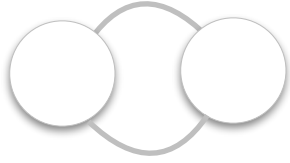


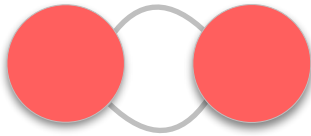
## Hydrogen



H<sub>2</sub>

- most abundant chemical in the universe
- reactive and highly flammable
- important for acid/base reactions as an H atom

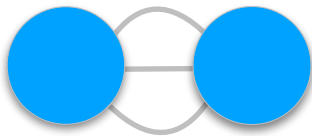
## Oxygen



O<sub>2</sub>

- makes up 20% of the atmosphere
- most abundant element in Earth's crust
- made by plants
- we and other living things need it to survive
- very reactive

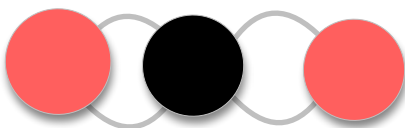
## Nitrogen



N<sub>2</sub>

- most abundant gas in the atmosphere
- very stable (with three bonds)
- part of proteins in living things
- bacteria fix nitrogen from the air into food chains

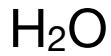
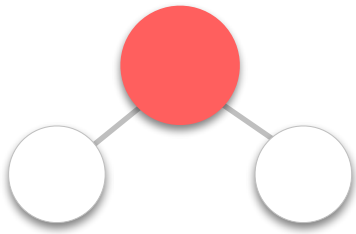
## Carbon dioxide



CO<sub>2</sub>

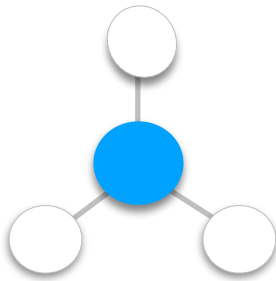
- we exhale it
- made when organic things burn in oxygen, releasing energy
- used by plants to make sugars (food)
- dissolved in drinks to make sodas
- used to make cakes and bread rise
- traps heat in the atmosphere - a greenhouse gas

## Water



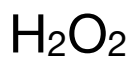
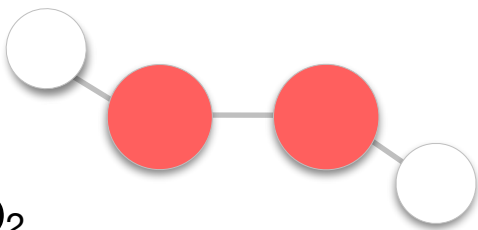
- abundant on Earth in all three states of matter
- essential for life
- ice floats on liquid water (as it is less dense) so aquatic life survives under ice
- many things dissolve in water - it transports nutrients around the body and carries minerals around the earth

## Ammonia



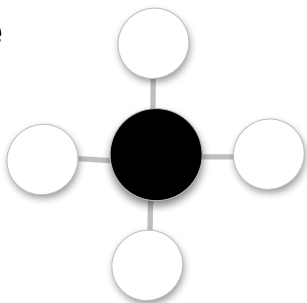
- has a distinctive smell
- used as a cleaner (in window cleaner)
- important in the chemical industry for making fertilizers, plastics and pharmaceuticals
- bacteria make it from nitrogen, and convert it to other nitrogen compounds that are used by living things

## Hydrogen peroxide



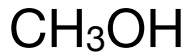
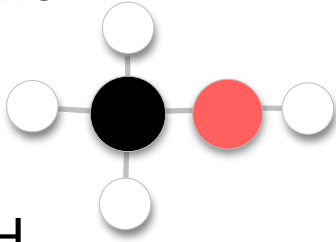
- powerful oxidizing agent - reacts with organic compounds
- the active ingredient in oxygen bleach (non-chlorine bleach)

