**BI-102 Learning Objectives – Chapter 16: Control of Gene Expression**

**Fall '08**

1. Be able to explain how it is possible for two cells having exactly the same DNA to be physically and functionally very different from one another.
2. Be able to explain how DNA can be “read” without being unwound.
3. Be able to name a major DNA binding motifs.
4. Be able to explain what an *operon* is.
5. Be able to describe the general roles of repressors and activators in regulation of gene expression.
6. Be able to explain, in general terms, how the *lac* operon is controlled (what simulates its expression and what inhibits its expression).
7. Be able to describe the functions of *basal factors*, *enhancers* and *coactivators* in the control of eukaryotic gene expression.
8. Be able to describe the role of DNA methylation in the control of gene expression.
9. Be able to describe the role of histone methylation and acetylation in control of eukaryotic gene expression (know which is generally activating and which is generally inhibitory).
10. Be able to explain the role of alternative spicing in producing different versions of proteins in different tissues.
11. Be able to name or describe any 4 of the 6 levels at which gene expression can be controlled in eukaryotes.
12. Be able to state, in general terms, how proteins can be marked for destruction and destroyed in cells (you don’t have to know the names of the particular proteins used in this marking and destruction).
13. Be able to describe a way other than expression control in which cells control their function.