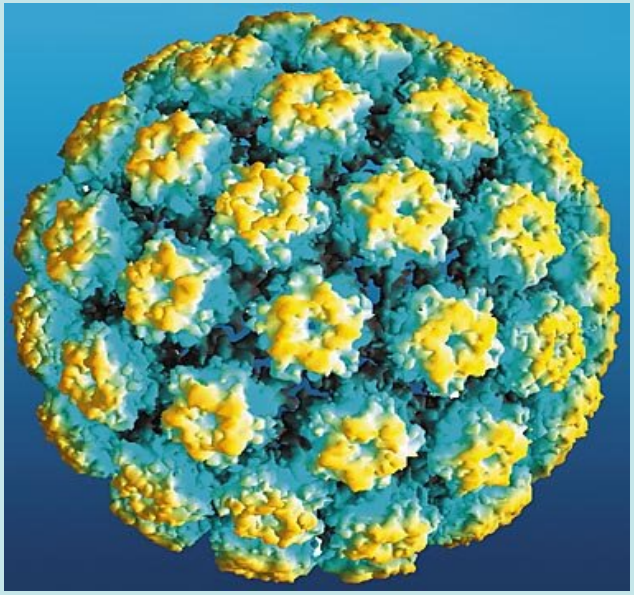
Human Papillomavirus (HPV) and Cancer

Cancer Education Project

University of Rochester

Human Papillomavirus (HPV)



http://healthlawblog.blogspot.com/uploaded_images/hpv_380-743858.jpg

Overview of HPV Activities

Part	Title	Strategy
1	“One Less” and “Tell Someone”	Short PBL
2	HPV Vaccine & Immune System	Making Notes
3	HPV Vaccine & Cervical Cancer	Jigsaw
4	The Pap Test	Reading for Understanding
5	Cancer Detection: A Laboratory Simulation	Hands-on Lab
6	Why Not the Boys?	Decision-Making

Part 1:
“One Less” and “Tell Someone”

http://www.healthline.com/blogs/teen_health/uploaded_images/hpv-743477.jpg

Part 1:
"One Less" and "Tell Someone"

- A "hook" for HPV lesson series
- TV commercials

  http://www.gardasil.com/tv-commercial-for-gardasil

  http://www.youtube.com/watch?v=hJ8x3KR75fA
- PBL teams of 3-4 students
- "Facts" and "Questions" charts

After watching the video, students write one question about:

- Human Papillomavirus (HPV)?
- The Gardasil vaccine?
- An ELSI* implication?
  (*ethical, legal, or social issue)

Part 2:
HPV Vaccine
and
The Immune System

http://www.signonsandiego.com/news/health/images/060816cervical_cancer.gif

Part 2:
HPV Vaccine & the Immune System

Students will:

- View Gardasil TV commercial

  http://www.stronghealth.com/services/cancer/hpvMedia.cfm

- See National Cancer Institute (NCI) PowerPoint:

  "HPV Vaccine to Prevent Cervical Cancer"

  http://cancer.gov/cancertopics/understandingcancer/HPV-vaccine

- Make Notes from the NCI PowerPoint
- Complete a 3-2-1 Refection Sheet

Part 2:
HPV Vaccine and Immune System

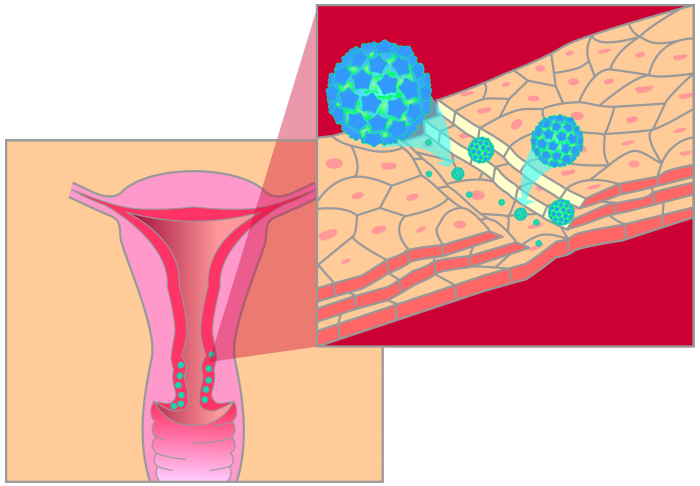
"Making Notes" pages from the HPV PowerPoint

Name _____ Period _____

Title / Notes / Question	**Notes, Comments, Drawings**
HPV Vaccine to Prevent Cervical Cancer Title Page (no questions)	
Common Infection: Two facts about HPV: 1. 2.	
Infection is Sexually Transmitted: What might "the virus is silent" mean?	

