**Group Activity - Molecular Phylogeny**

1. Construct the most likely phylogenetic tree:

based on the morphological characteristic states of the following three taxa (assume absence of segmentation is the ancestral condition of all three taxa and that segmentation evolves sometime during the evolution of this group)

Taxon 1:  **Segmentation present**   
Taxon 2:  **Segmentation absent**

Taxon 3:  **Segmentation absent**

based on the nucleotide sequences for the same three taxa

Taxon 1:  **ACTGCGCTG**   
Taxon 2:  **ACTGCGCAG**   
Taxon 3:  **CCTCAGCAG**

1. Based on both the morphological and molecular evidence, draw the tree that you are most confident represents the true phylogenetic relationship among these three taxa. Explain why you choose this one.