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Accelerated Learning Programme

ALP BIOLOGY

Glossary for all Units, and the full text of Unit 5 “Microbes and Disease”, translated in English

Funded by the Asylum, Migration and Integration Fund of the European Union

IOM UN MIGRATION

ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ

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ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ

Αυτή η έκδοση χρηματοδοτήθηκε από την Ευρωπαϊκή Ένωση. Το περιεχόμενό της εκφράζει τις απόψεις των συγγραφέων της και δεν μπορεί να θεωρηθεί ότι αντικατοπτρίζει την επίσημη θέση της Ευρωπαϊκής Ένωσης.

ΕΡΓΟ ALP

ΒΙΟΛΟΓΙΑ

ΣΥΓΓΡΑΦΕΑΣ ΕΚΠΑΙΔΕΥΤΙΚΟΥ ΥΛΙΚΟΥ
ΠΗΝΕΛΟΠΗ ΠΑΠΑΔΟΠΟΥΛΟΥ
Αναπληρώτρια Καθηγήτρια Πανεπιστημίου Δυτικής Μακεδονίας

ΜΕΤΑΦΡΑΣΗ ΣΤΑ ΑΓΓΛΙΚΑ
ΑΧΙΛΛΕΑΣ ΚΩΣΤΟΥΛΑΣ
Μέλος ΕΔΙΠ ΠΤΔΕ Πανεπιστημίου Θεσσαλίας

ΕΙΚΟΝΟΓΡΑΦΗΣΗ
ΑΝΝΑ ΠΑΠΑΪΩΑΝΝΟΥ

ΕΠΙΣΤΗΜΟΝΙΚΑ ΥΠΕΥΘΥΝΟΣ ΕΡΓΟΥ ALP
ΓΙΩΡΓΟΣ ΑΝΔΡΟΥΛΑΚΗΣ
Διευθυντής του Εργαστηρίου ΜΔΔ Ελληνικής Γλώσσας και Πολυγλωσσίας
Πανεπιστήμιο Θεσσαλίας

ΥΠΕΥΘΥΝΟΙ ΓΙΑ ΤΗ UNICEF
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ΕΚΠΡΟΣΩΠΟΣ ΓΝΩΜΟΔΟΤΙΚΗΣ ΕΠΙΤΡΟΠΗΣ ΙΕΠ
ΝΤΟΡΕΤΤΑ ΑΣΤΕΡΗ

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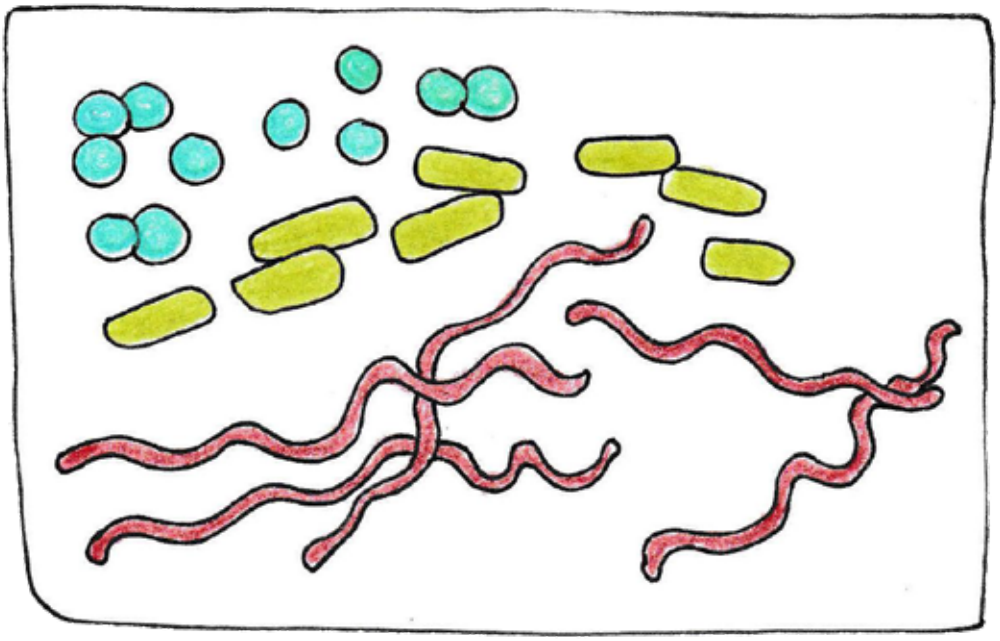
Unit 5

Microbes and disease

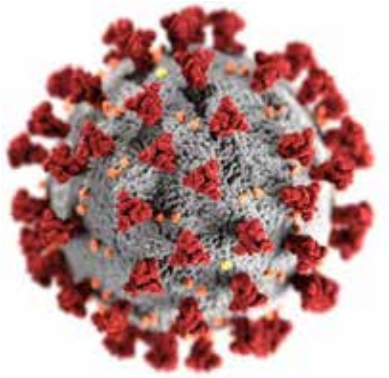


Unit 5: Microbes & disease

In this unit you will learn:

- That some diseases are cause by microbes and some are caused by our lifestyle and environment.
- That not all micro-organisms make us sick; in fact, some are very useful.
- What viruses are.
- How microbes make people sick.
- How our body prevents microbes from entering our body.
- How our body fights microbes once they have entered our body.
- How serums and vaccines keep us from getting sick.
- What to do in order to keep from getting sick from microbes.

Activity 1: Living with the coronavirus



Picture 1: The coronavirus. Picture credit: CDC/ Alissa Eckert, MS; Dan Higgins, MAMS. https://phil.cdc.gov/Details.aspx?pid=23312

After closing for two months, schools re-opened. Children are restless, because all the new rules are making them uncomfortable. Some children say that they do not need all these restrictions. In their view, we get sick because we are not good people, and disease is our punishment for this.

When this discussion takes places in class, your teacher suggests dingind the answer on your own, i.e., finding out what makes us sick. When you find out the answer, you can write a short article in your school website, so that other children can learn the answers, too.

Discuss this among yourselves, and decide –with some help from your teacher – what topics you will focus on. Some possible topics include:

1) Why do we get sick?
2) What are viruses? Why is the coronavirus so dangerous?
3) How do we get well after falling sick?
4) What can we do to avoid getting sick?

Do the following activities. Read the information that is provided. Also so some searching on your own. This will help you to finally write your own article.

Activity 2: A small survey on disease

Each of you should ask five people (e.g. classmates, family members, or others) the following questions.

1) If they have every been sick, and what the name of the disease was?
2) What made them sick?
3) How long were they sick? How did that feel?
4) What made them well?

Look at the worksheet *My survey on disease*. Complete a sheet for every person we ask. Record their responses, as they were given to as. Record the name of the disease, using the language in which they responded.

Gather all the sheers from everyone. Write down all the responses in the table below. Record the information from every sheet in a single row.

Disease	**From what** (cause)	**Feelings** (symptoms)	**How long did it last?**	**How did they get well?** (Cure)

MY SURVEY on disease

Boy ☐ Girl ☐ (*Tick the right box*)

1) Have you been sick?

.....

2) What was the name of the disease (*Let them say the name that they know*)

.....

3) How long were you sick?

.....

4) How did that feel?

.....

5) What made you better? Did you get any medicine?

.....

Activity 3: Why do we get sick (1)

Using the school library or the internet, look for information about every disease that you found in your survey. If you need to, you can also ask a doctor or a nurse.

It will be easier to find this information by splitting in groups.

If you want to find out more about a disease, you can add it to your list.

