# **Topic 1: Cell Structure and Organisation**



#### © Hee Xin Wei (Copyrighted)





### Chapter Analysis





#### FOCUS

- straightforward chapter
- animal cell, plant cell, specialised cells



#### **EXAM**

• usually tested in MCQ



#### WEIGHTAGE

• light weightage





# organelle functions specialised cells





## Animal Cell







## Plant Cell



#### © Hee Xin Wei





#### **Present in both animal and plant cells**

Cell Membrane	Partially permeable, contro
Nuclues	Controls <b>cellular activities</b> <ul> <li>Nucleolus: plays a part in</li> <li>Chromatin: long strands</li> </ul>
Cytoplasm	<ul> <li>Made up of 90% water ar</li> <li>Embedded with organelle</li> <li>Sites of most cellular act</li> </ul>
Vacuole	<ul> <li>Animal: store water and f</li> <li>Plant: store water, with for products and water.</li> </ul>
Mitochondria	Carry out <b>aerobic respirati</b> activities



### **Organelle Functions**

ols substances entering or leaving the cells.

such as growth, repair, and cell division. the making of proteins in the cell. of DNA.

nd contains dissolved protein, sugars, enzymes. es (eg mitochondria, RER, SER, Golgi body). tivities.

food substances bod substances and mineral salts. also takes in waste

ion to release energy, energy is used to carry out cellular





## Organelle Functions

#### Present in both animal and plant cells





#### involved in the movement of substances (protein) out of cells

Ribosomes	<ul> <li>Can either be attached to RER or free floating.</li> <li>Site of protein synthesis.</li> </ul>
Rough endoplasmic reticulum	Ribosomes are attached to the membrane (thus rough) RER is <b>involved in protein synthesis</b>
Smooth endoplasmic reticulum	<ul> <li>Synthesises fats and steroids such as a hormones.</li> <li>also contains enzymes that detoxify dra and poisons.</li> </ul>
Golgi Body	It <b>stores, sorts and modifies</b> substances made by the ER, and <b>packages them in</b> <b>vesicles</b> to be secreted out of the cell.







#### Present ONLY in either animal or plant cells

Organelle	<b>Present only in</b>	Functions
Cellulose cell wall	Plant Cell	Fully perme <b>shape.</b>
Chloroplast	Plant Cell	Contains ch process by
Centrioles	Animal Cell	Help with <b>c</b>



### Organelle Functions

eable, protects the cell from injury and gives the cell its

nlorophyll. They are the sites of photosynthesis, which is the which plants make food.

ell division in animal cells





### Compare the structure of typical animal and plant cells

	Animal Cells	Plants Cells
Cellulose cell wall	Absent	Present
Vacuole	Small and numerous	A large and central vacuole
Chroloplast	Absent	Present
Centriole	Present	Absent generally









- - RBC contain **haemoglobin** which binds with oxygen and transports it from the lungs to all parts of the body • RBCs have **no nucleus**, thus have more capacity for
  - haemoglobin
  - RBCs have a flattened **biconcave shape**. This increases the surface area to volume ratio for faster diffusion of oxygen. It also allows the cell to be more flexible when squeezing through blood capillaries.



### **Specialised Cells RED BLOOD CELLS**

• **Function:** deliver oxygen to the body tissues via the blood. • Cell structure **adaptations**:



### **Specialised Cells XYLEM VESSELS**



- (1) of the plant.
- **mechanical support** of plants (2)
- Cell structure **adaptations**:
- Absence of protoplasm and cross-walls which could impede (1) water flow through the lumen
- (2) **Deposition of lignin** on the cell walls which strengthens vessel walls, providing support



xylem vessel



**Conduct water and mineral salts** from the roots to the leaves









### **Specialised Cells ROOT HAIR CELLS**

- Function: Extend into the soil to absorb water and mineral salts.
- Cell structure adaptations: root hair is long and narrow, this increases the surface area to volume ratio of the cell, so that water and mineral salts can be efficiently absorbed.







cell

tissue

**Cell** is the most basic unit of a living organism

A group of cells of the same type that are found near each other and carry out the same function form **tissue** 



### Organ System





organ

organ system

Different tissues working together to perform a specific function or a group of functions form an **organ** 







### For more notes & learning materials, visit: www.overmugged.com

### 'O' levels crash course program

**Professionally designed crash course** to help you get a **condensed revision** before your 'O' Levels!

The 4 hour session focuses on going through key concepts and identifying commonly tested questions!

Our **specialist tutors** will also impart valuable **exam pointers and tips** to help you maximise your preparation and ace your upcoming national exam!

The crash courses will begin in June 2021 and last till Oct 2021.

**Pre-register now on our <u>website</u> and secure your slots!** 





Join our telegram channel: <u>@overmugged</u>



Need help?

Hee Xin Wei

90721842 (Whatsapp)

@xinweihee (telegram username)



