HPV, Cancer, and Vaccination
MIT/HHMI Summer Teacher Institute 2013
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Summary
90% of the cervix cancer cases are directly caused by a few strains of the HPV virus. This activity is to introduce the introductory biology student to the concept of a virus causing a cancer. The student with be introduced to the basics of what cancer is, the biology of a virus, going into more detail about the HPV virus, discussion of virus,

Background Information
The motivation for this unit is the nonfiction book written by Rebecca Skloot, The Immortal Life of Henrietta Lacks. Focusing on chapter 27, The Secret of Immortality, the students will delve into the HPV virus and its relationship with cancer and HPV as an infectious pathogen.

Essential questions
• What is a virus?
• What is cancer?
• How do viruses cause cancer?
• What is HPV?
• What is one of the jobs of p53 protein and how does this relate to HPV and cancer?
• How does an infectious disease spread through a population?
• How does the HPV vaccine prevent cervical cancer?

Objectives
• The students will be able to identify the structure and function of a virus.
• The student will be able to record, graph, and analyze the data collected.
• The student will be able to demonstrate the connection of the HPV virus and cancer.
• The student will research the HPV vaccines and communicate their findings both orally and in writing to the class.

Materials and Lessons
• Internet resources for this unit:
  Website (Documents included in Lesson Wiki)
  http://lifesciences.envmed.rochester.edu/lessonsCancer.html
  Documents and PowerPoints 1-4 can be retrieved directly from the above website.

Documents:
1. HPV and Cancer Unit 2007
2. HPV and Cancer PPT 2007
3. Cancer and the Cell Cycle Unit 2007

DNA Learning Center, Cold Spring Harbor:
Insidecancer.org: http://www.dnalc.org/websites/insidecancer.html?gclid=CMneoPTlu7gCFcZI
OgodYUsAug
Videos for HPV Homework assignment
• [http://www.gardasil.com/tv-commercial-for-gardasil](http://www.gardasil.com/tv-commercial-for-gardasil)
• [https://www.youtube.com/watch?v=wQSTUIw8_1U](https://www.youtube.com/watch?v=wQSTUIw8_1U)
• [https://www.youtube.com/watch?v=GbsLeuCA3LQ](https://www.youtube.com/watch?v=GbsLeuCA3LQ)

Homework Assignments
  
  o  Pre-lesson assignment - 5 Cancer pre-lesson Assignment MIT 2013
  o  Post-lesson assignment- 6 HPV Vaccine Assignment MIT 2013

• PowerPoints:
  o  7 The Immortal Life of Henrietta Lacks Chapter 27 MIT 2013
  o  8 Intro to Viruses MIT 2013
  o  9 HPV and Cervical Mechanisms Johns Hopkins B Wells

• Lab:
  o  10 Infectious Disease Teacher Prep MIT 2013
  o  11 Infectious Disease Protocol MIT 2013

• Virus Project:
  o  12 Virus Template MIT 2013
  o  13 Virus Project MIT 2013

**Assessment**

• Performance
• Product
• Assessments