SCoPE

Scientists' Collaborative Project with Educators

The Cell Explorer: A-level Teacher Notes

This interactive 3D model can be used to highlight the different structures in eukaryotic cells and their functions. The scale bar and magnification allow students to calculate the actual size of each organelle in a eukaryotic cell. Students can use the model to fill in worksheet A to identify structures, their function and their relative sizes.

The 3D model also includes an animation of mitosis. An animation of meiosis will be added to the model soon.

Worksheet B can be used to help students record the main stages of mitosis. An animation showing meiosis will be added to the model soon.

To extend students' knowledge beyond the exam specification (e.g. for AQA synoptic essays), links to current research are provided in a separate document that is available for download on the Cell Explorer page of the SCoPE website.

Links to A-level curriculum

The list below shows the current A-level exam board curricula and possible areas of study where these resources may aid teaching.

AQA Specification Point 3.2 - Structure of eukaryotic cells, methods of studying cells, DNA replication in the cell cycle, transport across cell membranes
AQA Specification Point 3.4 - DNA, genes and chromosomes, DNA and protein synthesis
AQA Specification Point 3.8 - Most of a cell's DNA is not translated, regulation of transcription and translation, gene expression and cancer
AQA Specification Point 3.5 - Photosynthesis - light dependent reactions of photosynthesis, Respiration - electron transport chain on the inner mitochondrial membrane
Edexcel Biology A Topic 2 - Know the structure and function of cell membranes, understand the process of protein synthesis, understand the process of DNA replication.
Edexcel Biology A Topic 3 - Know the ultrastructure and function of eukaryotic cells, understand the role of mitosis and the cell cycle in producing identical daughter cells, understanding stem cells, understanding how cells become specialised through gene expression
Edexcel Biology A - Topic 5 - Understand the light dependent reactions of photosynthesis
Edexcel Biology A - Topic 7 - Understand the electron transport chain in respiration.