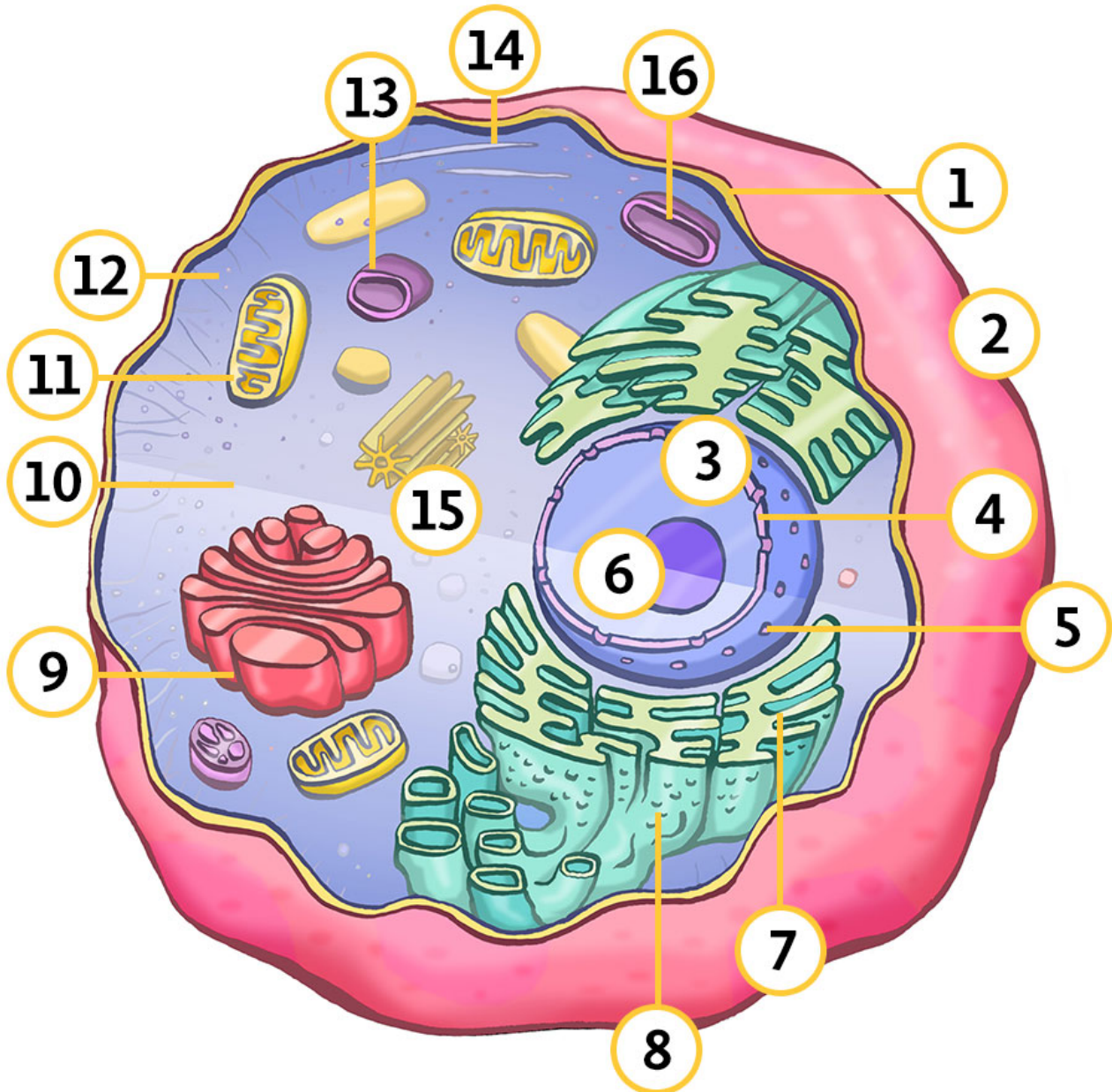


Finding your way around the animal cell

Our annotated diagram shows you what goes where



ABOUT THIS RESOURCE

This resource first appeared in 'The Cell' in January 2011 and reviewed in September 2015. Published by the Wellcome Trust, a charity registered in England and Wales, no. 210183. bigpictureeducation.com

BigPicture

1. **Plasma membrane (or cell surface membrane):** a phospholipid bilayer that contains cholesterol and proteins. It is a fluid layer that surrounds the cell and enables it to communicate with its neighbours and detect and respond to changes in the environment. It also acts as a physical barrier, controlling what can enter and exit the cell.
2. **Extracellular matrix:** the material in between cells that holds tissues together, usually made of scaffolding proteins such as collagen. Important for cell-to-cell signalling.
3. **Nucleus:** the information centre of the eukaryotic cell, where the DNA is stored, replicated and copied into messenger RNA (mRNA) (through transcription).
4. **Nuclear envelope:** double membrane that separates the contents of the nucleus from the cytoplasm.
5. **Nuclear pores:** gaps in the nuclear envelope that allow substances to move in and out of the nucleus.
6. **Nucleolus:** part of the nucleus that produces ribosomes.
7. **Endoplasmic reticulum (ER):** an extensive network of membranes. Rough ER is studded with ribosomes and is a site where proteins are made, folded and moved to the Golgi apparatus. The roles of smooth ER include lipid and steroid synthesis and drug detoxification.
8. **Ribosomes:** molecular machines, built from ribosomal RNA (rRNA) and protein, that make new proteins from mRNA through a process called translation. They are found as 'free ribosomes' in the cytoplasm and bound to the rough endoplasmic reticulum.
9. **Golgi apparatus:** one of the wondrously complex membrane systems in the cytoplasm, which modifies, packages and directs newly made proteins to where they are needed.
10. **Cytoplasm:** everything in the cell outside the nucleus; a viscous aqueous fluid (cytosol) containing water, proteins, other organic and inorganic molecules, and organelles. This is the site of many biochemical reactions.
11. **Mitochondria (singular: mitochondrion):** rod-shaped bodies in the cytoplasm that supply chemical energy to the rest of the cell. They are surrounded by a double membrane (envelope).

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12. **Microfilaments:** these are made from repeating actin subunits. Responsible for cell movement and changes in shape, and make muscle contraction possible. The thinnest component of the cytoskeleton.
13. **Vacuole:** internal bags, surrounded by a membrane, which cells use for storing food or waste.
14. **Microtubules:** small, tubular assemblies of protein, made from repeating tubulin subunits, which help maintain the cell's internal structure and move organelles and cytoplasm using molecular motors. Part of the cytoskeleton.
15. **Centrioles:** a pair of organelles that organises microtubules into spindles on which chromosomes are separated when cells divide.
16. **Lysosomes:** membrane-bound organelles that are the cell's rubbish disposal and recycling units; contain hydrolytic (digestive) enzymes.

Lead image:

Bret Syfert/Big Picture

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