

## MODULE: *Cells*

### Activity Sheet 1.3: Important discoveries

It is important for us to find out about the scientists who helped us to understand about the structure of living things.

Read the article below and then answer the questions and carry out the tasks I have suggested.

In 1665 an English scientist, Robert Hooke, studied the cork tree. He noticed that the cork was made of holes which he named 'cells'. He then discovered that other living things were made of cells. He published his ideas and drawings in a book called *Micrographica*.

One of the most well known early microscopists was a Dutch draper named Antony van Leeuwenhoek. He built the first simple microscope. It was the size of the palm of his hand. He was the first to observe living things such as sperm and water organisms. In April 1673 he reported his observations to the Royal Society, which were published in a book called *Philosophical Transactions*.

A German scientist Matthias Schlieden studied plant cells. In 1838 he used a microscope to study plants and determined that they are made of cells.

A year later in 1839 another German scientist, Theodor Schwann, studied many other living things. He concluded that all animals are made of cells. These two scientists shared their ideas which led to the development of the cell theory.

In 1953 Francis Crick and James Watson made one of the most important scientific discoveries. They discovered the structure of DNA, the chemical inside the nucleus that contains the instructions to all the activities of a cell.

Who was the first scientist to use the term 'cell'?

What was he studying at the time?

Who invented the first simple microscope?

What did he observe using it?

Who developed the cell theory?

When was the structure of DNA discovered?

Who discovered the structure of DNA?

### **Find out more**

- Find a picture of the van Leeuwenhoek's simple microscope and an interesting paragraph from one of the letters he wrote.
- Find a picture of one of the Robert Hooke's drawings in Micrographica.
- What is the cell theory?
- Find a diagram of the DNA molecule?
- Simply explain how it works?
- Find out about the contribution that Rosalind Franklin made to the discovery of the structure of DNA.

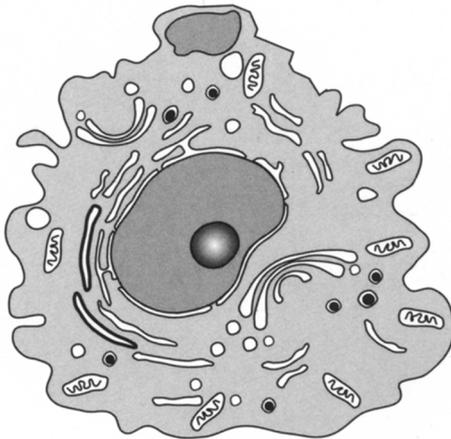
Draw timeline to show the important discoveries that have were made, when they were made, who made them, and any other important information.

### **Points to discuss**

What piece of equipment was needed to help scientists understand about the structure of living things?

How has that equipment developed over the years? What are we able to see today using the latest equipment?

Label the diagram of an animal cell seen under the electron microscope. Write a sentence next to each label to describe the function of the structure you have labelled.



Here are some of the ideas that scientists have put forward over the years to explain more about cells. Some of the ideas are still accepted today but others are not.

Put a tick in the box next to the ideas you think are correct. Put a cross next to the ideas that you think are incorrect.

Idea	Correct or incorrect
All living things are made of tiny units called cells	
All cells contain a cell wall	
A cell divides again and again to make an organism	
Every cell contains a nucleus	
Some cells can be more than a metre long	
The nucleus is part of the cell wall	
Cells come in all shapes and sizes – some are long and thin	
New cells are formed like crystals inside a cell	

Based on all the activities you have been engaged in write a sentence in the space below, to provide some evidence to support

- i. ...an idea you think is *correct*

Idea

Evidence

- ii. ...an idea you think is *incorrect*.

Idea

Evidence