

STEM BIOLOGY SUMMER READING ASSIGNMENT 2009

The Hot Zone, Richard Preston, ISBN: 0-385-47956-5

After reading the non-fiction book The Hot Zone, I would like you to critically think about the information that you have acquired. Our first few days of class will include discussions based upon what you have read and thought about.

Your written responses are due in my hand on the first day of class, at the beginning of class. All responses must be typed in times new roman font, size 12, single spaced with all page margins no larger than 1 inch.

Written assignment - Part One - **MAXIMUM** of one page

1. Write a short summary of the book. Include major events and the general chronological timeline of the described events. Do not include many minor details in this section.
2. Write your reaction to the events described in the book. How did you feel about what you read? What would you do if a lethal disease was detected in your area? What would you do if a close relative contracted a deadly contagious disease?

Written assignment - Part Two - **MAXIMUM** of one page - **Choose two** of the following, and respond to the quote.

3. It has been hypothesized that the most likely source of the Ebola virus is in Kitum Cave in western Kenya. Viruses are parasites that typically spend part of their life history in one organism which they do not harm, and part in another host organism. Read the following quote from the book and comment on the possible sources of infection from which one could contact Ebola. Include how easy or difficult it may have been for Monet to 'catch' Ebola.

Monet and his friend wandered through the cave, shining their lights on petrified rainforest. Did he run his finger over the stone trees and prick his finger on a crystal? They found petrified bones sticking out of the ceiling and walls..... There were spiders hanging in webs among the logs. They spiders were eating moths and insects. Over [the ceiling] hung a velvety mass of bats which had fouled the pillar with black guano - a different kind of guano from the green slime near the mouth of the cave. These bats were insect eaters and the guano was an ooze of digested insects. Did Monet put his hand in the ooze?

4. There are those that think that the application of modern science is a 'cure all' for the potential hazards of Mother Nature. Read the following excerpt from Ed Regis' book Virus Ground Zero: Stalking the Killer Viruses with the Centers for Disease Control. After thinking about the quotes, give your reaction regarding your views based upon what you have read in 'The Hot Zone'. Do you agree or disagree, and why or why not?

Regis writes, "Ebola is of absolutely no danger to the world at large. It is a dangerous virus, but it's relatively rare and quite easily contained... The media is scaring the world out of its wits, and movies like Outbreak are doing people a great disservice."

A physician who was interviewed after an Ebola outbreak reports "...in the end, Ebola killed less than 1/10 of 1 percent of the population- 300 people out of half a million, in a crowded city with poor medical care and abysmal sanitary conditions. [After the outbreak], they cleared out and carefully disposed of the vomit, urine, excrement, dirty needles, and dead bodies, liberally applying bleach to everything."

5. "Moving Targets" are notoriously hard to hit. Read the following excerpt and give your reaction regarding difficulties (as you see them) of trying to come up with a treatment or cure for a virus such as Ebola. Most viruses behave in the same manner as the AIDS virus does in the following passage.

The AIDS virus is a fast mutator; it changes constantly. It is a hyper mutant, a shape shifter, spontaneously altering its character as it moves through populations and through individuals. It mutates even in the course of one infection, and a person who dies of AIDS is usually infected with multiple strains, which have all arisen spontaneously as mutants in the body... The AIDS virus and other emerging strains [like Ebola] are surviving the wreck of the tropical biosphere [destroyed rainforest] because they can mutate faster than any changes taking place in their ecosystems.

6. The 'GAIA hypothesis' states that the Earth is actually a living organism, and maintains all of the conditions necessary for its survival like any other single organism. The Earth is also prone to all of the ills as any other single organism. After reading the following excerpt, give your reaction to the thoughts presented by Preston regarding the actions of the Earth. Do they make sense? Why/Why not? Give one or two other examples of the Earth reacting to its environment.

The emerging viruses are surfacing from ecologically damaged parts of the Earth. Many of them come from the tattered edges of tropical rainforests, or they come from tropical savanna that is being settled rapidly by people. In a sense, Earth is mounting an immune response against the human species. It is beginning to react to the human parasite, the flooding infection of people, the dead spots of concrete all over the planet, the cancerous rot-outs in Europe, Japan, and the United States, thick with replicating primates, the colonies enlarging and spreading and threatening to shock the biosphere with mass extinctions. Perhaps the biosphere does not "like" the idea of five billion humans...Nature has an interesting way of balancing itself....The Earth's immune system is starting to kick in.

Have a great summer break. I look forward to teaching you and getting to know you next year. If you have questions over the summer, email me. jmillingworth@smcps.org

Ms. Illingworth