

Topic	Function of cell organelles	Level	GCSE (or any course for students aged 14-16)
Outcomes	<ol style="list-style-type: none"> 1. To use analogies to understand the function of cell organelles 2. To evaluate the use of analogies to understand scientific concepts 		

The Cell and the City of Bling: using analogies to teach cell structure and organelle function

Sometimes in biology it is useful to use analogies to explain difficult concepts. We can also use analogies to assess whether something has been understood. The story below describes a small city. Parts of the city are similar to parts of a cell. Read the passage and see if you can match the cell part (organelle) to the city part.

The City of Bling is surrounded by a tough city wall that has various large open gateways along it. Just inside this wall there is a wire fence. Within the perimeter of the fence there are various buildings that are surrounded and therefore connected by a sea of water. Boats ferry items from building to building. There are many small power stations that ‘power’ the entire city by releasing energy from sugar. The sugar is grown by plants in giant greenhouses near to the power stations.

The energy is used by buildings within the city to make a variety of products. One such building is the Gucci clothes factory. This factory manufactures many different clothes that are all designed by Gucci. The designs for these clothes are very valuable and are therefore contained within the design studio, which is a separate building. To ensure security, the original designs never leave the studio but instead are copied and the copied instructions are sent to the factory. Once the instructions arrive at the factory they are turned into clothes. The raw materials to make the clothes are imported by Bling City through the city wall and fence. Once the clothes have been made they are folded and stitched and sent to the distribution warehouse by ferries. It is at the distribution warehouse that logos and buttons are added to the garments before they are packaged and sent to their destinations by the water ferries.

1. Complete the table

Organelle	City Part	How is the organelle and city part similar?
Nucleus		
Rough Endoplasmic Reticulum		
Mitochondrion		
Cell Wall		
Cell Membrane		
Chloroplast		
Vesicle		
Golgi Apparatus		

2. Develop this analogy to explain the function of other organelles:

- (i) smooth endoplasmic reticulum
- (ii) free ribosomes

3. What are some of the problem associated with using analogies to explain concepts in biology?

4. Has this analogy helped your understanding of protein synthesis and cell structure?

Progress: further resources on cells are available here:

<http://thescienceteacher.co.uk/cells/>