BOTANY (Major)
Paper: M 401 (Theory)
(Morphology, Palynology, Embryology of Angiosperms)

Write any one assignment of the following

ASSIGNMENT: 1. Explain Telome theory, Phyllode theory, Carpel polymorphism,

Marks-15

ASSIGNMENT: 2. Embryo and endosperm development.

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<u>INTERNAL ASSESSMENT-15 MARKS</u>

Answer any five of the following. Marks -3 each

1. What is Inferior ovary?
2. Describe about pollen allergy.
3. What is the consequence of megasporogenesis?
4. What are the methods of pollen studies?
5. Explain the types of embryo sacs.
6. Explain the causes of polyembryony.
7. Explain importance of haustorial structure.
8. What are the primitive characters of stamen?

SEND TO : [Write in brief (short) as possible]

Dr Bipul Saikia, Email : bipul_sai@yahoo.com (within 15 days from date of uploading)

BOTANY (Major)
Paper: M 402 (Theory)
(Plant Taxonomy)

Write any one assignment of the following

ASSIGNMENT: 1. Explain detail about the Bentham and Hooker system of classifications.

Marks-15

ASSIGNMENT: 2. Numerical Taxonomy

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INTERNAL ASSESSMENT-15 MARKS

Answer any five of the following. Marks -3 each

1. What is taxonomy and systematics?
2. Describe about the importance of APG system.
3. What is the concept of biocode?
4. Explain the importance of Palynology in Taxonomy.
5. Describe the importance of embryology in taxonomy.
6. Explain the characters of Magnoliaceae.
7. Explain the characters of Asteraceae.
8. Explain about the type concepts and its applications

SEND TO : [Write in brief (short) as possible]

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SOME HINTS:

AN **INFERIOR OVARY** lies below the attachment of other floral parts. A pome is a type of fleshy fruit that is often cited as an example, but close inspection of some pomes (such as Pyracantha) will show that it is really a half-**inferior ovary**. Flowers with **inferior ovaries** are termed epigynous.

. **POLLEN ALLERGY SYMPTOMS MOST OFTEN INCLUDE:**

1. nasal congestion.
2. sinus pressure, which may cause facial pain.
3. runny nose.
4. itchy, watery eyes.
5. scratchy throat.
6. cough.
7. swollen, bluish-colored skin beneath the eyes.
8. decreased sense of taste or smell.

PRIMITIVE STAMEN:

The *Magnolia* family has the following primitive characteristics:
(1) Large flowers with numerous petals and sepals (tepals).
(2) Numerous spirally arranged stamens at the base of a cone like receptacle bearing numerous spirally arranged carpels.
(3) Each seed has a fleshy red outer layer (aril) and hangs from its follicle by a threadlike stalk.
(4) Radial symmetry or actinomorphic and floral axis (receptacle) elongated.
Thus, the correct answer is option D.

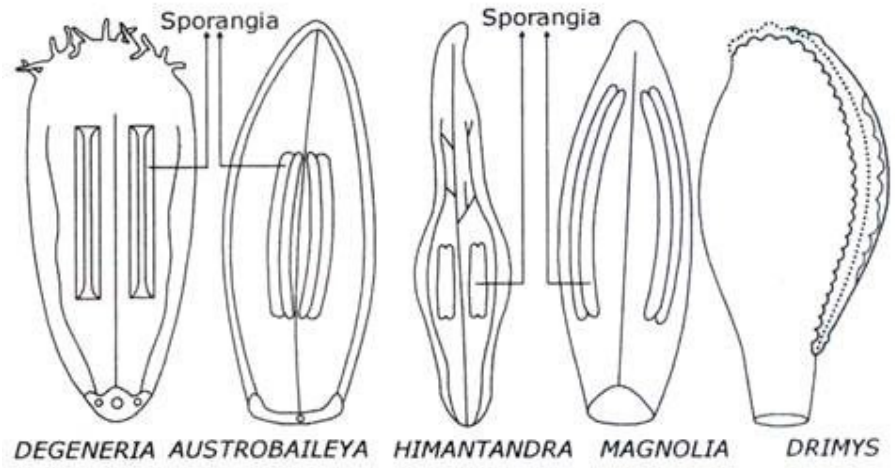
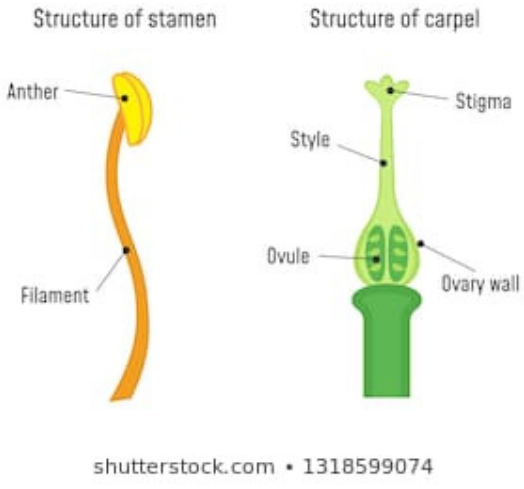


Figure 30.11
Diagram showing stamens and a carpel (*Drimys*) of extant angiosperms that are regarded to have primitive features.

