

PEOPLE, HEALTH AND ENVIRONMENT



Our health depends mainly on our way of life: Our actual food, the pollution in our environment, the traffic, a lot of types of radiations around us, the noise and so on.

"Progress" is also a danger for human beings, if we understand it without taking care of Nature.

1- Health and Illness.

When we feel well, physically and mentally, when we have energy to interact with other people, to face problems, and so on, we are in good health.

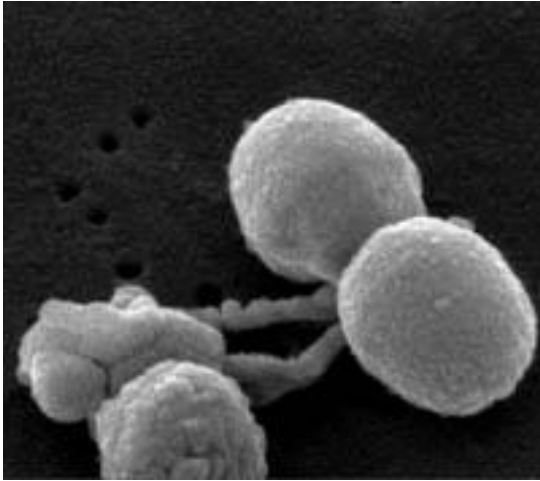
According to the World Health Organisation (WHO), "Health is a complete physical, mental and social state". Illness is the opposite situation due to physical, mental or social reasons.

There are three main types of illnesses:

1.1- **Physical illnesses**: they are produced by an infection, a wound or a degenerative process in the organism. They can be classified into **two groups**:

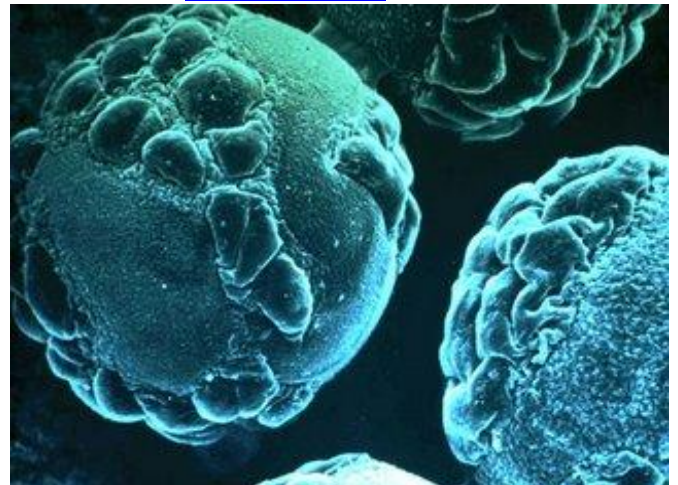
- **Infectious illnesses**: they are caused by [bacteria](#), [viruses](#), protozoa or any [micro-organism](#). Unfortunately, [micro-organisms](#) are also a problem to us. Some of them cause disease when they enter our bodies, then grow and multiply. You can often "catch" them from other people. Here are some diseases caused by **micro-organisms**:

Pneumonia

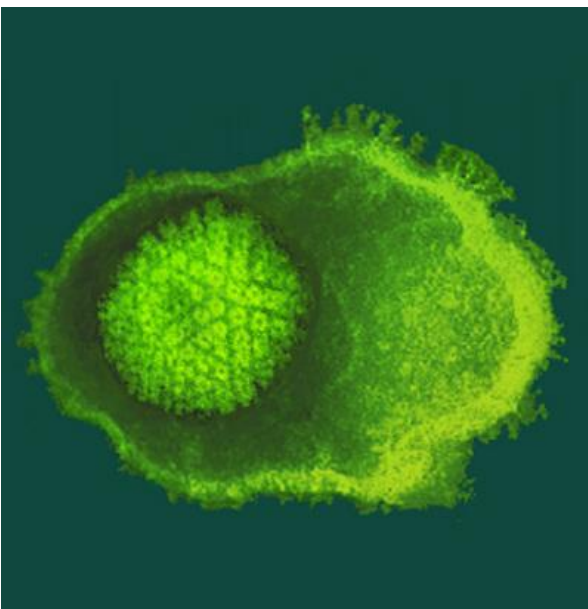


Scanning Electron Micrograph of Streptococcus pneumoniae. (Courtesy: Dr. Richard Facklam/CDC)

Chicken pox



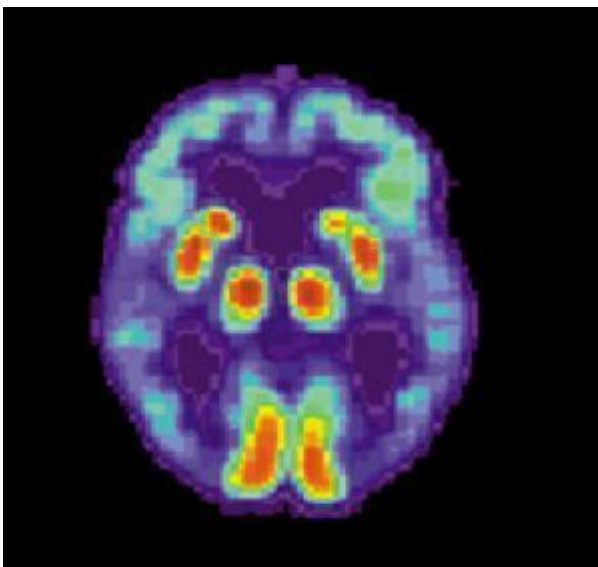
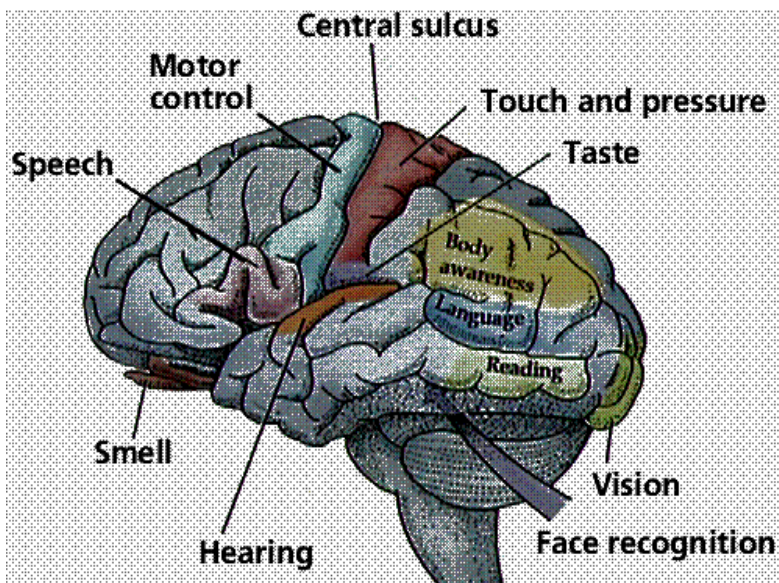
Measles



-Non infectious illnesses: they are due to other reasons, like traffic accidents.



