

Life Processes.

(Along with this refers Classroom notes and diagram)

The basic function performed by living organism to maintain their life on earth is called as Life Processes. Some of the activity that living organism performed are Nutrition, respiration, Excretion , Reproduction etc.

Nutrition : Nutrition is a process of intake of nutrients like carbohydrates proteins ,fats, minerals, etc by an organism as well as utilization of these nutrients by the organism

Modes of nutrition :

1.Autotrophic modes of nutrition :

The mode of nutrition in which organism prepares their own food is called as autotrophic modes of nutrition e.g. Green plants.

The mode of nutrition in which organism prepare their food by the help of light is called as **phototrophic mode of nutrition** e.g. Green plants

The mode of nutrition in which organism depends on chemical for their food is called as **chemotrophic mode of nutrition**.e.g. sulphur bacteria and iron bacteria

2.Heterotrophic mode of nutrition :

The mode of nutrition in which organism depends on others for their food is called as heterotrophic mode of nutrition

It is of 2 types :

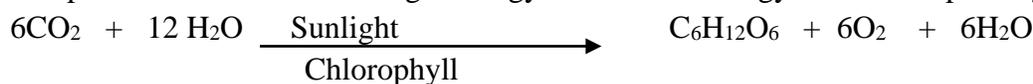
1.Saprophytic mode of nutrition :

The mode of nutrition in which organism depends on dead and decaying material is called as saprophytic mode of nutrition. e.g. Fungus [**Rhizopus**]

2.Parasitic mode of nutrition : The mode of nutrition in which organism depends on other living organisms is called as parasitic mode of nutrition. e.g. **humans**

Photosynthesis:

The process of conversion of light energy to chemical energy is called as photosynthesis



L.S Of Leaf :

It shows following important structure :

1. **Upper Epidermis :** Leaf on upper side is covered by single layered compactly arranged rectangular cells called epidermis . It is covered by cuticle.
2. **Mesophyll :** Below upper epidermis there lies mesophyll. It is divided as palisade parenchyma and spongy parenchyma. Palisade parenchyma is compactly arrange and column like where as spongy parenchyma is loosely arranged.
3. **Midrib :** It shows vascular bundle in which both xylem and phloem is seen. Vascular bundle is covered by bundle sheath.
4. **Lower epidermis :** on lower side it is covered by single layered compactly arranged rectangular cells called lower epidermis . It show presence of stomata. Lower epidermis shows more number of stomata in it as compared to upper epidermis.

Note :Experiments with respect to photosynthesis will be in classroom notes.

Raw material required for photosynthesis :

1. **Sunlight :** Light from sun is absorb by chlorophyll of leaves
2. **Chlorophyll :**It is present in leaf and it helps in absorption of light .
3. **Carbon dioxide:** It is absorb from air by the help of stomata present in leaf
4. **Water:** It is absorb from soil by the help of root hair.

Mechanism of photosynthesis :

1. Light reaction :

The reaction which occurs in day time is called as light reaction.

It is divided as Photolysis of water and Photo phosphorylation

Breakdown of water in presence of light is called as photolysis of water. By photolysis oxygen is evolved from water.

Addition of phosphorous in presence of light is called as photo phosphorylation. The most common photophosphorylation in plants is addition of phosphorous to ADP to form ATP.

During day time product obtained in plants are O_2 , ATP and $NADPH_2$.

Note : $NADPH_2$ is reduced co-enzyme.

Dark reaction (Calvin Cycle) :

The reaction which occurs in night is called as dark reaction.

The CO_2 absorbed by plants reacts with Ribulose di phosphate (RUDP) and forms 3-Phospho glyceric acid. 3-Phospho glyceric acid is then react with ATP formed during day time and forms 1,3 di phospho glyceric acid. 1,3 di phospho glyceric acid reacts with $NADPH_2$ and forms fructose -6-phosphate. Some molecules of Fructose-6-Phosphate is then converted to glucose and remaining continuous the cycle to form RUDP.

Digestive system :

In human being it is divided as

1. Alimentary canal
2. Digestive glands

Following are the imp.organs associated with alimentary canal:

1. Mouth :

It is a slit like aperture guarded by means of two lips. Lips helps in preventing entry of foreign material in buccal cavity. It also helps in speech.

2. Buccal Cavity:

Mouth opens in buccal cavity. It consists of teeth , tongue and salivary gland.