ADVANCED STAMEN AND CARPEL



POLYEMBRYONY

This phenomenon is **caused** either due to **the** fertilization of one or more than one embryonic sac or due to **the** origination of embryos outside of **the** embryonic sac. This natural phenomenon was first discovered in **the** year 1719 by Anton van Leeuwenhoek in Citrus plant seeds.

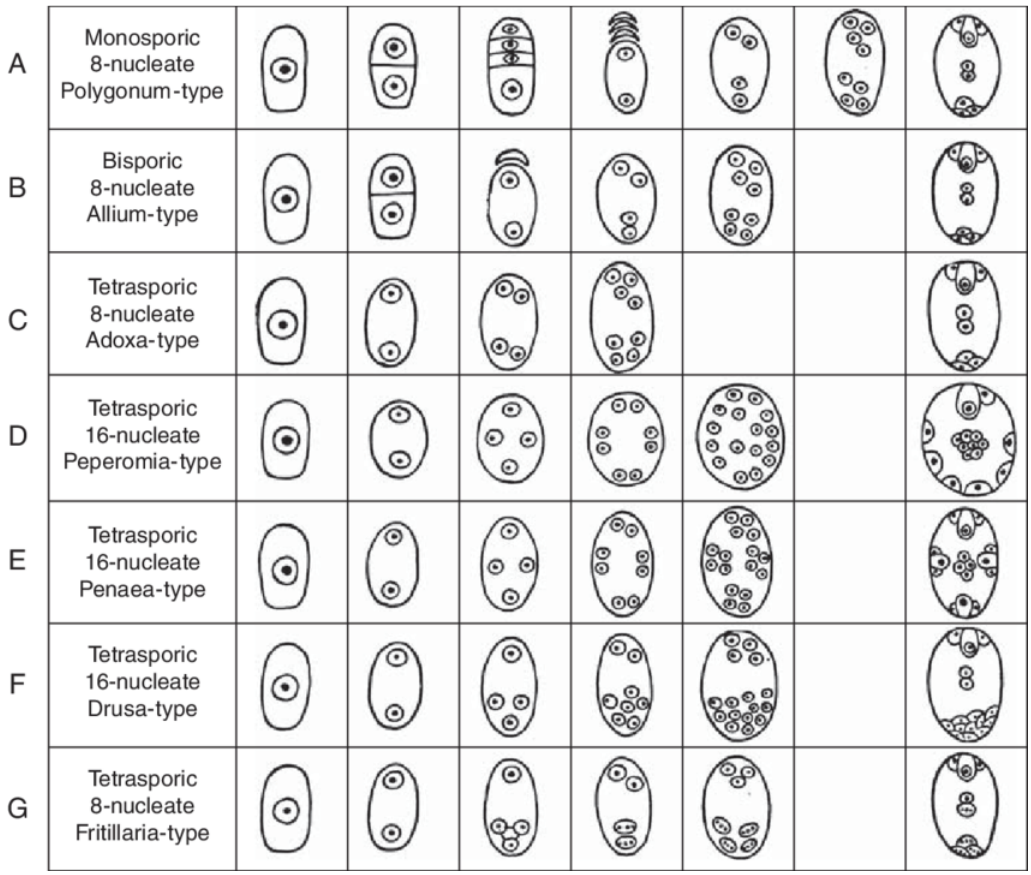
CLEAVAGE POLYEMBRYONY

APOGAMY

ADVENTIVE EMBRYONY

FALSE POLYEMBROYONY

TYPES OF ANGIOSPERM EMBRYOSAC



HAUSTORIUM

The development of the endosperm is of the cellular type. A micropylar haustorium is differentiate at eight-celle endosperm stage and a-chalazal haustorium at sixteen-celled endosperm stage. A large amount of wall ingrowths interweaved network, dense cytoplasm with abundant mitochondria, ER and dictyosomes, and marked large nuclei and nucleoli are found in the haustorial cells connected endosperm cells with numerous plasmodesmata. Two cuticular layers are observed between the integumentary typetum and embryo sac, which enclose the embryo sac from all sides but leave an apture at each pole where a edosperm haustorium is formed. The main role of endosperm haustoria is to absorb and transport nutrients to endosperm from sporophyte during its development.