Understanding Cancer and Related Topics

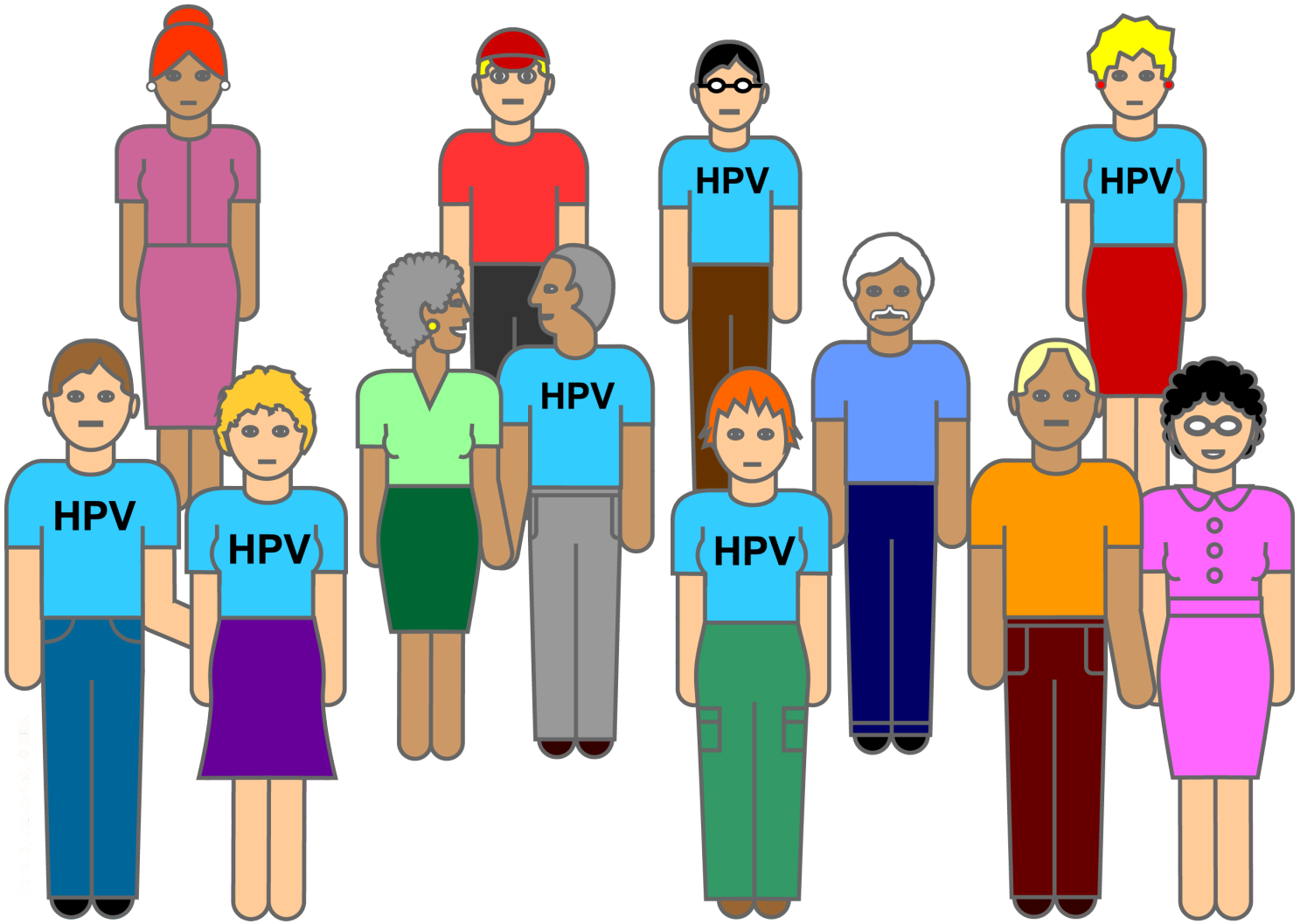
HPV Vaccine To Prevent Cervical Cancer



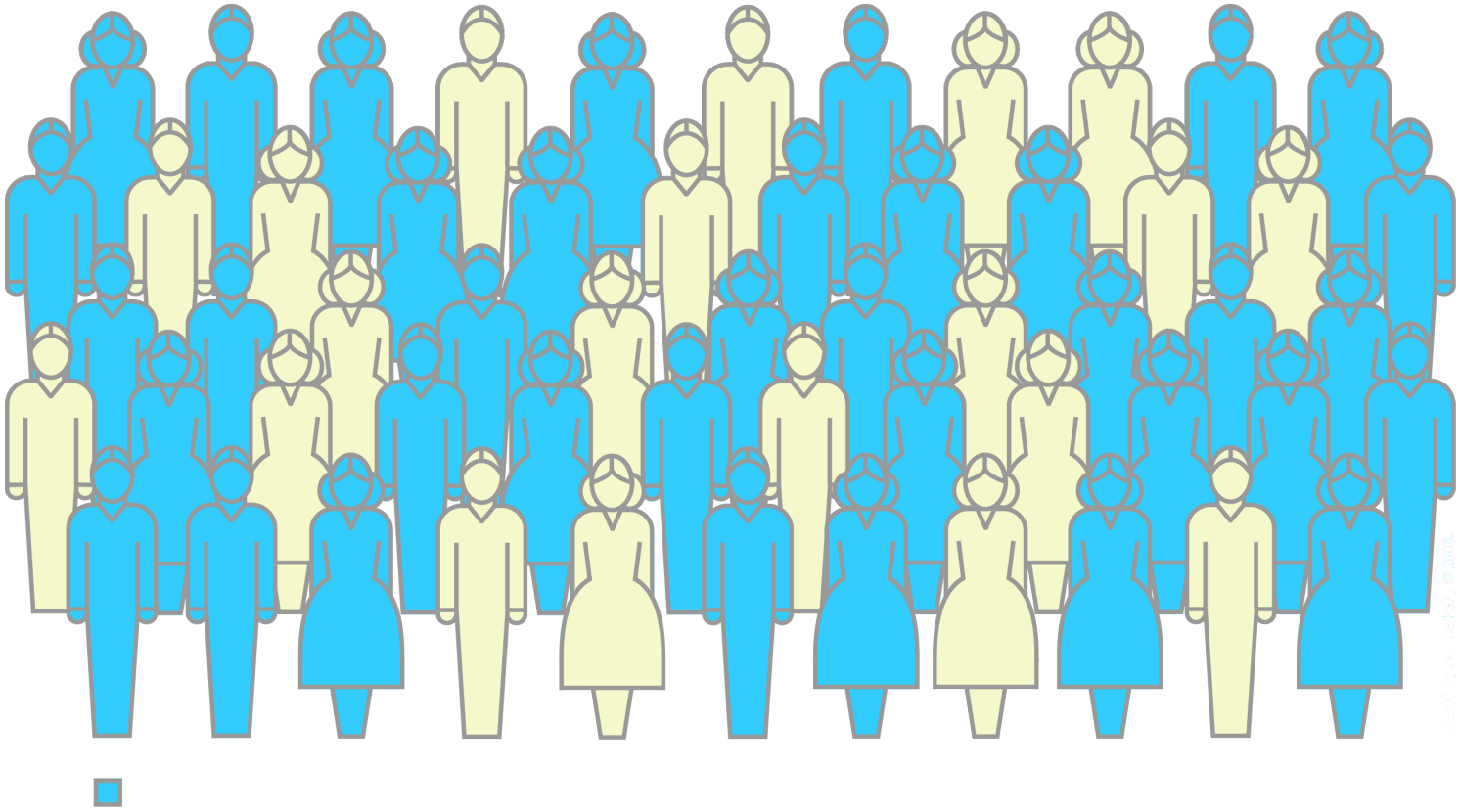
This PowerPoint presentation from the National Cancer Institute explains the science behind the development of a new vaccine against high-risk types of human papillomaviruses, which can lead to cervical cancer over time.

These PowerPoint slides are not locked files. You can mix and match slides. In the Notes section, you will find explanations of the graphics.

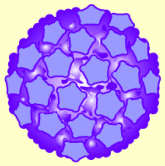
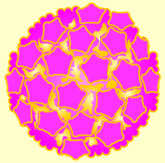
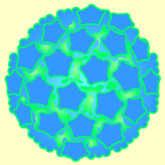
Infection Is Sexually Transmitted