Arrangement of teeth within jaws is called as dentition.

Teeth are present in jaws. Humans have more than one type of teeth and hence called as **heterodont** condition. The four different types of teeth are Incisors, Canines, Premolars and Molars. When the teeth are present in sockets then it is called as **Thecodont**.

Structure of Tooth :

Tooth are white in colour. Tooth shows enamel, dentine and pulp cavity. Enamel is white because of deposition of calcium phosphate and calcium carbonate. Dentine is hard layer and it lies below enamel. Pulp cavity is lying below dentine which shows blood supply and nerve supply. The part of teeth which lies above jaws is called as crown and part within jaws is called as root.

Dental formula : $I = 2/2$, $C = 1/1$, $PM = 2/2$, $M = 3/3$

Tongue is movable muscular part in buccal cavity. It shows number of small taste buds . It helps in taking sensation of taste. The different taste buds on tongue are Fungiform papillae, Foliate papillae, Filiform Papillae and circumvallate Papillae etc. Moreover it also helps in speech.

Salivary gland:

These are the pair of gland situated in cheeks.

Each salivary gland is divided into 3 parts i.e Parotid gland, Sub mandibular gland and Sub lingual gland. Salivary gland produces saliva. Saliva contains 95% water, ions and salivary amylase(Ptyalin) . Saliva along with food is called bolus. Salivary amylase helps in digestion of carbohydrate . It converts carbohydrates into glucose

Oesophagus :

It is an elongated tubular passage. It carries bolus from oesophagus to stomach. The transfer of food is carried out by peristalsis. The rhythmic contraction and relaxation that occurs in muscles of oesophagus for transport of food is called as Peristalsis.

Stomach :

It is a muscular bag which is situated in abdominal region, It is divided into 2 parts i.e larger cardiac stomach and smaller pyloric stomach.

Internally stomach is lined by mucus membrane. It prevents the stomach from effect of gastric juice and HCl . Internally wall of stomach is folded and it shows villi. Villi shows gastric gland in it . Gastric gland produces gastric juice, Gastric juice contains pepsin, gastric lipase and HCl. pepsin helps in digestion of protein .It converts protein into amino acids. Gastric lipase converts fats into fatty acids and glycerol. HCl helps in

- 1.Softening of food material so that it will be easily digested and absorb.
- 2.It converts inactive pepsinogen into active pepsin
- 3.It makes the medium acidic

Small intestine : It is long pipe like structure measuring about 7 m in length. Internally it shows microvilli. Small intestine also secretes some enzymes which are helpful in digestion of food. At the junction of small and large intestine vermiform appendix is present which is a vestigial organ in humans

Large intestine : It is larger in size as compared to small intestine. It helps in absorption of water. The last part of large intestine is rectum. It is temporary store house of waste. It opens to outside by an aperture called anus.

Liver :

It is a large dark brown coloured gland situated in abdominal region. Its mass is about 1.5 kg. It shows a small pouch attached to it called gall bladder. Liver produces Bile juice. Bile juice is a waste of liver which actually helps in digestion. Bile juice helps in emulsification of fats. It also helps in making medium alkaline. About 400 to 800 ml bile juice is produced per day. Bile juice helps in emulsification of fats. The process of conversion of larger molecule of fats into smaller one by the help of bile juice is called as emulsification of fats.

Pancrease :

It is a leaf shaped gland. It is slightly creamish in colour. The length of pancrease is 6 inches. It secretes pancreatic juice. Pancreatic juice contains trypsin , pancreatic lipase and pancreatic lipase.

Trypsin converts protein into amino acids. pancreatic lipase converts fats into fatty acids and glycerol. Pancreatic amylase converts carbohydrates to glucose. About 1.5 lit to 2 lit of pancreatic juice is produced per day.