1.2- **Mental Illnesses:** they are produced by the brain not working well.



PET Scan of Alzheimer's Disease Brain. (Credit: NIH/National Institute On Aging)

1.3- **Social Illnesses**: they are produced by a violent social environment or educational or economic deficiencies.

You need to look after your health to keep your body working properly. There are lots of things you can do to help your body stay healthy. We will try to study them in this unit.



Activities

1. -List some more diseases that are produced by micro-organisms.

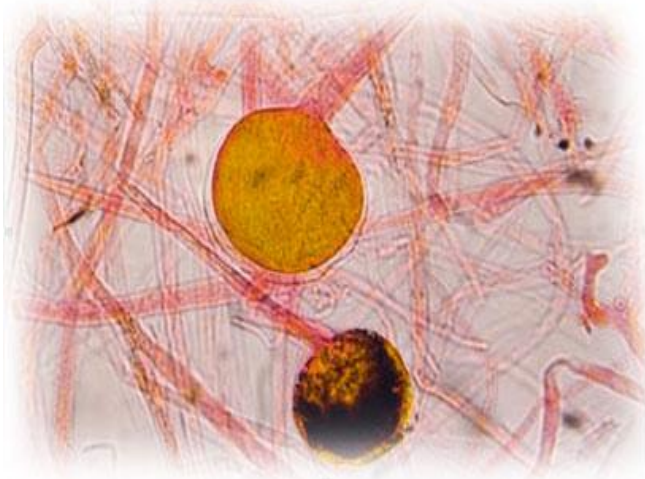
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2- Read the text bellow.

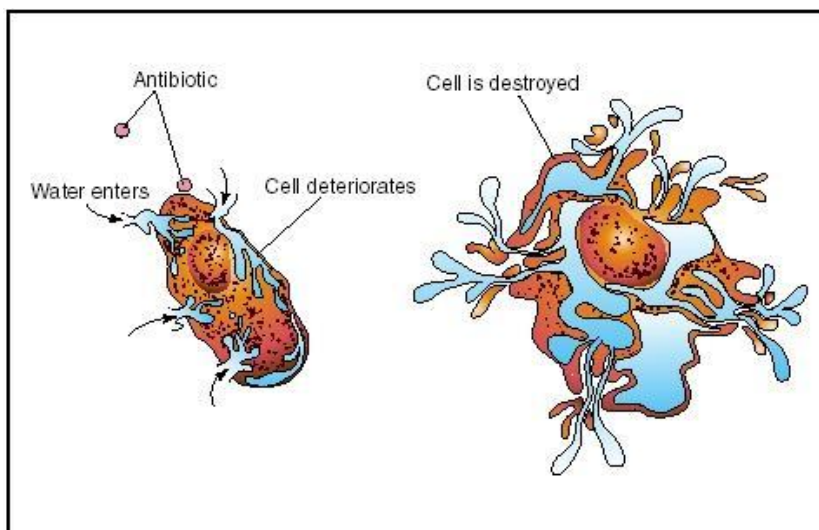
"Scientists have developed the following ways of helping us fight diseases:

• **Antibiotics**, which kill one type of micro-organisms called bacteria, will help us with tonsillitis and most forms of pneumonia. They do

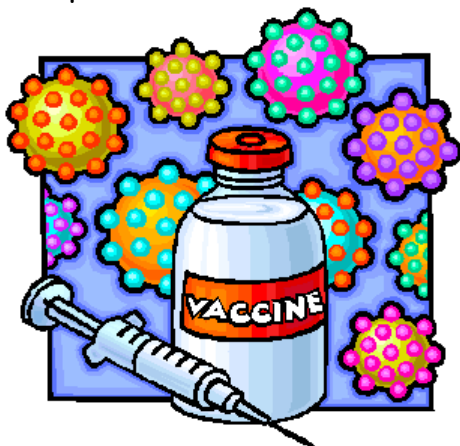
not help with a disease like chicken pox because this is caused by a virus - a different type of micro-organism.



Magnification of penicillin



• Vaccinations: A **vaccine** is a biological preparation that improves immunity to a particular disease.

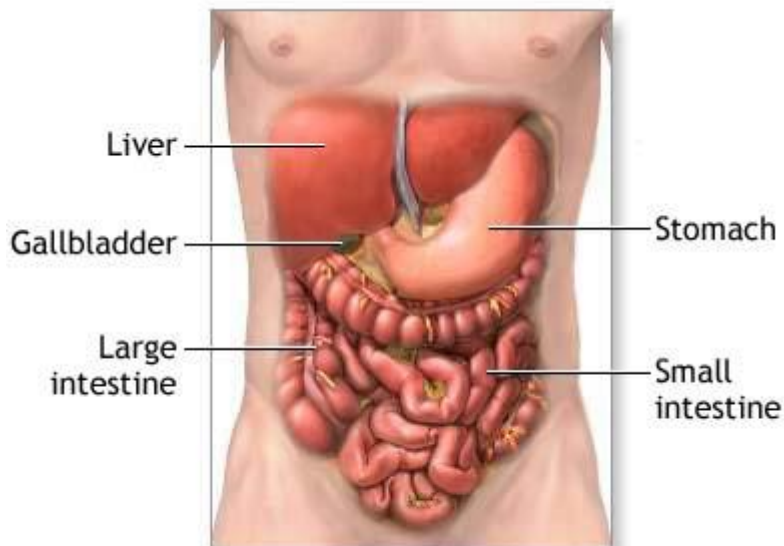


- Disinfectants are substances that will kill micro-organisms outside our bodies."



