



LENAPE VALLEY REGIONAL HIGH SCHOOL

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Honors Biology Summer 2015 Assignment Lenape Valley Regional High School

Dear Incoming Students and Parents or Guardians,

Welcome to Honors Biology! In an effort to prepare you for the upcoming school year the following summer assignment will need to be completed.

As part of the summer reading program we have this year, honors Biology students are going to read the book *The Hot Zone* by Richard Preston. In Honors Biology the summer reading will be combined with the summer work. We hope that you will find the activities both enjoyable and insightful. Many of the questions require outside resources such as the Internet. The Honors Biology summer assignment will be due September 11th for all students, if not handed in the grade will be a zero. The summer assignment will count for a test grade.

We look forward to seeing you next school year!

Sincerely,

Mrs. Motyka
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Miss Fasano
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Honors Biology Summer Assignment 2015 Instructions

- Answers should be composed on separate paper.
- Keep your answers organized!
- Answer all questions with complete thoughts and complete sentences

Checklist:

- ☐ Part I: Two page paper on *The Hot Zone*
- ☐ Part II: Poster on Viruses with Virus Checksheet

Assignment: Read the assignment carefully and be sure to complete all requirements.

Purpose: This assignment was designed to accomplish two goals.

- 1- To provide you with the opportunity to see how amazing biology is by reading a very exciting, and at times terrifying, book about a real life application of biology.
 - 2- To encourage you to begin to think about what it means to be "living". Biology is "the study of living things". You may think it is easy to determine if something is living or not; but it turns out, like many things in biology, it is not so simple.
1. **Part I: The Hot Zone:** Read the book *The Hot Zone* by Richard Preston, and answer the questions attached. This book is required summer reading for all Lenape Valley RHS Honors 2015 Biology students. You should **preview** all questions before beginning the book.

It is recommended that you do not put off reading the book until the week before school starts. How much you learn and the quality of your written answers (and your grade ☺) will reflect the amount of work you put into the assignment. As you read the book, you will want to take a few notes and answer the questions associated with the reading. Feel free to seek clarification from outside sources (the internet or books) if you need help. **The websites listed in the second portion of this assignment are a great place to start – we strongly recommend that you visit these websites as you read the book.**
 2. **Part II: Virus Independent Study:** Create a highly visual poster explaining your knowledge of viruses.

We *strongly recommend* that you take the opportunity to think about your virus poster as you read *The Hot Zone*. In order to complete this poster project, you will visit numerous websites on viruses. You will watch videos, study images and read text to help you learn about viruses. You should take notes and feel free to use other sources.

Both assignments will be collectively graded as 1 test grade.

Part I: Questions for The Hot Zone:

After reading the entire book complete the following assignment. Complete a two page single spaced summary detailing the following information.

1. Detail the methods of viral transmission found in the book.
2. Discuss the government's methodology concerning containment of pathogenic viruses as a disruption to public health.
3. Determine an instance where parts of the scientific method are used in problem solving or evidence of scientific thinking. View http://www.sciencemadesimple.com/scientific_method.html to refresh your knowledge of the scientific method.
4. Provide examples of lab safety errors as found in the book and the consequence that arise from them.
5. Your opinion on the book as a credible source related to a possible future outbreak of a viral epidemic.

Part II: Viral Poster

Poster: Use the websites listed below, and others you find, to learn about viruses. You will then prepare a poster (Remember: use pictures and not too much text). The following points must be addressed in your poster.

- Illustrations of viruses –computer generated images are ok.
- An explanation of the basic structure of at least **three** various viruses; include a retrovirus and a bacteriophage.
- An explanation and diagrams of the lytic and lysogenic reproductive cycles of viruses.
- Compare the structure of a virus with that of a typical cell. Discuss whether or not a virus is living or nonliving.
- Discuss other life forms (viruses, prions, viroids) that challenge our understanding of what it means to be living
- Describe vaccines and their role in preventing viral diseases. Distinguish between live and inactivated vaccines.
- Complete the attached table on some of the viruses that are important to humans. (attach to poster)

Viral structure and how it compares to a cell:

http://www.youtube.com/watch?v=bILvTe2_FEE&feature=plcp

<http://www.schooltube.com/video/5883521fda9293df5bc9/Bill-Nye-on-Cells>

<http://www.khanacademy.org/science/biology/v/viruses>

<http://micro.magnet.fsu.edu/cells/virus.html>

<http://wshsscience.edublogs.org/files/2010/11/Viral-Types-22jshqi.jpg>

<http://wshsscience.edublogs.org/biology/cells-viruses-webquest/>

Viral Infection and Replication

<http://www.schooltube.com/video/08aae2ef0da979dbbb5a/Flu-Attack-How-A-Virus-Invades-Your-Body>

<http://www.schooltube.com/video/7df9758e78aa9ef159ea/How-Flu-Viruses-Attack-National-Geographic>

<http://www.pbs.org/wgbh/nova/body/1918-flu.html>

<http://www.schooltube.com/video/ed73acab46dccbe036a1/Viral-replication-lifecycle>

<http://www.bozemanscience.com/science-videos/2011/9/14/035-viral-replication.html>

<http://www.courses.fas.harvard.edu/~biotext/animations/viralinfection.html>

<http://www.bozemanscience.com/science-videos/2012/5/6/viruses.html>

Vaccines

<http://health.howstuffworks.com/wellness/preventive-care/vaccine.htm>

http://www.pbs.org/wgbh/nova/bioterror/vacc_smallpox.html

Prions and Virioids

<http://faculty.ccbcmd.edu/courses/bio141/lecguide/unit3/viruses/prion.html>

<http://suite101.com/article/cells-viruses-viroids-prions-a33464>

Rubric - Hot Zone Project

1. Questions answered completely (10 points each/50 points) _____

2. Poster (70 pts)

a. Illustrations (10 pts)

i. Viruses diagram and labeled (5) _____

ii. Comparison to basic cell structure (5) _____

b. Virus Life Cycles (10 pts)

i. Lytic cycle illustrated and explained (5) _____

ii. Lysogenic cycle illustrated and explained (5) _____

c. Description of life forms that challenge our understanding of what it means to be living (10pts)

i. description of viruses, prions, and viroids (5) _____

ii. explanation of how they fall short of the definition of life (5) _____

d. Vaccines (10 pts)

i. description of how vaccines work (5) _____

ii. elaboration of how vaccines are used in particular viral diseases (5) _____

e. A virus that affects humans (10 pts)

i. Identification of disease with pictures (5) _____

ii. Detailed description of viral affects (5) _____

f. Creative/Neat/ Organization (10 pts) _____

g. Works Cited (10)

i. Minimum of 3 references (5 pts) _____

ii. Under each illustration, in parenthesis, give credit to the originator (5) _____

Total points awarded _____/120