

Homeostasis and Zombies (Or... how you too can survive the Zombie Apocalypse)

WebQuest Description: All living beings need to maintain homeostasis to stay alive. Specifically, humans regulate temperature, blood pressure, heart rate, oxygen levels, and blood sugar. What happens, though, if you're already dead...?

Grade Level: 6-8

Curriculum: Science

Keywords: biology, science, homeostasis, zombies, organ systems, anatomy, physiology, middle school

Published On: 2012-12-12 19:23:01

Last Modified: 2012-12-12 18:52:32

WebQuest URL: <http://zunal.com/webquest.php?w=178201>

Introduction

Homeostasis and Zombies (Or... how you too can survive the Zombie Apocalypse) In people, homeostasis is a state of being at which your body is totally and completely stable. Everything is balanced. Your body needs everything to be balanced, but we will keep it simple and focus on temperature, oxygen levels, blood sugar, blood pressure, and heart rate. Remember that everything needs to be balanced, or you will die. Temperature Your cells need to be at a very specific body temperature in order to survive. Specifically, your body has to be at 98 degrees Fahrenheit. If it is too cold, everything inside of your body will move too slowly. If it is too hot, everything will be overheated. Some ways that your body can try to regulate your temperature are sweating, fevers, shivering, and goosebumps. The main system that controls temperature is your endocrine system. Oxygen Levels You need to breathe oxygen to live (duh). However, once again you need to have a certain amount of oxygen in your body in order for you to live. Too little oxygen, and you will suffocate and die. Too much, and you could get oxygen poisoning and die. We all know that we get oxygen from breathing, but oxygen is spread out through your body by blood. This is why your body controls your breathing rate and your heart rate. The main systems that control your oxygen levels are your respiratory and circulatory/cardiovascular systems. Blood Sugar We all need to eat, and most of us like to eat (Ms. Lagman included). Your body is very happy when you eat because it needs the nutrients to help you maintain that important balance that keeps you from being dead. Food that you eat gets broken down and your body takes the nutrients from it. One thing that your body takes from food is sugar for energy. If you have too much sugar, you can get sick and get a disease like diabetes. If you have too little sugar, you can also get sick and not have enough energy to live. Your body balances this by keeping nutrients it needs and...getting rid of what it doesn't. The main systems that control your blood sugar levels are your digestive, endocrine, and excretory systems. Blood Pressure and Heart Rate All of the "stuff" that your body needs travels through your body in your blood. Your blood delivers the oxygen and nutrients you need to live. If you have no blood, you have no life. If your blood moves too slow and you have high blood pressure with a low heart rate, you won't get oxygen and nutrients when you need it. If your blood moves too fast and you have low blood pressure and a fast heart rate, you won't have enough time to get rid of the stuff you don't need and you will die. The main systems that control your blood pressure and heart rate are your endocrine and cardiovascular/circulatory systems. SO... how is this related to zombies? Remember that EVERYTHING we have been talking about is meant to keep us alive, but zombies are DEAD!!!! So how do they function?

Tasks

Assignment: You (or you and a partner) are the last remaining survivors of the zombie apocalypse and you need to make a game plan so you don't die. Use the resources provided to create a survival guide that includes the following information:
Project Information Check when completed What homeostasis is and the five things that need to be balanced
How ONE of the organ systems works and maintains a balance (ex: You could explain how the digestive system helps maintain blood sugar)
The main organs in that organ system
A list of things you need to survive and how each item relates to maintaining homeostasis
Your own theory of how best to defeat a zombie and why you think this would work
Pictures (of the organ system and maybe a cool one of a zombie)
Formats: Your project can be presented in ONE of the following formats: Poster Brochure Video Powerpoint Educreations Comic

Process

- Decide if you want to work by yourself or with a partner.
- Decide what format you would like to do your project in.
- Read the "Introduction."
- In your journal, take notes on each section that needs to be regulated. Write down what is being regulated, how it is regulated, and what body system regulates it. Graphic Organizer for Step 4 of Process

What's Being Regulated	System Responsible	How Regulated
Temperature		
Oxygen Levels		
Blood Sugar		
Blood Pressure and Heart Rate		
- Choose an organ system and click on the link that explains the organ system.
- In your journal, for the organ system you have chosen, explain: what it regulates, how regulating it helps maintain homeostasis, and what the main organs are. Organ System Chosen How it works Main Organs/main parts
- Make a list of all the items you would need to survive and explain how it would help you maintain homeostasis.
- Devise an effective way of killing zombies. Explain.
- Take ALL of the information you have found and put it in the project format. Make your project creative! Humanity is counting on you...
- Look at the checklist and make sure you have all parts of your project.

Evaluation

CATEGORY 4 - Above Standards 3 - Meets Standards 2 - Approaches Standards 1 - Below Standards Score Stud. score Teach. score Organization 15% Information is presented logically, completely, and in an interesting manner. Information is presented logically and completely. Information is presented logically, completely, OR in an interesting manner. Information is incomplete or illogical. Demonstration of Subject knowledge 30% All questions are answered completely and correctly. All answers are original and it is clear that student has thought out how to word the responses on their own. All questions are answered completely and correctly. All answers are original. Some questions are answered incompletely and/or some answers are incorrect. All answers are original. Most answers are incomplete and/or incorrect. Some answers are not original. Media and Presentation 30% Labeled pictures and explanations are included. It is clear that the student has put effort into the presentation and the explanations are thorough and complete. Labeled pictures and explanations are included. It is clear that the student has put effort into the presentation and the explanations are complete. Labeled pictures are included. The student has completed the presentation and the explanations are complete. Pictures are missing and it seems that the students have put little effort. Creativity 10% Project is creative and clear. All work is original and it is evident that the student has put forth much effort. Project is creative and clear. All work is original and it is evident that the student has put forth some effort. Project is creative. All work is original and it is evident that the student has put forth effort. Project is plagiarized or shows little effort. Citations 5% References are complete and one hundred percent correctly cited. References are complete and ninety percent correctly cited. References are complete and partially correct. References are incomplete and/or mostly incorrect. Grammar & Spelling 10% All words are spelled correctly in the title, labels and caption/description. All common words are spelled correctly in the title, labels and description. 1-2 scientific words may be misspelled. 75% of the words are spelled correctly in the title, labels, and description. Fewer than 75% of the words are spelled correctly in the title, labels, and description.

Category and Score					Score
				Total Score	

Conclusion

Think about what you have just learned. You will need to keep these concepts in mind for the rest of this unit because we will NEVER move on from homeostasis in biology... => As a final piece, complete the following exit ticket:
 3 Things you learned about homeostasis.
 2 questions you still have about homeostasis.
 1 thing you would be excited to study related to human biology in general.

Teacher Page

This webquest would probably take about 4 hour long periods to complete. This is easier to do if you have computers or ipads in your room.

Standards

State: 3.0.2.b

b. Select several body systems and explain the role of cells, tissues and organs that effectively carry out a vital function for the organism, such as

- Obtaining food and providing energy (digestive, circulatory, respiratory) • Defense (nervous, endocrine, circulatory, muscular, skeletal, immune) • Reproduction (reproductive, endocrine, circulatory) • Waste removal (excretory, respiratory, circulatory).
- Breathing (respiratory, circulatory)

County:

1.1.2 Define homeostasis.

Credits

The Walking Dead

biology4kids.com

<http://necropology.com/>

Other