- Underline the words that you do not understand.
- Look for them in your dictionary.
- What is an antibiotic?
- When do we use disinfectants?

2.- Illnesses of the Digestive Apparatus



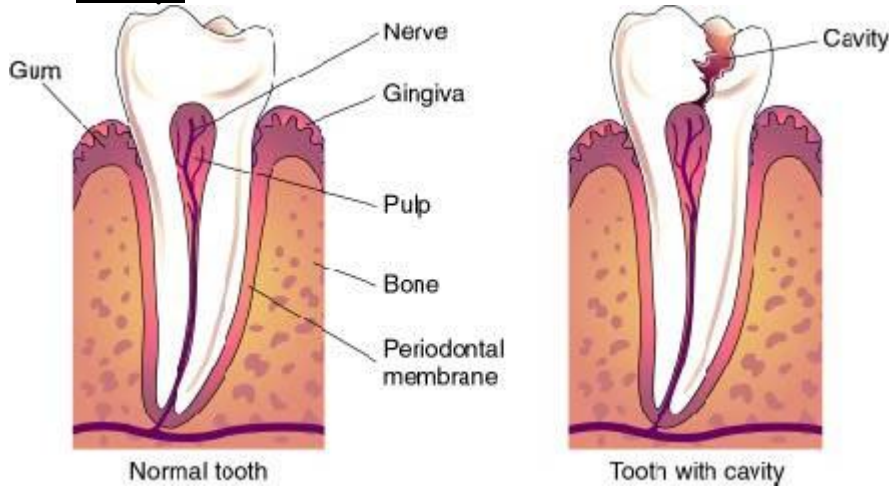
ADAM.

There a lot of causes for a digestive illness. Most of them can be prevented with healthy eating, keeping clean, keeping fit and so on. Some of these illnesses are:



- 2.1. Constipation.** The lumps of waste are squeezed out of your rectum when you go to the toilet. If not, you are constipated. Why? Normally because you do not eat enough fibre in the food.

2.2 Cavity.



We have lot of germs living inside our mouth. They feed on any sweet food and makes holes in the teeth. Do not eat or drink many sweet things and brush your teeth at least after each meal.

2.3 Ulcers.



They are injuries in the walls of the digestive tube, mainly in the stomach and intestine. They are due to:

- a bacterial infection
- stress
- tobacco, alcohol and other substances.

2.4 Cirrhosis.



It is a liver illness and consists of the progressive death of the liver cells.

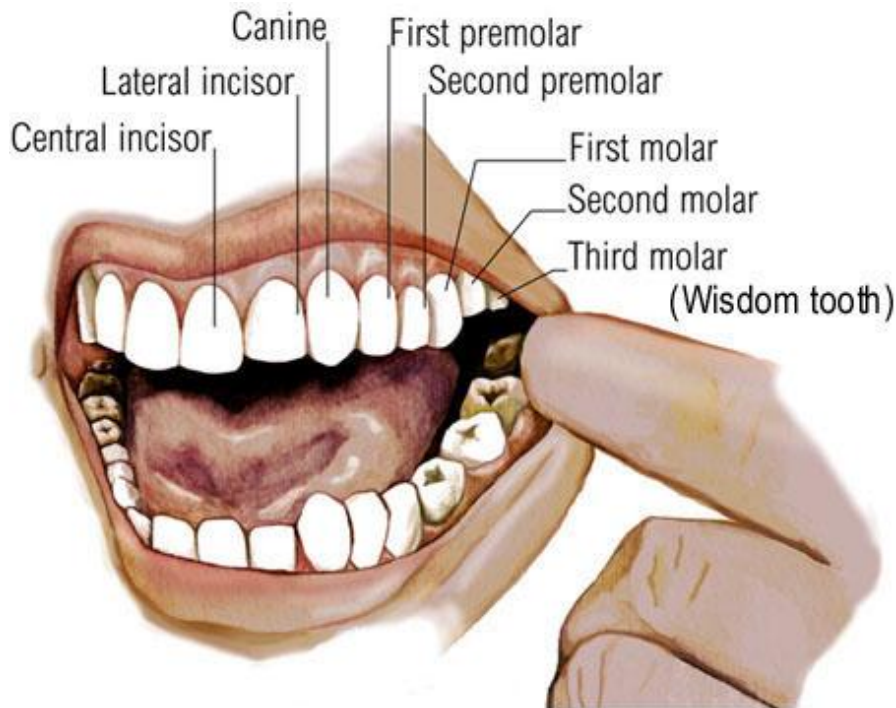
Normally it is due to an excessive consumption of alcohol.



Activities

1. Read the text below.

You have three main types of teeth.



See if you can find them in your mouth.

Incisors. These are the sharp biting one at the front. You have four at the top and four at the bottom.

Canines. You have four of these. In carnivorous animals like cats and dogs they are long, sharp and used for stabbing and gripping.

Molars. Your back teeth are all grinding teeth.

An adult has 32 teeth in a complete set.

a.- How many teeth do you have?

.....

b.- Which teeth would you use for biting off a bit of apple?

.....

c.- Which teeth would you use for crunching up peanuts?

.....

2.- Who do you think might have most trouble with his or her teeth?. Say why you chose this person.

- Susan likes chocolate with every meal. She always brushes her teeth afterwards.

- Anne likes sweets and eats them all day. She brushes her teeth when she remembers.

- Pete likes carrots and munches them at every chance. He brushes his teeth when he remembers.

.....
.....
.....

3.- Some surprising foods have sugar added. Look at the labels of as many food as you can and make a list of all those that contain sugar.

.....
.....

3.- Illnesses of the Respiratory Apparatus

Most of them are infectious illnesses but there are important sicknesses due to unhealthy habits like smoking.

3.1. **Asthma:** some people have a condition called asthma that makes their air tubes suddenly get narrower. This makes it hard for them to breathe. Normally asthma is due to allergic causes (pollution, dust, pollen, etc) or respiratory infections. It can produce coughs, noises.

