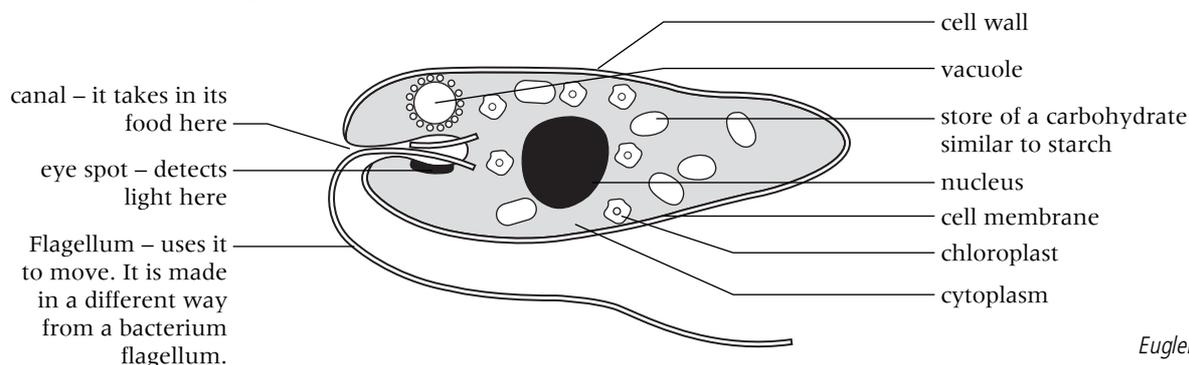


The first person to describe protoctists was a Dutch cloth salesman called Antoni van Leeuwenhoek (1632–1723). He became very good at making lenses which he used to inspect the fibres in the cloth he bought and sold. He also made microscopes and in 1674 he discovered tiny one-celled moving organisms in water which he called animacules (tiny animals).

Today we consider these 'animacules' as part of the **protoctist kingdom**. This kingdom contains many very different organisms – everything from the smallest algae (0.01 mm long) to huge giant kelp seaweeds (up to 65 m long). These organisms are classified as protoctists because they do not fit very well into any other group. Like plants, fungi and animals, protoctists have nuclei in their cells, but unlike these other groups, their cells do not group together to form different tissues (all their cells are very much the same).

Many protoctists are one-celled or **unicellular**. One is called *Euglena* which has some features that you would expect to find in an animal cell and others which you would expect to find in a plant cell.



Euglena.

- ?** 1 a Who first discovered small protoctists?
 b Why do you think he called them 'animacules' and not 'planticules'?
- 2 a Name one unicellular protoctist.
 b What do you think the word **multicellular** means?
 c Name one multicellular protoctist.
- 3 a Write down one difference between a unicellular protoctist and a bacterium.
 b Write down one difference between any protoctist and a plant or an animal.
- 4 List the features of *Euglena*:
 a that are the same as both animal and plant cells
 b that are the same as plant cells
 c that are the same as a whole animal (e.g. a rabbit).
- 5 Until 1862 all organisms were classified as either plants or animals. A German biologist called Ernst Haeckel (1834–1919) first divided protoctists (or protists as he called them) into a different kingdom. Why do you think he did this?

S knowledge, literacy