Holozoic mode of Nutrition :

The mode of nutrition in which solid food material is taken in called as holozoic mode of nutrition .e.g Humans

Steps involved in Nutrition :

- 1.**Ingestion:** The process of intake of food within body is called as ingestion. In human being food is taken in through mouth.
- 2.**Digestion:** The breakdown of complex food into smaller one is called digestion. It is done by chemicals called enzymes.
- 3.**Absorbtion:** After digestion all the nutrients are absorbed in small intestine. The microvilli of small intestine helps in increasing surface area and thus absorption.
- 4.**Assimilation:** After absorption all the nutrients are accumulated in respective organs. Carbohydrates are stored in liver in the form of glycogen. Fats are stored below skin in the form of fatty acids.
- 5.**Egestion:** Removal of waste outside body is called egestion. Finally waste components are removed out of body through anus

Nutrition in Amoeba :

- 1.**Ingestion:** The process of intake of food within body is called as ingestion. In Amoeba food is taken in by the help of pseudopodia. Food is taken in by endocytosis (Phagocytosis).
- 2.**Digestion:** The breakdown of complex food into smaller one is called digestion. It is done by cytoplasmic enzymes.
- 3.**Absorbtion and assimilation :** After digestion all the nutrients are absorbed in cytoplasm. After absorption all the nutrients are accumulated in cytoplasm.
- 5.**Egestion:** Removal of waste outside body is called egestion. Finally waste components are removed out of cell by exocytosis.

Heart:

Heart is situated ventrally towards left side within thoracic cage. Heart is myogenic in nature i.e it is completely made up of muscles(Cardiac Muscles). Heart is conical in shape. It is 250 to 300 gms in female and 300 to 350 gms in male .Externally it is covered by perimetrium. The perimetrium is divided as outer parietal perimetrium and inner visceral perimetrium. In between two perimetrium there lies space called pericardial space which is filled by pericardial fluid. This fluid prevents heart from mechanical shock and jerks.

Human heart is 4 chambered, two upper smaller auricle/atrium and two lower larger ventricle. The two auricle is separated by a partition called as inter auricular septum and two ventricles

are separated by inter ventricular septum. Auricle and ventricle are joined by aperture called as inter auriculo ventricular aperture. Towards left side this aperture shows Bicuspid valve and on right side it shows tricuspid valve. Left auricle receives oxygenated blood from four pulmonary veins whereas right auricle receives deoxygenated blood from superior vena cava and inferior vena cava. When auricles get contracted blood from auricles flows in ventricle. Right ventricle receives deoxygenated blood and left ventricle receives oxygenated blood. When ventricle contracts blood tries to go in vertically upward in auricle but bicuspid and tricuspid valve gets closed so instead of going in auricle, blood goes in systemic aorta and pulmonary aorta. By closure of such valve 'lub' sound is produced. Systemic aorta receives oxygenated blood which supplies such pure blood to every part of body and pulmonary aorta receives deoxygenated blood which provides it to lungs for purification. When ventricle gets relaxed the blood from both systemic and pulmonary aorta tries to come back but again it is not possible because semilunar valve at its base gets closed. By closure of such valve 'dub' sound is produced.

As this circulation of blood occurs twice through the heart it is called as double circulation. It is a basic characteristic of higher organisms.

Working of Heart :

Pace makers : The specialized structure which generates electrical impulses for working of heart is called as Pace makers. E.g. S.A.Node (Sinu Auricular Node) and A.V.Node (Auriculo Ventricular Node)

Cardiac cycle : The sequence of events that occurs in one heart beat is called as cardiac cycle.

Heart beat : The pulsation of heart is called heart beat.

Pulse : The rhythmic throbbing of arteries due to flow of blood is called as pulse

When auricles and ventricles get filled by blood, the S.A.Node present in walls of left auricle gets activated and generates electrical impulses. These impulses are spread all over auricles and thus auricles get contracted. Blood from auricle gets flow in ventricles. Time required for auricular contraction is 0.1 sec. One of the electrical impulses gets strike on A.V.Node. A.V.Node thus gets activated and generates electrical impulses which is carried to Bundle of His, Then Purkinje's fibre and then to muscles of ventricle. As ventricular muscles receive impulses it gets contracted and blood flows in systemic and pulmonary aorta. Time required for contraction of ventricle is 0.3 sec. The time of isometric contraction is 0.4 sec. Both auricular contraction, auricular relaxation, ventricular contraction and ventricular relaxation occurs simultaneously.

Cardiac output : 4.7 lit/min

Blood vessels : The pipe through which blood flows is called as Blood vessels.

1.Arteries

2.Veins

3.Capillaries

s.n	Artery	s.n	Vein
1	The blood vessel which starts from heart and goes towards body part is called as artery.	1	The blood vessel which starts from body part and goes towards heart is called as Vein.
2	Usually it carries oxygenated blood	2	Usually it carries deoxygenated blood
3	Arteries are thick	3	Veins are thin
4	Arteries have more pressure	4	Veins have less pressure
5	Arteries are deeply embedded	5	Veins are superficial
6	Exception : Pulmonary artery carries deoxygenated blood.	6	Exception : Pulmonary vein carries oxygenated blood

3.Capillaries:

Extremely small thin walled, tubular, branched structure is called as capillaries.

