ans what does it function as?

How intracellular Receptors Regulate Gene Transcription

<http://highered.mcgraw-hill.com/sites/9834092339/student_view0/chapter16/how_intracellular_receptors_regulate_gene_transcription.html>

1. What can small lipid soluble molecules do that regular proten signal molecules cant do?
2. What must all intracellular receptors that regulate transcription have?
3. Why don’t these intracellular receptors always activate transcription (in other wrds, why aren’t they always “on”)?
4. What is the role of the signal molecule in activating these intracellular receptors?