Disease	Cause

Science says

There are many reasons why we get sick:

- Dangerous substances, i.e., **poison** or **toxins**. These harm various parts of our body and make us sick. They are often found in our environment.
- Microbes. The **microbes** that make us sick are: **viruses**, **bacteria**, and **fungi**. Some of the most common diseases are caused by microbes. There are microbes everywhere on earth: on us, around us, and even inside our body.
- Some of us were born with health problems.

Activity 4: Why do we get sick (2)

You can now discuss what you found through your research. Judging from what your classmates said, what do they seem to think about disease? What makes us sick?

.....

.....

Activity 4: Why do we get sick (3)

Make a poster to show your classmates what makes us sick. The poster could show what the cause of each disease (Is it a microbe? Something else?).

Activity 5: How small are microbes? (Optional)

In Picture 5.2, make a note of which things we can see with the naked eye.

We know that:

1m=100cm=1.000mm=1.000.000µm=1.000.000.000nm=10.000.000.000A^0

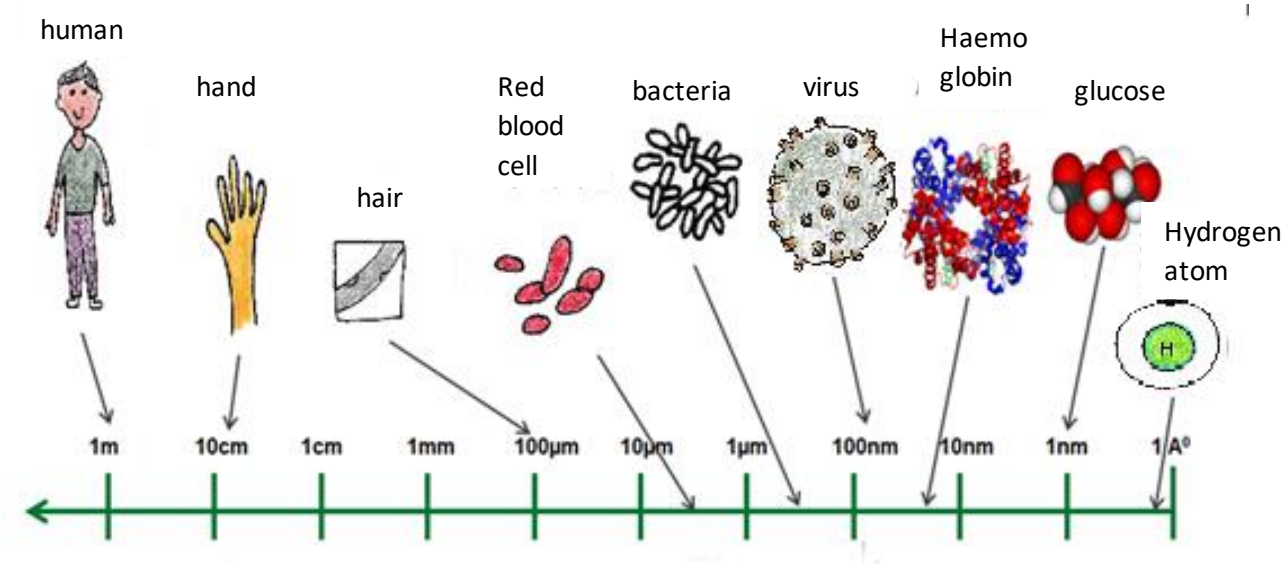
Look at the picture and answer the following questions.

How much smaller is a bacterium:

1) …than a human hair? .....
2) …than a red blood cell? .....
3) …than a human? .....

How much larger is a bacterium:

1) …than a virus? .....



Picture 5.2: Πόσο μεγάλοι είναι οι ζωντανοί οργανισμοί και τα μέρη που τους αποτελούν

Activity 6: Types of microorganisms

To find out more about the number and types of microorganisms (microbes) that exist, you can do the activity that you will find at the following URL http://photodentro.edu.gr/aggregator/lo/photodentro-lor-8521-4920.

Science says

Microbes are tiny living organisms. They are too small to see with a naked eye. Some microbes are useful and some hurt humans. There are three main groups of microbes:

Viruses are smaller than microbes, and they are usually harmful for humans. Viruses cannot live on their own. They need a cell, which they enter. When they are inside it, they multiply (: they become more and more) and they slowly destroy the cell. That's when people get sick.

Bacteria are single cell organisms. When they find themselves in a warm place (37° C) with a lot of food, they multiply very fast: once every 20 minutes. Some are harmful to humans and cause disease. Other bacteria are not **harmful**, and others are very **useful** for humans. We use the name **pathogens** to describe harmful bacteria.

Fungi are multi-cellular organisms. They feed on **dead matter**. Some are harmful, and cause disease, and some are poisonous if eaten. Other fungi are beneficial, e.g., we use them to make medicine, or we can eat them.

Activity 7: Types of microorganisms

You can remember the types of living beings and find out more about the types of microbes by visiting the following URL http://photodentro.edu.gr/aggregator/lo/photodentro-lor-8521-4686.

Activity 8 (Watch a video!): Viruses

You can find out what viruses are, how they multiply, and how they make us sick by watching the video at the following URL: https://www.youtube.com/watch?v=7KXHwhTghWI

Activity 9: The flu virus

You can see how the flu virus enters the cells of our respirator system in the following URL

https://human.biodigital.com/widget/?m=production/maleAdult/flu_virus_in_respiratory_epithelium.json&lang=es&uaid=30dbA

You can also see what the flu virus does in our mouth and nose, by visiting the following URL https://human.biodigital.com/widget/?m=production/maleAdult/flu.json&lang=es&uaid=30dch

Science says

The flu virus is a transmissible virus that **infects** the nose, mouth, and throat. When this virus makes us sick, we get a **fever**, our head and body hurts, and we feel tired. Also, our nose runs and our throat hurts, just like when we have a cold. This lasts for two to five days.

We usually get well on our own. However, when babies or older people get the flu, they could get very sick. For example, they might get **pneumonia**.

Activity 10: How many bacteria?

When bacteria are in a warm place (37° C) with lots of food, e.g., inside our body, they divide in two, every 20 minutes.

A single bacterium that enters our body, can make two in 20 minutes, four in 40 minutes, and so on.

Can you estimate how many there will be…:

In 2 hours …….

In 4 hours …….

In 6 hours …….

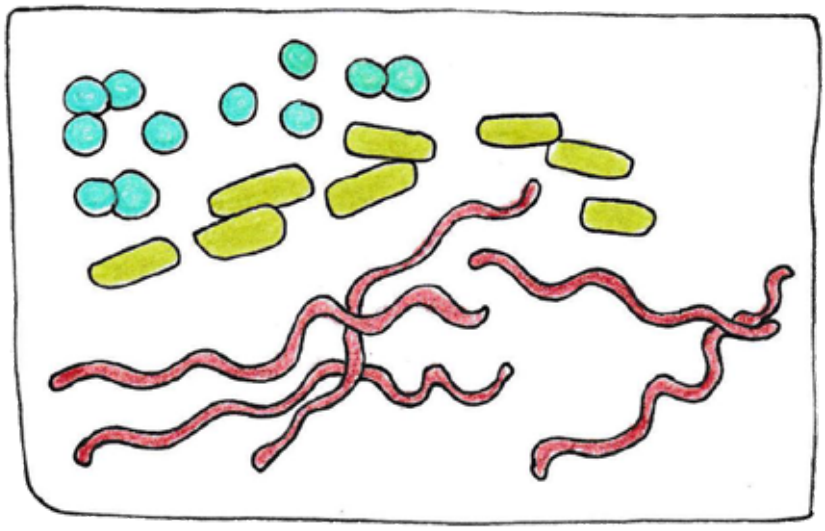
Activity 11: The shapes of bacteria

Although they are very small, microbes appear in various shapes and sizes.

