

Cell models

Assessing learning

Learning Intentions <i>Students should:</i>	Evidence of Learning Statements <i>Students will be able to:</i>
<ul style="list-style-type: none"> understand that cells are three-dimensional 	<ul style="list-style-type: none"> make a three-dimensional model of a typical cell

Why this item?

Research suggests that it is better if students look at a variety of different kinds of cells of different sizes and shapes, and from this the model typical cell is developed to identify the common features. In this way students realise the ubiquitous nature of cells, their complexity and that the images usually seen in text books are a representation of a typical cell and not all cells, which is a common misconception. Research has shown that teaching is enhanced by the use of 2D and 3D models. The use of three dimensions gives students a clearer impression of the reality of 3D cells.

Ways to use the item

Students individually or in groups make models of a typical animal cell and a typical plant cell. The models could be in two dimensions as a paper and pencil exercise, or in three dimensions using any appropriate materials for the various constituent parts. Alternatively, students could use ICT to produce a cell model, so long as they do not merely cut and paste an image with no real engagement of thought.

Evidence of learning

Students could be set this as a task in class or at home. When complete they share the models with their peers and the teacher. Discussion should focus on what makes each model a good representation of a cell, and in what ways it could be misleading.

All the key features of a typical plant or animal cell should be visible and identified by the student. The models may reveal errors or misconceptions, e.g. animal cells with plant cell features, anthropomorphised cells, plant root hair cells with chloroplasts, or two-dimensional models (resembling a text book line drawing) with no appreciation that a cell is a three-dimensional structure.

Requirements

Each student/group will require:

- a range of materials for model making (e.g. plastic or cardboard boxes, balloons, sponge, polystyrene, cotton wool, plastic bags, pipe cleaners, Plasticine, glue, etc.).

Cell models

What makes each model a good representation of a cell?

In what ways could each model be misleading?