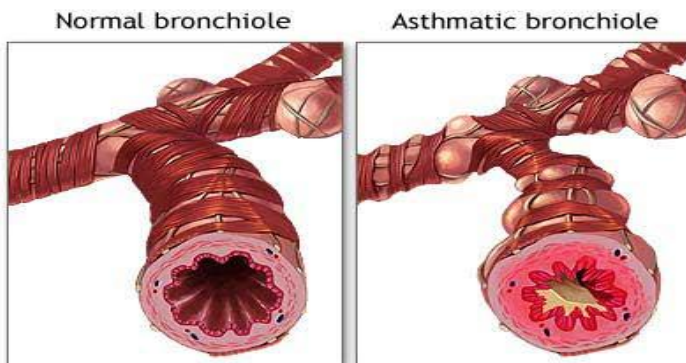
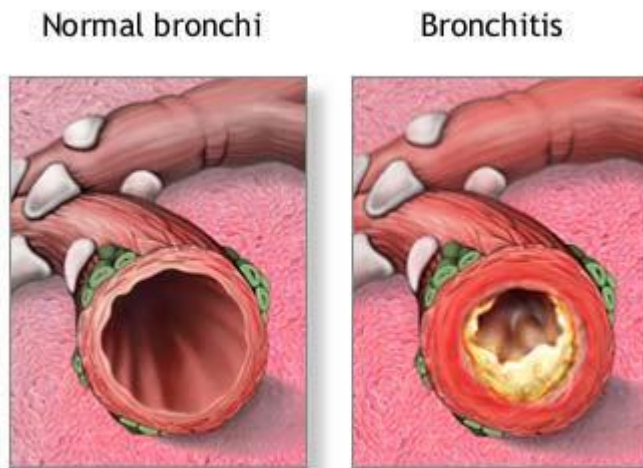


Image obtained at www.healthpm.com

3.2. **Bronchitis.** It is an inflammatory sickness of the bronchial tubes due to a bacterium which makes it more difficult to breathe. Most smokers have chronic bronchitis.

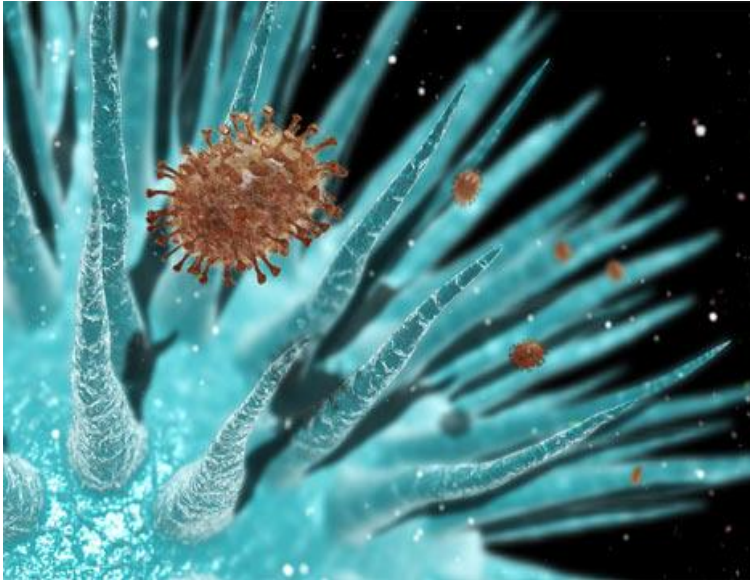


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3.3 **Lung cancer** and other types of cancer of the respiratory tract. There are a lot of things which can provoke these types of cancer. The most important causes are tobacco and pollution.



3.3 Cold and Influenza (flu)



3.4. These are very contagious diseases through the respiratory tract. These are [viral diseases](#).

<http://www.mcb.uct.ac.za/tutorial/mcb3011s/human%20viral%20disease.ppt>

Activities

1. - Find out how respiratory diseases are spread.

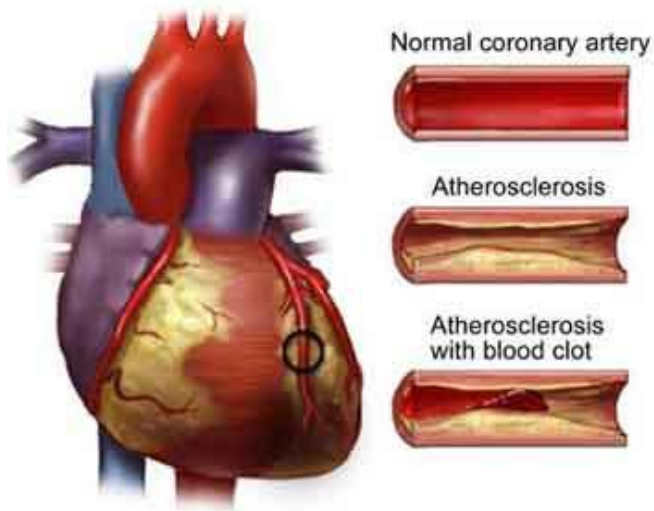
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2. - Find out a disease that it is unusual or impossible to catch from another person.

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4.- Illnesses of the circulatory apparatus

4.1 Atherosclerosis



. Sometimes blood vessels have stores of fat and cholesterol inside them. This is very dangerous because if the blood vessels get blocked, they produce clots. This is Thrombosis.

4.1. Heart attack. Atherosclerosis can affect any part of the body, but it is especially important when it reaches the blood vessels of the heart. In this case, blood with oxygen and nutrients can not get to the heart muscle (myocardium). The muscle can not work properly. This is called a heart attack.

Try to eat a mixture of healthy food. Exercising is an important way of keeping your heart healthy. And do not smoke. Nicotine has a negative effect on the arteries.

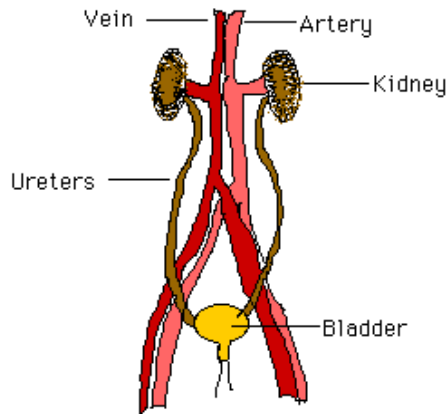
Activities

1.- Trace the route of blood around your body, starting in the heart, going wherever you want and returning to your heart.