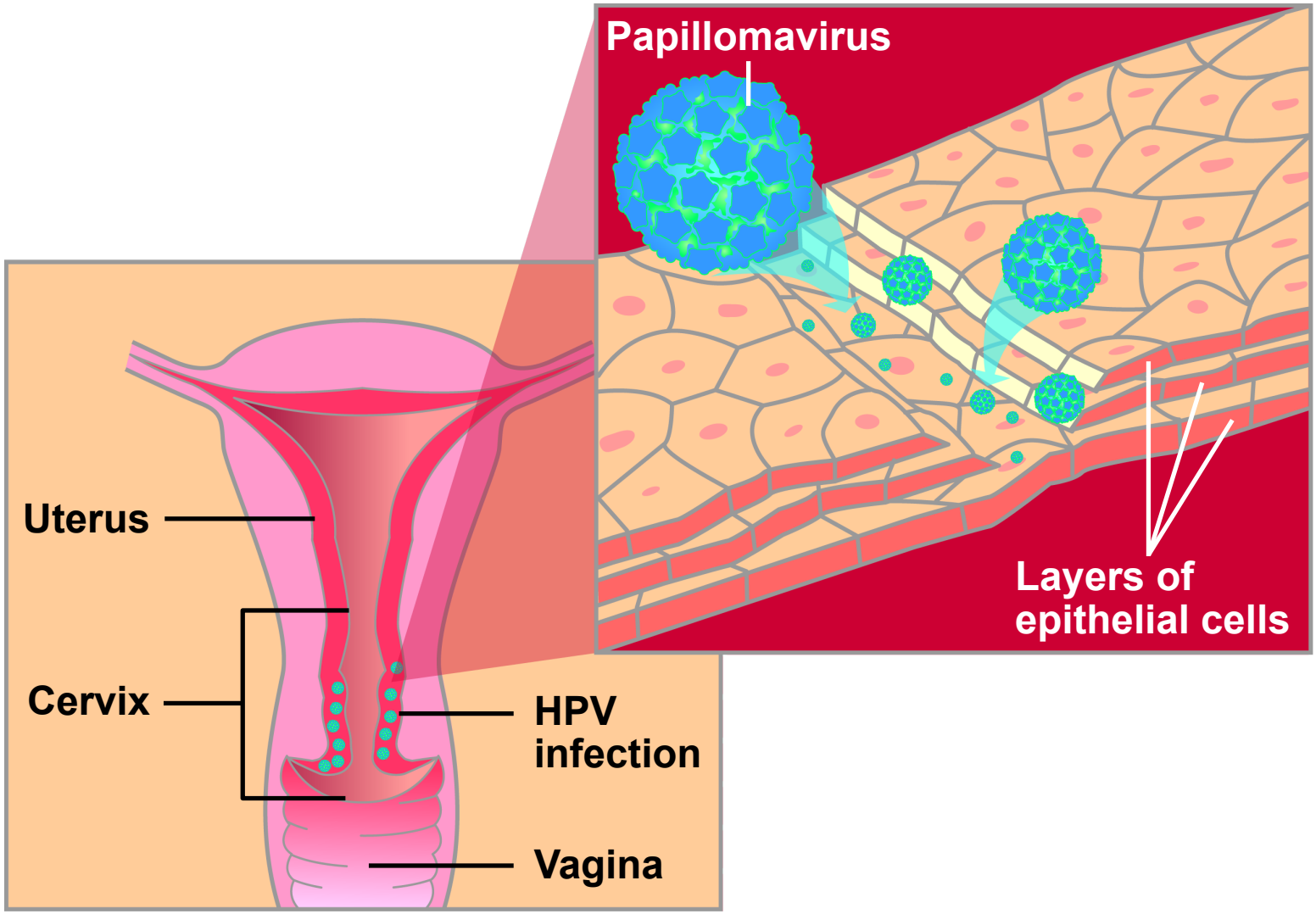
Common Infection



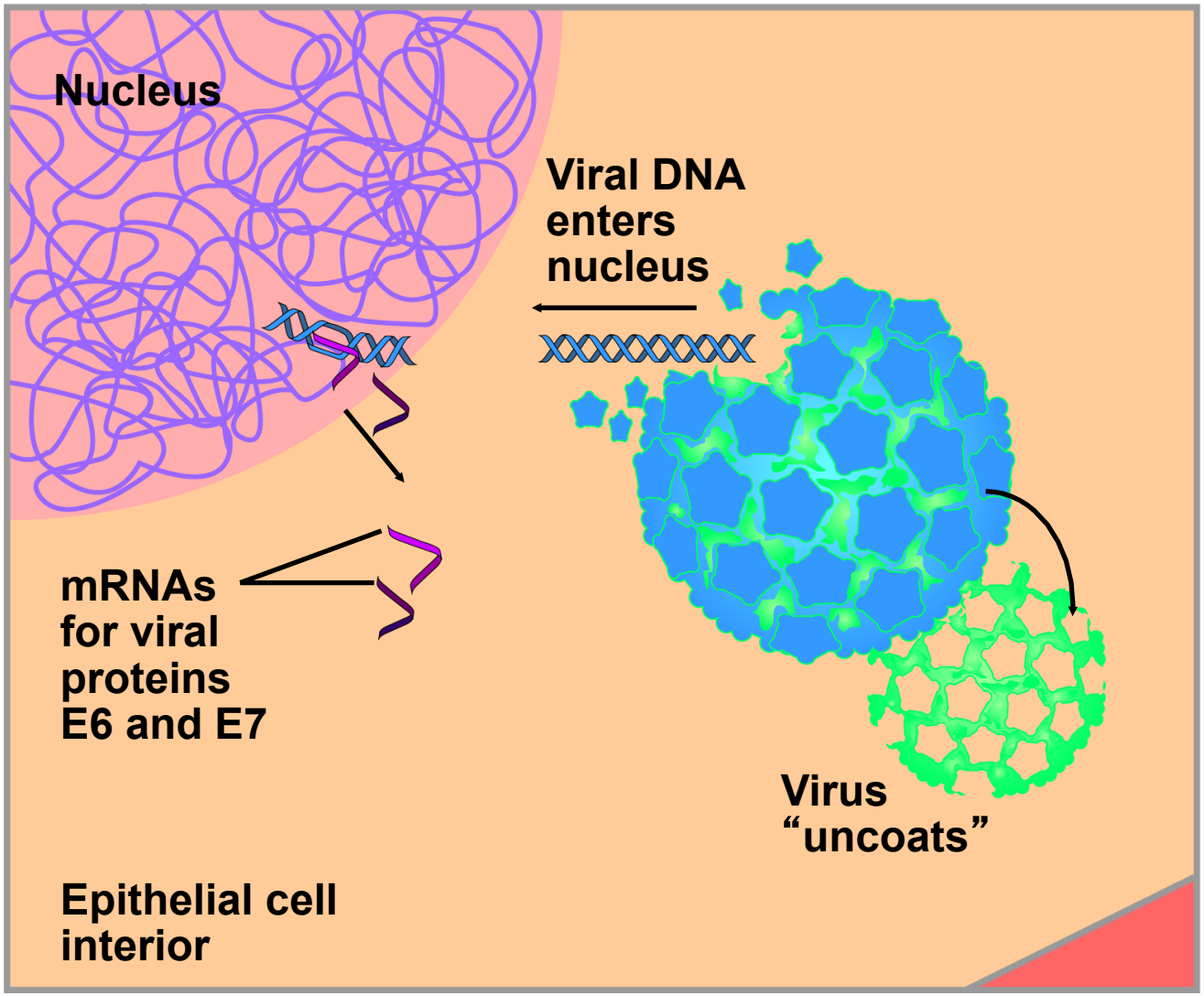
Many Types of HPVs

Different HPVs–Different Infections	
Harmless	
No warts or cancer	
Warts-Linked	
Genital warts	
Cancer-Linked	
Most clear up	
Some persist, but no abnormalities in cervix	
Some persist, some abnormalities in cervix	
A few persist and progress to **cervical** cancer	

