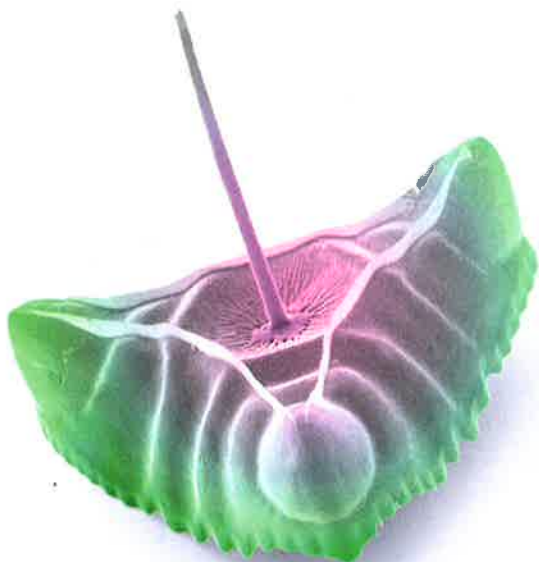


Cells

Your body is made up of cells. Whenever you look at your hand or at a drop of blood, you're looking at millions of cells packed tightly together. But on their own, most cells are too tiny to see. In all, you have 50 million million to 100 million million cells in your body.



This is a diatom, a tiny single-celled plant, shown 300 times bigger than in real life. Many living things have only one cell.

INTERNET LINK

For a link to a website where you can find out a lot more about different types of cells, go to www.usborne.com/quicklinks



What is a cell?

A cell is a tiny living unit with its own protective "skin". Inside, a cell has several parts, called organelles, which help it to work. The cells that make up your body are working all the time to keep you alive. They make body chemicals, carry messages, and help you to think, move, eat and breathe.

This is a microscope photo of human fat. You can see how it is made up of clusters of round fat cells.

Making proteins

Your cells make chemicals called proteins, which help to make new cells or are used to do different jobs around your body. Proteins are made up of simpler chemicals called amino acids. By combining amino acids in different ways, your cells can make thousands of different kinds of proteins.

Kinds of cells

The human body has over 200 kinds of cells, including muscle cells, blood cells, nerve cells, liver cells, fat cells and skin cells. Different kinds of cells do different jobs. Here are some of them:



