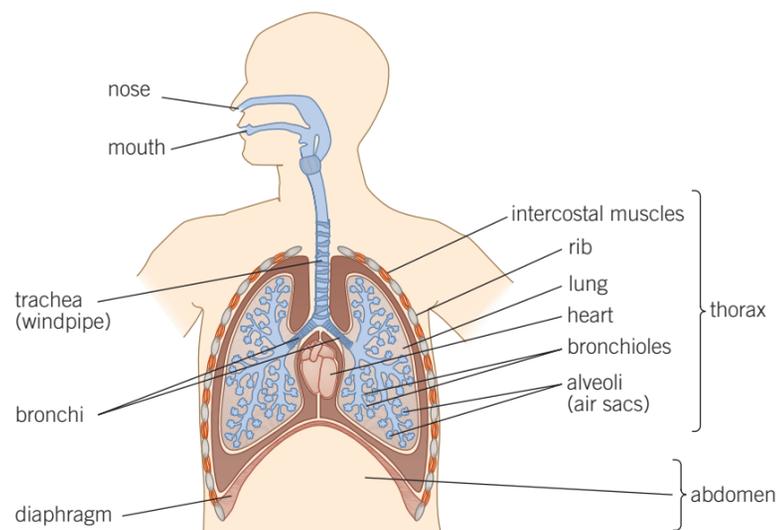


### Gas exchange and breathing

- **Gas exchange** is the process of taking in oxygen and giving out carbon dioxide
- This occurs in the **respiratory system**
- The proportions of gases in the air we **inhale** and **exhale** changes due to using oxygen in **respiration** and producing carbon dioxide



### What happens when you breathe in and out

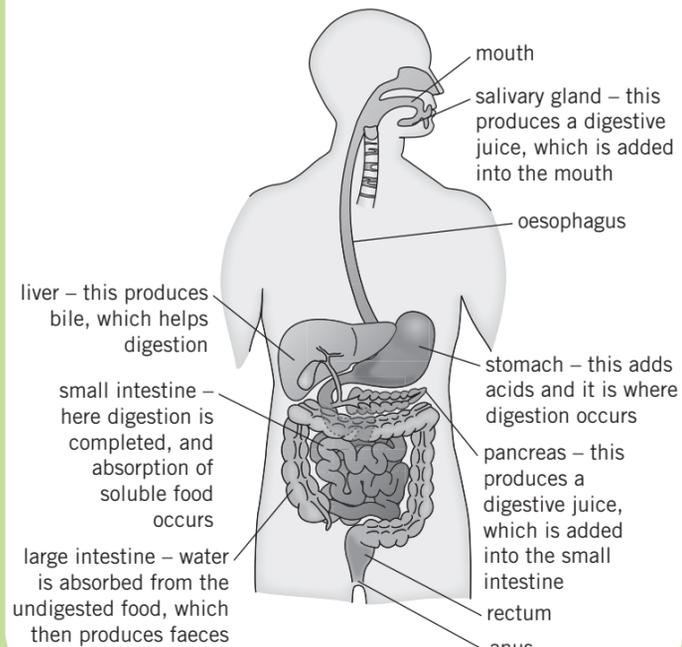
#### when you breathe in (inhale)

- muscles between the ribs contract
- ribs are pulled up and out
- diaphragm contracts and flattens
- volume of the chest increases
- pressure inside the chest decreases
- air rushes into the lungs

#### when you breathe out (exhale)

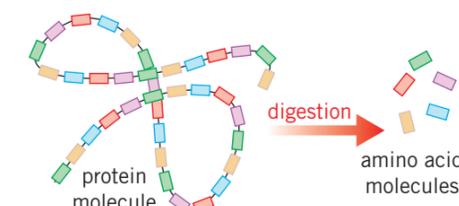
- muscles between ribs relax
- ribs are pulled in and down
- diaphragm relaxes and moves up
- volume in the chest decrease
- pressure inside the chest increases
- air is forced out of the lungs

### The digestive system



### Enzymes

- **Enzymes** are biological **catalysts**, they speed up the digestion of **nutrients**
- Each enzyme is specific to each nutrient
- The way the enzyme and nutrient bind with each other is called a lock and key model
- **Carbohydrases** break **carbohydrates** down into simple sugars
- **Proteases** break **proteins** down into amino acids
- **Lipase** breaks **lipids** (fats) down into fatty acids and glycerol



### Drugs

- **Drugs** are chemicals that affect the way that our body works
- **Medicinal drugs** are used in medicine, they benefit health
- If medicinal drugs are not taken in the correct way they can harm health
- Examples include antibiotics and pain killers
- **Recreational drugs** are taken by people for enjoyment
- Recreational drugs normally have no health benefits and can be harmful for health
- Examples include alcohol and tobacco
- Drug **addiction** is when your body gets so used to a drug, it feels it cannot cope without it
- If someone who has an addiction stops taking the drug, they will experience **withdrawal symptoms**

### Nutrients

- A **balanced diet** involves eating the right amount of nutrients for your body to function
- Not eating enough of a nutrient means you have an unbalanced diet, and this can lead to a **deficiency**

Nutrient	Role in your body
carbohydrates	main source of energy
lipids	fats and oils provide energy
proteins	growth and repair of cells and tissues
vitamins and minerals	essential in small amounts to keep you healthy
water	needed in all cells and body fluids
fibre	provides bulk to food to keep it moving through the gut

### Key terms

Make sure you can write definitions for these key terms.

addiction    balanced diet    carbohydrate    carbohydrases    catalyst    deficiency    drug    enzyme    exhale    fibre    gas exchange    inhale    lipid  
 medicinal drug    mineral    nutrient    protease    protein    recreational drug    respiration    respiratory system    vitamin    withdrawal symptoms