Homework:
Name: $\qquad$ Date: $\qquad$

Pretend you have been allowed access to a DNA sequencing laboratory and gathered genetic data for each of these living species and an out group. Review the coding sequences and complete the following matrix using ' 0 ' for ancestral states and ' 1 ' for derived characters (use ' 2 ' if there are more than 2 traits).

Fill in the Matrix:

|  | A | B | C | D | E | F | G | H | I | J | K | L | M |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Species 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Species 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Species 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Species 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Species 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Species 6 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Species 7 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Species 8 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Species 9 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Species 10 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Species 11 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Species 12 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Out Group |  |  |  |  |  |  |  |  |  |  |  |  |  |

6. Revisit the categories you created in Worksheet 1a, Question 1. After reviewing this new data (fossils, DNA, and out group) have you altered the way you believe these species are related to one another? In the space below, write down the groupings you finalized. Explain what evidence you used to organize these species and justify any changes you have made to your groupings, if any.

## Genetic Data:

Coding Sequence: (Codon Sequences Labeled)


