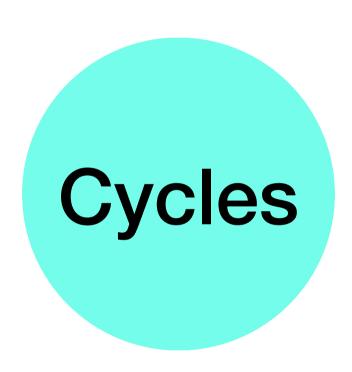
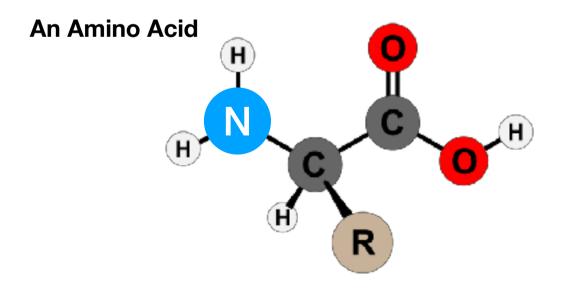
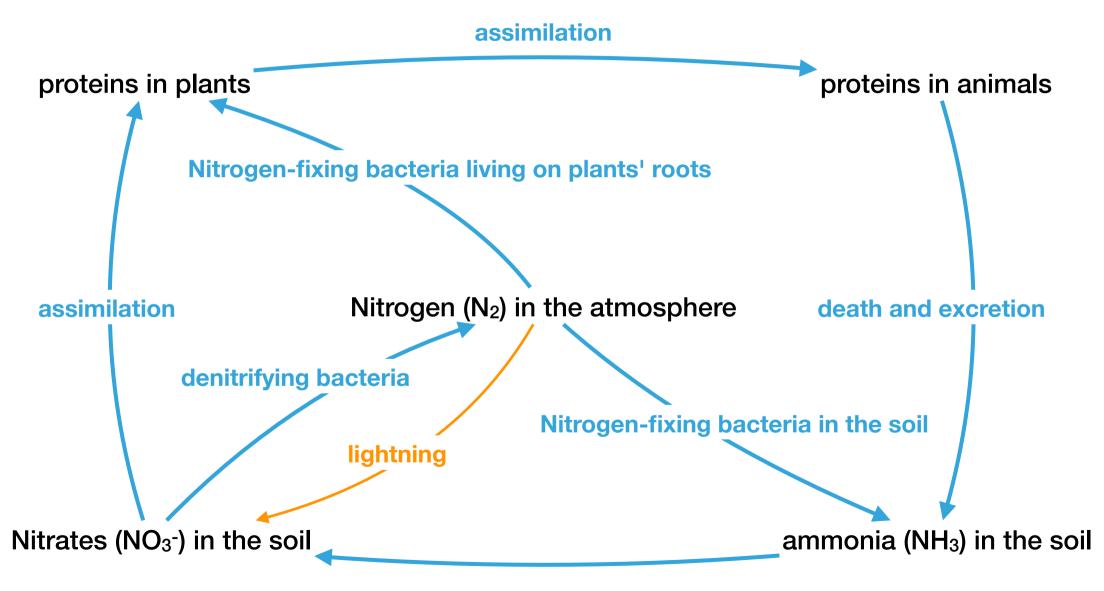
# Cycles



The amino acids that proteins are built from contain Nitrogen.

Nitrogen makes up 78% of the atmosphere but it is very unreactive and therefore hard to assimilate into living things.





nitrifying bacteria via nitrites (NO<sub>2</sub>-)

Lightning has enough energy to bond Nitrogen and Oxygen in the air to form Nitrate ions in the soil.

Nitrogen (N<sub>2</sub>) in the atmosphere

lightning

Nitrates (NO<sub>3</sub>-) in the soil

This is the only process putting Nitrogen back into the atmosphere!

There are many types of denitrifying bacteria. They perform this reaction instead of aerobic or anaerobic respiration.

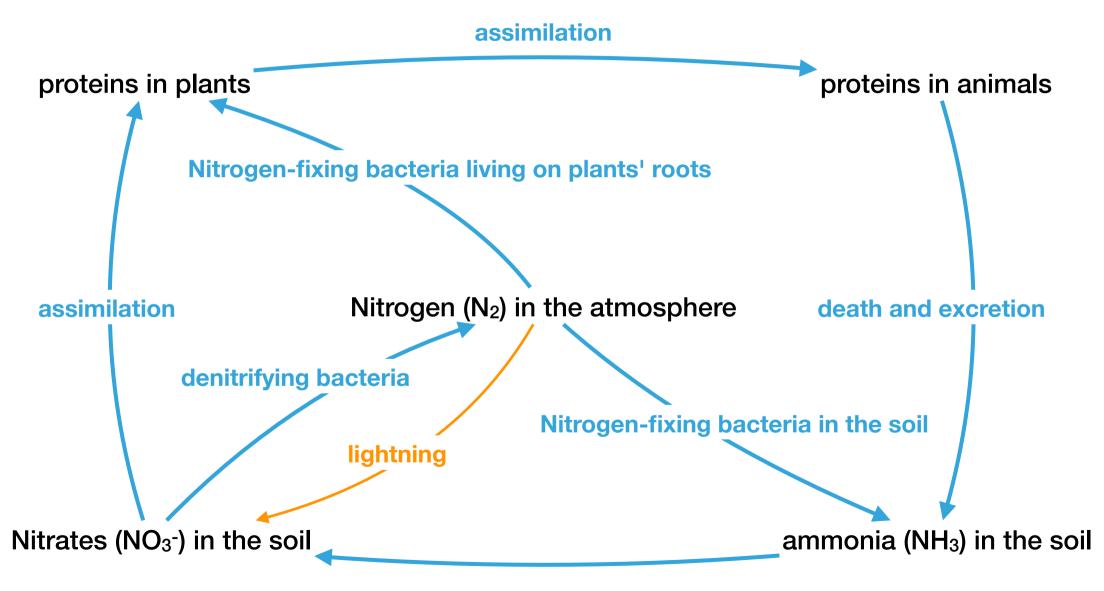
Their ability to metabolise nitrates makes them useful for processing sewage and purifying drinking water.

Nitrogen (N<sub>2</sub>) in the atmosphere

denitrifying bacteria

Nitrates (NO<sub>3</sub>-) in the soil

https://en.wikipedia.org/wiki/Denitrifying\_bacteria



nitrifying bacteria via nitrites (NO<sub>2</sub>-)

Carbon accounts for roughly 50% of all biomass on Earth. Life on Earth is said to be Carbon-based.

In living things Carbon is found in key macromolecules:

- fats
- proteins
- DNA and RNA
- Carbohydrates

Carbon is also found in

- fossilised remains of organisms
- man-made products, often as plasitcs.
- Carbon dioxide in the atmosphere.