2.- Our hearts beat quite quickly and we can count the number of beats per minute if we can find a pulse. Two of the easiest places to find a pulse are in the wrist and in the neck.

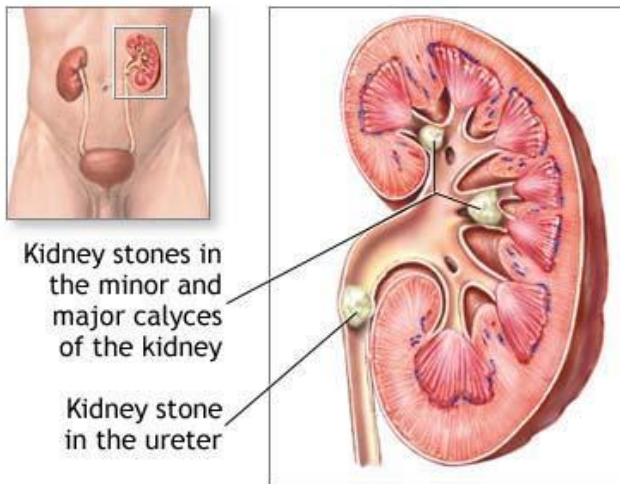
Sit quietly. Now find a pulse in your neck or in your wrist using your fingers. And finally count the number of beats in one minute.

5.-Illnesses of the excretory system



When the excretory organs do not work properly, we can store lots of toxic and poisonous substances inside us. Our kidneys clean all the blood in the body every four minutes.

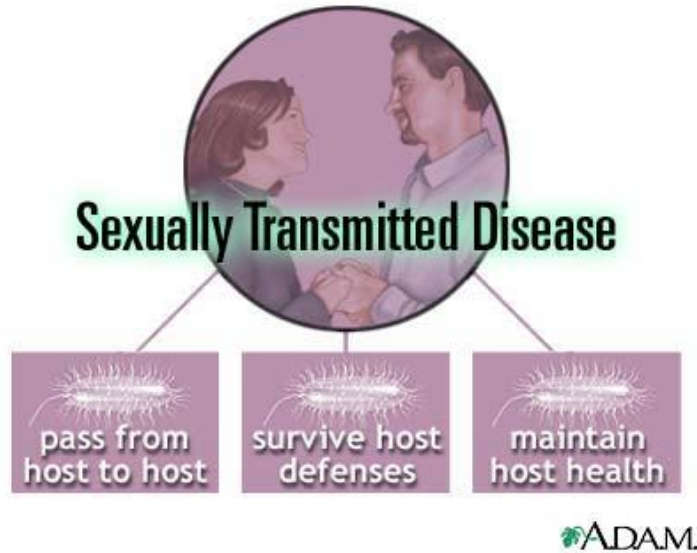
5.1 Renal colic.



It is a painful disease and it is due to stones in the kidneys or in the excretory tracts. We should all drink plenty of water every day. We should take in water in drinks and in food. We lose water when we sweat or when we go to the toilet. We have to drink to replace the water we have lost. We can also avoid some food that produces stones in the kidneys, like seafood, or some meats, or spinach.

5.2. Cystitis. It is an inflammation of the bladder or excretory tracts due to micro-organisms. Washing helps to stop germs from spreading. We should always wash our excretory tracts after going to the toilet.

6.- Sexually transmitted diseases



These are diseases that are caused by sexual contact. They mainly affect the reproductive apparatus, like **syphilis**, **gonorrhoea**, but others affect other parts of the body, like **AIDS** or **hepatitis**.

These diseases are produced by bacteria, viruses, fungus and other micro-organisms.

They can be prevented by:

- Using condoms in sexual relations.
- Not sharing syringes.

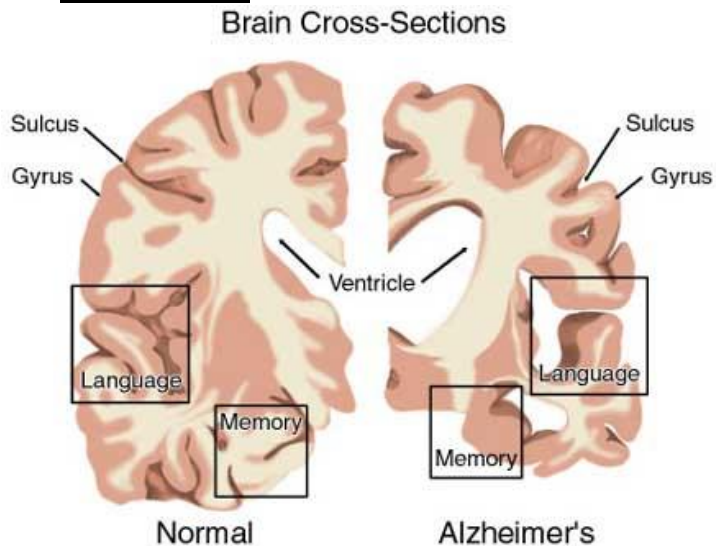
Activities

- 1.- What is a sexually transmitted disease?
- 2.- What would you do if you had one of these diseases?
- 3.- How can we prevent these type of diseases?

7.- Mental health

Problems of mental health are due to physical, social, psychological or even hereditary reasons.

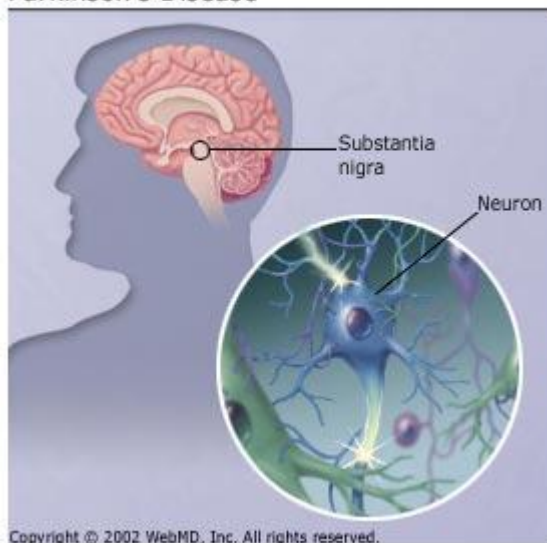
7.1. Alzheimer's:



It is produced by a degeneration of neurons of the cerebral crust. The patient loses memory, orientation, reasoning, or even it can produce language difficulties and changes in behaviour. Normally this illness affects old people.

