

BOTANY EXCEL 3- PLANT EMBRYOLOGY

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| 1. Geoplynology | Study of Fossil pollens. |
| 2. Latro palynology | Study of pollens in Criminology and Medical aspects. |
| 3. Nemec phenomenon | Nemec in 1898 found out pollen grain embryosac in |

Hyacinthus.

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| 4. Megasporangium | It is the Ovule. |
| 5. Funicle | It is the stalk of the Ovule |
| 6. Chalaza | It is the basal part of the Ovule. |

7. **Types of Ovules**

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| 1. Unitegmic
Solanaceae. | Single integument | Gamopetalae, Compositae, |
| 2. Bitegmic
Malvaceae, | 2 integuments | Polypetalae, Cruciferae,
Cucurbitaceae. |
| 3. Atemic | No integument | Loranthaceae, Santalaceae. |
| 4. Crassinucellate | Well developed nucellus | Monocot, Malvaceae. |
| 5. Tenui nucellate
Cucurbitaceae. | Nucellus absent | Solanaceae, Compositae, |
| 6. Orthotropous /
Atropous | Errect type ovule | Polygonaceae, Piperaceae. |
| 7. Anatropous | Inverted ovule | 82% of families. |
| 8. Hemianatropous | Transverse ovule | Ranunculaceae, Leguminosae. |
| 9. Camylotropous | Curved ovule | Caryophyllaceae, Leguminosae. |
| 10. Amphitrophous | Embryosac curved into
horse shoe shape | Papaveraceae, Butomaleae. |
| 11. Circinotropous | Ovule turns 360 degree | Opuntia. |

8. **Development**

1. **Outer primary parietal cell** form Nucellus and **inner primary sporogenous cell** form Megaspore mother cell.
2. Mother cell divide by meiosis and linear tetrad of **4 mehaspore** forms. **Lower one** near the Chalaza becomes **functional**.
3. Functional megaspore divide Mititically (3 divisions)
4. The mature embryosac at the time of fertilization is Monosporic – 7 celled and 8 nucleate.
5. 3 nuclei form Egg apparatus, 3 nuclei near Micropyle form Definitive nucleus and the remaining 2 fertilize to form Definitive nucleus.

6. This is called **Polygonus type embryosac**. It was discovered in **Polygonum** by **Stransburger**.
7. **Geitonomy** Is the transfer of pollen from one flower to another of same plant. It is genetically self pollination
8. **Xenogamy** Is the transfer of pollen from one plant to another of a related allied species.
9. **Cleistogamy** Is the condition in which the flower never opens. Egs. Oxalis, Viola, Impatiens, Commelina, Arachis.
10. **Monoecious** Maize, Caster, Coconut.
11. **Dioecious** Papaya, Asparagus, Spinach, Datepalm.
12. **Dicogamy** Bisexual – male and female parts develop at different times.
13. **Protandry** Androecium mature first. Cotton, Marigold, Impatiens, Saxifraga.
14. **Protogyny** Gynoecium mature first. Aristolochia, Bajra.
15. **Herkogamy** Physical barrier between male and female parts. Gynostegium disc in Calotropis.
16. **Self sterility** Radish, Petunia.

9. Mode of entrance of pollen tube into ovule

1. **Porogamy** through micropyle.
2. **Chalazogamy** through Chalaza.
3. **Merogamy** through integument.

10. Double fertilization

It was discovered by **Nawashchin** in **Lilium and Fritillaria**. It is found in Angiosperms.

11. **Generative or True act of fertilization** is the fusion of one male gamete with the egg.
12. **Pseudo or Vegetative fertilization** is also called **Triple fusion**. It is the fusion of large male gamete with secondary nucleus to form a triploid cell.