Look at Picture 5.3, and use your own words to describe what bacteria shapes you can see.

.....

.....



Picture 5.3: Bacteria shapes

Science says

Where do microbes live? Everywhere. On every surface. In water, in the soil, and in the air. On our skin, and even inside our body.

So, why don't we get sick?

- Because not all microbes cause disease.
- Because our body has many ways to fight microbes.

Picture 5.4: How are microbes transmitted? Droplets in the air. Picture credit: *Wilkin, D. Brainard, J. (2015) Human Biology. http://www.ck12.org/saythanks, (CC BY-NC 3.0).*

Science says

How are microbes transmitted?

1. Through the air (Picture 5.4): **Coughing** and **sneezing** shoots thousands of microbes into the air, and they can infect anybody. That's why we should wear a mask.
2. Through water: Microbes that cause many diseases, such as cholera, are transmitted through dirty water.
3. Through contact: By touching hands, or a towel that a sick person touched, or by walking barefoot on a dirty floor.
4. Through animals: e.g., mosquitos carry the malaria disease.
5. **Through sexual contact, breast-feeding, and pregnancy.**

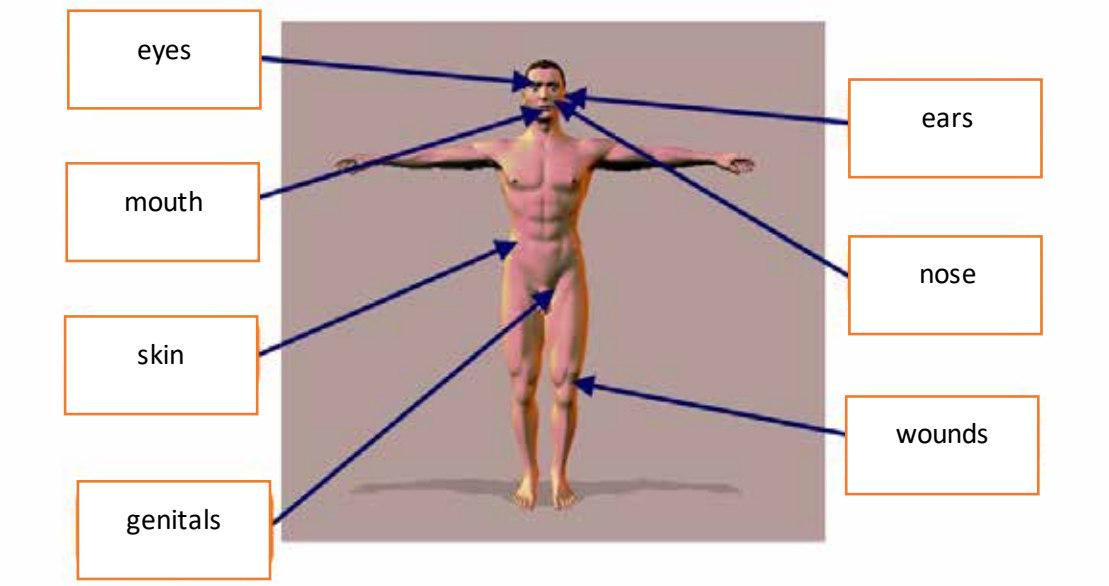
Activity 12: How do we get microbes (1)

You can find out the places where microbes can enter your body in the following address: http://photodentro.edu.gr/aggregator/lo/photodentro-lor-8521-4886 . You can compare this to Picture 5.4.

You can also see how some diseases are transmitted, by clicking on the following URL: http://photodentro.edu.gr/aggregator/lo/photodentro-lor-8521-5727.

Activity 13: How do we get microbes (2)

Draw lots to select a classmate (you will not know who he or she is). Your teacher will help him or her to put glitter on their hands. After 2-3 hours, look for glitter in your class and on you. Think about how it got there



Picture 5.4: How do microbes enter your body

Activity 14: Lines of defence

Picture 5.5: A castle's lines of defence. Picture srouce: *Wilkin, D. Brainard, J. (2015) Human Biology. http://www.ck12.org/saythanks, (CC BY-NC 3.0).*

In what ways are enemies prevented from entering the castle in the picture? That is, what are the castle's lines of defence?

……

……

……

What is the first obstacle that someone will meet if they try to enter the castle?

……

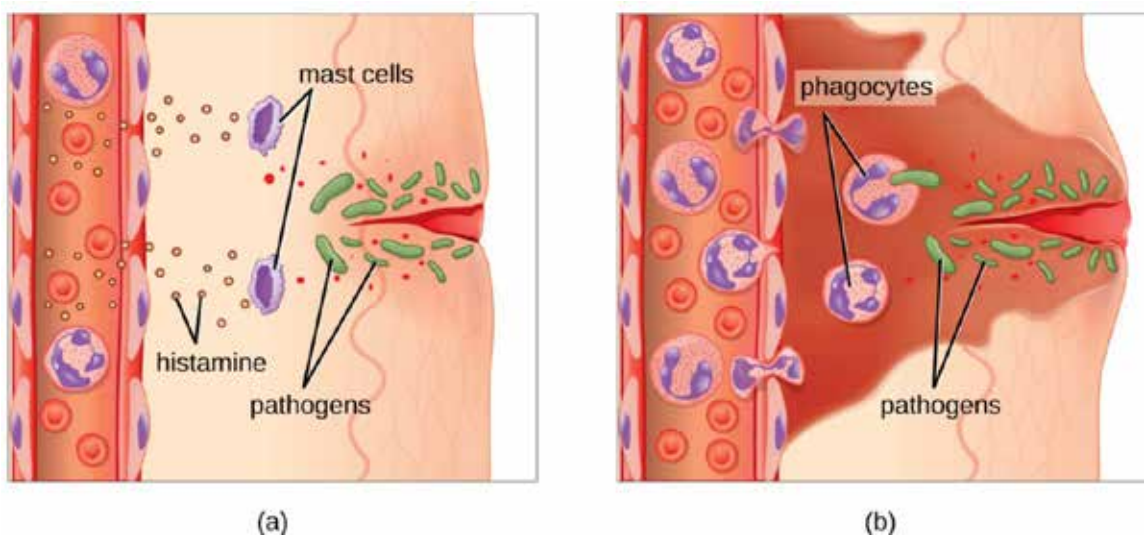
Look at Picture 5.4. Think about what the first obstacles are, that the body presents to microbes, and describe them.

……

……

……

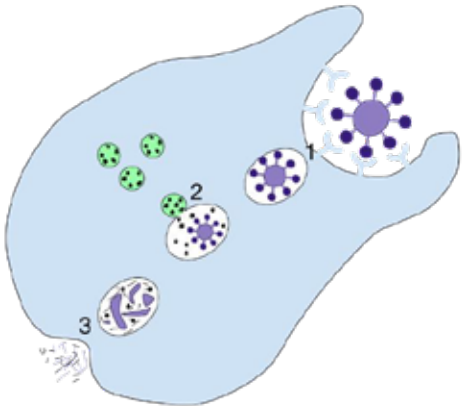
Picture 5.6: Proper handwashing. This is how we help our body's lines of defence. Picture Credits: Human Biology. http://www.ck12.org/saythanks, (CC BY-NC 3.0).