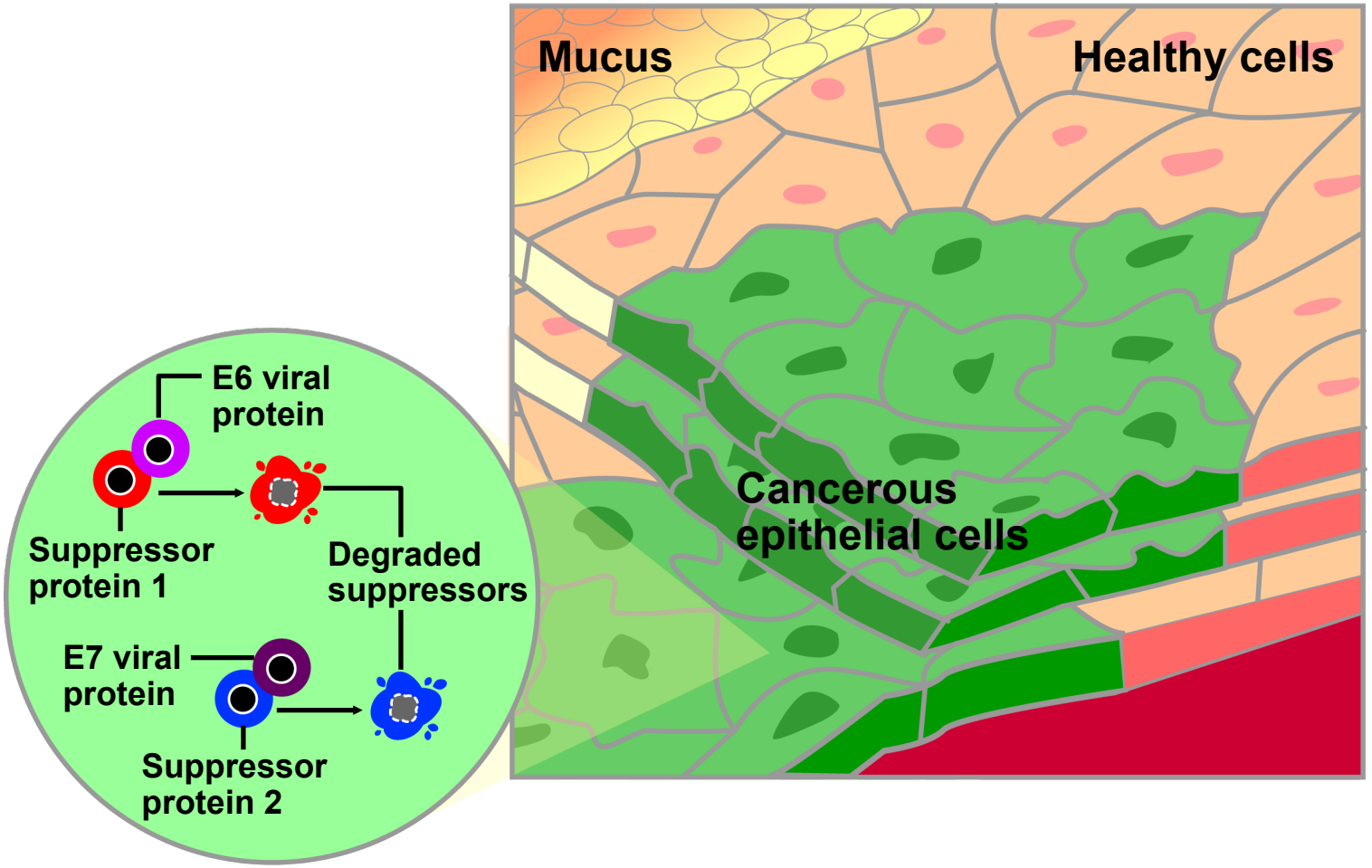
Virus Penetrates Cervix



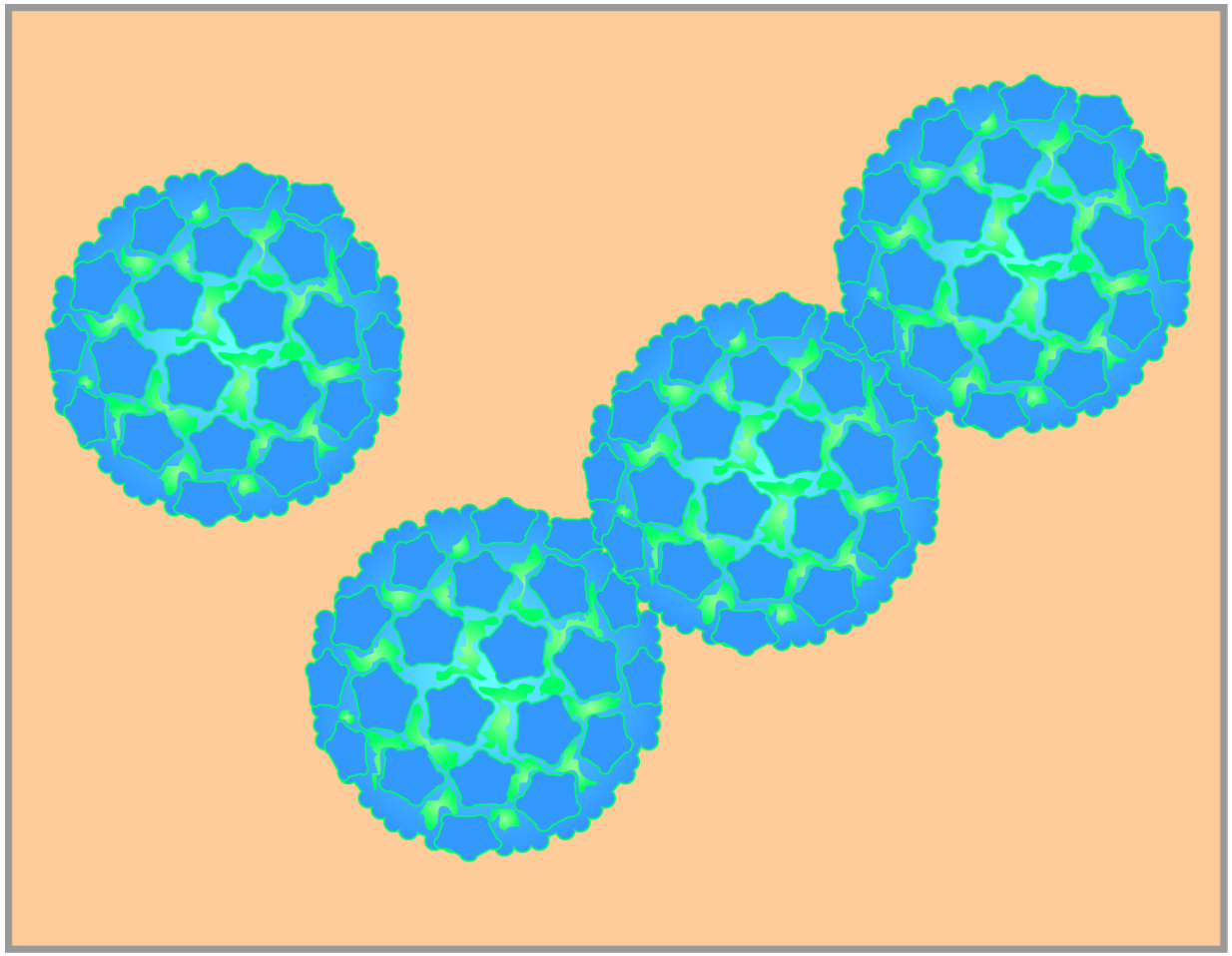
Virus Uncoats



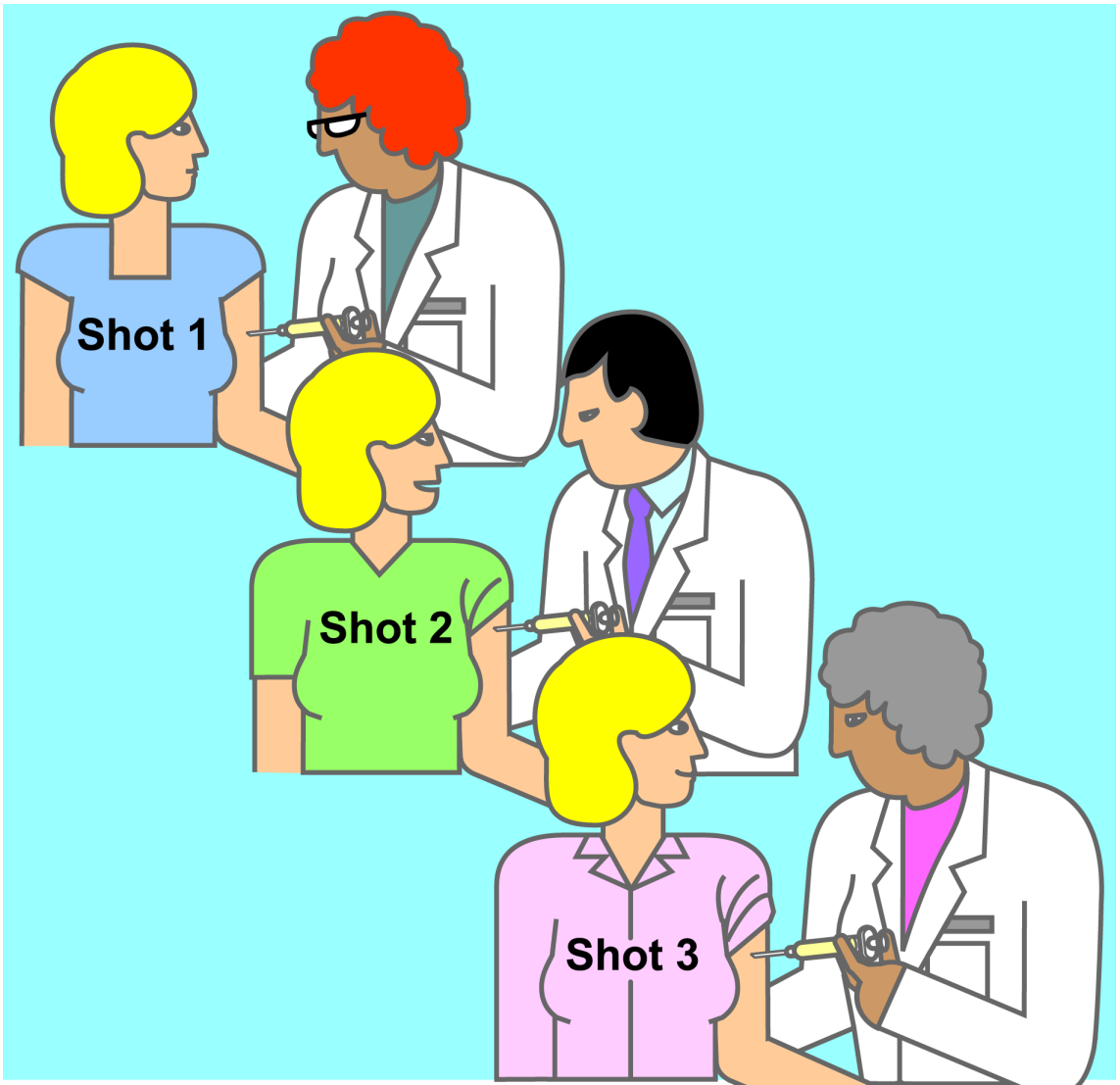
Virus Disables Suppressors



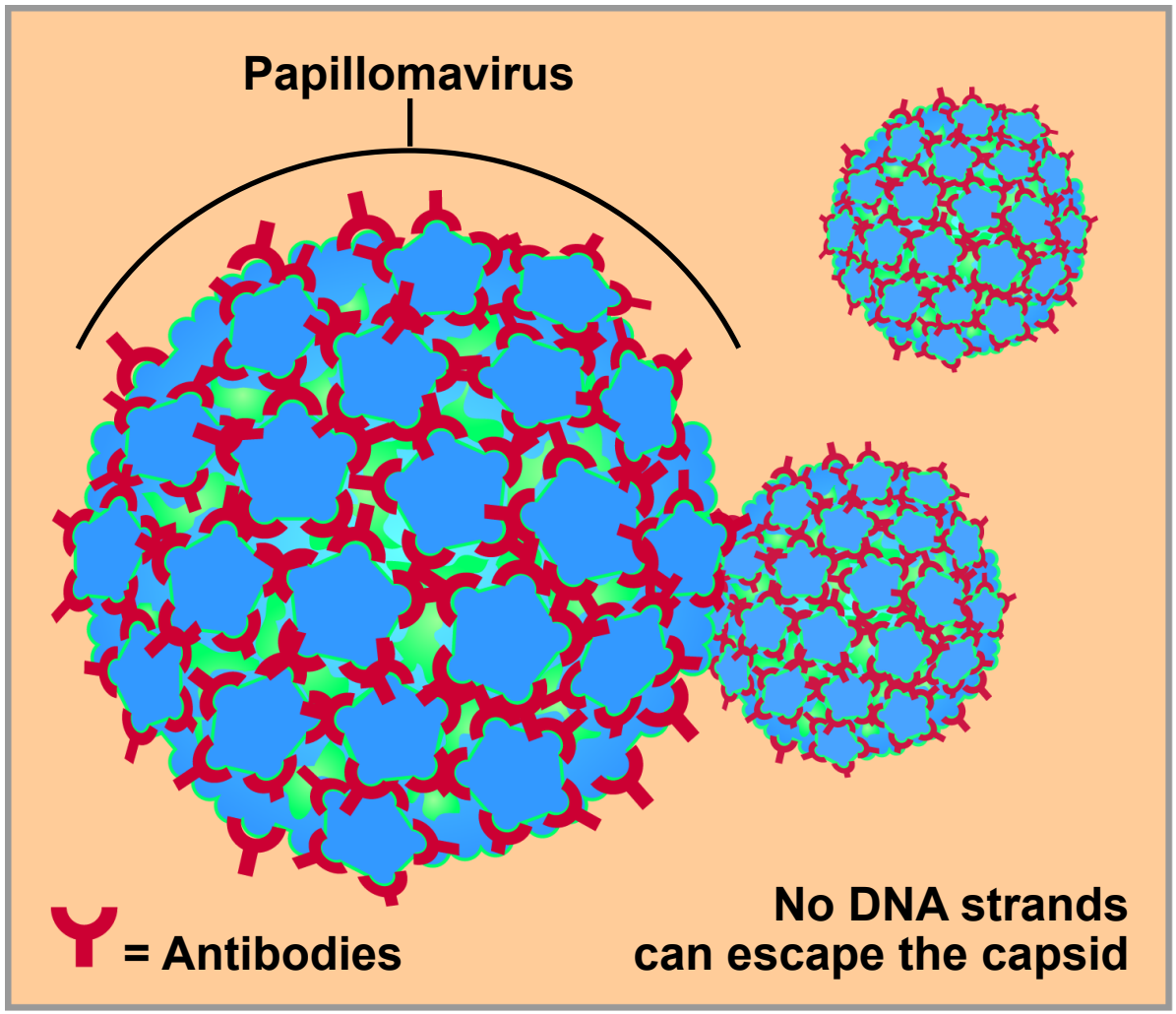
Virus-Like Particles



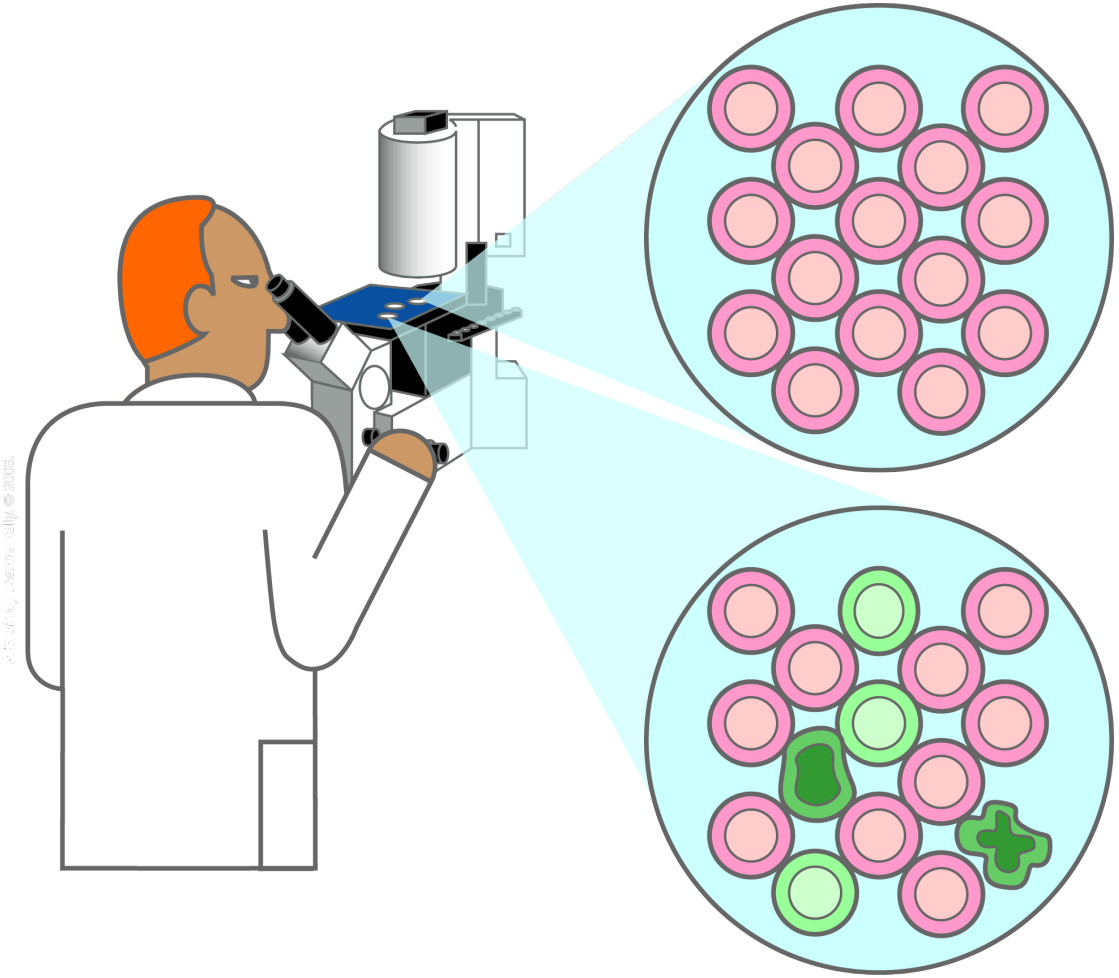
The Vaccination



Antibodies Prevent Infection



