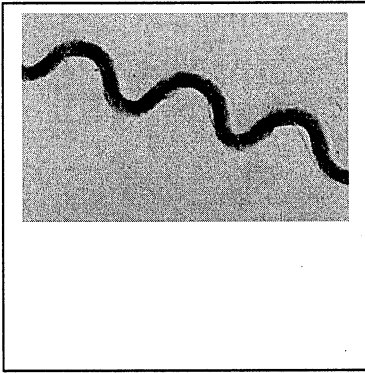
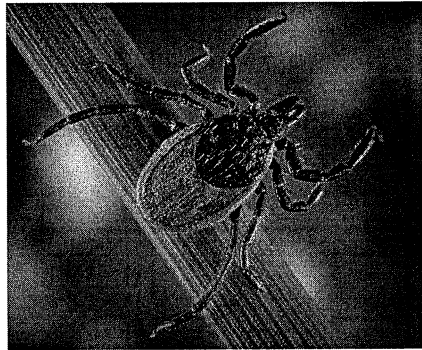


Suspect #1

Lyme Disease



Borrelia burgdorferi



Deer Tick



Lyme disease "bull's eye" rash

Background:

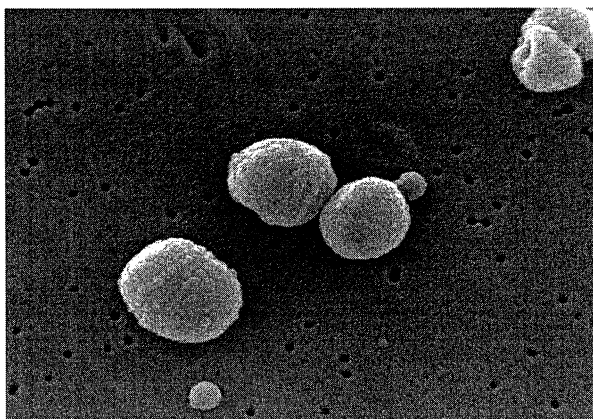
Lyme disease is caused by a spirochete-shaped bacteria called *Borrelia burgdorferi*. *Borrelia burgdorferi* lives in the gut of a tick and can be **transmitted** (passed) to a person if a **tick** that has *Borrelia burgdorferi* bites them. *Borrelia burgdorferi* infection in people leads to Lyme disease.

The natural **host** for Lyme disease is a deer. A tick is considered a **vector** for Lyme disease because it passes the disease from deer to people. Ticks that bite deer are called **deer ticks** (not all ticks are deer ticks). A deer tick is special type of tick that travels and feeds off of deer in the forest. *Borrelia burgdorferi* bacteria are found in both deer and deer ticks, but Lyme disease only occurs in people. The size of a deer tick is so small that it would fit in the period at the end of this sentence.

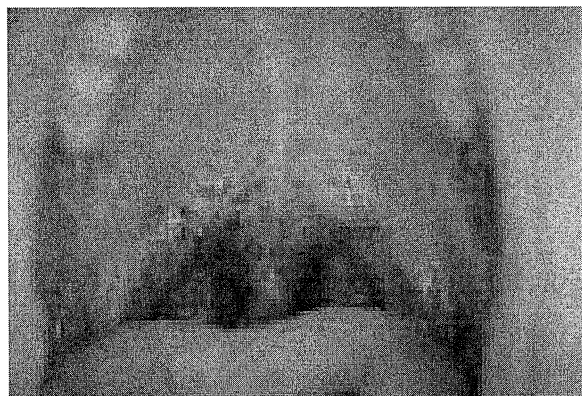
The infected person may get a fever, headache, or a "**bull's eye**" **skin rash**. If left untreated, the infection can spread to joints, the heart, and the nervous system. Medical tests can determine whether or not someone is infected with Lyme disease and the disease can be treated successfully with a few weeks of **antibiotics**. Steps to prevent Lyme disease include using insect repellent with DEET and looking for ticks after you have been in a wooded area.