Picture 5.7: Inflammation. Picture Credit https://bio.libretexts.org/Bookshelves/Microbiology/Book%3A_Microbiology_%28OpenStax%29/17%3A_Innate_Nonspecific_Host_Defenses/17.5%3A_Inflammation_and_Fever (CC BY 4.0)

Activity 15 (Watch a video): Inflammation

You can see what an infection is by clicking at the following URL
http://photodentro.edu.gr/aggregator/lo/photodentro-lor-8521-5626



Picture 5.8: A special microbe-eating cell. (1) It envelopes a microbe and takes it inside; (2) it uses special substances to kill and dissolve it (: break it into small pieces); (3) If flushes the dead microbe out. *Picture credit:* https://en.wikipedia.org/wiki/Phagolysosome

Activity 16 Fever

You can find out about fever by clicking on the URL below:
http://photodentro.edu.gr/aggregator/lo/photodentro-lor-8521-7417.

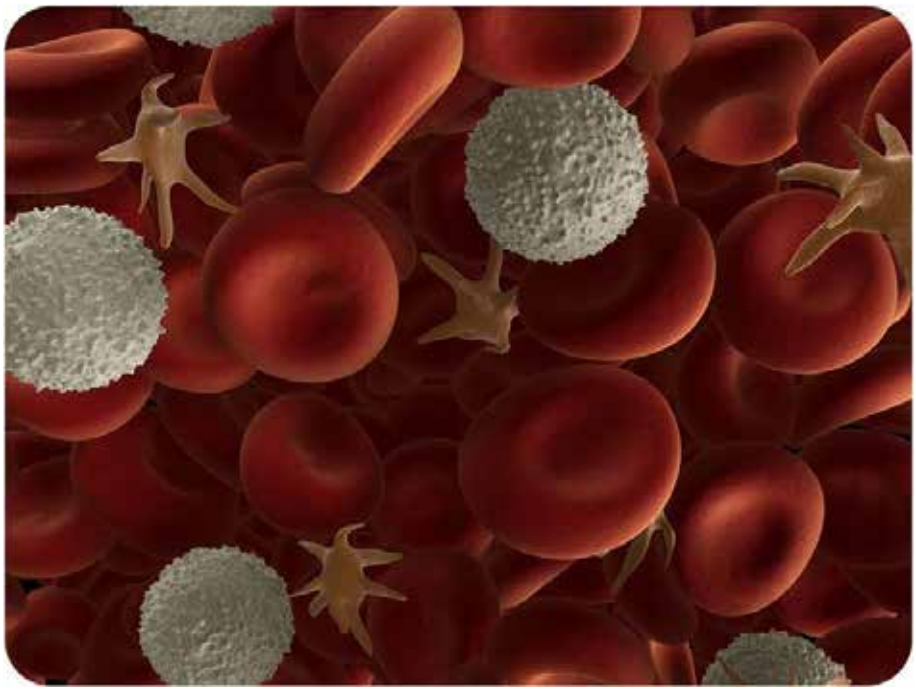
Science says

Our body has many ways of fighting off microbes. In other words, it has several lines of defence.

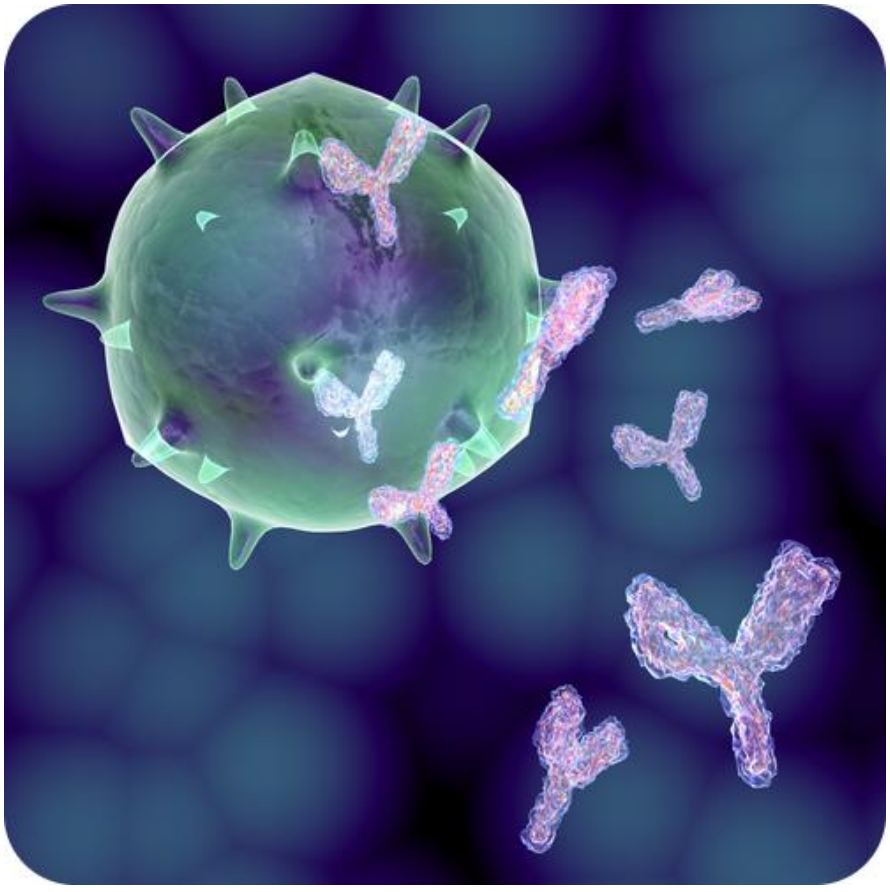
1st line of defence: Obstacles for microbes in the openings of the body (fine hair in the ears, saliva in the mouth, mucus in the nose, etc.).

2nd line of defence: **Inflammation** (Picture 5.6) Some microbes make it through the obstacles and into our body, e.g., through a wound. Then, some special cells create a substance that brings blood in the area. This is why the area around a wound gets red and swollen. The blood brings with it white blood cells. Some of these can eat foreign bodies, microbes etc. (Picture 5.7). The same happens if microbes enter the bloodstream (Εικόνα 5.8). Sometimes our temperature rises in all of our body. That's when we have a **fever**.

3rd line of defence: **Immunity**. Sometimes, an inflammation is not enough. Many microbes (usually viruses) can't be killed. Then another type of white blood cells creates special substances, **antibodies**. Antibodies gather around a microbe and kill it (Picture 5.9). Antibodies don't kill all microbes. There are different antibodies for different types of microbes.



Picture 5.9: Λευκά αιμοσφαίρια (άσπρες μπάλλες) πλησιάζουν microbes (σαν αστέρια) για να τα φαν
Πηγή Pictureς: Wilkin, D. Brainard, J. (2015) Human Biology. http://www.ck12.org/saythanks, (CC BY-NC 3.0).



Picture 5.10: Antibodies (shaped like a Y) gathering around a microbe (ball). Picture credit: Wilkin, D. Brainard, J. (2015) *Human Biology*. http://www.ck12.org/saythanks, (CC BY-NC 3.0).

Science says

Sometimes, our body can't defeat the microbes. That's when we use special medicine. **Antibiotics** are the special medicine that targets bacteria. However, they are useless against viruses.

Sometimes, microbes can grow very fast in numbers. Then it's hard for our body to fight them off. That's when we take a **serum**. A serum is ready-made antibodies.

Vaccines help us not to get sick from serious disease. These are usually dead microbes. They help our body to produce anti-bodies, without getting sick first. If the microbes re-enter our body, our body already has the antibodies it needs to fight them.

Microbes, such as the coronavirus, are dangerous, because they are new, and we don't have antibodies for them. We don't have medicine of vaccines for them, either.

Picture 5.11: Vaccine. Picture Credit: Wilkin, D. Brainard, J. (2015) *Human Biology*. http://www.ck12.org/saythanks, (CC BY-NC 3.0).

Activity 17: Antibiotics

You can learn about the history of antibiotics, by clicking at the following URL http://photodentro.edu.gr/aggregator/lo/photodentro-lor-8521-4885 .

