

handout

Tissues and Organs

Introduction

People often talk about bits of the body as 'organs' – but they don't mean musical instruments. Other times they talk about 'tissues', but they don't mean thin pieces of paper. What are they talking about? Tissues and organs are **terms** used to describe particular parts of the body. Let's find out what they are.

What is a tissue?

The body is made up of cells, but it isn't just a big blob of random cells glued together. The body needs to perform different functions, and so a **tissue** is a collection of cells which is brought together for a particular **function**.

One way of thinking about a tissue is a **wall of cells**, where the cells are the bricks. It may be made up of slightly different kinds of bricks, but usually they're quite similar and they're there to perform a specific job.

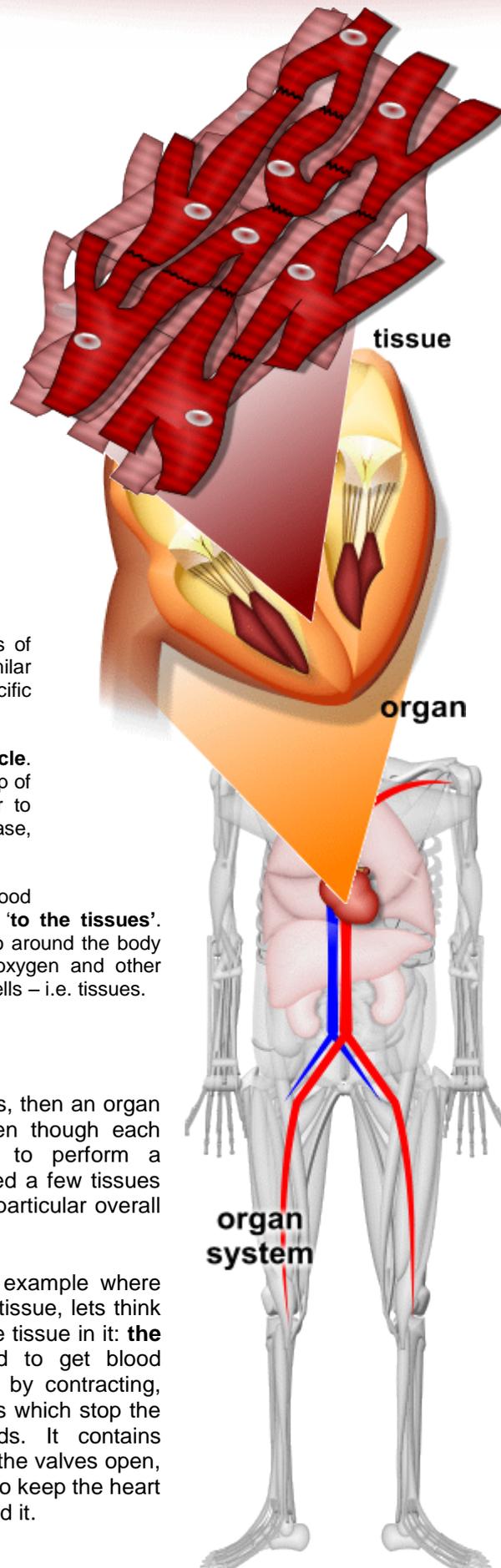
One example of a tissue is **muscle**. Muscle is a tissue which is made up of muscle cells. They work together to perform a specific task – in this case, to cause **contraction**.

You might hear about the blood transferring nutrients and oxygen '**to the tissues**'. This is because blood does not go around the body to visit individual cells. It takes oxygen and other chemicals to particular groups of cells – i.e. tissues.

What is an organ?

If a tissue is a collection of cells, then an organ is a collection of tissues. Even though each tissue is specially designed to perform a specific function, you often need a few tissues together in order to achieve a particular overall task.

If we carry on looking at our example where muscle cells make up **muscle** tissue, let's think about an organ that has muscle tissue in it: **the heart**. The heart is designed to get blood around the body. It does this by contracting, squeezing blood through valves which stop the blood from flowing backwards. It contains special parts designed to keep the valves open, and it is surrounded by a layer to keep the heart separate from the organs around it.



Even just thinking about these few things, it is clear that the heart needs several different tissues in order to achieve its task of getting blood around the body. We need muscle tissue, but we also need other types of tissue designed to do the other jobs that the heart needs.

Other organs in the body are also made up of different tissues which do different things to achieve a task. An organ, then, is a collection of tissues brought together to achieve a particular job.

What is an organ system?

The body is trying to achieve certain things to survive. One is digesting food in order to obtain nutrients. One is inhaling air in order to obtain oxygen. If we go back to our example, the heart is part of a system set up to distribute oxygen and nutrients around the body, and get rid of waste products. In each case, the systems are made up of several organs in order to achieve the greater purpose. These are called **organ systems**.

In the case of the heart, it is part of the **circulatory system**. This is made up of the heart and blood vessels, and the lung are also an important part. All of these organs are connected together in order to achieve a particular purpose.

So, organ systems are made up of organs, and organs are made up of cells; all of these are brought together so that the body can achieve all of its functions successfully.

➡ Further Reading

1. **Alberts B, Bray D, Hopkin K, Johnson A, Raff M, Roberts K, Walter P (2009) Essential Cell Biology. 3rd Ed. New York: Garland Publishing**