Functions of Blood :

- 1.Transport of oxygen to every part of body
- 2.Transport of nutrients to every cell of body
- 3.Transport of hormones in body
- 4.Transport of waste upto kidneys
- 5.maintenance of body temperature
- 6.Protection
- 7.Prevention from Haemorrhage.

Lymph :

Lymph is a colourless liquid that flows in lymphatic vessels. It contains lymphocyte , proteins etc..

- 1.It helps in providing immunity.
- 2.It helps in transport of protein.
- 3.It helps in removing waste products like fragments of dead cells etc

Blood Pressure :

Pressure exerted by blood on the walls of artery is called as Blood Pressure. It is measured on Branchial artery. It is measured by device called as Sphygmomanometer.

Types Of B.P :**1.Systolic BP :**

Pressure exerted by blood on the walls of artery during ventricular contraction is called as Systolic BP. In normal adult it is 120 mm Hg

2.Diastolic BP :

Pressure exerted by blood on the walls of artery during ventricular relaxation is called as diastolic BP. In normal adult it is 80 mm Hg

3.Pulse Pressure:

Difference between systolic and diastolic BP is called as Pulse Pressure. In normal adult it is 40 mm Hg.

Excretory system in man :

Removal of non gaseous nitrogenous waste along with excess of water in the form of urine is called as excretion.

Following are the imp.organs associated with excretory system :**1.Kidneys:**

- 1.Kidneys are situated in abdominal region along dorsal body wall one on either side of vertebral column.
- 2.Bean shaped
- 3.Reddish brown in colour
- 4.10 cm in length and weighs about 150 gms
- 5.Covered by capsule
- 6.It has two faces i.e outer convex and inner concave
- 7.Middle of concave face is called as 'Hilus' , from which ureter arises.
- 8.They are asymmetric in position
- 9.They are deeply embedded in fats.

2.Ureter:

These are whitish pipe arising from kidney and goes to urinary bladder. It carries urine from kidney to urinary bladder.

3.Urinary Bladder :

It is a muscular bag acting as temporary storehouse of urine. It is a pear shape sac .In male it is larger in size as compared to female. In male it stores 1000 to 1200 ml of urine and in female it store 800 to 1000 ml of urine. At the base it shows neck in which spincter muscles are present. It regulates aperture of urethra.

5.Urethra :

It is a tubular structure measuring about 16 to 18 cm in males . in male it is called as urinogenital duct . It helps to transfer urine and genital components (semen).In female it is of 4 cm only, it helps to transfer urine only.

L.S of Kidney :

Externally kidney is covered by Connective tissue covering called as Capsule. It shows two region , outer granular zone called as Renal cortex and inner zone called as renal medulla. Renal medulla shows 10 to 12 triangular structure called as Renal pyramid . In between two renal pyramid there lies gap called renal column of Bertini .In renal column of Bertini also there is cortex. In the middle area there is pelvis. From pelvis there arises ureter. The blood vessel which supplies blood to kidney is renal artery and which carries blood is called renal vein. Amount of blood flow through kidney per min is 600 ml.

Nephron or Uriniferous tubule :

Structural and functional unit of kidney is called as nephron . Each nephron is divided as Malphigian body and renal tubule. Malphigian body shows Bowman's capsule and glomerulus. Bowman's capsule is a cup like structure having two layers i.e outer parietal layer and inner visceral layer. Visceral layer shows small aperture in it for filtration. Glomerulus is a netwrk of blood capillaries .It shows two ducts i.e afferent arteriole and efferent arteriole. Afferent has larger diameter than efferent. Blood enters in afferent arteriole and leaves from efferent. Renal tubule is divided as Proximal convoluted tubule (PCT), Henle's loop and Distal convoluted tubule (DCT). The first folded part of nephron below neck is called as PCT. Internally it is lined by epithelial cells .It shows large microvilli. The 'U' shape tube is called as Henle's loop. It has two limbs i.e ascending limb and descending limb. Internally lined by squamous epithelial tissue The last folded part of nephron is called as DCT. Internally it is lined by Cuboidal epithelial cells DCT finally opens in larger tube called as collecting tubule which finally opens in pelvis.