Activity 18: Vaccines

You can learn about vaccines, by clicking at the following URL http://photodentro.edu.gr/aggregator/lo/photodentro-lor-8521-4883 .

Activity 19: Beneficial microbes

Are there any beneficial (: helpful) microbes? Do you know how yoghurt is made? If not, do some research. Find five useful products that are made with the help of microbes.

....

....

....

Revision activities

Activity 20: Why do we get sick?

Using all that you have learnt in this unit, write a short article for your school website. You should aim to inform your schoolmates why we get sick. Your article could answer questions such as the following:

1) What makes us sick?
2) What are the different types of microbes?
3) Are all microbes dangerous?
4) What are viruses? Why is the coronavirus so dangerous?
5) What is immunity?
6) What makes us well, after we have got a disease?
7) What can we do to avoid getting sick?

Activity 21 (Watch a video): How do viruses and bacteria make us sick?

You can remember how viruses and bacteria make us sick by watching the video in the following URL https://www.youtube.com/watch?v=C2gdqsKfIWk.

(if there are too many hard words, ask your teacher to describe what the video shows. You might then re-watch it)

Activity 22: Human disease

You can evaluate everything you've learnt about human disease by clicking on the following URL http://photodentro.edu.gr/aggregator/lo/photodentro-lor-8521-3112 .

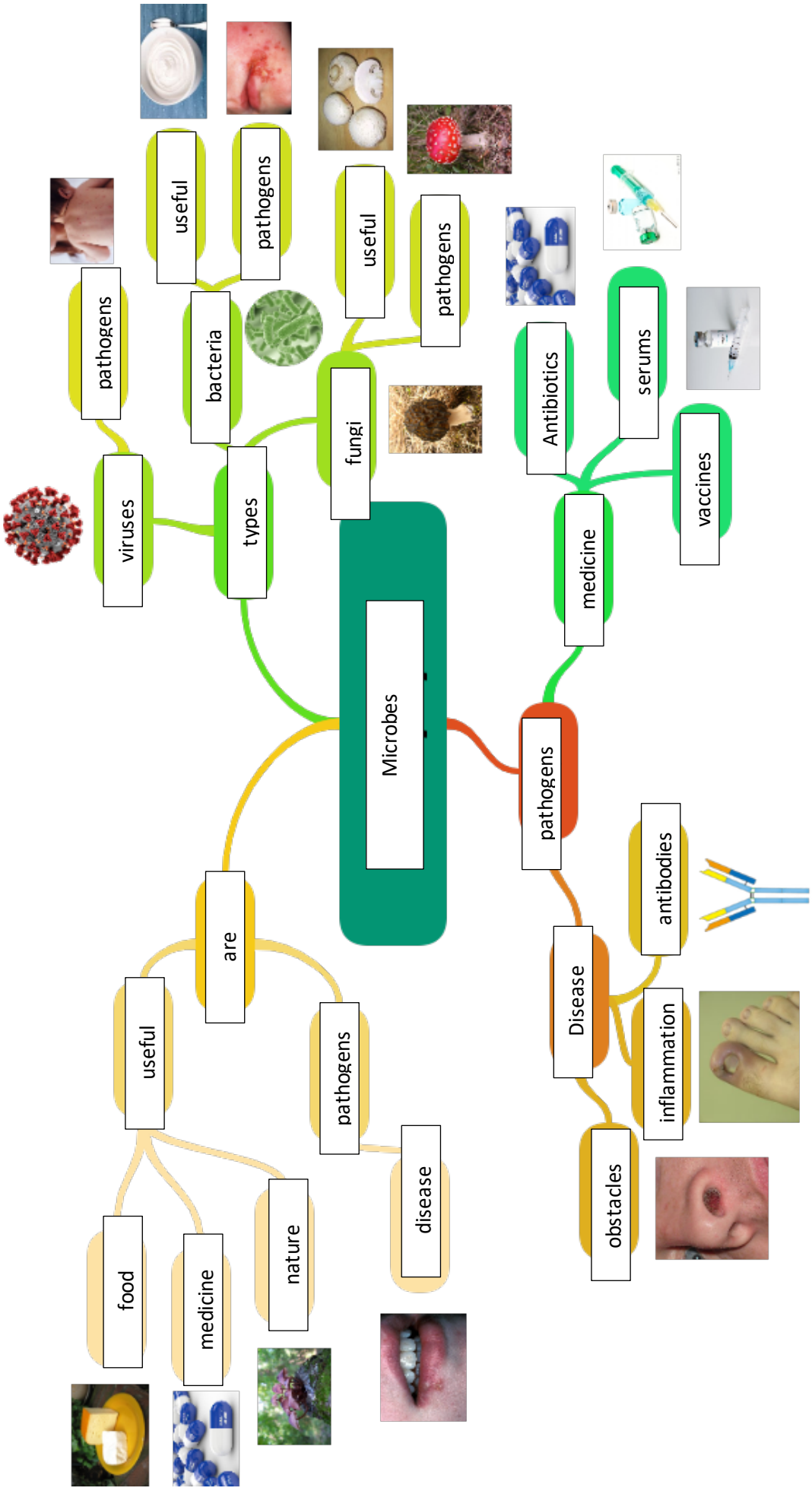
Activity 23 (Watch a video): How to protect ourselves from the coronavirus

You can watch a video entitled "how to protect ourselves from the coronavirus" at the following URL https://www.who.int/westernpacific/news/multimedia/video/covid19 .

There are additional videos here https://www.youtube.com/watch?v=zAOJr15sD3g and here https://www.facebook.com/watch/?v=588495735207121 about protecting ourselves from the coronavirus.

In this unit we learnt that:

- Some of our diseases are caused by microbes.
- Not all microbes cause diseases. The ones that do are called pathogens.
- Viruses, bacteria, and fungi are types of microbes.
- Microbes make us sick because they use our cells. They also produce poison.
- Our body has many ways to deal with microbes. It puts up obstacles in gateways, it deploys microbe-eating cells, and it produces anti-bodies.
- We can use vaccinations and serums to prevent disease.
- If a bacterium makes us sick, we take antibiotics (a type of medicine).
- Not all microbes are pathogens. Some bacteria and fungi are very useful for our body. Others can be used to make drugs, food, etc.

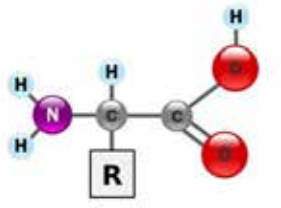

Microbes
are
useful
food
medicine
nature
pathogens
disease
types
viruses
pathogens
bacteria
useful
pathogens
fungi
useful
pathogens
medicine
Antibiotics
serums
vaccines
pathogens
Disease
antibodies
inflammation
obstacles

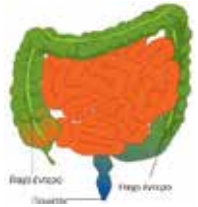
BIOLOGY

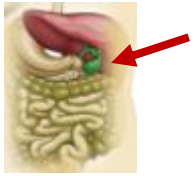
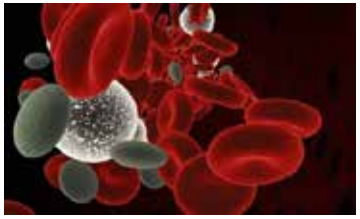
Glossary

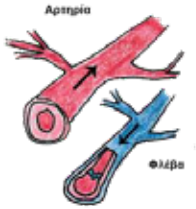
The cover picture is from:
https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_General_Biology_%28Boundless%29/1%3A_The_Study_of_Life/1.1%3A_The_Science_of_Biology/1.1A%3A_Introduction_to_the_Study_of_Biology

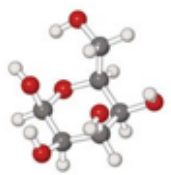
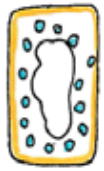
Glossary[1]

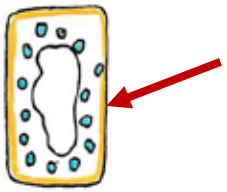
Επιστημονική λέξη / .... / scientific word			What does it mean	*What does it mean;* (in your language)	Παράδειγμα / .... / example
In English	In your language	In Greek			
Alveoli		**Κυψελίδες**	These are cells in the lings. They look like bubbles full of air. This is where blood leaves CO_2 and takes oxygen.		
Amino acids		**Αμινοξέα**	Compounds with carbon (C), hydrogen (H), oxygen (O) and nitrogen (N). When many of them get together, they create proteins. There are 20 types of amino acids in living beings.		

