Name _____

Class _____

Expedition – Galaxies – Hubble Tuning Fork in Color

Don't forget to record data and observations as you work through this activity. All of the questions and reminders from the activity are listed in order below.

1. You are going to apply color to the original Hubble tuning fork diagram. Formulate a question related to this process. Use whatever background knowledge you have regarding galaxies and color. Do you see how specific you can get?

   Example start to your question: When we are able image galaxies in color can we observe. . . (pattern)?

Find a Starting Place

2. Record the coordinates of your starting place.

   RA –
   Dec –

Search the Database Using SQL

3. What do you want your SQL search to do? Write a sentence that describes your goal. Your statement should report what you looking for; qualifiers such as size, distance, or brightness; what information you want reported back about those objects; where you want them to come from (location in the sky); and if you want them ordered in a specific way or not.

A Query to Start With

4. Rewrite each line in the sample query, and make at least one modification. Explain why you made each modification.

   SELECT

Name _____

FROM

WHERE

Run Your Query

5. How many galaxies does your query return? If it is outside the targeted 15-25, modify the query to increase or decrease the sample size. Record what you did here.

Run Your Query in Image List

6. How do we have to modify our query so that it will run in Image List? Rewrite the modified query here.

7. You have now run your query two different ways; describe the advantages of each.

Colorize the Tuning Fork

8. After you run your query, choose galaxy images that you think match the positions on the Hubble tuning fork diagram. Create your own colorized version of this chart any way you like. If you prefer, simply transfer small screen capture images to the chart below or record your observations.

Name _____

EO	
E5	
S0	
Sa	
Sb	
Sc	
SBa	
SBb	
SBc	

9. Do you observe any patterns related to color?

10. How does your work compare with others?

Name _____

11. Are there any additions or changes you would make to the diagram to take into account your new observations?

12. How might you interpret your observations? (What phenomena might explain your observations? What do you think is going on here?)

13. In the next part of this expedition, we will attempt to design an investigation that explores some aspect of what we see when we observe galaxy colors and shapes. Can you formulate one or more questions related to what you observed or concluded that could be the starting point for an experiment? A good way to begin if you are stuck is to take one of your observed patterns and ask, "Is it true?"