Grade 6

Ch. 2 Lesson 3
Life Science

Page #	Question	Answer(s)	Links/Sources
62	How do you think the cell nucleus communicates with the rest of the cell?	Molecules pass between the nucleus and the cytoplasm through tiny pores in the nuclear membrane.	
62	What parts does it have?	Sample answer: A frame, a seat, handle bars, petals, a fork, a sprocket, petals.	
62	Why do you think the nucleus is often the largest and visible object inside the cell?	Sample answer: Because it hold all the coded instructions for all the functions of the cell throughout the life of the cell, in the chromosomes and genes.	
62	What might happen if these instructions contain mistakes?	Sample answer: The cell would not function properly and would die prematurely.	
62	How might this affect these kinds of cells?	Sample answer: There would be more chance for the DNA to get mixed up and this would result in mistakes within the cell.	
63	Where does the nucleus store the genetic material	*In the chromatin.	
63	What protects the nucleus and separates it from the cytoplasm of the cell?	The nuclear membrane.	
63	What purpose do the folded membranes serve within the cell?	*They increase the available surface area on which chemical reactions take place.	
63	Where do the plans for building the proteins come from?	*From the nucleus.	
63	What is the job of vesicles?	*Their job is to complete and transport finished proteins. Explain that the vesicles work requires energy.	
63	How much surface area does your model have?	Sample answer: This depends on how wide the 60" tape measure is. If it is about 1/2" wide with a length of 60 cm meters there would be about 30 square cm per side give a total surface area of 60 square cm.	

63	According to this verse, what is their purpose?	*I Corinthians 12:7-10, 28 describe these jobs for which church members are equipped: wisdom, knowledge, faith, healing, miracles, prophecy, discerning spirits, speaking and interpreting tongues, and administrations. Verse 7 explains that they are to benefit everyone.	
63	What might be the advantage of having ribosomes attached to the ER?	Sample answer: They would be closer to where the amino acids are being moved through cell, the ribosomes would not have to wait for the materials they need to make proteins needed by the cell.	
63	Why do you think the ER connects to the cell membrane?	Sample answer: So it can easily deliver product of the cell outside the cell for transport to other cells. Being attached to the nuclear membrane also makes it easier to pick and transport needed material within the cell.	
63	What is the job of the Golgi apparatus?	*It receives the proteins from the rough ER, checks them for errors, then packages them for use elsewhere.	
63	Why is the surface of area of the ER important?	*The increased surface area works to make proteins and energy for transport to areas of the cell.	
63	How can you use the analogy of a highway to explain the function of the ER?	*A highway is a path used to transport cargo throughout an area. Like a highway, the ER is used to transport materials in the cell	
64	How do organelles present in plant cells differ from those present in animals cells?	Sample answer: Plant cells have chloroplasts, animals cells do not have these structures. The plant cell has one very large vacuole along with smaller vacuoles. The one large vacuole takes up most of the space in the cell.	
64	How will the plant and animal cells look different?	Sample answer: Plant cells are often green because of the chloroplasts that are present, and heavy cell walls that are easily visible. Plant cells lack chloroplasts and are usually not green. They also lack the large central vacuole present in plant cells.	

64	How can you identify whether cells come from a plant or an animal?	Sample answer: Look for a green structures in the cell. This will mean that they are likely plant cells. If they lack the green structures, the are probably animals cells.	
65	How is their work different?	*Chloroplasts store chemical energy, the mitochondria change this energy into a form the cell can use to power its activities.	
65	How does the structure of this cell organelle provide surface area on which reactions can take place?	*The inner layer of the mitochondrion's membrane is folded which increases the surface area and allows it to produce more energy for the cell.	
65	What is the Christian's "powerhouse?"	*The Christian's "powerhouse" is the outpouring of the Holy Spirit (Acts 1:8). We can access that power by asking God for it (Luke 11:13). Point out to the students that asking is not a one-time thing. The verb tense in Luke 11:9 means "keep on asking," and the story in Luke 11:8 talks about persistence in asking.	
66	What other items can you think of that would represent thylakoids and grana?	*Sample answers: stacks of coins, dinner plates, and checker pieces.	
66	What is the purpose of stacks inside the chloroplasts?	*They are the sites where photosynthesis takes place inside the chloroplast.	
66	What do the tube-like structures connect?	*The connect the grana. Explain that these tube-like structures act like a skeleton within the chloroplast. They keep the grana at ideal distances from each other.	
66	How does the structure of grana help the process of photosynthesis?	*Because the grana are stacks of multiple thylakoids, the is a larger total surface area for efficient photosynthesis.	
66	How might the cell use these materials?	Sample answer: To rebuild damaged organelles or build new organelles.	
67	How is this like the body of Christ?	*Everyone is different yet all are common in our dependence upon God; children of God find themselves jointly fit together working in a common task. Ask students to look for other comparisons or evidence of God's design in the structure and design of cells.	
67	What is the function of these organelles?	*The function to coordinate the activities of the other cell parts to keep the cell alive.	

67	How do the organelles of a cell resemble the various parts of the human body?	*Sample answer: different parts working together for the good of the cell or the body.	
67	How do the functions of the vacuoles and lysosomes differ?	*Lysosomes contain powerful digestive enzymes to break down food, worn out cell parts, and harmful bacteria. They help recycle these materials. The vacuoles store food and waste products until they can be removed. In plants, the vacuole also provides additional support and structure.	
67	What causes the tiny cilia in the inner ear to move?	Sample answer: The vibration of sound waves that cause the bones of the middle ear to move back and forth, which pushes the fluid inside the inner ear to move back and forth with cause the cilia to move.	
68	In what ways is the model you made similar to the real cell? In what ways is it different?	*It is similar because it shows the correct parts of the cell. It is different because the parts are just representations and because it does not actually function as a cell does.	
68	How can a cell model be used to understand how a cell works?	*Sample answer: To make a model, you have to understand how the parts work together. By making the model, you can understand how the whole cell functions.	
69	How do these organelles represent God's design in living things?	Sample answer: The intricate design and the specific functions that these organelles carry out do not look like something that happened by chance but are examples of God's design.	
69	What do you remember noticing that was similar?	Sample answer: Both plant and animal cells have a cell membrane, cytoplasm, and nucleus.	
69	What do you remember noticing that was different?	Sample answer: Plant cells are often green in color and are rectangular in shape. Animal cells are generally not green and do not have a rectangular shape.	
70	What is the most easily visible in both cells?	*The nucleus.	
70	What is its main function?	*To coordinate the activities of the other cell parts.	

70	How do plant and animal cells differ?	*Sample answers: Plant cells have a cell wall and chloroplasts, whereas animals cells do not. The vacuoles of plant cells are larger than in animal cells.	
71	When you consider the complexity of cells and their functions, which theory about the origin of life makes the most sense to you?	Sample answer: That cells were designed, rather than they happened by chance.	
71	Did such complexity happen by chance or did it require a designer?	Sample answer: Complexity suggest plan and design.	
71	Did life result randomly or did God create the complex structures and their complex functions?	Sample answer: The design and intricacy of cells and their functions suggest that God created the cell. It does not look like cells developed by chance or developed randomly.	
	* Means the answer is found in the TE.		