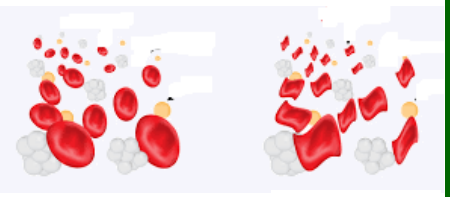
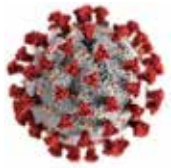
Animals		**Ζώα**	Living beings; they are multicellular, can move, and eat other living beings.		
Antibiotics		**Αντιβιοτικά**	Medicine that kills bacteria (but not viruses)		
Antibodies		**Αντισώματα**	Substances that our body produces to fight microbes.		
Anus		**Πρωκτός**	This is the end of the large intestine. It is where feces exits the body from. (*picture on the right -> παχύ έντερο: large intestine*)		
Arteries		**Αρτηρίες**	Vessels (tubes) in our body. The blood in these has a lot of oxygen.		

Bacteria		**Βακτήρια**	A large number of small, single-celled beings. They look like sticks. They live everywhere.		
Beneficial		**Ωφέλιμο (ωφέλιμα)**	Something that is good for us. E.g., there are microbes which produce medicine, or food (cheese, yoghurt). These microbes are beneficial.		
Bile		**Χολή**	A green fluid that is produced in the liver. It helps to break down fat.		
Blood		**Αίμα**	A liquid tissue in our body. It helps all of the functions of our body.		
Blood cells		**Αιμοσφαίρια**	Cells inside the blood. There are white and red blood cells.		

Blood donation		**Αιμοδοσία**	Giving blood to someone who needs it		
Blood transfusion		**Μετάγγιση αίματος**	Taking blood for people who need it. We can take all of the blood or just some substances. (*picture on the right -> Σε φλέβα: In vein, Μονάδα αίματος: Blood unit, Νοσοκόμος: Nurse*)		
Blood vessels		**Αιμοφόρα αγγεία**	These are tubes in our body that carry blood: arteries, veins, and capillaries. (*picture on the right -> Αρτηρία: Artery, Φλέβα: Vein*)		
Brain		**Εγκέφαλος**	An organ that regulates all the functions of our body. It helps us understand what is happening outside, in the environment.		

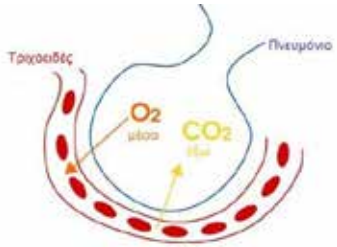
Breastfeeding		**Θηλασμός**	When a baby feeds on its mother's milk.		
Capillaries		**Τριχοειδή αγγεία**	Very fine blood vessels. They are thinner than a hair. They connect arteries and vains. (*picture on the right -> Φλέβα: Vein, Τριχοειδή αγγεία: Capillaries, Αρτηρία: Artery*)		
Carbohydrates		**Υδατάνθρακες**	These are made up of C, H, O. They are rich in energy and are the staple of our diet.		 
Carbon dioxide		**Διοξείδιο του άνθρακα**	A gas in the atmosphere. It is produced when something burns.		CO_2 
Cell		**Κύτταρο**	The smallest part of a living being.		

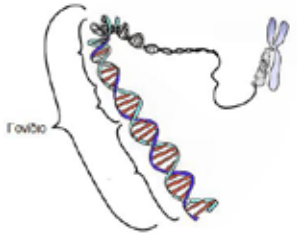
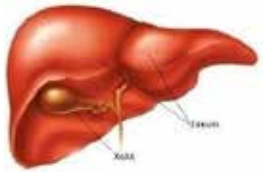
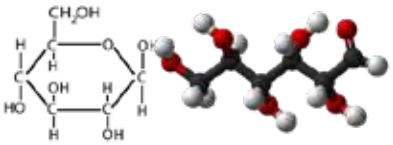
Cell membrane		**Πλασματική μεμβράνη**	A thin layer that surrounds a cell.		
Cell wall		**Κυτταρικό τοίχωμα**	A hard layer on the outside of plant cells.		
Chloroplast		**Χλωροπλάστης**	A part (organelle) of a plant cell. This is where plants produce their food (glucose) using sunlight.		
Cholera		**Χολέρα**	A very serious disease. It is produced by a microbe that we find in dirty water.		
Chromosome		**Χρωμόσωμα**	A piece of DNA. It contains many genes.		

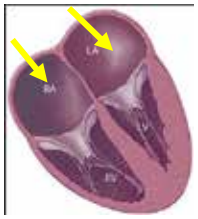
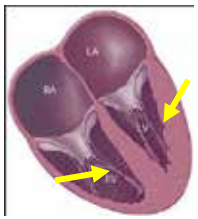
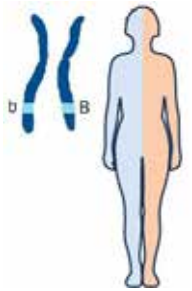
Cooley Disease		**Μεσογειακή Αναιμία**	A disease that we take from our parents. The blood cannot do its job properly. The red cells do not work properly.		
Coronavirus		**Κορονοϊός**	This is a type of virus. The dangerous coronavirus that was recently found causes a disease like pneumonia.		
Cough		**Βήχας**	A strong, sudden exhalation. It is often repeated. It happens in many diseases (e.g., cold, flu, etc.)		
Cytoplasm		**Κυτταρόπλασμα**	A material between the cell membrane and the nucleus.		
Dead matter		**Νεκρή ύλη**	What is left when a living being dies.		

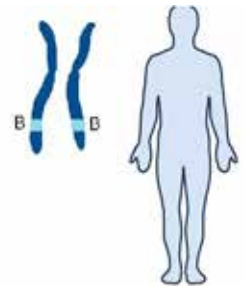
Digestive system		**Πεπτικό σύστημα**	This takes food, makes it useful for our body, and expels waste.		
DNA		**DNA**	A large molecule that regulates the operations of a cell. The reproduction of the cell is based on this.		
Dominant gene		**Επικρατές γονίδιο**	The strongest gene. It regulates a trait that will be expressed in a child, even if only one of its parents has it.		 Dark hair > blond hair
Drugs		**Φάρμακα**	Substances that help us get better when we are ill.		
Egg cell		**Ωάριο**	The female reproductive cell. When it merges with a sperm cell, it produces a fetus.		