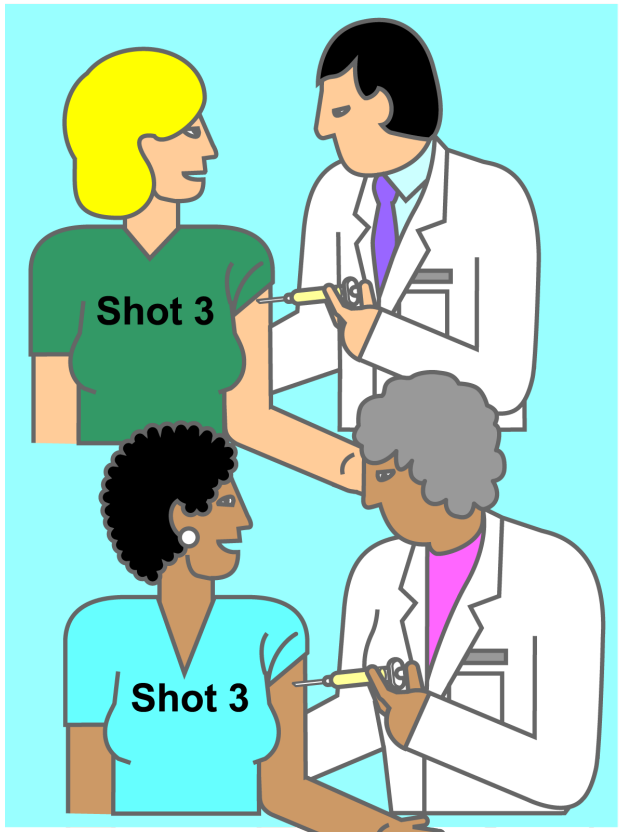
Pap Test Still Necessary

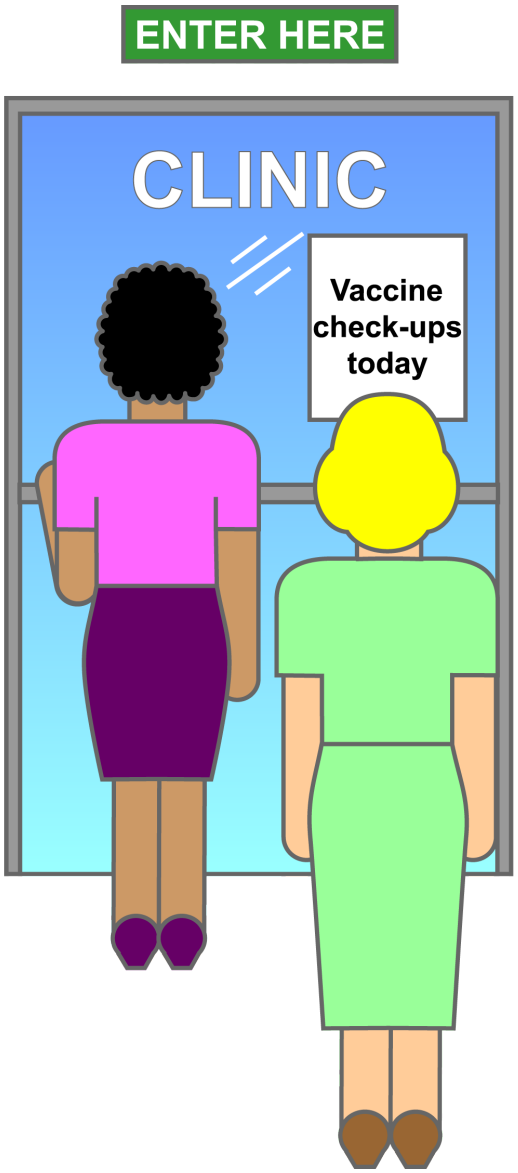


Normal Pap test

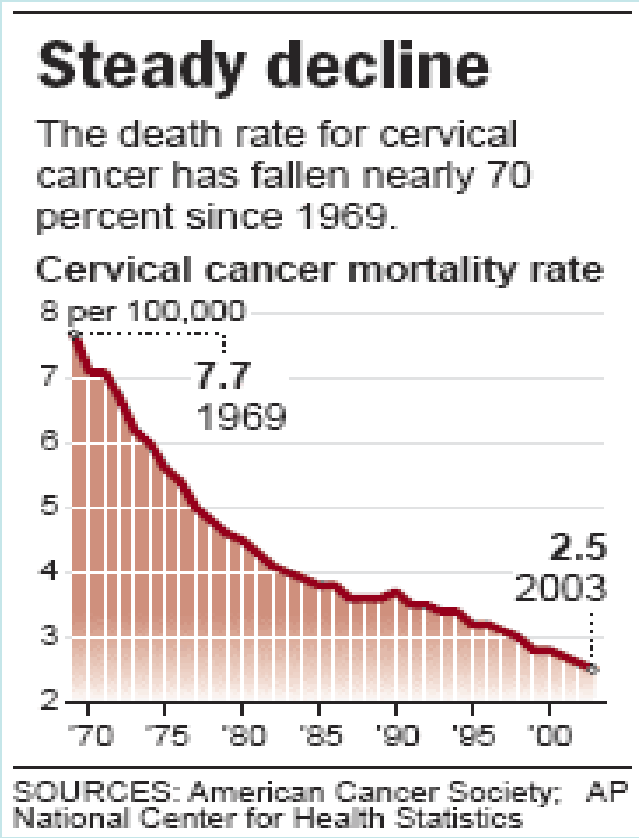
Abnormal Pap test

More Work Ahead





Part 3:
HPV Vaccine and Cervical Cancer



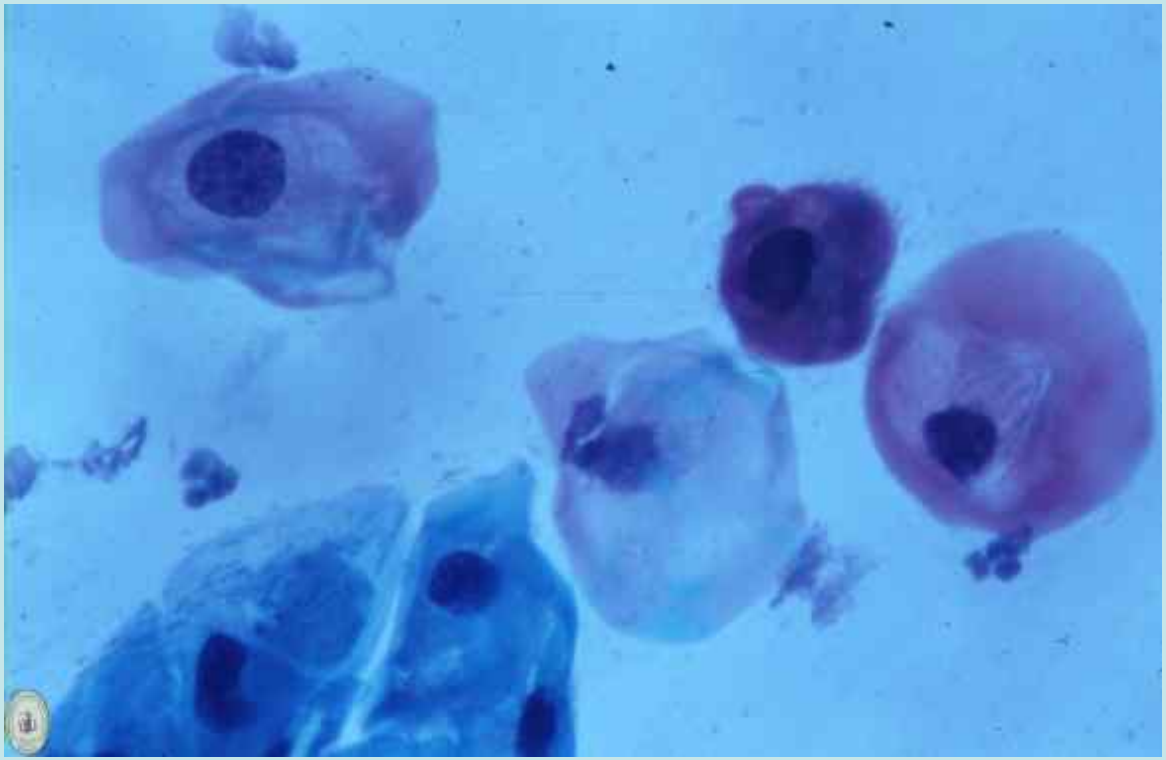
http://msnbcmedia4.msn.com/i/msnbc/Components/Art/HEALTH/060828/AP_CERVICAL.gif

Part 3:
HPV Vaccine and Cervical Cancer

Students will:

- In Jigsaw "home groups," get one of four readings and decide on Top 5 facts.
- In reading "specialty groups," brainstorm top facts and decide on Top 3.
- Discuss Top 3 with "home group" members.
- Complete Personal Reflection sheet as Ticket-to-Leave.