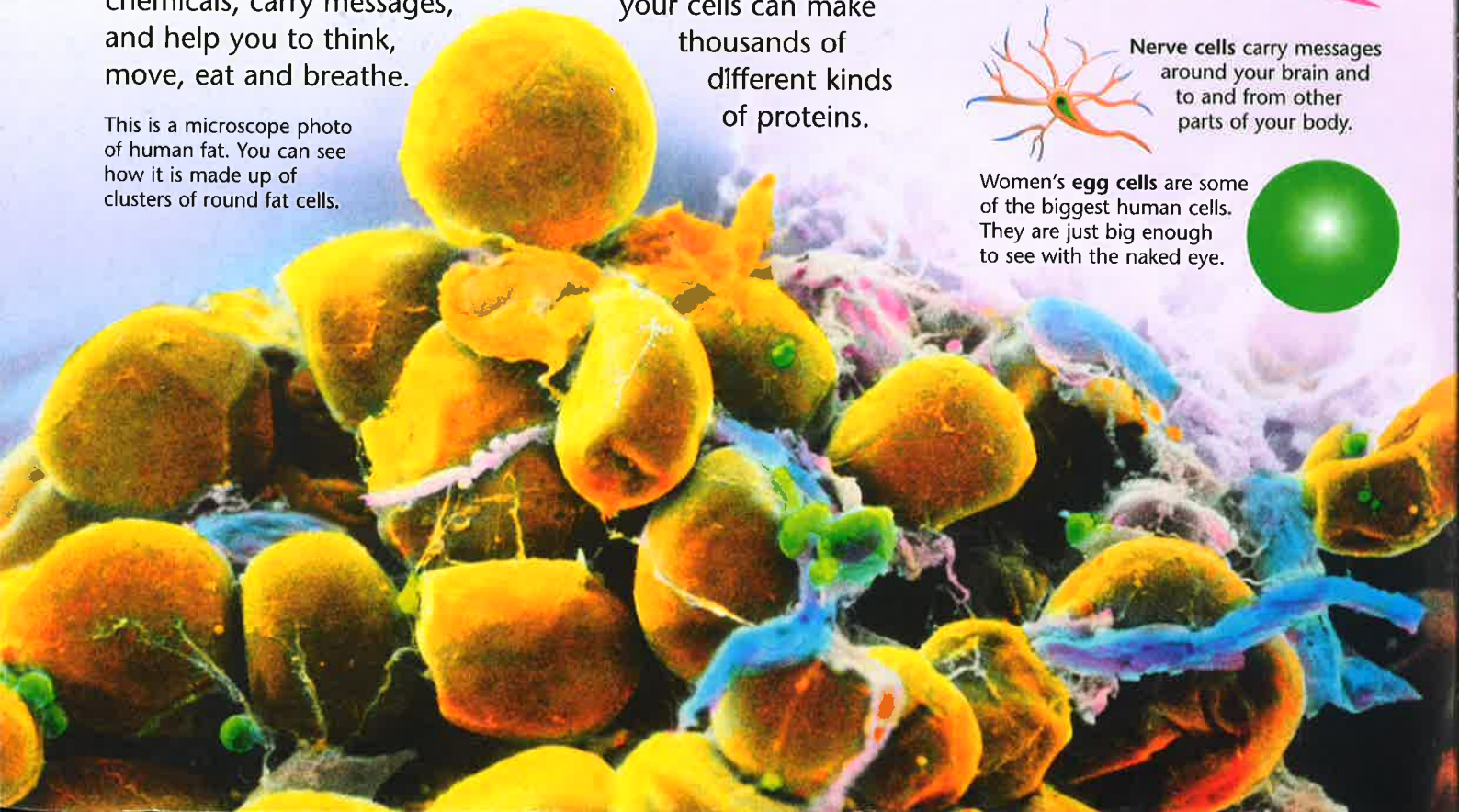
Red blood cells are shaped like flattened balls. They carry oxygen around your body.

Muscle cells are long and thin. They can shorten themselves to make muscles work.



Nerve cells carry messages around your brain and to and from other parts of your body.

Women's **egg cells** are some of the biggest human cells. They are just big enough to see with the naked eye.



Inside a cell

Although body cells can look very different from each other, most of them have the same parts. The skin around a cell is called the cell membrane. Each cell also has a control unit called a nucleus. The cell's other parts, or organelles, float around in a watery jelly called cytoplasm.

This picture shows a typical cell, cut open to reveal its main parts.

Ribosomes are organelles that make new proteins.

This is the **endoplasmic reticulum**. It transports proteins made by the ribosomes to other parts of the cell.

Lysosomes destroy old, damaged organelles and any dangerous substances which get into the cell.