Mechanism of Urine formation :

It is studied under 3 headings

1.Ultrafiltration :

Blood enters in afferent arteriole and leave through efferent arteriole. Due to difference in diameter there exist pressure in glomerulus called as ultra pressure ans The filtration that

occurs due to ultrapressure is called ultrafiltration. Due to ultrafiltration blood plasma gets filtered through glomerulus and filtrate is formed in neck region. Blood cells does not gets filtered through Bowman's capsule since diameter of cells are larger than diameter of pores.

2. Selective reabsorption :

The filtrate contains both essential and non essential component . The essential components are then absorbed by PCT, DCT and Henle's loop. The PCT helps in absorption of 75% water ,sugars , amino acids ,Na⁺, K⁺ Ca⁺⁺ etc , Henle's loop helps in absorption of DCT helps in absorption of remaining 25% water etc. The hormone ADH(Anti diuretic hormone) stimulates cells of DCT to absorb required water for body.

3. Tubular secretion :

All the waste component and excess water is not absorb by water. All such waste collectively called as Tubular secretion. This tubular secretion is nothing but Urine. The colour of urine is pale yellow and is due to urochrome pigment. The typical odour of urine is because of urinoid pigment. The pH of urine is slightly acidic.

Haemodialysis or Dialysis :

The process of artificial removal of waste by machine (dialyser) is called as dialysis. It is done when both the kidney of patient are partially or completely stops it working.

Respiration :

Respiration is an oxidative process in which complex organic food material is broken down into simple one with the release of energy.



Types of Respiration :

1. Aerobic Respiration :

The respiration which occurs in presence of oxygen is called as aerobic respiration.

e.g Higher plants and Animals.

Here 1 Glucose molecule gives 38 ATP molecule.

2. Anaerobic Respiration :

The respiration which occurs in absence of oxygen is called as Anaerobic respiration.

e.g Micro organism

Here 1 Glucose molecule gives 2 ATP molecule.

Fermentation :

Fermentation is an anaerobic process in which complex organic food material is broken down into simple one with the help of micro organism.

If the end product of fermentation is Alcohol then it is called as alcoholic fermentation and if end product is lactic acid then it is called as lactic acid fermentation.

Respiratory system in Man :

It consist of following important organ :

1.Nose :

It is an olfactory organ. It shows two nostrils at its tip. The air from nostrils enters nasal passage where it is filtered by nasal hairs and mucus. The nasal two passage are separated by nasal septum. From nasal passage air passes to buccal cavity and then to pharynx

2.Pharynx :

It is a common passage for both digestive and respiratory system. It is tubular elongated passage which is extended upto trachea. The air from pharynx enters to trachea.

3.Trachea (Wind Pipe):

Trachea is elongated tubular structure supported by 'C' shaped cartilaginous ring. It is extended upto chest region. At the tip of trachea there lies larynx or voice box. It is covered by flap called as epiglottis. Epiglottis prevents entry of food, water etc to trachea. At the lower end trachea shows branching called as bronchus. The bronchus enters in lungs and divided as primary, secondary and tertiary bronchii. Finally the tertiary bronchus is divide into number of small branches called as bronchioles which ends into alveoli.

Lungs :

There are two lungs situated in thoracic cage. The lungs are asymmetric in shape. Left lung is bilobed and right lung is trilobed. In left lung there ia notch for heart. Lungs are externally covered by membrane called as plural membrane. Internally lungs shows number of small ballon like structures called as alveoli.

Mechanism of Breathing :**Inhalation :**

The process of taking gas within the body is called as inhalation or inspiration. During inhalation the lungs expand in forward and downward direction. The intercostals muscles of ribs helps in expansion of lungs in forward direction where as diaphragm helps to move it in downward direction. When pressure is exerted on diaphragm , its shape gets change from curved to straight.

Exhalation :

The process of giving out gas outside the body is called as exhalation. During exhalation diaphragm and inter costal muscles both gets contracted and exerts pressure on lungs, due to which gas is removed out. After exhalation diaphragm attains its original shape. Before inhalation the amount of oxygen in air is more but after exhalation amount of CO₂ is more.

Respiratory Organs :**Cell :**

The unicellular organism like Amoeba, Diatom etc can respire by their whole body i.e cell. The cell absorb oxygen from water and liberates CO₂. It is done by common process of Diffusion.

