**Angiosperm Reproduction**

**Essential Idea(s):**

*Reproduction in flowering plants is influenced by the biotic and abiotic environments.*

**IB Assessment Statements and Class Objectives**

9.4.S2:  Drawing of half-views of animal-pollinated flowers.

* Draw and label an animal pollinated flower, including:
  + Nectar-secreting glands
  + Petals
  + Sepals
  + Stamen
  + Anthers
  + Filaments
  + Pistil
  + Stigma
  + Style
  + Ovary
  + Ovule
* State the function of the different parts of the animal-pollinated flower.

9.4.U1:  Flowering involves a change in gene expression in the shoot apex.

* List the vegetative and reproductive structures of an angiospermatophyta.
* State that flowers are produced from a shoot apical meristem.
* State two abiotic factors that may trigger flowering.
* Compare the timing of flowering in short-day plants and long-day plants.
* Outline the process by which changes in gene expression trigger flowering.

9.4.U2:  The switch to flowering is a response to the length of light and dark periods in many plants.

* State the role of the pigment phytochrome.
* Describe the conversions between the two forms of phytochrome.
* Describe role of phytochrome in controlling flowering in long and short day plants.

9.4.A1:  Methods used to induce short-day plants to flower out of season.

* State how plants can be manipulated to force flowering out of season.

9.4.U3:  Success in plant reproduction depends on pollination, fertilization and seed dispersal.

* Define pollination, fertilization and seed dispersal.
* State the changes to the ovule and ovary that result from fertilization.
* List mechanisms of seed dispersal.

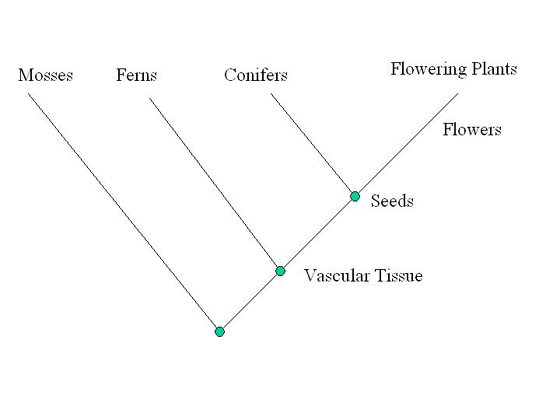
9.4.S1:  Drawing internal structure of seeds

* Draw and label the structure of seeds, including:
  + Embryo root
  + Embryo shoot
  + Cotyledons
  + Testa
  + Micropyle
  + Hilum
* State the function of the different parts of the seed.

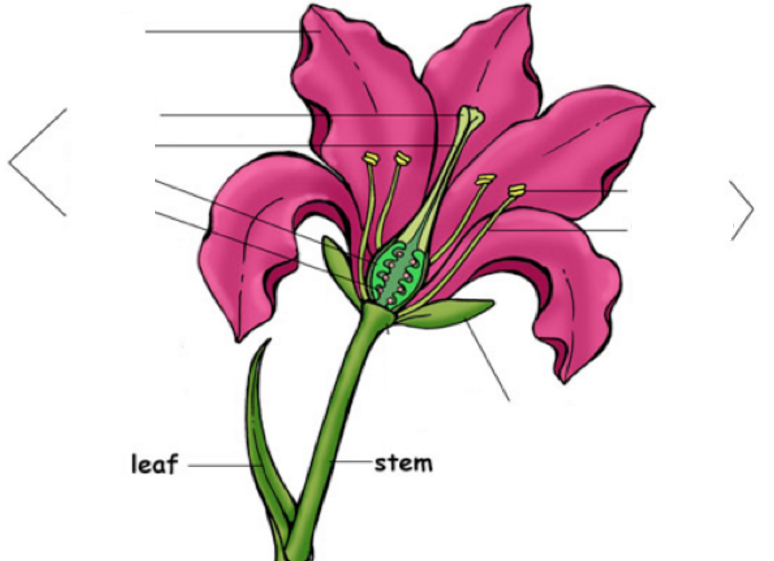
9.4.S3:  Design of experiments to test hypothesis about factors affecting germination.

* Define germination.
* Outline why water, oxygen and warmth are required for germination.
* Outline the role of gibberellin during germination.
* Write five example problem questions for experiments that could test factors affecting germination.

