Name:	Date:	Class:

Comparing Molecular Data Student Activity Sheet

In this activity you are going to contrast sequences of about 60 bases and look for areas where the sequences are DIFFERENT.

- Cut the RNA Sequences sheet into strips.
- Each person in the group will select two strips at a time and line them up on a piece of notebook paper so that one strip is directly above the other. Make a small mark on your notebook paper (not on the sequencing strip) wherever the strips have a difference in base sequences. Count the marks and record the number in the table below. Work until you have filled in the entire table, dividing the work among your group members.

Organism	Human	Yeast	Corn	*E. coli*	*Thermotoga*	*Methanococcus*	*Thermococcus*
Sulfolobus							
Thermococcus							
Mathnococcus							
Thermotoga							
E. Coli							
Corn							
Yeast							

Interpreting the data:

1. According to the number of substitutions (differences in the sequence) found for the rRNA fragment, which three organisms are the most closely related? How did you decide on these three?

2. Which pair of organisms are the least closely related?

3. What does it mean to have many differences in base sequences, in terms of relatedness of organisms?

4. If you were asked to put these organisms into three different categories based solely upon the differences in their RNA sequences, how would you group them? Make three different lists placing those organisms most alike together.

5. From the three groups you constructed in question (4), where would a pine tree be placed? Why?

