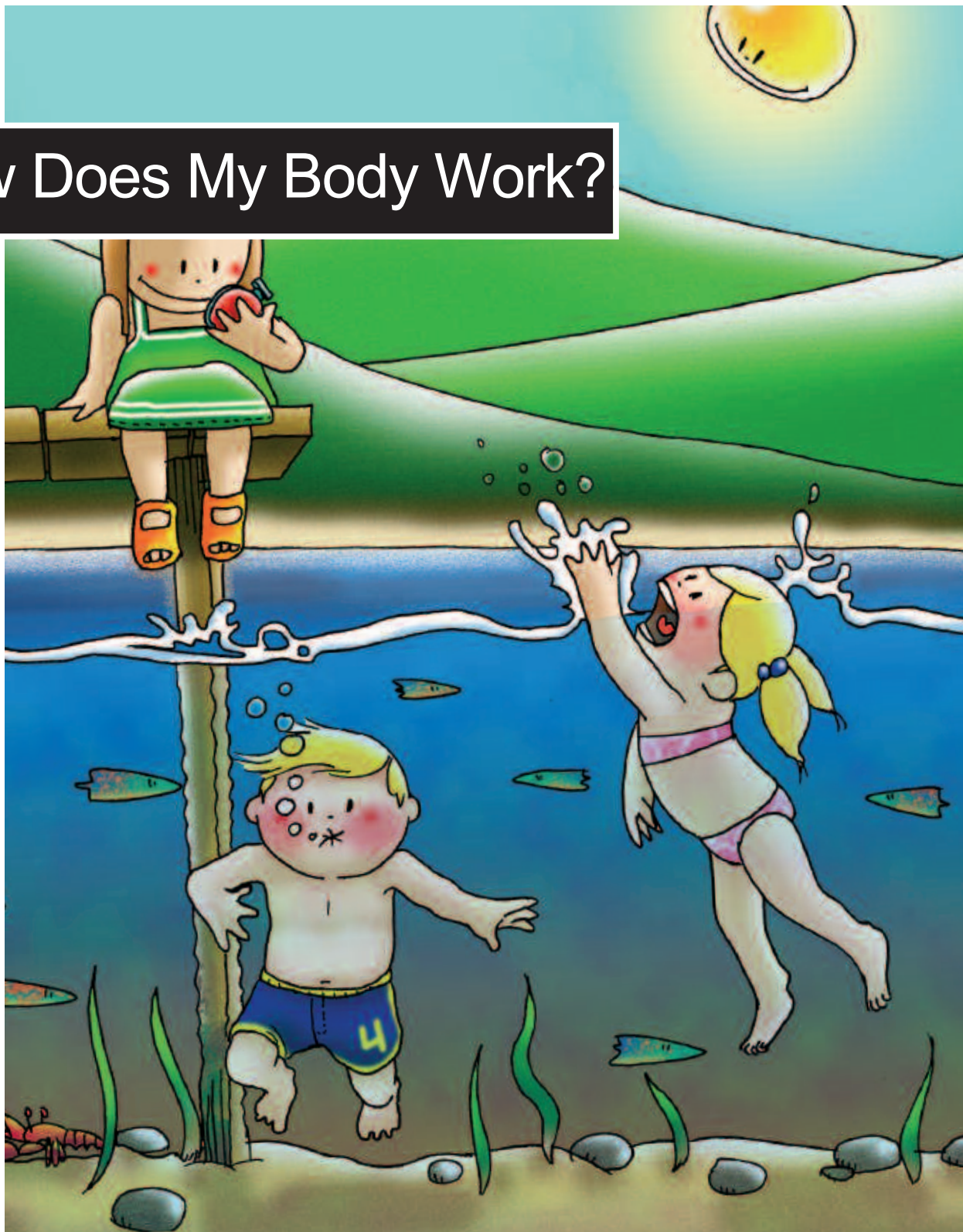


How Does My Body Work?

FUNDACIÓN
LUCÍA

Miquel Àngel
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How does my body work

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FUNDACIÓN LUCÍA

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Hello everybody! As you know, we are on a summer camp and we are going to have an activity. This is Núria. She is a paediatrician and is going to explain to us how the body works.

Hello, I'm Núria. I'm sure that you have some questions about the way the body works. Like, how does it move?. How are children made?

Well, the answer to these questions is: cells!. Yes, that's right: different cells that live and work in our bodies. Cells are the smallest living expression of life. There are some kinds of cells that make unions between themselves to build different tissues, while there are also types of cells that 'travel' continuously through the blood to repair and feed our organs.