## Methane



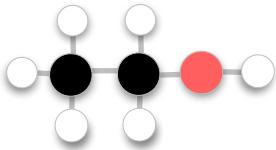
- fossil fuel
- flammable gas used in cooking and heating
- burns with a blue flame in oxygen, or yellow flame with less oxygen
- other fuels (ethane, propane, butane and gasoline) are longer molecules with additional  $CH_2$  groups

## Methanol



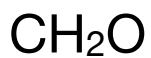
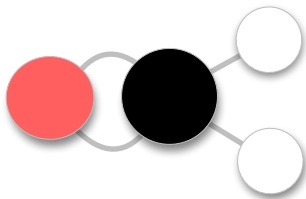
- flammable
- a poison - the body breaks it down into toxins (formic acid and formaldehyde)

## Ethanol ("alcohol")



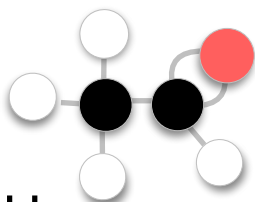
- flammable
- in wine, beer and other alcoholic drinks
- interacts with nerve cells in the brain
- naturally made in our bodies by gut bacteria

## Formaldehyde



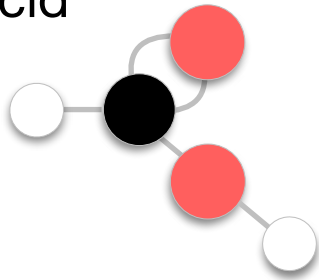
- sterilizes and preserves organic things by linking protein chains together
- in wood smoke - the active chemical in the preservation of smoked foods

## Acetaldehyde



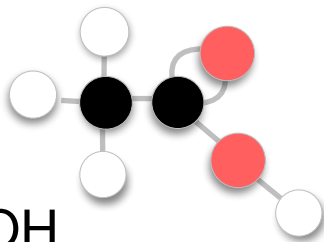
- in the smell of ripe fruit
- made in our body from ethanol

## Formic acid



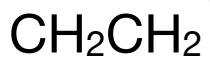
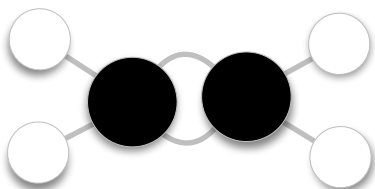
- in the venom of stinging ants and caterpillars
- damages proteins in the body

## Acetic acid



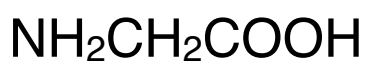
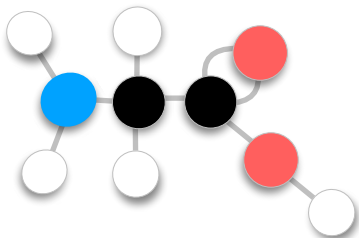
- main component of vinegar, and responsible for its smell
- has a sour taste
- made by bacteria, including the kind used in making sourdough bread

## Ethylene (ethene)



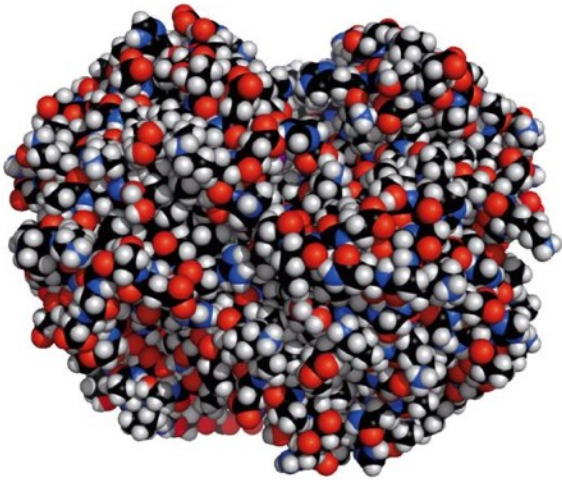
- made by plants and causes fruit to ripen
- a chain of ethylene molecules form polyethylene plastic