BIOCODE

As information on the world's biota becomes increasingly integrated across different groups of organisms, from bacteria and fungi to animals and plants, there is a concomitant rising need for a consistent and harmonized approach to the regulation of scientific names. The *BioCode* initiative represents a concerted effort, by biologists intimately involved in the operation of the current system of separate codes, to devise a unified approach to the future naming of organisms of all kinds. This need has become pressing in view of common issues

that the separate organismal codes now have to address, consequent on the rapid changes taking place in global informatics, database architecture, molecular systematics and ecology, and electronic publication.

The *Draft BioCode* (2011) is most appropriately viewed as a framework over-arching the practices of the current series of codes, but which also addresses ways in which some of the key issues of current concern in systematics could be handled by all codes, for example the registration of new names and electronic publication. In addition, it has been drawn up so that its provisions can be adopted at the appropriate time for any particular group of organisms, at any rank or range of ranks. Such adoption is to be determined by the appropriately mandated international body if and when the necessary structures exist and are operational

Preamble

1. Biology requires a precise, coherent and simple system for the naming of organisms used internationally, dealing both with the nomenclatural terms and with the scientific names that are applied to the individual taxonomic groups of organisms (*taxa*, singular *taxon*).

2. The provisions of this *Code* shall apply to names of all kinds of organisms, whether eukaryotic or prokaryotic, fossil or non-fossil[12], and of fossil traces of organism (ichnotaxa), that are established (i.e., validly published or made available) and shall govern the choice when names compete among themselves or with earlier names. They shall also, and without limitation of date, provide for the establishment of co-ordinate names within rank groups, for the protection of names, as well as for their correct form.

3. Established names of organisms that are not yet covered by Adopted Lists of Protected Names are in all other respects (including their subsequent typification) governed by the *International Code of Nomenclature of Bacteria* (here: "bacteriological *Code*"), the *International Code of Botanical Nomenclature* ("botanical *Code*") or the *International Code of Zoological Nomenclature* ("zoological *Code*") hereafter jointly called the "Special *Codes*", depending on the accepted taxonomic position of their type.

4. Separate rules for organismal nomenclature, contained in the *PhyloCode,* are being established by analogy to those in the Special *Codes* but are based on different principles. Any names that may be proposed under the *PhyloCode* have no standing under the *BioCode*.

5. Separate rules for virus nomenclature, contained in *The International Code of Virus Classification and Nomenclature* (virological *Code*) have been established in conformity with Principles I and V of this *Code* and with the thrust of many of its rules. Because names of virus species do not have the binominal form required under this *Code*, and names of virus taxa in other recognised ranks have mandatory terminations according to rank, provisions of the *BioCode* proscribing these terminations for non-virus taxa ensure that the names of viruses and other organisms cannot conflict.

6. The nomenclature of cultivated plants follows the provisions of this *Code*, in so far as these provisions are applicable, but the naming of distinguishable groups of plants whose origin or selection is primarily due to intentional human actions follows the supplementary provisions contained in the *International Code of Nomenclature for Cultivated Plants* ("cultivated plant *Code*").

7. The nomenclature of infraspecific taxa (pathovars) of plant pathogenic bacteria is regulated by a set of *International Standards for Naming Pathovars of Phytopathogenic Bacteria* ("plant pathogen *Standards*").

TYPE CONCEPT

ICN's second principle states that a specimen must be associated with the scientific name known as **nomenclatural type.** A nomenclatural type is either a specimen or may be an illustration. Example: Herbarium sheet for vascular plants.

There are different nomenclatural types.

Holotype : A specimen or illustration originally cited by the author in protologue. It is a definitive reference source for identity. Citation of holotype and submission of it is one of the criteria for valid publication of a botanical name.

Isotype: Duplicate specimen of the holotype collected from same population by same person on same date with same field number. They are the reliable duplicates of holotype and may be distributed to various herbaria of various regions.

Lectotype: Specimen selected from original material serves as a type, when no holotype was designated at the time of publications or if holotype is missing or destroyed.

Syntype: When more than one specimen cited by the author in the protologue without designating holotype.

Neotype: Specimen derived from non-original collection selected as the type, when original specimen is missing or destroyed.

Paratype: Specimen cited in the protologue is other than holotype, isotype or syntype.

Epitype: Specimen or illustration serves as an interpretive type, when holotype, neotype or lectotype is ambiguous.