There are many examples:

[Our skin](#), which protects us from outside attacks.

[Our brain and nervous system](#), which is like our central computer and controls everything we do.

[Our bones and muscles](#), which give us mobility and strength.

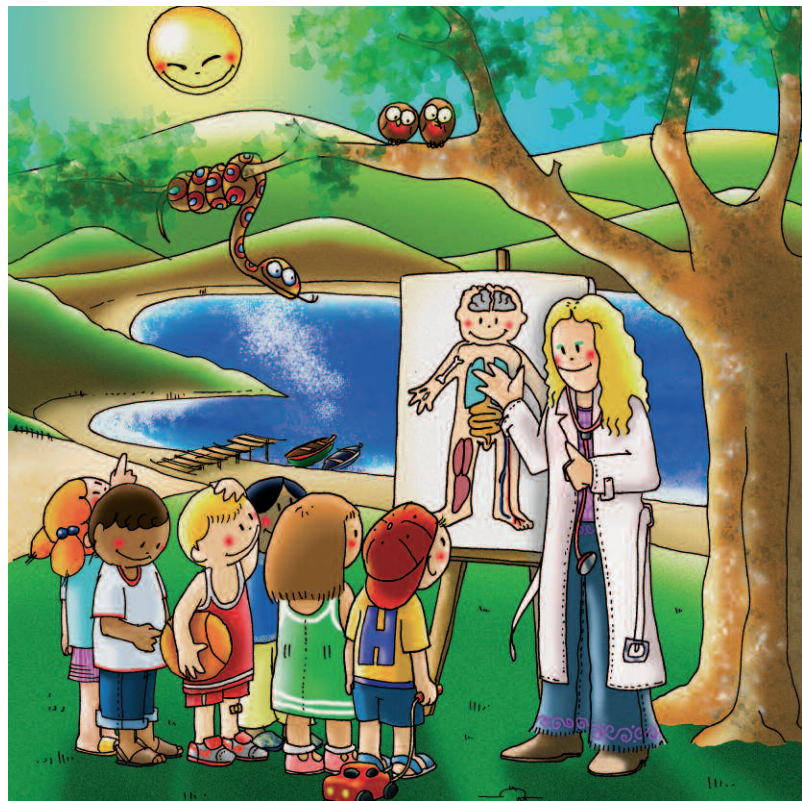
[Our digestive and urinary systems](#), which are in charge of breaking down food and water, absorbing their nutritional value and then helping us get rid of what's left over.

[Our respiratory system](#) (the nose, mouth and lungs), which allows our breath to make energy.

[Our circulatory system](#) (the heart and blood), which carries energy, oxygen and all we need to grow to the body's cells.

[Our immunological system](#), which defends us from infections.

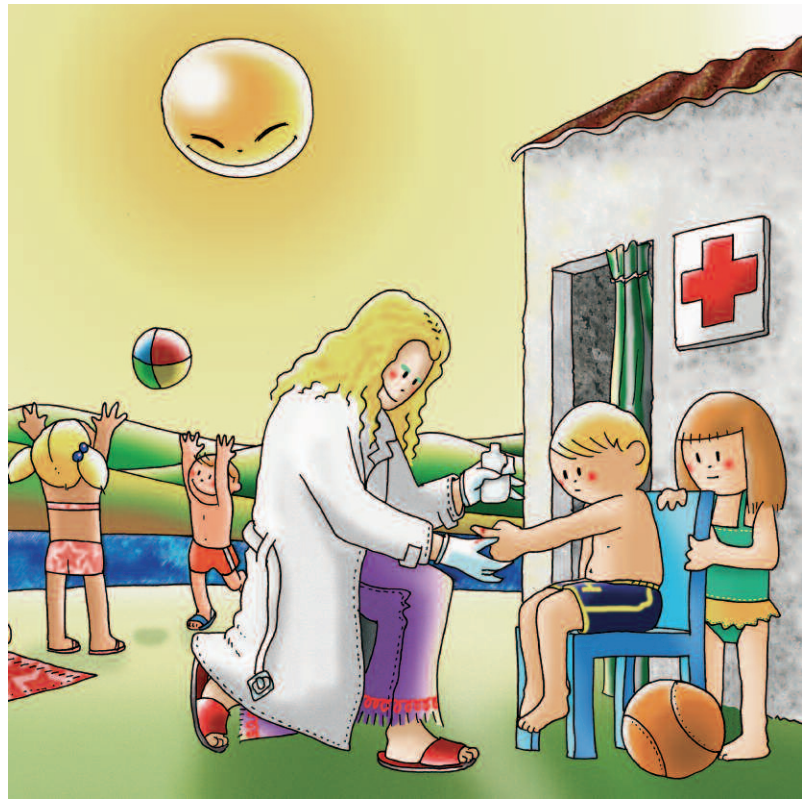
And [our reproductive system](#), which will help us have children, just like your parents had you.