7.2. Parkinson's:

Parkinson's Disease



Some neurons do not work properly or are dead. These neurons are movement control neurons. Parkinson's produces muscular rigidity, shaking in the hands, legs, arms and other effects. And it also affects the elderly.

We do not know the reason for these illnesses yet but doctors think they are because of genetic reasons and some toxic substances in the environment.

7.3. There are many **psychological** illnesses like:



- **depression**
- **anxiety**
- **schizophrenia**
- **mental disorder like obsession** (about something or someone)

What can we do to prevent mental illnesses?

We can have healthy habits, for example:

- a.- Having a balanced diet.
- b.- Exercising regularly.
- c.- Doing mental and intellectual activities.
- d.- Keeping your life in an orderly way.
- e.- Avoiding stress.
- f.- Nor smoking.
- g.- Not consuming alcohol and other drugs.

Activities

1- Read carefully the text.

Many adults try to give up smoking, but often find it very difficult. Tobacco contains a substance to which they become addicted. This means that their bodies must have it, or they will feel bad. Sadly, smoking over a period of time is very dangerous, especially to our lungs. It can cause all sorts of breathing problems, and some people end up with lung cancer or heart disease, both of which can kill.

Cigarette smoke is not very good for non-smokers either as they can get lung problems from breathing in cigarette smoke produced by smokers.

Beer and wines contain alcohol, another substance that many people enjoy using. In small doses this is not harmful as smoking, though some people become addicted to it. Then it can be a really big problem. Alcohol makes people less sensitive, so they feel more relaxed at parties, for example. It also affects our reactions so that we can not drive properly. Too much alcohol over a long period of time is very dangerous to the liver.

Today, there are a lot of illegal drugs that are sold under cover, even in schools. These are considered to be bad for the body. Many of them are addictive. Most of them can have very harmful effects. They are illegal and quite expensive to buy. Nobody knows what the long-term effects of taking these drugs will be. Drugs dealers often make a lot of money out of the people they sell to. When caught they can be sent to prison for many years.

- a.- Write down why smoking is harmful for people who smoke.
- b.- Write down why smoking is harmful for those people who do not smoke.
- c.- Write some negative effects of alcohol in people.
- d.- Write some reasons why we should not take drugs.

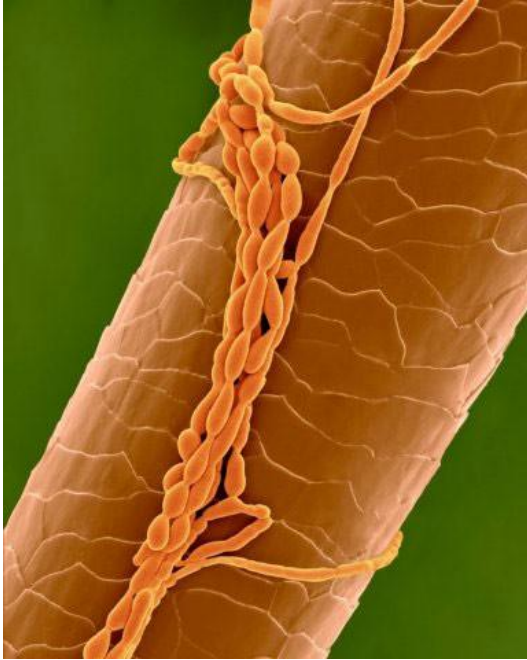
MICRO-ORGANISMS QUIZZES

- 1.- **Most micro-organisms cannot be seen without a...**
 - Telescope
 - Periscope
 - Microscope
- 2.- **Which of these is not true about micro-organisms?**
 - They are all harmful
 - They feed and grow
 - They reproduce
- 3.- **What is yeast used for?**
 - To cure chickenpox
 - To make bread rise
 - To make yoghurt
- 4.- **Why should cooked and uncooked foods be stored separately?**
 - Because bacteria only like cooked food
 - Because bacteria only like uncooked food
 - To stop bacteria spreading from one to the other
- 5.- **Which of these is not caused by a micro-organism?**
 - Measles
 - A sprained ankle
 - Tooth decay
- 6.- **Which of these micro-organisms is useful?**
 - Bacteria that decompose leaves
 - Salmonella
 - Chickenpox virus
- 7.- **Which of these is true?**
 - Micro-organisms are all around us
 - Micro-organisms are only found in the kitchen
 - All micro-organisms cause illness
- 8.- **Which sentence is true about bacteria?**
 - Bacteria are living things that consist of one cell
 - Bacteria are the smallest of all living things
 - Both are true
- 9.- **Some bacteria are used to fight off harmful infections. Where would you find these helpful bacteria in the human body?**
 - On your skin
 - In your intestines
 - In your nose and throat
- 10.- **Viruses**
 - Are living things
 - Are not living things
 - Are living thing but not micro-organisms

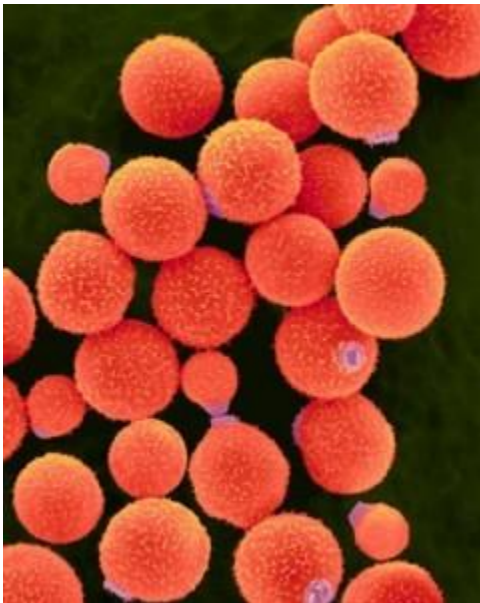
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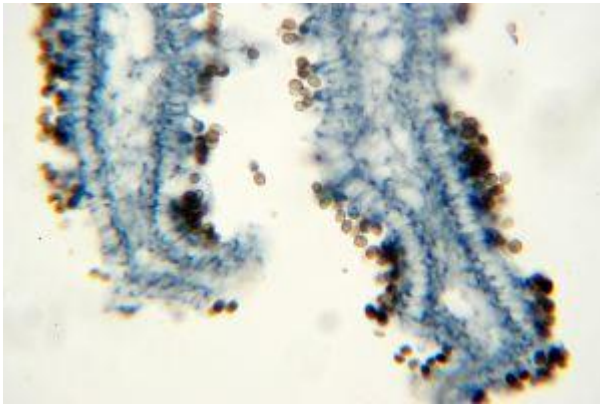
http://www.visiblebody.com/demos/head/vb/content/learn/physiology_demo/learn.html

