Alien by Design: Human vs. Alien Body Systems
My Size Gallery: Student Activity
(Grades 5-6)

In this activity, students create an alien and compare its body systems with human body systems. The activity should follow a trip to the Science Museum and the My Size Gallery.

**Time Required:** 1-hour visit to the Science Museum; one to two 45-minute classroom periods to complete the activity.

**Purpose:** As they complete this activity, students will do the following:
1. Analyze the life processes that are essential for human survival;
2. Write creatively; and
3. Improve problem-solving skills.

**1995 Virginia S.O.L.s:** Science – 5.5, 6.2, 6.8, 6.9; English – 5.7, 5.8, 6.7, 6.8, 6.9

**Museum Connection:** Visit the following exhibits in the My Size Gallery to explore the concepts and S.O.L.s covered in this activity: Rush Delivery, Down the Hatch, From Egg to Infant, Nerve Center, Bones in Motion, Nutrition Facts, Pyramid Picnic and Body Probe.

**Materials:**
- My Size Scavenger Hunt for grades 5–6
- Internet access
- Library access
- Paper
- Crayons, markers or colored pencils

**Prerequisite Skills and Knowledge:** Before completing this activity, students should visit the Science Museum and complete the scavenger hunt for the My Size Gallery. As a class, review the scavenger hunt and answer any lingering questions.

Students should be familiar with the body system that you decide to cover in this activity. This activity is designed to make students think about how human body systems work, not to teach specific information.
Procedure:

1. Have students complete the Alien Profile: Student Activity Sheet. Students should create an alien by deciding what planet it comes from, what it looks like, and what the alien is called. The alien should be an organic creature, not a robot. Finally, students should draw pictures of their aliens. Encourage students to be creative.

2. Choose one or more body systems for students to study. Give students the corresponding worksheets.

3. Students should answer the questions on the appropriate Student Activity Sheets. There are two kinds of questions on each sheet. One type of question deals with human body systems. Students should answer these questions by using prior knowledge or by looking up the answers. The other set of questions deals with the student’s fictional alien. Students should be creative with these answers, but the alien body systems that the students make up should be well thought-out and feasible.

4. After students have answered the questions, give them the creative writing assignment that corresponds to the body system on the Student Activity Sheet. (This part of the activity could be completed in English class as an integration activity.) Students should use their answers on the activity sheets to write a story about their alien. Students will have to describe one of the alien’s body systems to get the alien out of its latest catastrophe.

Extension: Art integration – Students may use clay to make models of their aliens and the alien’s body systems.

Resources:


Science Fact File – Inside the Human Body: www.imcpl.lib.in.us/nov_ind.htm


Body Quest – Exploration of Human Anatomy: http://library.thinkquest.org/10348
Alien Profile
Student Activity Sheet

Name _______________________________ Date ___________

Directions: Create your own alien by answering the questions below. Your alien must be organic (living). Use your imagination! Who knows what’s out there?

1. What is your alien’s name? ________________________________

2. What is the name of your alien’s home planet? ___________________

3. What does your alien look like? For example, how many arms, legs, eyes, heads, mouths, ears, fingers and toes does your alien have?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

4. Draw your alien!
How Does It Flow?
The Circulatory and Respiratory Systems: Student Activity Sheet

Name ____________________________ Date ___________

Directions: Answer the questions below on a separate sheet of paper.

Human Circulatory System
1. What role does the heart play in the human circulatory system?
2. How does blood travel throughout the human body?
3. What element does blood deliver to our body parts?

Alien Circulatory System
Compare your alien’s circulatory system with the human circulatory system.
Answer the following questions to help make your comparisons. If your alien does not have a circulatory system, explain why. How does its body work?

1. Does your alien have blood? If your alien has blood, what color is it? What makes it this color? How does it compare with human blood? If your alien does not have blood, does anything flow through its body?
2. How does your alien’s blood or other substance move around its body? If it does not move, why not?
3. What is the purpose of your alien’s circulatory system? Does it carry anything? If so, what does it carry?

Human Respiratory System
1. Oxygen is the essential element that humans breathe in air. Where does air enter into the human body?
2. Once we breathe in air, where does it go?
3. Where does the oxygen go once it gets into the lungs?

Alien Respiratory System
Compare your alien’s respiratory system with the human respiratory system.
Answer the following questions to help make your comparisons. If your alien does not have a respiratory system, explain why. How does its body get what it needs to survive?

1. What elements make up the atmosphere on your alien’s planet? Could your alien survive in Earth’s atmosphere? Why or why not?
2. Does your alien breathe the air on its planet? If not, what does it breathe? Of the elements that your alien breathes, which one is most essential to your alien’s survival?
3. How does the essential element get into your alien’s body? Where does it go, once it gets into the body?
Where Does It Go?
The Digestive System: Student Activity Sheet

Name ____________________________ Date ___________

**Directions:** Answer the questions below on a separate sheet of paper.

**Human Digestive System**

1. What role do teeth play in the human digestive system? Why are they important?
2. What does food travel through on its way to the stomach? How does it move through this tube?
3. How is food broken down once it is inside the stomach?
4. After food leaves the stomach, it enters the small intestine. Describe the digestion process in the small intestine.
5. Where are nutrients absorbed into the bloodstream?
6. What happens in the large intestine?