Take a look at your friends around you. The first thing you see is their skin. The skin is constantly renewing itself and is the most external organ of our body. It is like a barrier against outside elements, but also helps us maintain our body temperature and has a very important job of absorbing the light of the sun, indispensable for the processes by which vitamin D regenerates the calcium that strengthens our bones and teeth. Thanks to our skin, we have the sense of touch, and we may recognise textures, feel pain, feel cold and feel heat. And because of this sense, we also enjoy kisses and hugs that help us grow.

To keep our skin healthy, it is very important that we have good hygiene. We need to wash and dry our skin well, protecting it with sun screen or hydrating creams. If we get hurt, the first organ that suffers is the skin, and this can make it more possible for us to come into contact with infectious elements, which can cause infections or diseases.

This is why it is very important that if we cut it or damage the skin we should clean it with soap and water, put an antiseptic on it and cover it with a band-aid. Don't forget that if you help someone take care of a bleeding injury or if someone helps you, it is important to use gloves, since there are some diseases that can be transmitted through the blood.



All the big companies have central computers that control them. Do you know that our body also has one? It is called our nervous system. The nerves, brain and spinal fluid are the main parts of this system, which control all the functions and movements of our bodies; both the active and involuntary ones. Thanks to these organs we can yawn, speak and walk. They are also in control of the movements we don't choose to do, such as when we swallow food or drink, or when we blink because of our reflexes.

Our nerves inform the brain using the sensory endings on the skin, as well as our sight, hearing and smell: they detect changes in temperature or other information coming from the outside world, like when we touch a cooking pot that is hot. After processing the information, our brain sends an electrical command through our neurons. These neurons tell our nerves to send precise instructions to our muscles through the spinal cord. Then our body reacts correctly, making us rapidly withdraw our hand from the hot cooking pot.



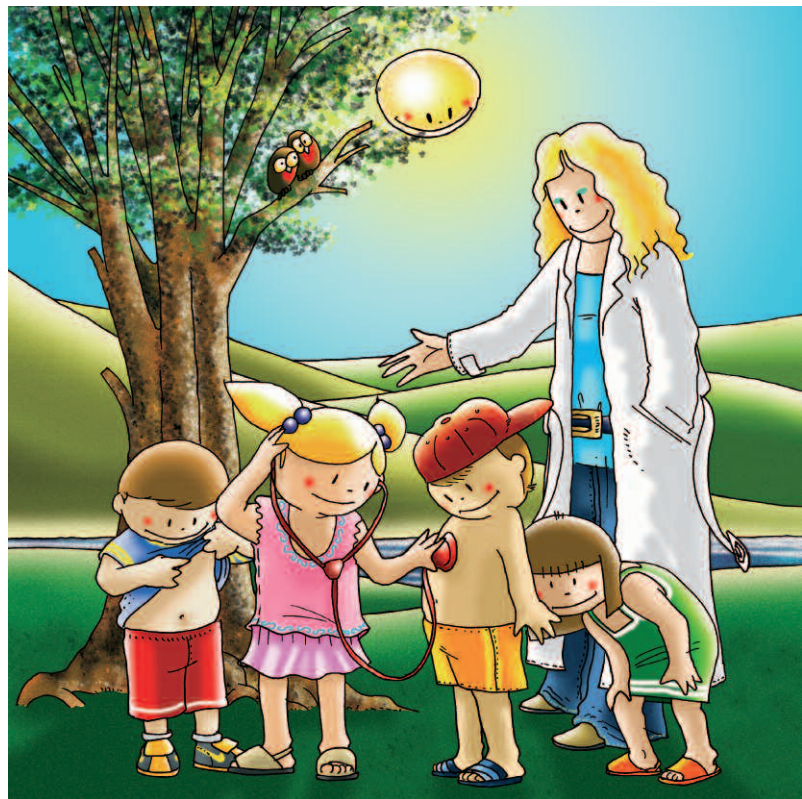
Do you remember when you were younger and used to fall down a lot? And isn't it true that you never broke a bone after all those falls? This is because our bones, along with our teeth, are the hardest parts of our body, since they contain 98% of all the calcium we have. For them to regenerate themselves, we only have to give to them calcium through food and do physical exercise. There are 206 bones in our body, such as the spinal column which supports us and protects our spinal cord, and the cranium which protects our brain.