## Glycine



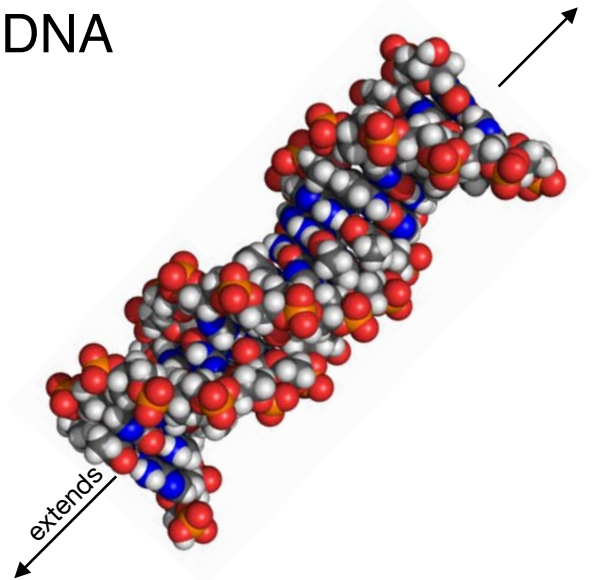
- one of the amino acids, which string together to make proteins in living things

## Hemoglobin



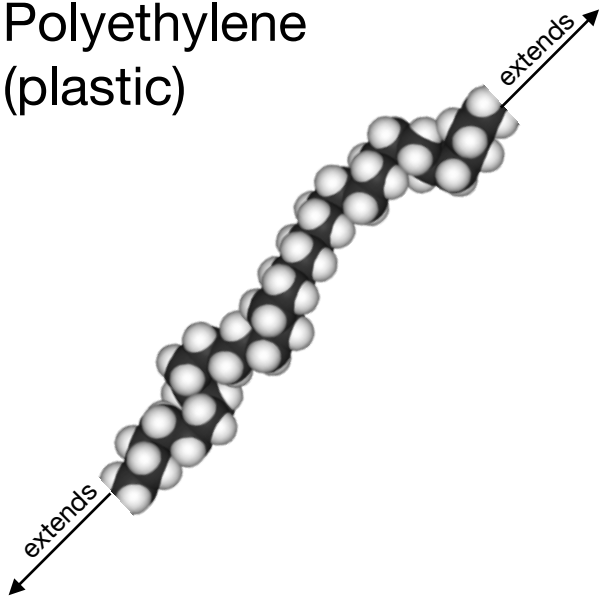
- a protein in our red blood cells
- it holds oxygen molecules, to carry it to all of our body
- red when oxygen is bound, and gives blood its colour

## DNA



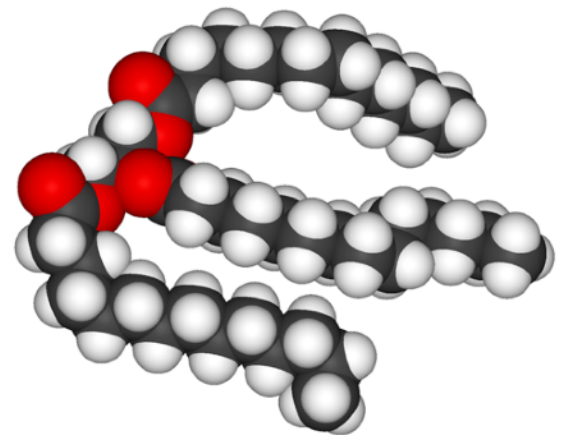
- found in every cell of our body
- the order of the units along the strand is our DNA sequence
- determines how we look, and to some extent, how we behave

## Polyethylene (plastic)



- the most common plastic, "PE"
- a chain of ethylene molecules
- used to make plastic bags and bottles
- an environmental concern as not easily biodegradable

## Fat



- in vegetable oils and animal fats
- a food high in energy
- we also have fat molecules in our body, as part of our cells and important for our nerve and brain function