Dr. Allevable and Regenerobot's Exploration Adventure

Name: ____________________________

WEBQUEST

THE BONE

Student Pages

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Hello! My name is Dr. Allevable and welcome to my lab!
Make yourself comfortable and explore a little before beginning your work as my guest assistant.

Oh, didn’t Regenerobot tell you? He seems to be forgetting things lately… I’ll have to fix his memory card again. Well anyway, today you will be helping me gather some very important information about bones!

The information you collect will help me with my Regenerative Medicine Project.

Before you begin your research, I have to fill you in on some important information about bones, so please pay attention.

Every single person has a skeleton with a lot of bones… 206 of them to be exact! These bones keep your body in the right shape and help you move around. If you didn’t have bones, you would just be a pile of mush on the ground! In addition to supporting your body like a scaffold, bones also protect the organs in your body from injuries, allowing your body to work properly.

If you didn’t know, bone is a living tissue! Inside each bone there are blood vessels that supply your bones with calcium and important nutrients, keeping them strong and healthy. At the center of some of your bones is bone marrow which is kind of a factory for making new cells. In between the layers of blood vessels and marrow is a light, spongy layer. This layer makes bones lighter for easier movement.

As I told you at your arrival to my lab, you will be my guest research assistant. Your job today is to help me gather information about regenerative medicine. Your assignment is to research the bones, since I heard you are becoming quite an expert!

To gather your information, you will use the Bone Module on my lab website.

The human skeleton has 206 bones!
Make sure you read all of the information on the website! It will be useful to you if I need to further discuss human bones with you. At the end of this activity, you will show your lab supervisor and fellow researchers (your teacher and classmates as we sometimes like to call them) exactly what you have learned about the bones in the human body. Remember to have fun and be prepared!

**Process**

You will use the internet to explore the fascinating human bone. Please follow the directions on the following pages of your Reading Guide to finish your research. After you complete each step of your task list, you will start the given assignment in class.

**Evaluation**

Once you gain the necessary background information, you and your partner will showcase your learning about bones and regenerative medicine in whatever form you chose! This can include a poster about advances in Regenerative Medicine, a brochure about medical care for broken bones, or even a flip book detailing what happens when a bone breaks. Once you and your partner decide on a product, please share this idea with your teacher so he or she may record it. Remember, the projects types listed are simply ideas! You can create whatever you want, but be sure to check with your teacher for specific content he or she would like to see. Share your finalized projects with your classmates to compare and contrast information you found in my lab.

**Conclusion**

Please follow the directions provided on the following pages. If you have any questions, remember to quietly raise your hand and your teacher will be around to help. Also, take a minute to think about proper computer lab behavior you have learned. If you are unsure, feel free to ask your teacher again!
Instructions

Part 1:  (Please check off when complete)

- Go to the following website: http://www.sepa.duq.edu
- Click “Visit the Lab!”
- Give the lab a chance to load
- Click on “Bone Module”
- Read the Introduction page that pops up
- Click on text normal bone growth
- Read the normal bone growth page and answer the following questions:

1. What roles does cartilage play in the process of bone formations?
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

2. Describe the process of bone renovation, step-by-step.
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

Part 2:

- Click the black BONE INJURY tab at the bottom of the Bone Module screen
- Read this section and answer the following questions:

1. A bad fall from your bike or a collision on the soccer field can cause a bone to break. Name three other activities that can put too much pressure on bones, causing a break as well.
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
2. **True or False?** Bone renovation only happens when you are young. If false, explain why it is false and change the statement so it is true.

   __________
   
   __________
   
   __________

**Part 3:**

- Click the black **MODERN MEDICINE** tab at the bottom of the Bone Module screen
- Read this section and answer the following questions:

1. **Arrange the sentences below by writing the correct number on the line (1-6) to explain what happens when a bone breaks.**

   ____ Cells clean the clot and create bendable cartilage.
   ____ Bone is broken.
   ____ New, strong bone is formed by the cells.
   ____ Broken blood vessels break and begin to clot.
   ____ Bone finally heals.
   ____ New cells eat the cartilage and begin to grow new bone.

2. **Explain why it is important for a cast to be placed on a broken bone. What would happen if a broken bone did not receive the proper treatment?**

   __________
   
   __________
   
   __________

**Part 4:**

- Click the black **REGENERATIVE MEDICINE** tab at the bottom of the Bone Module screen
- Read this section and answer the following questions:

1. **Why would using young cells to heal broken bones be a benefit? Explain.**

   __________
   
   __________
   
   __________
   
   __________
   
   __________
2. Click on the movie button and watch what happens. Draw your interpretation of each slide and write a caption describing your illustration!

1. ______________________
   ______________________
   ______________________
   ______________________

2. ______________________
   ______________________
   ______________________
   ______________________

3. ______________________
   ______________________
   ______________________
   ______________________

4. ______________________
   ______________________
   ______________________
   ______________________

Wow! You are done already? Well take a look at the next page for other fun sites to discover more about bones!
**More Websites!**

- **Mr. Bones:** [http://sv.berkeley.edu/showcase/pages/bones.html](http://sv.berkeley.edu/showcase/pages/bones.html) Look at the image of an assembled Mr. Bones, then click to mix up his bones! Try to correctly put all of his bones back together so it looks just like a real image of the human skeleton.

- **The Big Story on Bones:** [http://kidshealth.org/kid/body/bones_noSW.html](http://kidshealth.org/kid/body/bones_noSW.html) Want to know more about bones? Find the answers to your questions here, along with cool diagrams of bones that seem to come to life!

**Evaluation Choices:**

Now that you have had a chance to complete your research in my lab, why don’t you show your supervisor and colleagues (your teacher and classmates) what you know! Create a visual presentation with both images and writing that features at least 6 things you learned about bones and regenerative medicine. Remember to cite your sources! Some possible ideas include:

- An informative poster about new medical advances associated with Regenerative Medicine and bones
- A brochure about medical care for broken bones
- A flip book detailing the processes that occur when a bone breaks
- Have another idea? Please see your teacher before you start!