Part 4:
The Pap Test



http://www.steadyhealth.com/articles/user_files/4540/Image/HPV_pic2.jpg

Part 4:
The Pap Test

Students will:

- Receive directions about “Save the Last Word for Me” reading strategy.
- Read Mayo Clinic handout and complete “significant passage” task.
- Meet in groups of 3 to complete the “listening & reacting” protocol.
- Complete The Pap Test review sheet

Part 5:
Cancer Detection:
A Laboratory Simulation

Students will:

- Perform visual, radiation, and chemical testing on images of simulated biopsy samples to test for the presence of “abnormal” cells
- Estimate the chances of a biopsy sample being cancerous
- Write a lab report

Question?

What are two science laboratory skills that are critical to the work of a crime scene investigator (CSI)?

Answer!

Observation (accurate and detailed)

Analysis of Data

Goal of The Pap Test Lab:

…. to understand medical professionals use three different kinds of observation and data analysis techniques to detect cancer cells when given a biopsy (tissue sample) from a person suspected of having cancer.

Introduction to the Lab: Student Version

1. Form into teams of 2-3 students.
2. Obtain 1 copy of the lab per team.
3. Read the first 4 paragraphs.
4. Be able to name the 3 procedures.
5. Be able to identify 3 medical careers involved in cancer detection.

Pre-lab

For each student, obtain:

1 Cancer Detection Lab Report Form

2 biopsy images

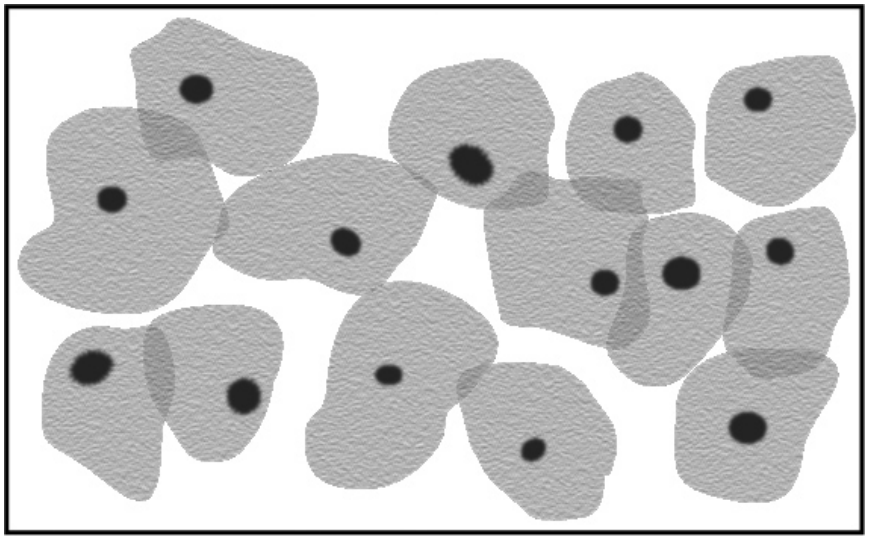
1 cotton swab

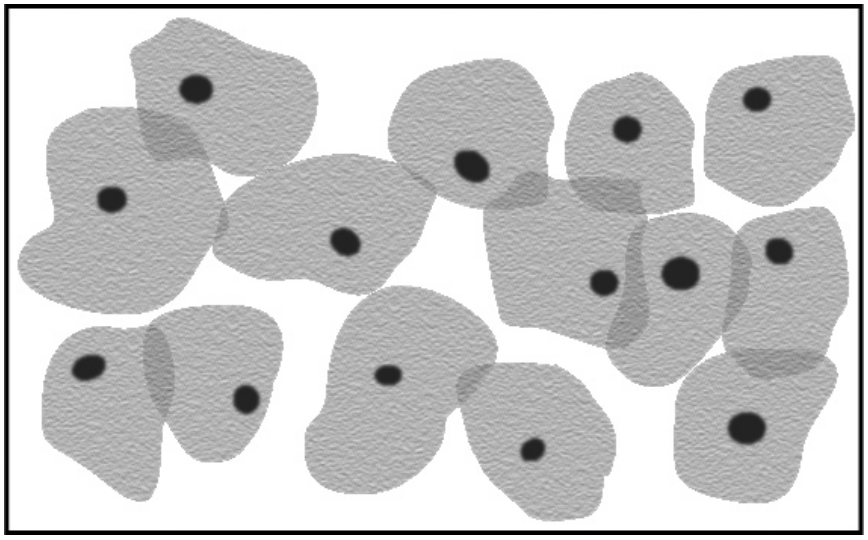
For each lab group, obtain:

1 UV light source

1 bottle of “antibody”

Visual Detection





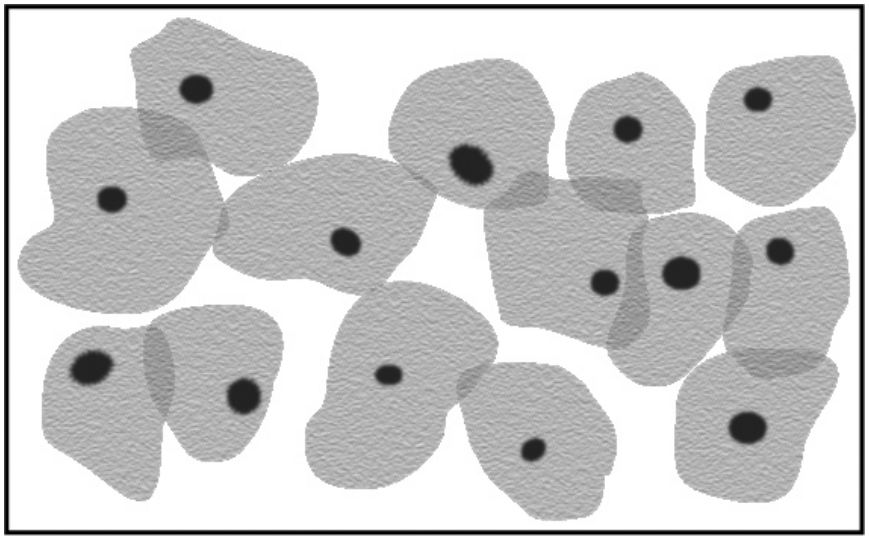
- Study the two images carefully to identify what you believe are differences between “normal” and “abnormal cells.
- Use a pencil to mark suspected abnormal cells with an “Ab.”
- Be ready to state your hypothesis (Q-1).

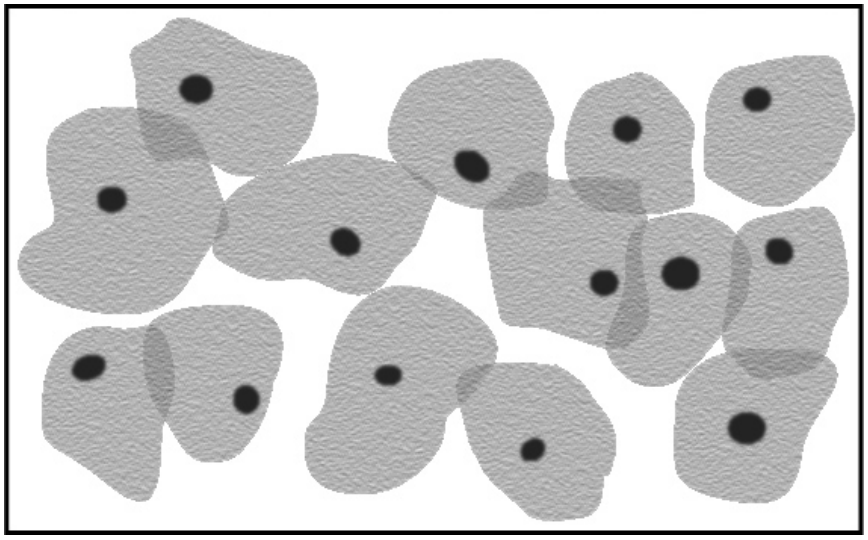
Visual Detection

Brainstorm a list of different hypotheses that might be used to visually detect differences between “normal” and “abnormal” epithelial cells.