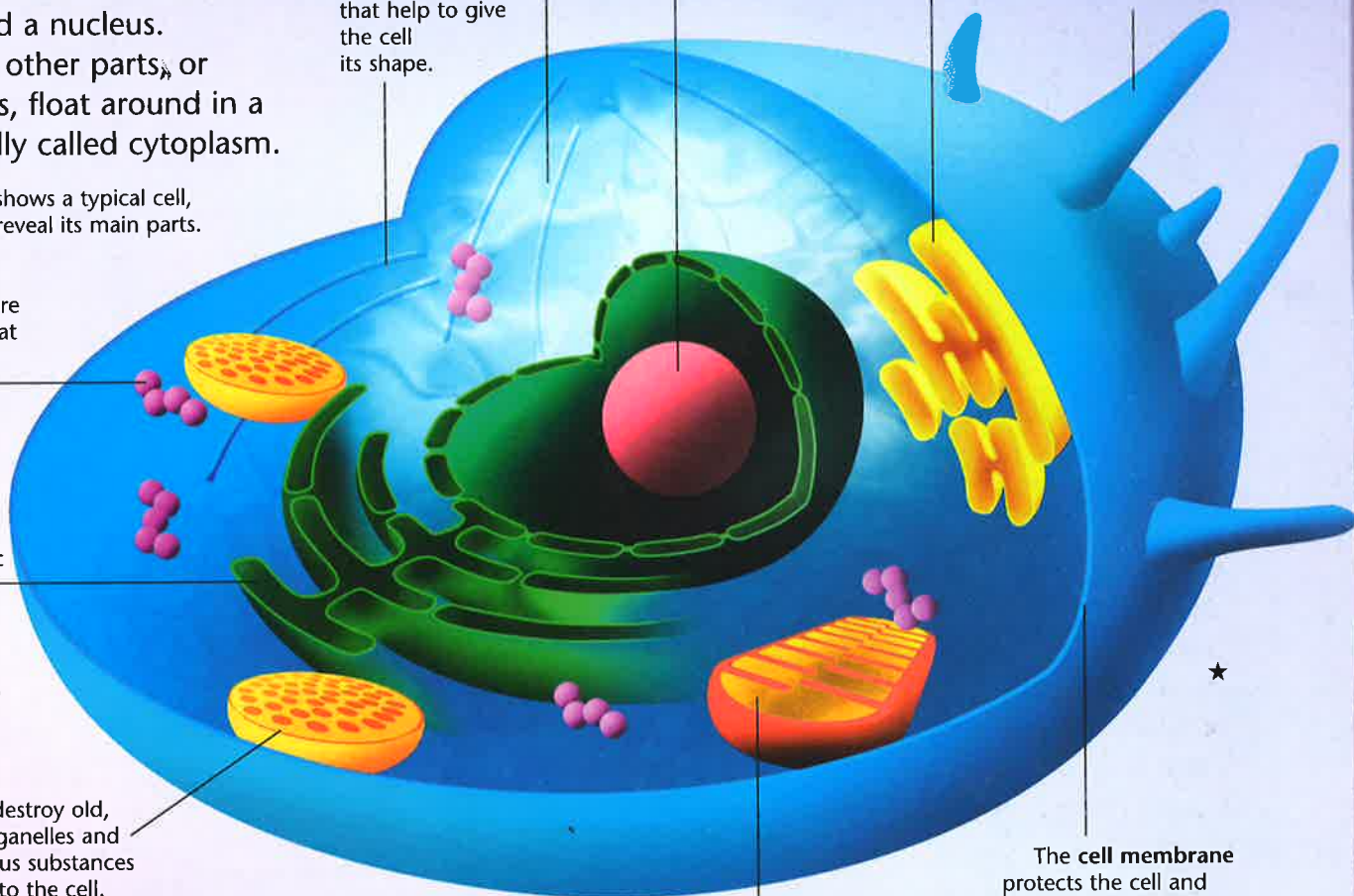
The cell is full of runny **cytoplasm**. It is mostly made of water, with thin strands of protein running through it.

The **cytoskeleton** is made of tiny tubes and threads that help to give the cell its shape.

The **nucleus** controls everything that happens in the cell, using chemical signals. It also contains the instructions for making new cells.

The **Golgi complex** stores proteins made by the ribosomes. It may also prepare the proteins for different uses.

Some cells have finger-like shapes called **cilia** on the outside. They help the cell to move things like food particles towards it.



The **mitochondria** turn food particles and oxygen into energy, so that the cell can keep working.

The **cell membrane** protects the cell and holds it together. It also controls the way substances such as food particles and water pass into and out of the cell.

Inside the nucleus

The cell nucleus controls what happens inside the cell, including the jobs the cell does and the proteins it makes. The nucleus can do this because it contains complicated instructions called genes, which are made of long strands of a chemical called DNA. You can find out more about genes and DNA on the next page.

Making new cells

Every second, millions of cells in your body die, and new ones have to be made. Most cells make new cells by dividing into two. But some kinds of cells, such as heart muscle cells, do not keep dying and being replaced. You keep the same ones for your whole life.



These pictures show how a cell divides. First, the cell grows to twice its original size.



The nucleus makes a copy of its DNA and splits into two nuclei.



The enlarged double cell begins to split in two down the middle.



Finally, the two new cells separate from each other.