Inside the bones there is bone marrow, a spongy substance where blood cells are made. On the outside of the bones we find the tendons and the muscles, which are responsible for our movement (voluntary and involuntary) and strength. The muscles are capable of transforming the nutrients they receive from the blood into muscular energy.



Have you ever noticed that in order to know if someone is alive, the doctor checks to see if his or her heart is working? This means that the heart is a very important organ. It is a fundamental organ for our life; it beats about 5,400 times per hour, without resting, and pumps our blood through our arteries and veins so that all our body's tissues receive the oxygen and energy they need.

All of us have hurt ourselves sometime. Maybe we have cut ourselves and seen the blood come out. But have you ever asked yourself exactly what blood is? What is it made of? Blood is formed by a liquid called plasma and three types of blood cells: red blood cells (which transport oxygen), white blood cells (which are part of the immune system and defend us against infections) and platelets (which are responsible for stopping bleeding). The job of the blood is to transport nutrients and defence cells to all the cells of the body. This is possible thanks to the circulatory system and the fact that the heart pumps blood to every point in the body. The arteries take in oxygenated blood coming from the lungs, while the veins return the blood to the lungs to receive more oxygen.



Now try to stay a while without breathing, holding the air in. You will see that you cannot resist very much, since you need to breathe in order to live. Our lungs are the main organs of our respiratory system. They absorb oxygen (or O_2) by inhaling and eliminate carbon dioxide (CO_2) by exhaling. Air enters through our nose or mouth and goes through the larynx, the trachea and the bronchus until it arrives in our lungs.

When we catch a cold, our respiratory tract gets inflamed, fills with mucous and does not allow us to breathe well. It is important to drink water and other liquids to expel the mucosity and avoid complications that colds can produce (such as an ear infection or pneumonia).



One thing we do every day to live is eat and drink. The digestive system takes necessary food from outside to repair the losses to the organism, transforms them into substances easy to assimilate and absorb and ultimately expels the useless remains. It is a tube of approximately 9 metres long, with an entry orifice (the mouth) and an exit one (the anus). The mouth is connected to the oesophagus, stomach, small intestine and large intestine. There are other organs in our bodies that work together with this alimentary track. They are the pancreas, liver and biliary tract.

The mouth is our entry door. Since it is in permanent contact with the outside, it is exposed to many types of bacteria and viruses. It is necessary to carefully brush your teeth every day (at least in the morning and in the night, for two minutes minimum) to avoid the cavities and infections that can destroy the gums. I suppose you all do it every day after eating!



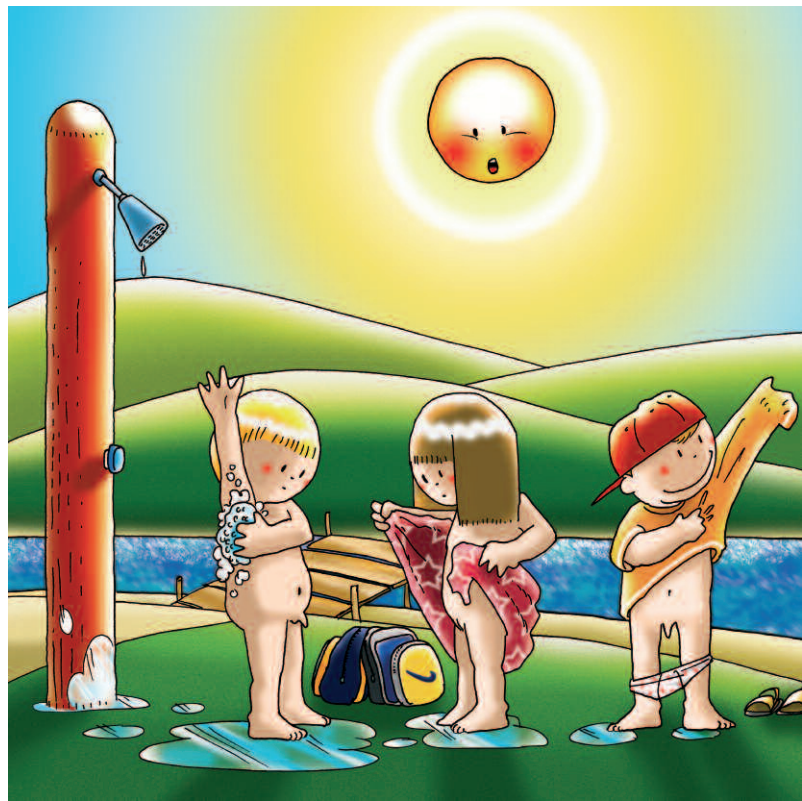
We all have people with whom we have better relationships than others, but this does not mean we should never speak with them, since we have to relate with everybody. The same thing happens with food. There are foods we like more than others, but we need all of them in order for our body to grow. Food has to be varied to be able to bring us all the vitamins, proteins, fats and sugars that our cells need. It is necessary to eat a bit of everything: fruits, vegetables (which give us fibre that helps our intestines work well), milk and yoghurt or cheese (which give us calcium for our bones), cereals (which supply energy) and meat and fish (which give us protein).

