

GCSE Biology – Cellular Respiration - Transcript

People sometimes say respiration when they mean breathing. But they're not the same thing, biologically. Right now, I'm doing both. Breathing oxygen into my lungs... and using that oxygen in every living cell in my body in a chemical process called respiration.

Respiration uses oxygen to release energy from glucose. Creating carbon dioxide and water in the process. We call this whole process cellular respiration.

It's an exothermic reaction, which just means it releases energy, and cells use that energy for things like movement, growth and repair.

There are two types of respiration. Aerobic respiration uses oxygen to completely break down glucose into water and carbon dioxide, releasing lots of energy. When written down it looks like this.

But when oxygen runs low, like during intense exercise, animal cells switch to anaerobic respiration. Glucose is converted to lactic acid releasing some energy.

The lactic acid can build up in the muscles and cause cramp and fatigue. This is a faster process, but releases much less energy.

Once oxygen is available again, the lactic acid is broken down, and the cells return to aerobic respiration.

As long as enough oxygen is available, most organisms will respire aerobically because it releases more energy.

Plant and yeast cells can also respire anaerobically. However, instead of lactic acid they produce ethanol and carbon dioxide. This reaction is also known as fermentation. The difference between aerobic and anaerobic respiration can easily be summed up like this.

Unlike aerobic, anaerobic respiration doesn't need oxygen but glucose isn't completely broken down, and it doesn't release as much energy.

So that's the difference between breathing and respiration. Organisms with lungs breathe, but all living organisms use cellular respiration to release the energy they need to survive.