**Academic Biology Station 3: Structure vs. Function**

**Read each scientific claim below. Use the resources available to find evidence about mitochondria and chloroplasts as you answer each question to support the claim.**

Resources:  
Mitochondria: <http://www.biology4kids.com/files/cell_mito.html>  
Chloroplast: <http://www.biology4kids.com/files/cell_chloroplast.html>

Claim #1

An organelle’s structure is related to the function it performs for the cell.

1. What are the functions of the mitochrondria and chloroplasts?
2. Draw and label a mitochondria and a chloroplast.
3. Why do these organelles have two membranes? What is the function of the outer membrane?
4. Where are the chlorophyll molecules in the chloroplast? Why are they placed there?
5. What is the significance of the placement/position of the thylakoids?
6. Why does a mitochondria have its own ribosomes? How are the products of the ribosomes used within the mitochondria?

Claim #2

Chemical reactions are carried out within organelles of a cell. When the surface area within an organelle is increased the efficiency of the organelle is increased.

1. Define: surface area
2. How do the inner membranes of the mitochondria and chloroplast represent an increase in surface area?
3. What reactions occur on the surfaces of the inner mitochondrial membrane and the thylakoids of the chloroplast?

Claim #3

Organelles are located in different amounts and in different locations based on the function of the cell.

1. In what parts of the plant do the cells contain chloroplasts? Why do chloroplasts not occur in other plant cell types?
2. Why don’t animal cells have chloroplasts?
3. Why do both plant and animal cells contain mitochondria?
4. Why do muscle cells have more mitochondria than other cell types?

Claim #4 YOU CREATE!

Write a claim about the location and number of ribosomes within a cell. Use the resources, your knowledge and cell diagrams to identify evidence to support your claim.

Resource: <http://www.biology4kids.com/files/cell_ribos.html>

Hints:

1. What is the function of the ribosome?
2. Why do you think there are so many ribosomes in cells? Why are they so spread out?
3. Why are some ribosomes “bound” to the endoplasmic reticulum while others are free-floating?