Skin : (Cutaneous Respiration)

The skin of animals like Frog, Salamander etc is highly vascularised i.e richly supplied by blood .When skin comes in contact with water , it absorb dissolved oxygen and receives CO₂.

Gills :

Gills are the respiratory organs of fish. They are highly vascularised and branched structure . When water flows over the gills, it absorb dissolved oxygen and liberates CO₂.

Lungs :

These are main respiratory organs found in birds, mammals and reptiles. These are spongy and expandable structures . It shows large number of alveoli which is highly vascularised where exchange of gases takes place.

Other respiratory organs are : Book Lung , Trachea, Branchiostegite, Epipodite etc.

Exchange of gases in plants : For respiration plant uses oxygen and liberates CO₂. They absorb oxygen through stomata, so exchange of gases occurs by stomata. In night when stomata are closed , the exchange of gases occurs by lenticels.

- **Different ways of breakdown of glucose (5m): In class Notes**

Absorption of water in plants : Plant absorb water by the help of root hairs. Complete root doesn't help in absorption of water. Plants use 2 kinds of water i.e capillary and hygroscopic water. The water from soil reaches up to xylem by simple activity of osmosis . Each living cell performs osmosis and transport water up to xylem.

Types of Water :

1. Flowing water
2. Gravitational water
3. Capillary water
4. Hygroscopic water
5. Combined water etc

Transpiration : Removal of excess of water in the form of vapours from surface of plant body is called as transpiration.

Types of Transpiration :

1. **Stomatal Transpiration :** When the transpiration occurs by the help of stomata then it is called as stomatal transpiration. About 80% of transpiration occurs by stomata.
2. **Lenticular transpiration :** When the transpiration occurs by the help of Lenticels then it is called as lenticular transpiration. About 17-18% of transpiration occurs by Lenticels.
3. **Cuticular transpiration :** When the transpiration occurs by the help of Cuticle then it is called as cuticular transpiration. About 2-3% of transpiration occurs by cuticle.

Structure of Stomata:

Stomatas are the microscopic structure that are found on leaves and green parts of the plants body. Each stomata consist of 2 kidney shape or bean shape cells called as guard cell. Each guard cell is living and shows prominent nucleus and cytoplasm, The cell wall of guard cell is thin on outside whereas thick on inside. Externally guard cell is covered or protected by means of subsidiary cells. Stomata remains open during day time and remains closed in night.

Ascent of Sap : Upward conduction of water against the force of gravity is called as ascent of sap.

Path of ascent of sap : Upward conduction of water takes place by xylem. So xylem is considered to be path of ascent of sap.

It can be proved by two simple experiments :

Root Pressure Theory :

Water is absorbed by roots by osmosis. Due to osmosis pressure is created in cells of roots , such pressure is called as osmotic pressure. The osmotic pressure occurring in roots is called as root pressure. It is believed that root pressure helps in upward conduction of water. The

magnitude of root pressure is found in the range of 0 to 2 atm. If the maximum of 2 atm pressure in the root then water goes upto 19m only.

Demerits :

- 1.How water is transported in those plants which shows height more than 19m is not explained by this theory.
- 2.In colder areas, plants shows zero atm root pressure but still water goes in upward direction, how this conduction occurs is not explained by this theory.

Cohesion theory of Ascent of sap :

This theory was proposed by Dixon and Jolly. It is the theory which satisfactorily explain ascent of sap. According to this theory Ascent of sap occurs by cohesion between water molecules and transpiration pull (Suction pressure). When transpiration occurs a kind of pressure is created in stomata called as suction pressure due to which it absorb water from neighbouring cells .The neighbouring cells absorb water from midrib, midrib from twig, twig from branch , branch from trunk , trunk from roots , root from root hairs and finally root hairs from soil. Thus the pressure which is exerted in the leaf sucks the water in upward direction. The continuous water column is maintained by cohesive forces between water molecule.

Translocation in plants :

Flow of food material from site of photosynthesis to site of storage is called as translocation of solute. In plants food material is prepared in leaf by photosynthesis. The food which is formed is then transported to phloem by diffusion . As phloem receives food components , it is called as phloem loading. The phloem carries the food material upto storage tissues(parenchyma) in stem or trunk region. In trunk the phloem pours all its food to storage tissues and thus it is called as phloem unloading.