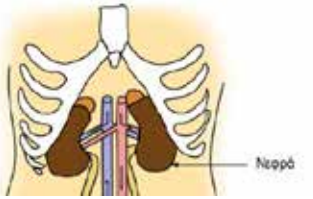
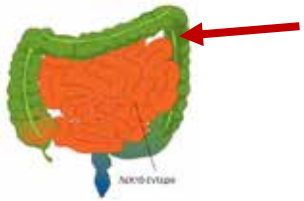
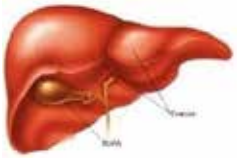
Esophagus		**Οισοφάγος**	A tube that connects to mouth to the stomach.		
Expiration **Breathing out**		**Εκπνοή**	Part of breathing. Air exits the lungs through the nose or mouth.		
Feces		**Κόπρανα**	What is left of food. It exits the body through the anus.		
Fetus		**Έμβρυο**	This is created when a sperm cell and an egg cell merge. It grows inside its mother's body for nine months.		
Fever		**Πυρετός**	When our body temperature raises over the normal value.		

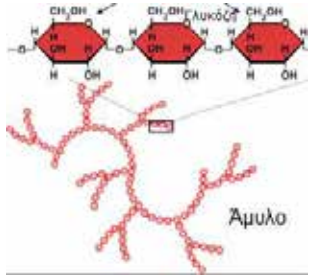
Fiber		**Φυτικές ίνες**	These are parts of plants that we can eat, but our body cannot break them down. We can find them in fruit and vegetables.		 
Fungus		**Μύκητας**	A type of living being. Some are single-celled and some are multicellular. They feed of rotting material.		 
Gametes		**Αναπαραγωγικά κύτταρα**	The cells that create a fetus when they fuse. In humans, these are sperm cells and egg cells.		
Gas exchange		**Ανταλλαγή αερίων**	To take in a gas and expel another one. This is what happens in breathing.		
Gastric fluid		**Γαστρικό υγρό**	A liquid that is made in the stomach. It kills microbes and breaks down food.		

Gastrointestinal tract		**Πεπτικός σωλήνας**	The digestive system		
Gene		**Γονίδιο**	A piece of DNA. It is the "recipe" for producing a trait.		
Genetic material		**Γενετικό υλικό**	A substance that can be found in the nucleus of a cell. It is made up of DNA.		 
Glands		**Αδένες**	Organs that produce substances that our body needs.		
Glucose		**Γλυκόζη**	A substance that is a source of energy for living beings. It is a carbohydrate. Plants produce it on their own.		

Harmful		**Βλαβερό (βλαβερά)**	Something that is not good for us; it can harm our health.		
Heart		**Καρδιά**	A pump that helps the circulation of blood in our body.		
Heart atrium		**Κόλπος** (Καρδιά)	This is a part of the heart. It sucks blood into the heart. There are two atria in the heart.		
Heart ventricle		**Κοιλία** (Καρδιά)	This is a part of the heart. It sends blood to various body parts. There are two ventricles in the heart.		
Heterozygote		**Ετερόζυγο άτομο**	A person for whom both genes ("recipes") for a certain trait are the different.		

Homozygote		**Ομόζυγο άτομο**	A person for whom both genes ("recipes") for a certain trait are the same.		
Illness, sickness		**Ασθένεια**	Disease. Our body does not function properly.		
Immunity		**Ανοσία**	The ability of our body to fight of microbes and diseases.		
Infect (infection)		**Μολύνω (μόλυνση)**	To transmit microbes to another person		
Inflammation		**Φλεγμονή**	When there's a lot of blood and high temperature in one part of our body. This happens to help our body fight microbes.		

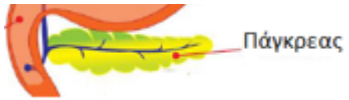
Influenza virus		**Ιός της γρίπης**	This microbe causes the flu. There are many different flu viruses. This is why we get sick from different kinds of flu.		
Inhalation **Breathing in**		**Εισπνοή**	Part of breathing. Air enters the lungs through the nose or mouth.		
Kidney		**Νεφρό**	An organ that cleans the blood from waste. We have two of these.		
Large intestine		**Παχύ έντερο**	A thick tube after the small intestine. It takes water and vitamins out of food.		
Lipids		**Λίπη**	Compounds with C,H,O. They are energy reserves for our body.		
Liver		**Συκώτι**	A large gland that helps to break down food. It produces bile.		

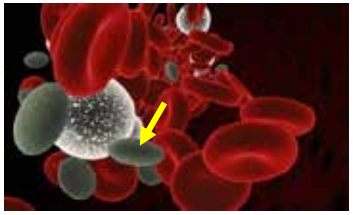
			(*picture on the right -> Χολή: Bile, Συκώτι: Liver*)		
Living beings		**Έμβια**	They have life. Living beings (e.g., plats, animals, microbes)		
Living beings		**Ζωντανοί οργανισμοί**	They have life (e.g., plants, animals, microbes)		
Lugs		**Πνευμόνια**	Body organs. This is where the body expels CO_2 and takes inO_2.		
Macromolecules		**Μακρομόρια**	These are very large molecules that are made of much smaller ones. E.g., starch (which we find in wheat, rice etc.) is made up of many glucose cells, joined to each other. (*picture on the right -> Άμυλο: Starch*)		

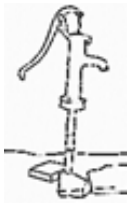
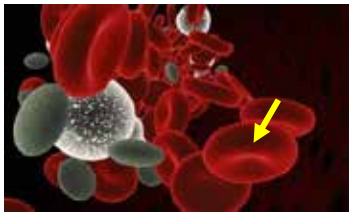
Malaria		**Ελονοσία**	This is a serious disease. It is produced by a microbe that mosquitos carry and bring to us. It destroys red blood cells, and gives us a high fever, shivers etc.		
Microbes		**Μικρόβια**	Living beings that we cannot see with a naked eye. They are usually single-celled.		
Microbes		**Μικροοργανισμοί**	Living beings that we cannot see with a naked eye. They are usually single-celled.		
Microscope		**Μικροσκόπιο**	An instrument for looking at cells.		
Mitochondrion		**Μιτοχόνδριο**	A part of a cell (organelle) where energy is produced		

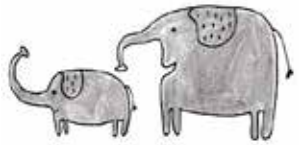
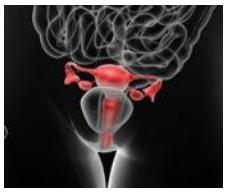
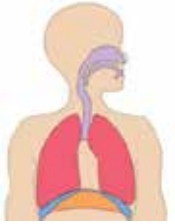
Model(s)		**Μοντέλο (Μοντέλα)**	Pictures, shapes, and structures that we use to understand the world around us.		
Multicellular organism		**Πολυκύτταρος οργανισμοί**	A living organism that is made up of many cells		
Muscle cells		**Μυϊκό κύτταρα**	Cells that build up our body flesh.		
Muscles		**Μυς**	Flesh. Organs that help our movement.		
Naked eye		**Γυμνό μάτι**	An eye that can see something without help, such as glasses or something that magnifies things.		
Neuron		**Νευρικό κύτταρο**	Cells that make up our nerves and brain.		

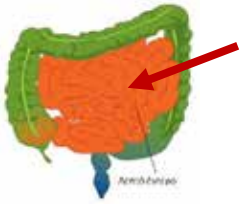
Nonliving beings		**Άβια**	Objects that have no life.		
Nucleus		**Πυρήνας**	This is the largest organelle in a cell. It is round and contains genetic material (DNA).		
Nutrients		**Θρεπτικές ουσίες**	Substances from which we get energy and materials. Carbohydrates, proteins, and fat are nutrients.		
Oral cavity		**Στοματική κοιλότητα**	Our mouth		
Organ		**Όργανο**	This is a group of different tissues that do the same job.		
Organ system		**Σύστημα οργάνων**	Organs that work together to do the same job.		