**Alien Digestive System**

Compare your alien’s digestive system with the human digestive system. Answer the following questions to help make your comparisons. If your alien does not have a digestive system, explain why. How does it get the nutrients that it needs to survive? Does it get hungry?

1. Draw a picture of your alien’s digestive system. Make up names and label the parts. Be creative! Answer the questions below to guide you.
2. Does your alien eat? If so, what does it eat? What would it eat on Earth?
3. How does your alien take in food?
4. How does your alien break down food? Does it have any way to mechanically break down food? Is it a chemical process? Or both?
5. How does food move through the alien’s digestive system?
6. How does your alien get nutrients to its body?
Aliens in Motion
The Skeletal and Muscular Systems: Student Activity Sheet

Name ____________________________ Date __________

Directions: Answer the questions below on a separate sheet of paper.

Human Skeletal System
1. Are humans classified as vertebrates or invertebrates? Why are humans classified this way?
2. If we had flexible bones, what problems might we have when moving around?
3. What makes it possible for humans to move their arms, legs, hips and ankles? How might a human’s movement be affected if these things were not present?

Alien Skeletal System
Compare your alien’s skeletal system with the human skeletal system. Answer the following questions to help make your comparisons. If your alien does not have a skeletal system, explain why. How does it hold its form? How does it move?
1. Draw a picture of your alien’s skeletal system. Make up names and label the parts. Answer the questions below as you go.
2. What supports your alien’s body? Are these structures rigid or flexible?
3. Does your alien have feet? If so, how many? If not, how does it move?
4. How does your alien’s body bend?
5. Is your alien a vertebrate or an invertebrate?

Human Muscular System
1. What is a muscle?
2. How does the human muscular system aid in movement, such as walking, talking, jumping, etc.?
3. Why is it important to exercise regularly?
4. Involuntary muscles are muscles that work automatically. In which body systems do involuntary muscles function?

Alien Muscular System
Compare your alien’s muscular system with the human muscular system. If your alien does not have a muscular system, explain why. How does it move?
1. How do your alien’s muscles help it move? Are these muscles voluntary or involuntary? Or both?
2. Do muscles control your alien’s body systems? If so, which ones? Are they voluntary or involuntary muscles? If not, how are the body systems controlled?
3. Is exercise important to your alien?
Picnic – Alien Style
Food Pyramid

Name ____________________________ Date ___________

Directions: Answer the questions below on a separate sheet of paper.

A Human’s Food Pyramid
1. What is a food pyramid?
2. Why should humans follow a food pyramid?
3. Draw the USDA Food Guide Pyramid and the Vegetarian Food Pyramid.
4. What can vegetarians use as a substitute for meat?
5. Which two food groups should you be eating the most of?
6. Why should fats, oils and sweets be eaten sparingly?

An Alien’s Food Pyramid
Compare your alien’s food pyramid with human food pyramids. Answer the following questions to help make your comparisons. If your alien does not eat, explain why. How does it get the nutrients that it needs to survive? Does it get hungry?

1. Draw a food pyramid for your alien. Answer the questions below to help make decisions about what your alien should eat. Be creative!
2. What does your alien eat?
3. Which food group(s) can your alien eat the most of?
4. Which food group is the least healthy for your alien?
5. If your alien went out to dinner on its own planet, what would it order as a healthy meal?
6. What would your alien eat while on a trip to Earth?
Creative Writing Topics

**Circulatory and Respiratory Systems**
Your alien has been in an accident while visiting Earth! The alien is in the emergency room and has just stopped breathing! What should the doctors do? They have never seen a being like this one before.

You are the alien’s emergency contact. You know everything about the alien and its circulatory and respiratory systems. Write a story telling the doctors what they need to know to help the alien. Begin by describing the alien’s planet. What does your alien breathe? Does it breathe? Your alien’s life is in your hands. Good luck.

**Digestive System**
On an excursion to Earth, your alien becomes very sick. The alien thinks it could be something that was ingested, so it goes to see Dr. Smith.

You are the world-renowned expert on alien health. Dr. Smith comes to you with her puzzling case. What can the doctor do to help the alien? Write a story telling Dr. Smith what she needs to know to help the alien. Begin by describing the alien’s planet. What does the alien eat? What could the alien have eaten that would make it sick? How is it affecting the alien’s digestive system? Your alien’s life is in your hands. Good luck.

**Skeletal and Muscular Systems**
You are an alien and you just crashed your ship into a tree! Rescue workers are on the scene. You are alert and do not seem to be seriously injured. However, when you try to get out, you fall down in pain! Something must be broken!

Good fortune is on your side because you are a trained alien medical doctor. You know all there is to know about your body systems. Write a story telling the doctors about your planet and your medical training. Then describe your skeletal system. What could be broken? Can they give you an x-ray? Explain how your muscles work and how your body bends and moves. Good luck and get well soon!
Food Pyramids

Your alien has been assigned a mission to study humans on Earth. The alien and its family will be on Earth for quite a while. Being fitness buffs, they are very concerned about maintaining a healthy diet.

You are your alien planet’s best nutritionist. It is up to you to design a food pyramid for the alien family, so that they can survive on Earth. Choose foods that the aliens can find on Earth and then compare them with the foods that the aliens would normally eat on their own planet. What does each food group provide? Which food groups should the aliens eat the most of? Which food groups should they eat the least of? Include a sample menu for the aliens that gives recommended meals for one day. Remember, your aliens must stay healthy during their mission!