

Prepare & present a 15 minute presentation on the topic that has been assigned to you. **DO NOT WRITE A PAPER. DO NOT HAND IN A PAPER.** Students should use visual aids (poster, pictures, charts, graphs, materials, samples etc.) and must be able to reference their sources. (journals, magazines, newspaper, interview an expert, internet etc). Be prepared to answer questions and facilitate a discussion on familiar aspects of biology and how they apply to a new topic. **THIS IS NOT A LECTURE.** You may create a game, a video, a poster, power point, brochure, a puppet show, a model. Get creative! Presentations will take place during week 10 of the quarter. No credit for students who miss lab this week. Students must attend the lab section in which they are enrolled during this week.

Topics:

1. **Carbon Sequestration:** Illustrate and review the carbon cycle. Discuss the current rise in carbon in our atmosphere. Identify the natural and unnatural causes of the accumulation of carbon in the atmosphere. What is carbon sequestration? Describe several proposed concepts that may capture, compress and store carbon from our atmosphere. What are the pros and cons to these ideas? Describe what organisms can assist in the reduction of carbon in our atmosphere.
2. **Pesticides and Health.** What is a pesticide? What types of pesticides are there? On a cellular level, what exactly does a pesticide do that is harmful? What is the EPA's Office of Pesticide and what does it do? Discuss some examples of successful and harmful pesticide use. Is there any reason for someone living in US to be concerned about international use of pesticides? Give specific examples. Check out your own home/garage/work place for the presence of pesticides. What did you find?
3. In **2005, Hurricane Katrina** hit the Gulf Coast of the US. Describe the wetlands in this area before and after this event. What significant ecological role do the wetlands play as it relates to hurricanes? What human activities have contributed to destruction of the wetlands in the last 150 years? How much destruction has occurred? Can the wetlands be restored? Describe at least 5 organisms who rely on these wetlands.
4. You will be assigned a **Genetic Disease**. Is it autosomal or sex linked? On what chromosome is this faulty gene found? Is this disease polygenic? Describe how it is acquired. Genetic testing? How is this testing done? Is it expensive? Does insurance pay for genetic testing generally? Get Instructor approval PRIOR to beginning your research. What is the likelihood of passing this

genetic pattern on to offspring? How does it affect the person who has it? Can it be treated/ prevented? Approved list of diseases as follows: Achondroplasia (dwarfism), Tay Sachs Disease, Adrenoleukodystrophy (ALD), Genetic Hearing Loss, Huntingtons Chorea

5. How has the **Sumatran tsunami in 2004** impacted the environment? What animals habitats have been devastated? Discuss the long term impact of this. (the UN Environmental Program discusses a particular ape whose habitat is all but eliminated now.) Do not give a broad presentation on tsunami's in general. Speak only about this particular event in history and its ecological impact. What was the human loss of life? Describe at least 5 other species that have been profoundly impacted by this event. Describe any reconstruction programs you may discover.
6. **Stem cell research and diabetes type I:** Is there a connection? Define adult stem cell, embryonic stem cell and cord stem cell. How could the insulin management of a diabetic person be improved by stem cells? Do not give a presentation on Diabetes. Explain how healthy genes somehow get into a human. Precisely what cells are faulty in type I diabetes?
7. **Ebola Virus:** Since September (2007), dozens of people infected with the Ebola virus have died in the Democratic Republic of Congo and in Sudan. Describe this virus, how it is transmitted, how does it reproduce. How can we contain this virus? What is the mortality rate of those who are infected? What tissues are attacked by this virus? How is this virus different from the E. coli virus? Compare and contrast these 2 viruses.
8. **What is the avian flu?** What is a pandemic vs an epidemic? How is this spread? Discuss the history of H5N1. Are all influenza's associated with birds? What is the current concern/ debate over this flu? What is being done internationally and here in the about this flu? How many deaths so far from this flu? Where? Has it been transmitted from human to human yet? Check out the Santa Clara County Public Health Webpage.
9. **Define the Green Revolution.** What were the benefits and the costs of this change in how food was grown? Define sustainable agriculture. How does this new concept of agriculture address the following concerns: profitability, environmental health, climate change, and rural community development. How does this new and evolving concept address water, air, soil and biodiversity as important values in our culture and to the biosphere. Discuss some of the life style changes you can make to move toward sustainable agriculture.