

14

Tuesday

Week 33
Day 226 • 139
Date 14 • 08 • 2018
August 2018

	M	T	W	T	F	S	S
A			1	2	3	4	5
U	6	7	8	9	10	11	12
G	13	14	15	16	17	18	19
18	20	21	22	23	24	25	26
	27	28	29	30	31		

Physiological effects of Auxin.

Cell Elongation:-

Auxins stimulate cell elongation or expansion in stems and coleoptiles.

Acid Growth Hypothesis:-

Auxins stimulates proton pumping by activating proton pump, H^+ -ATPase present on the plasma membrane.

↓
pH of cell wall falls as low as 4.5. The low pH activates expansins that disrupt the H-bonding of cellulose microfibrils causing the laminate structure of cell wall to loosen. With reduced rigidity the cells elongate.

↓
expansin triggered loosening of the cell wall is reversed when the pH is raised back to normal.

↓
Similar to auxin a fungal compound called fusicoccin causes rapid cell elongation and triggers wall loosening.

M	T	W	T	F	S	S	
					1	2	SEP 18
3	4	5	6	7	8	9	
10	11	12	13	14	15	16	
17	18	19	20	21	22	23	
24	25	26	27	28	29	30	

8.00 The action of fusicoocin or auxin can be blocked by permeating the cell wall with buffers that prevent the extracellular pH from being lowered.

10.00 Auxin Induced Proton Extrusion may involve both activation and Synthesis.

• Hypothesis for activation of preexisting H^+ ATPase.

- Auxin binds ABP1 (auxin binding protein located in cytosol or cell surface).



- ABP1 - IAA interact directly with plasma membrane H^+ ATPase stimulating proton pumping



- Second messengers could be involved.

Hypothesis for synthesis of new H^+ ATPase.

IAA induces second messengers that activate gene expression of H^+ ATPase.



Protein is synthesized on RER and targeted to plasma membrane

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Thursday

Week 33
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	M	T
A	6	7
U	13	14
G	20	21
18	27	28

8.00 27 Rooting:-

9.00 Auxins inhibit elongation of the primary root higher concn.

10.00 ↓
11.00 It stimulates root initiation on stem cuttings (adventitious roots).

12.00 ↓
1.00 Stimulates lateral roots which are present at the root hair zone and originate from the cells present in the pericycle.

2.00 ↓
3.00 Auxin stimulates division of pericycle cells which give rise to lateral root.
↓
4.00 cells beneath endodermis

5.00 37 Apical dominance (Imp)

6.00 Apical dominance is a phenomenon where the growing apical bud inhibits lateral buds (suppression of growth of lateral buds).

7.00 ↓
8.00 Removal of shoot apex (**decapitation**) usually results in the growth of lateral buds.

Notes

Auxin in the shoot apex maintains apical dominance by stimulating **strigolactone** synthesis.

strigolactone activates the **BRANCHED 1 (BRC 1)** gene. The product of BRC 1 gene inhibits the lateral bud growth.

Time is too swift for those who fear.

M	T	W	T	F	S	S
					1	2
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Week 33

Day 229 • 136

Date 17 • 08 • 2018

August 2018

Ovary → fruit
ovule → seed

17

Friday

8.00

4. → Fruit Set.

9.00

Transition of a quiescent ovary to a rapidly growing young fruit is known as Fruit set.

10.00

Auxin promotes fruit development.

11.00

After fertilization fruit growth may depend on auxin produced in developing seeds.

12.00

1.00

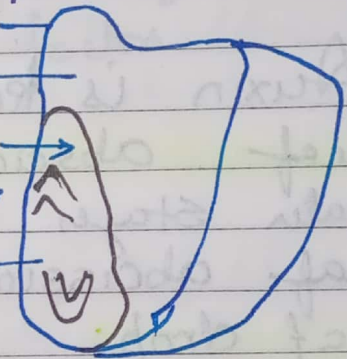
The endosperm may contribute auxin during the initial stage of fruit growth, and the developing embryo may take over as the main auxin source during the later stages.

Seed coat:

Endosperm:

Single cotyledon

Embryo



2.00

3.00

4.00

5.00

> (where ovary is resting).

6.00

False fruits: In them, receptacle or thalamus are very fleshy and it continues to grow and encloses the ovary within it. So they are called as false fruit.

7.00

eg: Apple, Strawberry.

8.00

Notes

In some plant species seedless fruits may be induced by treatment of the unpollinated flower with auxin. This is known as parthenocarpy.