

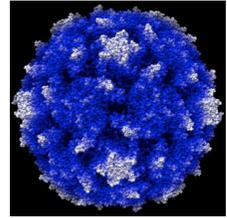


Name: _____

Catch the Bug!

In the mid-1950's, Dr. Jonas Salk of the University of Pittsburgh Virus Research Lab developed and tested the first successful polio VACCINE. Polio is a disease caused by the polio VIRUS that affects motor neurons and causes paralysis in its victims.

Prior to the development of the VACCINE, poliomyelitis, or polio, afflicted thousands and hundreds of thousands of people every year. The most affected were young children who suffered paralysis or even death. Many, whose diaphragm muscle became paralyzed spent days, months or even years in an IRON LUNG to enable breathing.



POLIO VIRUS
Magnified about
1,000,000X

Since the introduction of Salk's VACCINE, polio has almost been ERADICATED. From 350,000 cases in the early 1950's, only 2,000 cases were reported worldwide in 2006. The World Health Organization of the United Nations has set a goal to permanently eliminate the polio VIRUS.

In today's exercise you will view the video 'The Body's Defense Against Disease' to look more closely at disease causing agents such as VIRUSES and BACTERIA and at the 3 levels of defense that your body mounts against these invaders.

Bacteria & Viruses

BACTERIA and other things that cause disease are called _____ or _____. Harmful BACTERIA release poisonous substances called _____.



SALMONELLA BACTERIA
Magnified thousands of times



THE BLACK DEATH

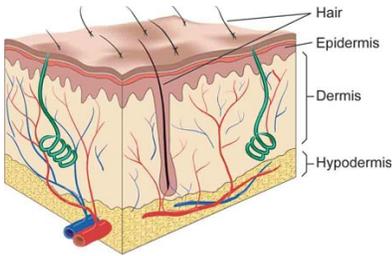
The Bubonic Plague that struck Europe between 1347-1351 was caused by a bacteria carried by fleas. The 'Black Plague' killed between 1/3 and 2/3 of Europe's population.

_____, another kind of PATHOGEN, are smaller than bacteria. Over _____ VIRUS cells can fit on the head of a pin.

Bacterial and Viral diseases are called communicable or _____ diseases. These diseases can be passed from person to person. Prior to the 20th Century

and the development of ANTI-BIOTICS like PENICILLIN and VACCINES like the polio vaccine, communicable diseases were the greatest cause of death for humans.

THE BODY'S DEFENSES



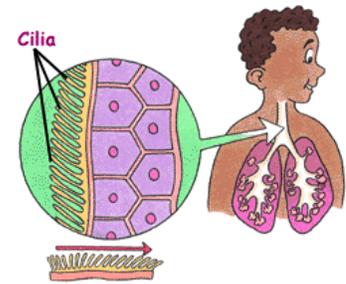
Tightly packed cells in the EPIDERMIS keep pathogens out of the body.

Physical Barriers

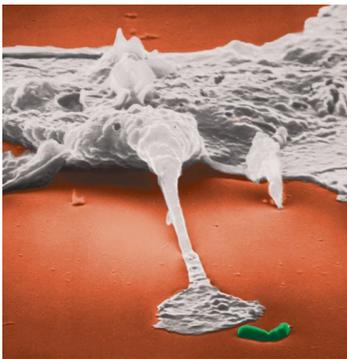
The human body has barriers that are intended to keep pathogens out. The body's first line of defense against pathogens is the _____. A second line of defense is found in the _____, _____ and _____ tubes.

_____ can trap pathogens before they reach the lungs. Hair-like _____ in the Bronchia and Trachea Tube sweep the pathogens upward to be coughed out.

_____ wash away pathogens that get in the eyes. If we eat something contaminated with bacteria _____ juices can kill them.



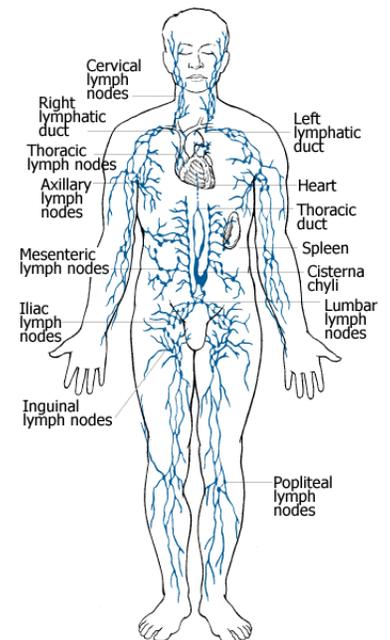
The Immune System



A PSEUDOPOD extends from a white blood cells before enveloping a bacterium.

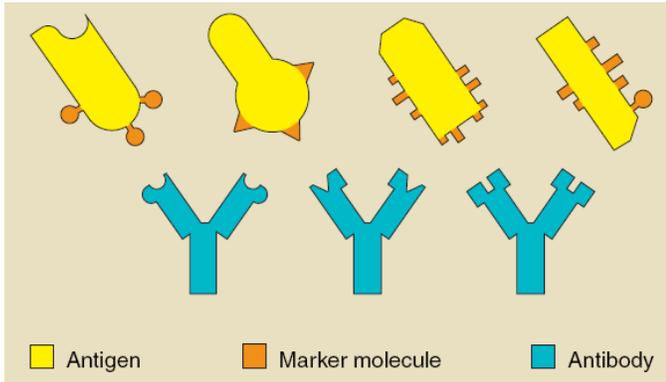
If pathogens do succeed in entering the body they will trigger a response from the IMMUNE SYSTEM. _____ blood cells flow through the _____ System and fight infection.

_____ are WHITE BLOOD CELLS that surround pathogens by sending out _____. Inside the _____ pathogens are dissolved.



WHITE BLOOD CELLS are also present in _____, a clear liquid that circulates through the body in the _____ System. Dead pathogens are collected in the _____ before disposal.

Antigens and Antibodies



ANTIBODIES will only work against specific PATHOGENS that have the correct ANTIGEN markers.

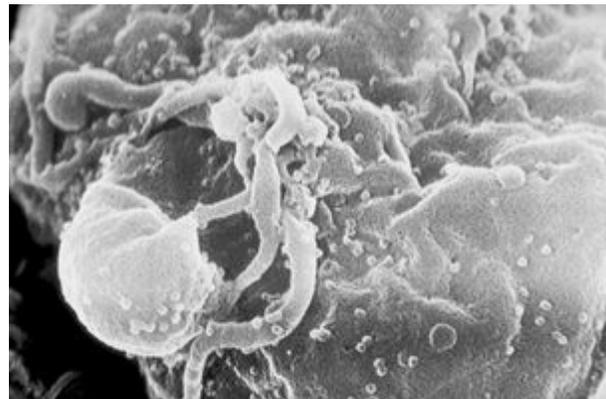
Every cell and every pathogen have markers on their surface called _____. These _____ tell the body whether or not they belong.

_____ manufacture _____ that fit on to

ANTIGEN markers making the pathogens harmless. _____ make a person IMMUNE to a disease.

HIV/AIDS

_____, or HUMAN IMMUNODEFICIENCY VIRUS, attacks the _____ System by infecting special WHITE BLOOD CELLS called _____. _____ weakens these cells, often destroying them. This weakens the _____ System and make the body less able to fight off infections and cancers. At this point the body has ACQUIRED IMMUNE DEFICIENCY SYNDROME or _____.



Electron Microscope image of HIV budding from a LYMPHOCYTE.