Suspect #2

Strep Throat



Streptococcus pyogenes



A throat infected with
Streptococcus pyogenes

Background:

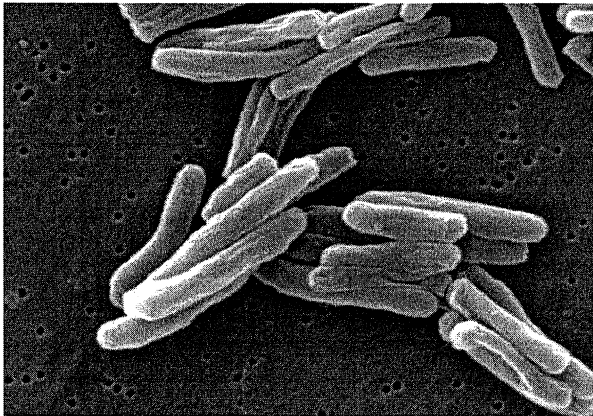
Strep throat is caused by the cocci-shaped bacteria *Streptococcus pyogenes*.

Streptococcus pyogenes infects the inside of the throat, making it feel very sore for several days. Not all sore throats are caused by *Streptococcus pyogenes*. Some of the **symptoms** of Strep throat are a painful, sore throat, high fever, chills, headache, and muscle aches. A quick medical test, called a throat culture, can determine whether or not a person is infected with Strep throat. The treatment for Strep throat is **antibiotics**. If left untreated, Strep throat symptoms may get worse and lead to more serious illnesses.

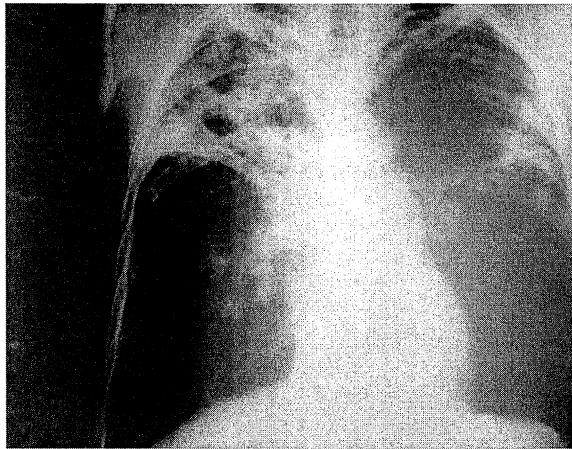
Streptococcus pyogenes bacteria are put into the air when a person with Strep throat coughs or sneezes. Strep throat is **transmitted directly** from person to person by coughing, sneezing, and close contact. Strep throat is spread through the air from person to person by them breathing in the bacteria, and becoming infected. Although anyone can become infected with Strep throat, it is most common in school-age children. Some of the common ways to prevent spreading Strep throat are covering your mouth when you cough or sneeze and washing your hands after sneezing.

Suspect #3

Tuberculosis



Mycobacterium tuberculosis

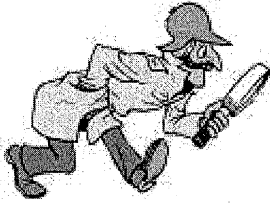


Lungs infected by Tuberculosis

Background:

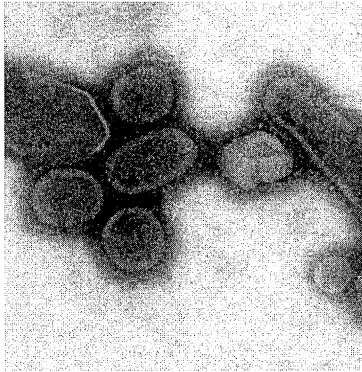
Tuberculosis is a disease caused by bacilli-shaped bacteria called *Mycobacterium tuberculosis*. *Mycobacterium tuberculosis* bacteria are put into the air when a person with Tuberculosis of the lungs coughs or sneezes. Tuberculosis is **transmitted** (spread) through the air from person to person by them breathing in the bacteria, and then becoming infected.

Mycobacterium tuberculosis usually causes infection in the lungs, but if left untreated, it can also infect the kidney, spine, and brain. **Symptoms** of Tuberculosis may include a bad cough (lasting 3 weeks or longer), pain in the chest, and coughing up blood. Medical tests can determine whether or not a person has Tuberculosis and infected people can be treated with antibiotics. Some common ways to prevent spreading Tuberculosis are covering your mouth when you cough or sneeze and washing your hands after sneezing.