(Q-2)

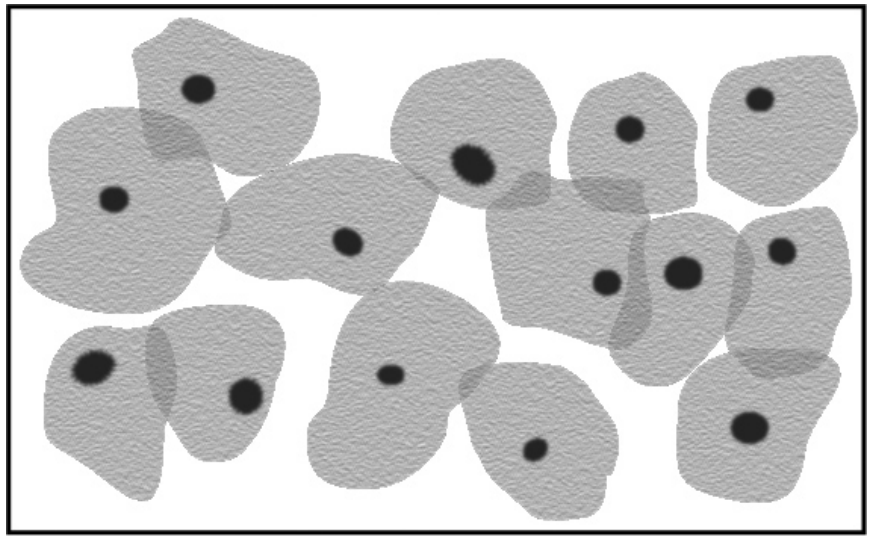
Radiation Detection
(Safety Warning: UV light)

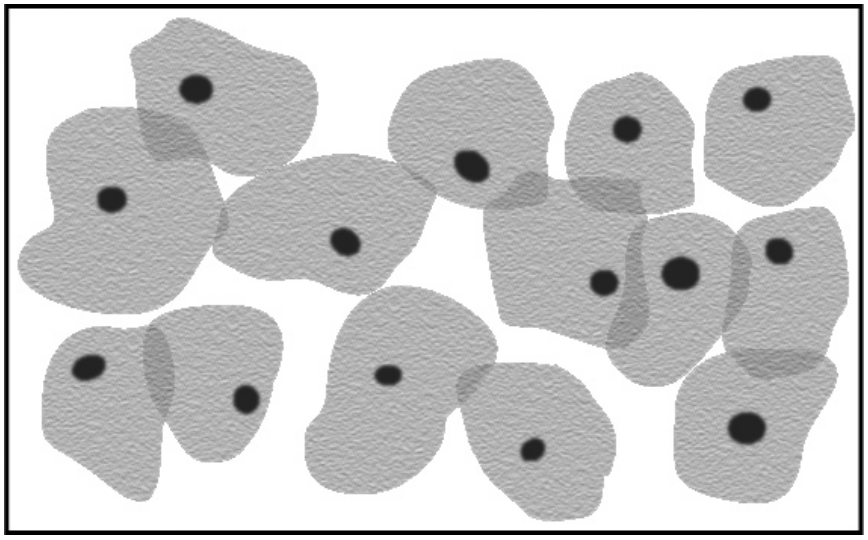




- Shine a UV light on your biopsy samples.
- Use a pencil to mark suspected abnormal cells with “UV.”
- Discuss differences between normal & abnormal cells (Q-3).
- Accept or reject hypotheses (Q-4).

Chemical Detection





- Use the swab to add a <u>very light</u> coating of "antibody" to cell membranes of "UV" cells, and describe observations (Q-5).
- Coat all the cell membranes in both images.
- Count your team's biopsies (not cells) that show abnormal cells (Q-6).

Estimating Odds

- What is the class's "operation definition" of an "abnormal" biopsy sample (Q-7)?
- What data have to be collected to estimate the odds that a biopsy sample will be cancerous? (Q-8)?
- Calculate the odds and show your work (Q-9).

Summary (“a” or “b”)

“a”: Write one sentence (or group of sentences) that summarize the main idea(s) behind this simulated cancer detection lab.

“b”: Choose one vocabulary word (or main idea) from this lab and write a Cinquain (a 5-line poem) to summarize this lab.

Rules of Writing a Cinquain

Line 1	1 word	Title
Line 2	2 words	Nouns or adjectives that describe Line 1
Line 3	3 words	“-ing” words that tell what Line 1 does
Line 4	4 words	Your personal, emotional reaction to Line 1
Line 5	1 word	Synonym for Line 1 (foreign words are OK)

A word and it’s root or derivatives can be used only once!
(e.g., *life*, *living*, *alive*)

Cinquain Example

Cancer

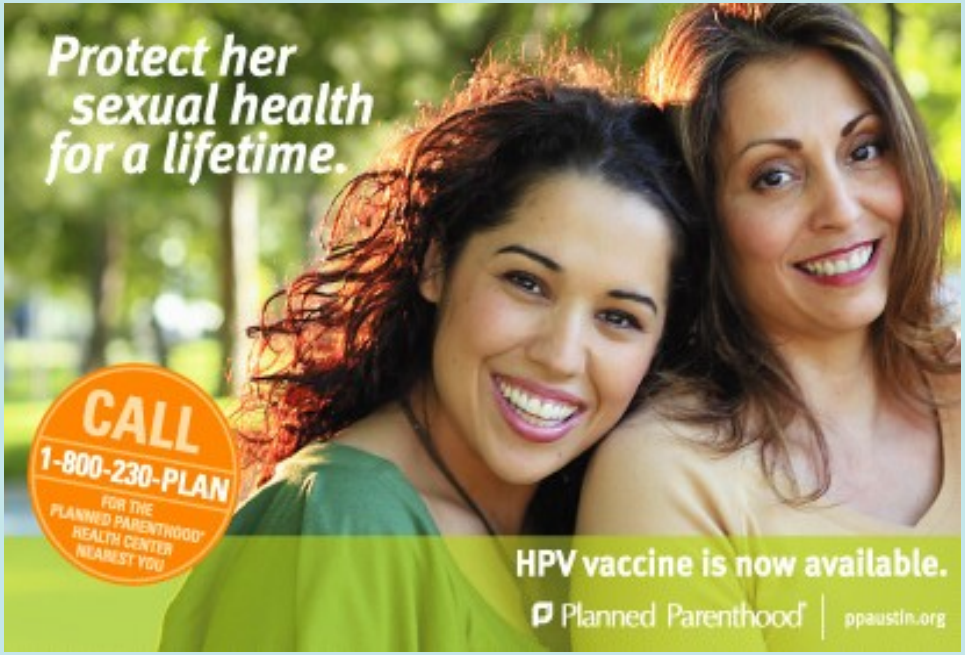
Abnormal Growth

Hiding, Dividing, Metastasizing

Should’ve Worn Enough Sunblock!

Tumor

Part 6:
Why Not the Boys?



http://www.plannedparenthood.org/ppaustin/images/Texas%20Capital%20Region/hpv_vaccine.jpg

Part 6:
Why Not the Boys?

Students will:

- Read a Board of Education press release about mandating Gardasil vaccine for all middle school students
- Complete 8-step decision-making model to formulate position statements for BOE
  - Steps 1-3 as whole class
  - Steps 4-6 in teams
  - Steps 7-8 individually