A. Introduction:
   a. Gene regulation is how we express …
   b. Terminology:
      i. Regulatory Gene: secretes (codes for the formation of) a ________________ that regulates
      ii. Regulatory sequence: an example is a
   c. For gene regulation: it starts with DNA that makes ________________ which codes for
   d. Though we can regulate a gene in any step along the way, most of the regulation is going to be from
   e. An example in us, is the TATA Box, a regulatory sequence that allows RNA polymerase to

B. The lac Operon:
   a. How many genes code for proteins to digest the lactose?
   b. What happens at the promoter?
   c. The operator sits right between
   d. The repressor protein binds to the
   e. If the repressor is attached operator then RNA polymerase
   f. The lactose fits into the ________________ and it changes the shape of the protein.
   g. Now RNA polymerase can transcribe the genes so that the lactose gets
   h. If lactose is now all gone, the repressor will bind back on the

C. The trp operon:
   a. How many genes?
   b. When tryptophan (amino acid) is present, it fits into the repressor who then binds to the
   c. If you have no tryptophan, the repressor changes it shape, and it no longer binds to the

D. In eukaryotes, we primarily use transcription factors:
   a. Transcription factors can:
      i. Allow RNA polymerase to
      ii. Some TFs will actually hold RNA polymerase in
   b. When the DNA folds back, with more TFs, it then activates the