Suspect #4

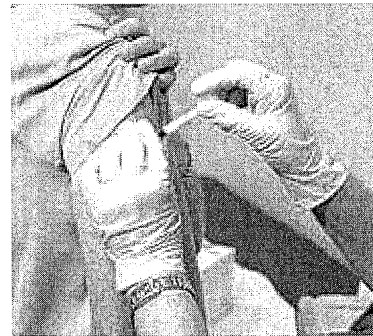
Influenza



Influenza viruses



**Sneezing Influenza Viruses
into the Air**



**Getting an Influenza
vaccine**

Background:

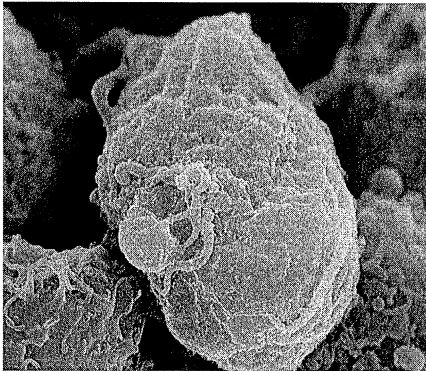
Influenza (also called the Flu) is caused by **Influenza viruses**. Influenza is a **contagious** illness that can be spread from person to person in droplets that are coughed or sneezed out from an infected person. Influenza virus can also be spread when infected people cough or sneeze on something (like a desk) and a **noninfected** person touches it and touches their mouth or nose.

Symptoms of Influenza include high fever, headache, dry cough, sore throat, upset stomach, and feeling very tired. Influenza can lead to more serious illnesses, such as breathing problems and ear infections. Most people can infect others beginning 1 day **BEFORE** symptoms develop and up to 5 days after becoming sick. That means that you can pass on Influenza to someone else before you know you are sick, as well as while you are sick.

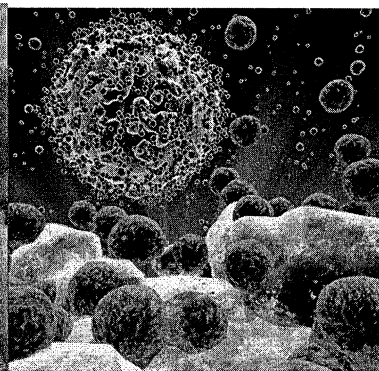
The best way to prevent Influenza infection is to get an Influenza **vaccination** every year in the fall. Vaccination allows the body to get a **vaccine** against the Influenza virus. This vaccine contains **inactivated** (killed) virus that is given with a needle. This vaccine helps the body to know what Influenza looks like, so that the body will be able to attack the Influenza virus if you become infected. This type of vaccine is only helpful to your body for one year because there is a new type of Influenza each year. It is important that you get the vaccine in the fall of **EVERY** year.

Suspect #5

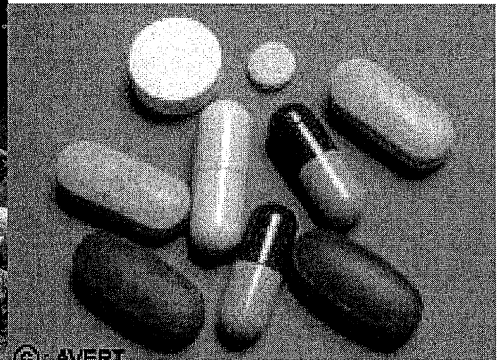
AIDS



HIV viruses



**HIV viruses
infecting the body**



AIDS Medicine

Background:

AIDS (Acquired Immunodeficiency Syndrome) is a disease that is caused by infection of **HIV (Human Immunodeficiency Virus)**. HIV disrupts the body's ability to fight off infection and keep the body healthy. Instead, people infected with HIV can become very sick or die from many diseases that a healthy person would not ever get sick from.

AIDS can only be spread directly by infected blood, by sharing needles and syringes with an infected person or by infected bodily fluids. AIDS is NOT spread by indirect contact, such as sneezing, shaking hands, hugging, or being in the same classroom with someone who is infected.