Picture gallery:

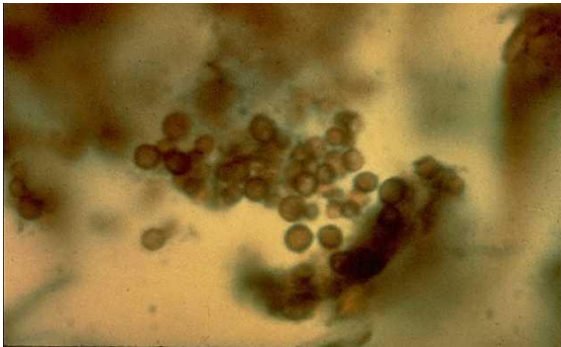


Scanning electron micrograph of the hair surface of a human eyelash with an unidentified fungal infection . This infection is a type of superficial mycosis that is limited to the outermost layers of the hair or skin.

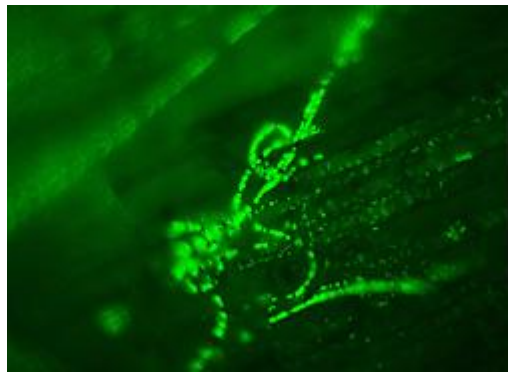
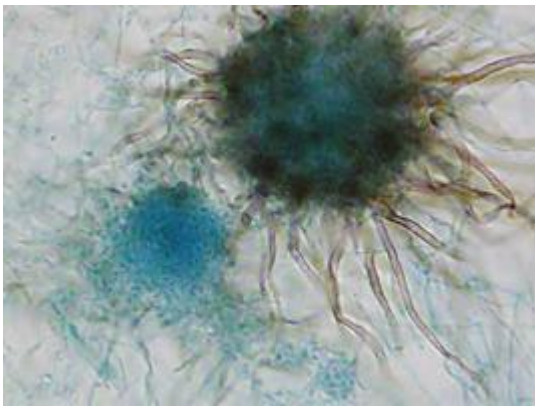




fungus



Cryptococcus neoformans fungus cells, which cause cryptococcosis. A dangerous meningitis commonly manifests when the fungus proliferates in the lungs, enters the blood, and is carried to the meninges.