The body of a newborn baby contains more than 80% water, whereas that of a human adult has nearly 65%. The urinary tract eliminates our liquid residue in the form of urine or pee. After contributing the nutrients to every cell, our blood arrives at our kidneys, which act like a recycling plant. Here a million cells act as filters and eliminate the excess liquid. So you will have to get used to drinking a lot of water, even if you are not thirsty. Do you promise that you'll do it?



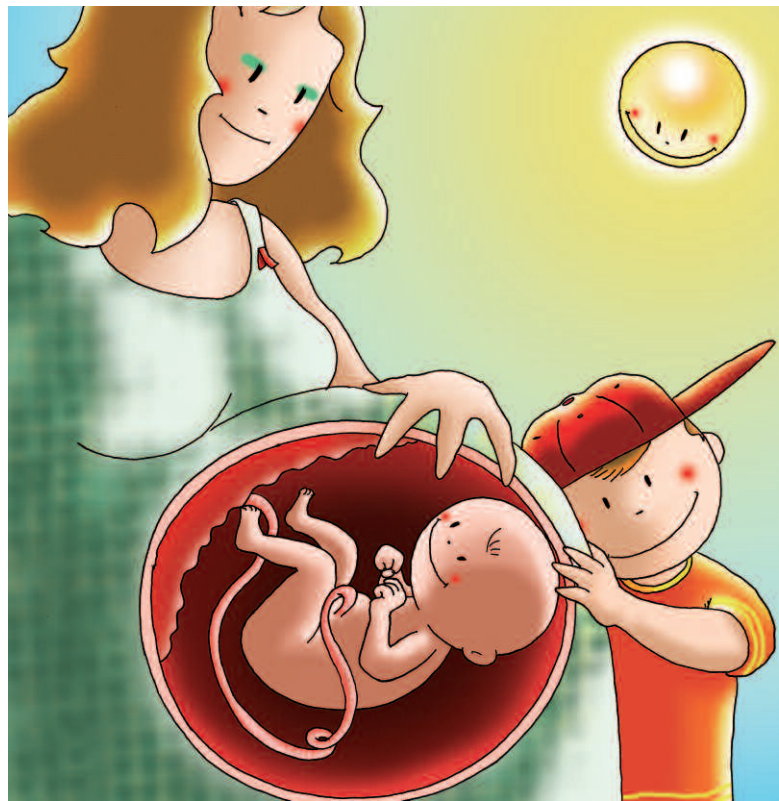
Some of you are boys and others of you are girls. You all know that boys and girls are not the same. Each has a few parts of the body that are different and distinguish you. The genitals are the only absolutely different organs for boys and girls: boys have a penis and girls have a vulva and vagina. These organs are responsible for reproduction and sexuality. Boys' testicles on girls' ovaries are the organs that make a type of special cell, because they only have half the chromosomes that the rest of cells in the body have. Boys make spermatozoid, which comes out of them through semen, and girls make ovules.

Beginning at puberty, girls get one or maybe more mature ovules every month. If the mature ovule meets a spermatozoid, then pregnancy may occur. If the mature ovule doesn't find any spermatozoid, the girl will eliminate the ovule with a little bit of blood. This is what we call menstruation.



I'm sure that all of you, at some moment in your lives, have asked yourselves how human beings are made. Well, the union between an ovule and a spermatozoid is necessary to begin a new life. All of this happens in the women's womb. From the moment in which a man and a woman join in sexual intercourse, it is possible to produce the union of these cells. From that point on begins the wonderful phenomenon of a new human life.