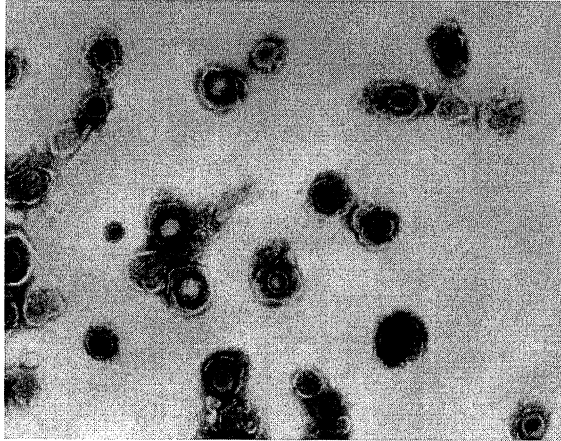
Early **symptoms** for AIDS include high fever, headache, dry cough, sore throat, upset stomach, and feeling very tired. AIDS symptoms may not occur until several years after infection. That means that you can pass on AIDS to someone else before you know you are sick, as well as while you are sick. Medical tests can determine whether or not you have AIDS. Some medicines can slow the course of AIDS, but there is NOT a **vaccine** or cure for AIDS. To prevent getting AIDS, do not touch used needles, do not touch other people's blood, and keep band-aids on your cuts and scrapes.



Suspect #6

Chickenpox

Varicella-zoster virus



**Blister-like rash
caused by Chickenpox**

Background:

Chickenpox is disease caused by infection with the **Varicella-zoster virus**. Chickenpox is highly **contagious** and spreads from person to person by direct contact or through the air from an infected person's coughing or sneezing. A person with Chickenpox is contagious 1-2 days before the rash appears and until all blisters are gone. It takes from 10-21 days after contact with an infected person for someone to develop Chickenpox. Once a person has been sick with Chickenpox, they are **immune** to it for the rest of their lives. Being immune means that you can no longer become infected.

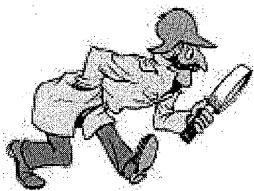
Symptoms of Chickenpox include a **blister-like rash**, itching, tiredness, and fever. First the rash appears on the chest, back, and face, but it can spread over the entire body causing between 250 to 500 itchy blisters. It is important to stay home from school when you have Chickenpox until the blisters are gone, so that you do not spread it to other people. Most cases of Chickenpox occur in people less than 15 years old. The best way to prevent Chickenpox is to get a Chickenpox **vaccination**. Vaccination allows the body to get a **vaccine** against the Varicella-

Name: _____

Period: _____

Infectious Disease Learning Packet

The Case of the Mysterious Disease



Now it is time for you to be the Disease Detective! A Detective uses clues to determine which Suspect has caused a crime and presents evidence to solve the Case. Use the clues in each case to figure out which one of the Disease Suspects is the criminal. Then, give evidence to support why you think that Disease Suspect is guilty of causing illness and answer the questions below.

Case #1

Mark has a high fever and an upset stomach. Mark always eats lunch with his friend Steve, who was coughing a few days ago and is now staying home sick from school. Mark's teacher asked him if he had a vaccination this year, but Mark does not remember getting any shots in the last few years.

Which disease does Mark have? _____

How is this disease spread? _____

What evidence do you have for your conclusion? _____

Is this disease caused by bacteria or a virus? _____

What is the name of the bacteria or virus? _____

How could this disease have been prevented? _____

Case #2

Soma has just returned from a family camping vacation in the woods and she has been having headaches for the past few days. Soma has a circular rash near her ankle. She has been vaccinated against the varicella-zoster virus.

Which disease does Soma have? _____

How is this disease spread? _____

What evidence do you have for your conclusion? _____

Is this disease caused by bacteria or a virus? _____

What is the name of the bacteria or virus? _____

How could this disease have been prevented? _____

Infectious Disease Learning Packet



Case #3

Tyron has a sore throat and chills. Many of Tyron's friends from school are home sick and are taking antibiotics. Tyron's school nurse suggests that he get a throat culture, but Tyron insists that he already got an Influenza vaccine.

Which disease does Tyron have? _____

How is this disease spread? _____

What evidence do you have for your conclusion? _____

Is this disease caused by bacteria or a virus? _____

What is the name of the bacteria or virus? _____

How could this disease have been prevented? _____

Case #4

Jing is a new student in school—she has only been there for 30 days. She used to be home-schooled, so she hasn't been around very many other students her age before. Jing has had a high fever and has been feeling very tired for days. Her mom tells her to stay home from school. The next day, Jing sees very small, red blisters on her face. Jing has never been vaccinated for anything.

Which disease does Jing have? _____

How is this disease spread? _____

What evidence do you have for your conclusion? _____

Is this disease caused by bacteria or a virus? _____

What is the name of the bacteria or virus? _____

How could this disease have been prevented? _____
