

CLASSROOM ACTIVITY

HPV: Treating Cancer Caused by Viruses

Scientists estimate that as much as 17 percent of all cancers are caused by viruses, including the human papillomaviruses (HPVs) implicated in cervical and oral cancers. In the race to develop new and better cancer treatments, molecular biologists are delving into HPV's evolutionary tree to uncover the mechanisms of cancer causation. Their work is helping to revolutionize patient treatment and is bringing new hope that virus-triggered cancers can be prevented.

CLASS DISCUSSION

Establish Prior Knowledge

Call on students to share what they know about viruses, including what they are and how they work. If necessary direct students to this website to learn more about viruses:

<http://health.howstuffworks.com/virus-human.htm>

Point out that viruses must live within a host cell in order to live. To reproduce, a virus uses the host cell's chemical machinery to reproduce. Explain that in the video they are about to see, scientists investigate a virus that causes cancer.

Exploration

Have students read the synopsis and watch the video. Use the following questions to guide a class discussion.

- What did scientists begin to notice about the rate of head and neck cancer?
(Answers will include: They noticed in the 70s and 80s the rate of head and neck cancer began to rise. Previously, alcohol and tobacco users were more likely to contract this type of cancer, but people with no history of alcohol or tobacco use were contracting cancer.)
- What virus was identified as causing this cancer?
(Answer: the human papillomavirus.)
- How does the HVP virus cause cancer?
(Answers will include: The virus takes over the host cell's machinery in order to reproduce itself. This causes damage to the host cell's ability to control its own growth. When control of cell growth is disrupted cancer occurs.)
- What has Dr. Robert Burk discovered about HPV and protein 53?
(Answers will include: Dr. Burk discovered that not all strains of HPV that inactivate protein 53 cause cancer. That means there are other factors involved that have yet to be discovered.)
- How can people prevent HPV infection?
(Answer: There is an effective vaccination for preventing HPV.)

Wrap-Up

- Point out to students that cervical cancer in women is the most prevalent type of cancer caused by HVP. Many states have proposed legislation that would require girls to be vaccinated against HVP before entering 6th grade. Call on students to present their opinions on this type of legislation.
(Answers will vary.)