

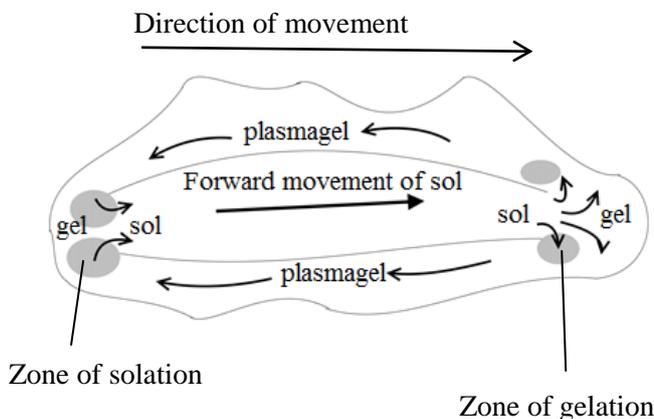
S.6: LOCOMOTION & CHEMICALS OF LIFE

1. a) Compare support in terrestrial plants and hydrophytes
2. Read information below on one type of mechanism of movement.
 - a) Summarize the sol-gel theory of pseudopodia formation in amoeba
 - b) State two importances of this mechanism to organisms that use it.

AMOEBOID MOVEMENT

Definition: is a crawling-like type of movement characterised by protoplasmic protrusion to form temporary feet-like structures called pseudopodia.

• Several theories (about 8) have been advanced about the formation of pseudopodia, but the most accepted now-a-days is the sol-gel-sol transformation of the cytoplasm as given by *Mast* (1925).



Description of amoeboid movement according to the sol-gel-sol theory

- The plasmalemma attaches to the substratum
- Stimulation of the ectoplasm (plasmagel) at a certain point causes its conversion to plasmasol, and flowing of the pressured plasmasol (endoplasm) into the weakened area, forming first a bulge and then a tube.
- The movement is sustained by contraction of the outer gel layer which squeezes inwards, causing cytoplasmic streaming towards the tip of the pseudopodium.
- Within the advancing tip at the **fountain zone**, plasmasol is converted to plasmagel which is then deposited on the sides of the pseudopodium. At the temporary posterior (rear/hind) end of the cell the plasma gel is converted to plasmasol, which then flows forwards into the newly formed pseudopodium so much so that the whole of body cytoplasm comes into it.
- Now the plasmagel tube contracts and the body moves forwards. Soon after this a new pseudopodium is again formed in this direction.

2. (a) What are the elements that make up proteins?
- (b) Give any two differences between a polysaccharide and a polypeptide?
- (c) Write in full the radicals written in symbols
 NH_2 ; - COOH ; - CH_3 ; -- OH
- (d) In what group of compounds are the radicals in (c) above usually found together?
3. a) Name the molecular components of DNA
- b) How does RNA differ from DNA in structure and function?