# ionic bonds

- donation of an electron
- from crystals like salt
- attraction is so strong that one pulls electrons from the other
- · extremely polar

#### covalent bonds

- sharing electrons
- electrons are attracted to those with higher electronegativity
- separations of charges is called polarity

# covalent bonds explained

#### polar

- uneven sharing of electrons

#### non-polar

# • ex: lipids, fats, waxes from Notesale.co.uk electron configuration and alence electrons

element	atomic number	total electrons	valence of electrons
с	6	6	
cl	17	17	7
0	8	8	6
n	7	7	2 or 5

# trace elements

- trace metals
- minerals present in living tissues in small amounts

ex: zinc, copper, cobalt

- key macromolecules in the continuity of life
- carbon, hydrogen, oxygen, nitrogen, & phosphorus

# nucleotide

## parts

- pentose sugar
- phosphate group
- nitrogen base



Table			ouk
macromolecule	monomer unit	type of bond	primary function
carbohydrate	monosaccharides	Desidic A7	provide energy & structure
lipids	nitapplicable	covalet	protection insulation
proteprevi	amino Rcica 9e	peptide	carry out cell processes
nucleic acid	nucleotides	phospho-diester	store information

# **3.1. cell structure**

# cell theory

- proposed by schleiden and schwann
- all living things are composed of one or more cells
- basic building blocks of all organisms
- cells are the basic unit of life
- all cells come from pre-existing cells

- membrane-bound organelle
- single or multicellular
- · plants and animals
- ▼ image



- have specialized cellular functions, as each of the organs have specialized functions

## compartmentalization

- distance structures in eukaryotic cells that have specific functions necessary for complete cell function
- ▼ responsible for
  - genetic information
  - protein synthesis
  - energy
  - cell functions and properties

- transport
- anchors cells in place
- cell division

# centrosome (animal cells)

- located in center of cell
- comprised of microtubules
- create microtubules necessary for cell division

# flagella & cilia (animal cells)

- located outside cell
- comprised microtubules
- used for cell motility, movement of other molecules in tissue

# endomembrane system

- set of organelles membrane-bound that function togather to carry out major functions of the cell
  parts
  proceanenvelope
  page 25 01
- - vesicles
  - endoplasmic reticulum  $\rightarrow$  rough (contains ribosomes) & smooth (does not)
  - golgi apparatus  $\rightarrow$  complete the processing and decides where the product goes\\

# nucleus

- membrane-bound
- largest organelle in animal cells
- houses chromosomes (dna) and protein
  - nuclear envelope  $\rightarrow$  controls what goes in or out, membrane of nucleus
  - nucleolus  $\rightarrow$  inside nucleus, where ribosomes are creared

- provides structure, stability, and protection to cell
- determines shape
- plant cells, fungi, prokaryotes, and some protist
- animal cells do not have cell walls
- · composed of cellulose (fiber) in plant cells
- composed of peptidoglycan in bacteria (procaryotes)

# chloroplasts

- plant organelles only
- carry out photosynthesis  $\rightarrow$  conversion of light energy into chemical energy
- internal structures called thylakoids → contain chlorophyll

# 3.2. cell membrane

# phospholipids

- bilayer
- mov around but they keep their shape due to fluid mosaic model → things attraction
- blue tails orty
- pink → glycerol
- allow/regulate movement of molecules



# types of tails

# single bond tails

- · carbon as a molecule wants to have four bonds
- three hydrogens

- the ability to differentiate between different types of molecules, only allowing some molecules through while blocking others
- for the cell to maintain its internal order irrespective of the changes to the environment

# transport

# passive

- moving a solution with the concentration gradient
- ▼ diffusion
  - movement of solutes

## types:

- ▼ facilitated diffusion
  - protein assisted diffusion
  - assisted by a transport
- osmosis
  - movement of water

from Notesale.co.uk 31 of 47 Masgove hint to reach equilibrium

## tonicity

- in reference to the environment
- a solution can cause a cell to lose or gain water

## hypertonic solution

- water is pulled outside of the cell
- crenation

# isotonic solution

- water is circulating normally
- regular