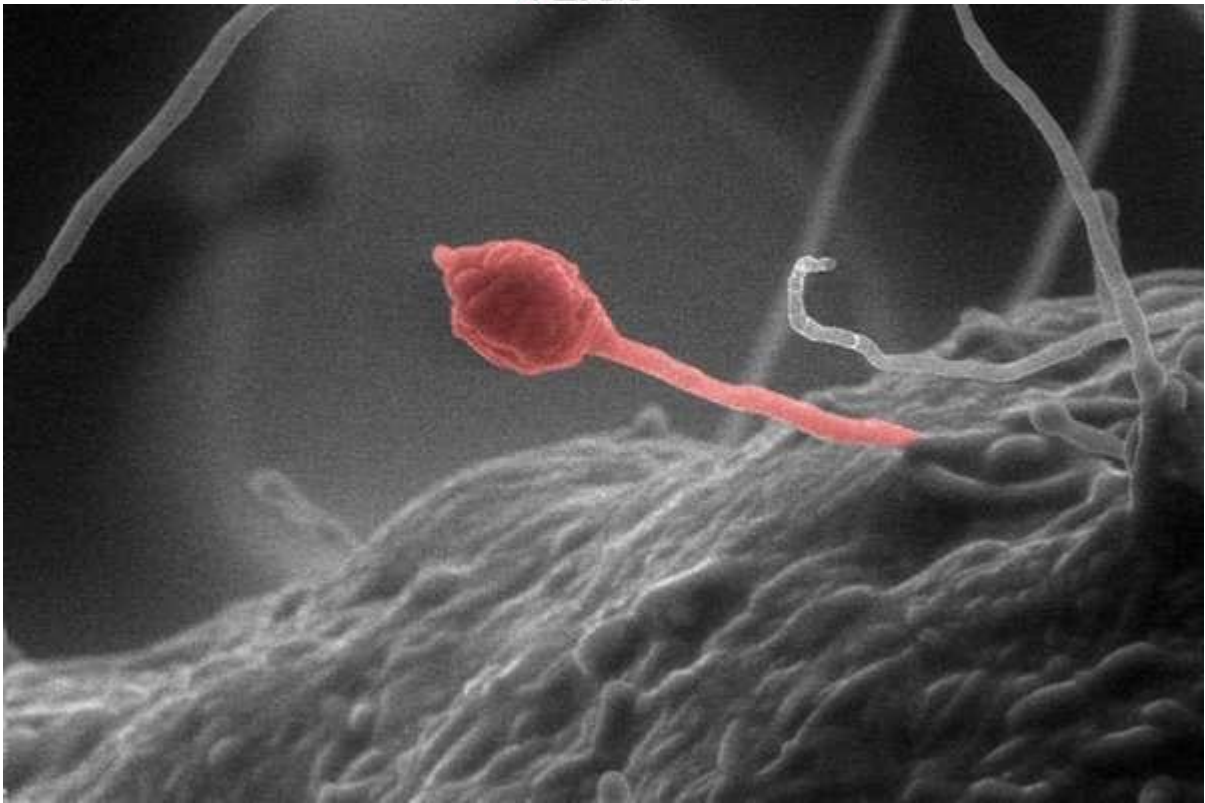


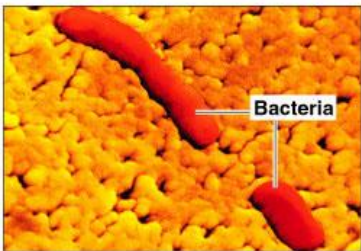
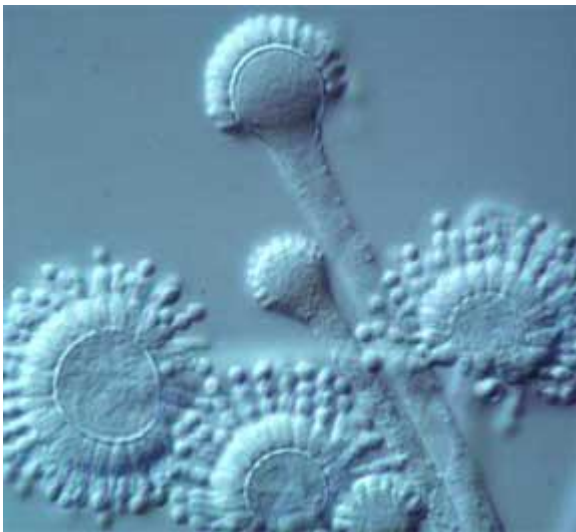
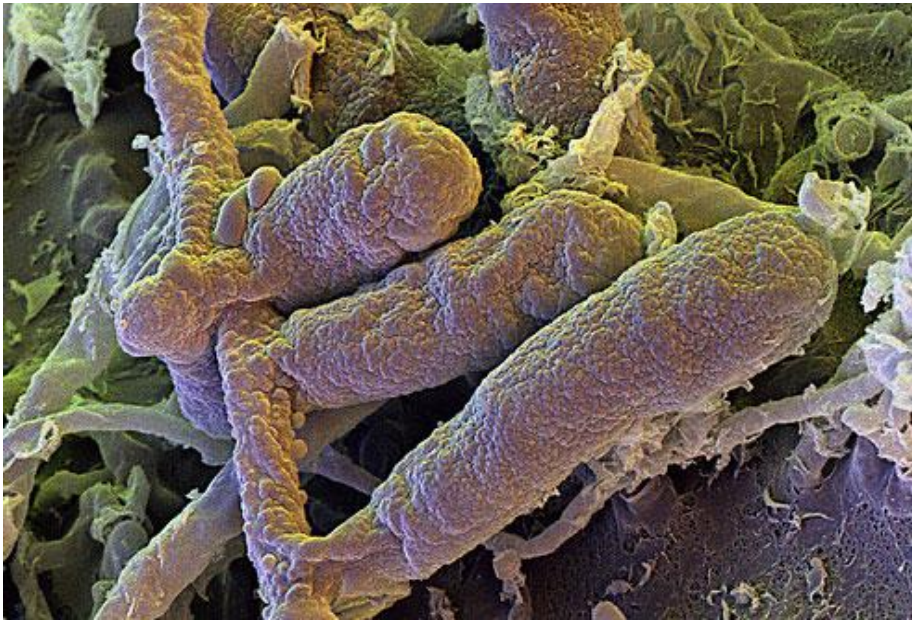
fungus

Fungus



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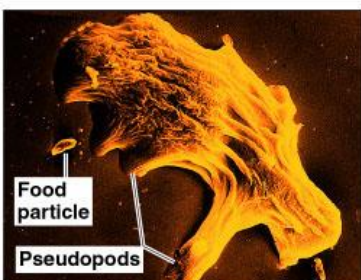




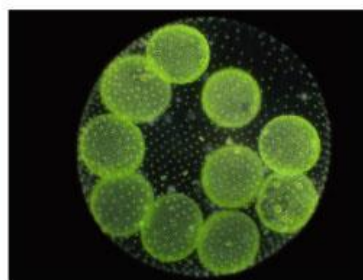
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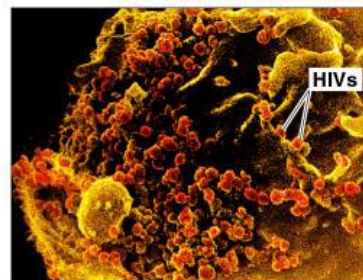
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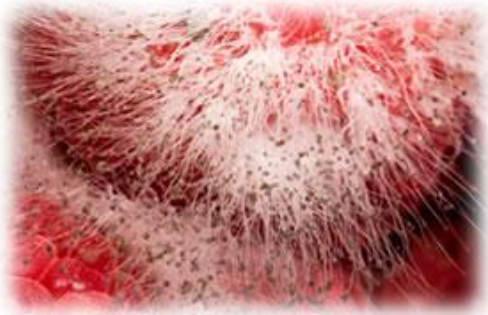
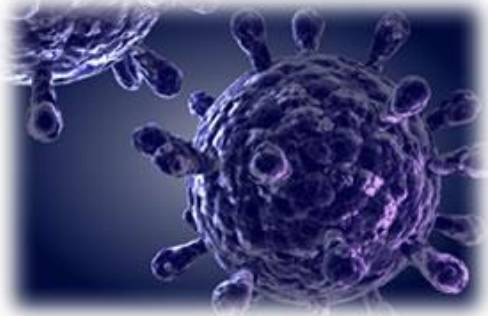
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(d)



(e)



Webgraphy of Internet sources:

http://www.youtube.com/watch?v=_JUEVEENE4M&feature=related
http://www.sflorg.com/sciencenews/images/imscn051606_01_01.jpg
http://www.visiblebody.com/demos/head/vb/content/learn/physiology_demo/learn.html
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http://gbs.glenbrook.k12.il.us/academics/gbssci/team/biounit8/circulatorydisease_spractice.htm
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<http://www.kimicontrol.com/edu-e.html>
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<http://car-insurance-finder.com/>
<http://kathrynellott.com.au/images/0000/0326/MentalHealthWeek1.jpg>
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<http://literaturainfluenza.blogspot.com/2009/05/fotografia-de-virus-de-la-influenza.html>
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