

Name _____

Course/Section _____

Date _____

Professor/TA _____



Activity 18.3 How is gene activity controlled in eukaryotes?

Human genes cannot all be active at the same time. If they were, all the cells in our bodies would look the same and have the same function(s). For specialization to occur, some genes or gene products must be active while others are turned off or inactive.

1. In eukaryotes, gene expression or gene product expression can be controlled at several different levels. Indicate what types of control might occur at each level of gene or gene product expression.

Level	Types of control
a. The gene or DNA itself	
b. The mRNA product of the gene	
c. The protein product of the mRNA	

18.3 Test Your Understanding

Single-celled organisms such as *Amoeba* and *Paramecia* often live in environments that change quickly. Which of the following types of control allow organisms like *Amoeba* to respond most quickly to frequent short-term environmental changes? Explain your reasoning.

- a. Control of mRNA transcription from DNA
- b. Control of enzyme concentration by control of the rate of mRNA translation
- c. Control of the activity of existing enzymes
- d. Control of the amount of DNA present in the cell