The foetus grows inside the mother for nine months. This new baby is joined to her by the umbilical cord and the placenta, and he or she receives nourishment and oxygen from the blood in the cord. As we have explained in other stories, when a mother is infected with HIV during this time or at the moment of childbirth, the baby can become infected too. This can also happen if the mother feeds it with her milk. Therefore, remember that it is very important to take care of your health, especially if you would like to have a baby in the future.





ACTIVITIES

- 1 Look up the word "cell" in a dictionary and write down the definition.
- 2 What do you need to do to have healthy skin?.
- 3 What are the main organs of the nervous system?.
- 4 Explain what happens in your body if you touch something really hot (before moving your hand away).
- 5 What is the main function of the spine?
- 6 Complete the following text:
_____ is formed by a liquid called _____ and three types of blood cells: _____ (which transport oxygen), _____ (which are part of the immune system and defend us against infections) and _____ (which are responsible for stopping bleeding).
- 7 What is blood for?.
- 8 Which is the most important organ of the respiratory system?.
- 9 Why is it important to brush your teeth.
- 10 Write:

FOODS with FIBER	FOODS with CALCIUM	FOODS that supply ENERGY	FOODS that supply PROTEINS
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- 11 What is the process to conceive a new life?.



NOTE FOR TEACHERS

These stories are written to explain to children between 7 and 13 years of age what is known about the HIV infection and AIDS: its origins; how it is thought that new pathogens appeared affecting humans; the transmission channels of this disease; the measures to prevent it, and also its clinical, social and emotional treatments.

These stories do not correspond to the story of the real Lucia who gave her name to the Foundation.

Here are some additional aspects to take into consideration:

- 1 Since some of the topics covered in these stories are difficult for children to understand, we recommend the participation of an adult to lead the reading and clarify and comment on any questions.
- 2 The stories take place here, in Spain. Thanks to access to treatment, the quality of life for infected persons is generally good, but these circumstances are not the same in the rest of the world. There are many countries where HIV infection means certain death in a short time period.
- 3 The treatments described in these stories are the same ones that were available when they were written. But other, more complicated treatments are being developed, and we hope that these treatments will be able to improve current ones.
- 4 One of the main aims of these stories is to diminish the social stigma surrounding the disease and the people infected with it via an objective approach based on information.
- 5 All stories were written to give answers and work on different questions when children ask to talk about these topics.
This material was developed to support adults when they talk with children about HIV infection. For children in general, the material is a basic tool of information and knowledge towards preventing infection. For affected children, there are stories that can be read before their own diagnosis or a family member's diagnosis is known: the second story, "How Does My Body Work?", the fourth story, "Visiting the Hospital", the fifth story, "Trusting and Sharing" and the sixth story, "A Normal Day". All these stories are very useful for answering questions that children may ask when the topic is discussed with freedom.
- 6 All stories contain a minimum of 5 exercises for afterthought and consolidating knowledge.

1 The Family

We all have a family and a history.

2 How Does My Body Work?

Anatomical and physiological concepts necessary to better understand how to take care of our health and practice good prevention.

3 The History of HIV

This story goes over the origins of this new infection, the discovery of the pathogen that causes it and its transmission channels.

4 Visiting the Hospital

To have a good understanding of our health, it is necessary that we have periodic check-ups.

5 Trusting and Sharing

Due to social rejection, infected people have a right to intimacy in order to avoid discrimination and mistreatment. It is important to mention that if this is taken to the extreme, it can cause loneliness, because we all need each other and need to relate with one another. In life it is always important to evaluate with whom you can and want to share your secrets.

6 A Normal Day

The daily activities of a child who takes medication are different, and like all children they sometimes have more needs than adults do.

7 My Friends at the Hospital

The lives of people who are infected with HIV are affected by many realities, all of which have been taken into consideration here.

8 Medication

This story explains drug mechanisms to hinder the progression of the disease, as well as the need to use different types of drugs.

9 The Future

A future with hope is life's bond. This story explains how infected children make their plans for the future, as well as the most common questions they ask.

10 Children's Rights

This section is on the vulnerability of children and young people, and their rights.

Primera edición: Diciembre 2005
Segunda edición: Noviembre 2006

Diseño de la colección:
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Coordinación del proyecto:
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por las ilustraciones

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por la edición en lengua catalana

ISBN 10: 84-246-2064-X; ISBN 13: 978-84-246-6
Depósito Legal: B. 46385-2006

Impreso en la UE

Impreso en Índice, SL
Fluvià, 81
08019 Barcelona

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