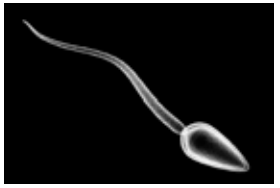
Organelle		**Οργανίδιο**	Parts of a cell that do important work for it. They are surrounded by membranes.		
Oxygen		**Οξυγόνο**	A gas in the atmosphere. Most living beings need it.		 O_2
Pancreas		**Πάγκρεας**	A gland that helps to break down food.		
Pathogens		**Παθογόνα μικρόβια**	Disease-producing microbes.		
Photosynthesis		**Φωτοσύνθεση**	This is how plants produce their food, using sunlight, water and carbon dioxide. (*picture on the right -> Sunlight + Carbon dioxide + Water → Photosynthesis Glycose + Oxygen*)		

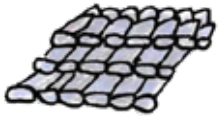
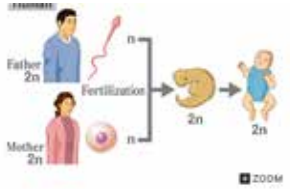
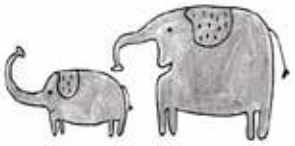
Plants		**Φυτά**	Living multicell organisms. They cannot move, and they produce their own food.		
Plasma		**Πλάσμα**	The liquid part of blood.		
Platelets		**Αιμοπετάλια**	These are small particles in the blood. They help to close wounds and stop bleeding.		
Pneumonia		**νευμονία**	An illness of the lungs. It is produced by germs.		
Pregnancy		**Εγκυμοσύνη**	The time when a fetus grows inside its mother's body.		

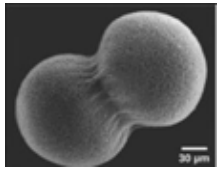
Proteins		**Πρωτεΐνες**	These are large molecules that help our body function. They build up the body.		
Pulmonary circulation		**Μικρή κυκλοφορία**	The flow of blood from the lungs to the heart and back. Blood leaves CO_2 in the lungs and takes O_2.		
Pump		**Αντλία**	A pump is a machine. We use it to move liquids and gases.		
Recessive gene		**Υπολειπόμενο γονίδιο**	The weaker gene for a trait. It regulates a trait only when both genes (recipes) for the trait are the same.		 Dark hair > Blond air
Red blood cells		**Ερυθρά αιμοσφαίρια**	Blood cells that transport blood to tissues. They take CO_2, from there, and carry it to the lungs where it is expelled.		

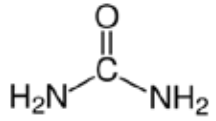
Reproduction		**Αναπαραγωγή**	What happens when I make something similar to me.		
Reproductive organs		**Αναπαραγωγικά όργανα**	Body organs that help reproduction.		
Respiration		**Αναπνοή**	What our body does when it takes in and expels gases.		
Respiratory system		**Αναπνευστικό σύστημα**	A system of the human body. This is how the body takes in oxygen and expels carbon dioxide.		
Salivary glands		**Σιελογόνοι αδένες**	These produce saliva in our mouth.		

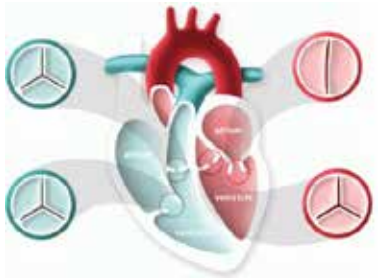
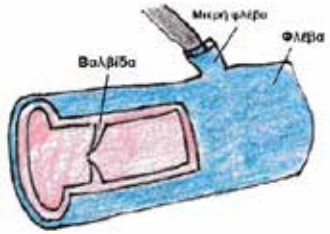
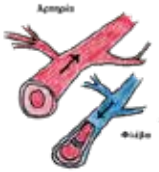
Serum		**Οροί**	This is a liquid that contains ready antibodies for a virus.		
Sex		**Φύλο**	Man or woman. Boy or girl.		
Sexual intercourse		**Σεξουαλική επαφή**	This is when the male reproductive organs enter the female ones.		
Single-celled organism		**Μονοκύτταρος οργανισμός**	A living being that consists of only one cell.		
Small Intestine		**Λεπτό έντερο**	A thin tube after the stomach. This is where nutrients are absorbed.		

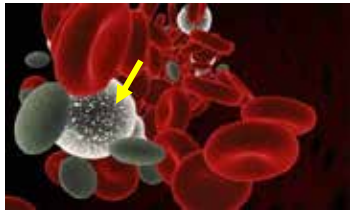
Sneezing		**Φτάρνισμα**	This is how our body tries to clean the nose from some foreign parts that have entered it (e.g., dust, microbes). To do this, we shoot out gasses from the lungs very strongly. They sweep out waterΑυτός παρασέρνει water, mucus, microbes, etc.		
Sperm cell		**Σπερματοζωάριο**	The male reproductive cell. It produces a fetus, when it merges with an egg cell.		
Stethoscope		**Στηθοσκόπιο**	A tool for listening to the sounds of our body.		
Stomach		**Στομάχι**	An organ, that looks like a sack. This is where food is broken down.		

Systemic circulation		**Μεγάλη κυκλοφορία**	The flow of blood to all the organs and back to the heart. It brings oxygen and nutrients to the body cells and takes back waste and CO_2.		
Tissue		**Ιστός**	A group of cells that look a like and do the same job.		
To feed		**Τρέφομαι**	To take in food.		
To reproduce		**Αναπαράγομαι**	To make something similar to me.		
To reproduce *(in Biology)*		**Πολλαπλασιάζομαι**	To make new organisms similar to me.		

To respire		**Αναπνέω**	Body movements that take in air.		
To respond		**Αντιδρώ**	To perceive a signal around me and to something about it.		
To split into		**Διαιρούμαι**	Break down in pieces. E.g., a cell can split in two.		
Toxin		**Τοξίνη**	A dangerous substabce (poison). It harms us. It is produced by cells or living organisms.		 
Toxin, poison		**Δηλητήριο**	A substance that can harm us so much that we might die.		
Trait		**Χαρακτηριστικό**	A property we take from our parents.		 

Tube		**Σωλήνας (Σωλήνες)**	A long round object that is empty on the inside.		
Urea		**Ουρία**	You can find this in urine. It is produced when the body burns substances with Nitrogen.		
Urine		**Ούρα**	This is a liquid produced in the kidneys. It contains waste.		
Vaccines		**Εμβόλια**	When we take a vaccine, we place dead microbes or parts of them in our body. This produced antibodies. Then, when a microbe enters our body, our body can fight it off very easily.		

Valve		**Βαλβίδα**	You can find this in the blood or veins. It helps the blood flow in one direction. It closes and does not let the blood flow back.		
Veins		**Φλέβες**	Vessels that bring blood back to the heart. (*picture on the right -> Βαλβίδα: Valve, Μικρή φλέβα: Small vein, Φλέβα: Vein*)		
Vessels		**Αγγεία**	These are tubes in our body where blood glows. (*picture on the right -> Αρτηρία: Artery, Φλέβα: Vein*)		
Villi		**Λάχνες**	These are bumpy structures in the intestine. They absorb nutrients.		

Virus		**Ιός**	Very small microbes. They do not live outside the cells of other beings. They cause disease.		
Vitamins		**Βιταμίνες**	Very useful substances for our body.		 
White blood cells		**Λευκά αιμοσφαίρια**	These are blood cells that kill microbes or produce antibodies that kill microbes.		
Wound		**Τραύμα**	A cut or damage to our skin. It usually lets blood come out.		

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