**Major Plant Phyla**

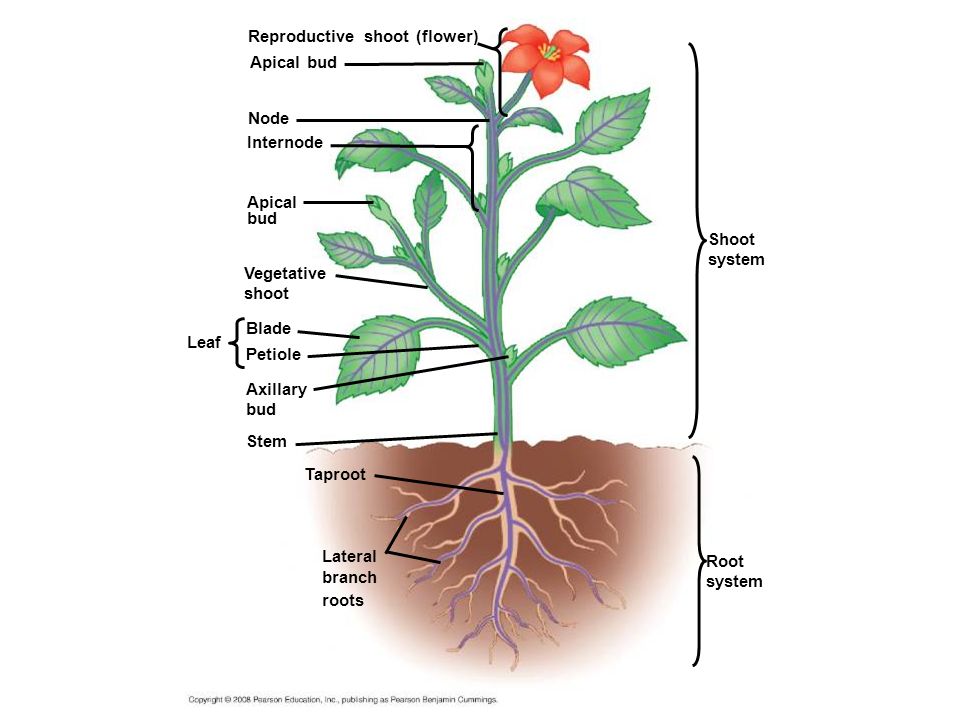


**Flower Structure**

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**Flower Structure to Function**

|  |  |  |  |
| --- | --- | --- | --- |
| **STUCTURE** | | **SKETCH** | **FUNCTION** |
| **Nectar Gland** | |  |  |
| **Petal** | |  |  |
| **Sepal** | |  |  |
| **Stamen** | **Anther** |  |  |
| **Filament** |  |  |
| **Pistil** | **Stigma** |  |  |
| **Style** |  |  |
| **Ovary** |  |  |
| **Ovule** |  |  |



**Control of Flowering**

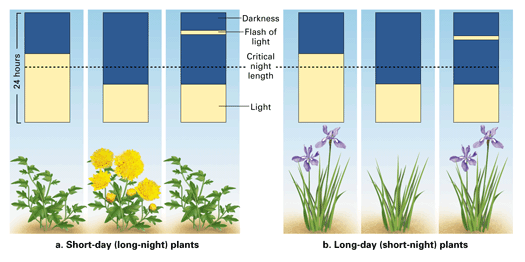
Reproductive Structures:

Flowers form from…

Vegetative Structures:

Abiotic Factors that Regulate Flowering:

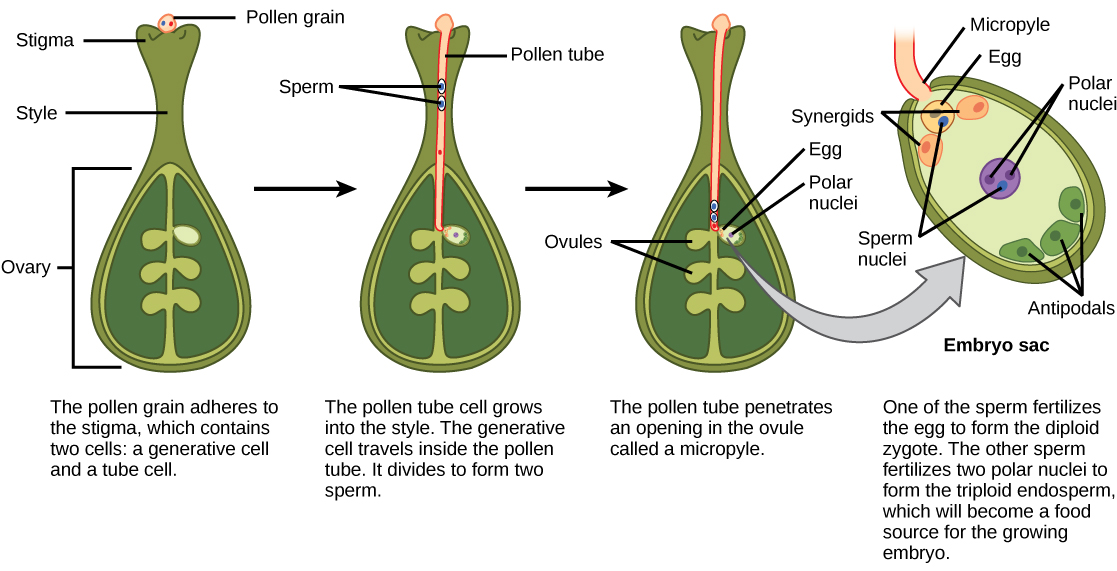
**Photoperiods**



Phytochrome is a pigment within the leaves with two interchangeable forms that each elicit different responses in the plant.

**Pr Pfr**

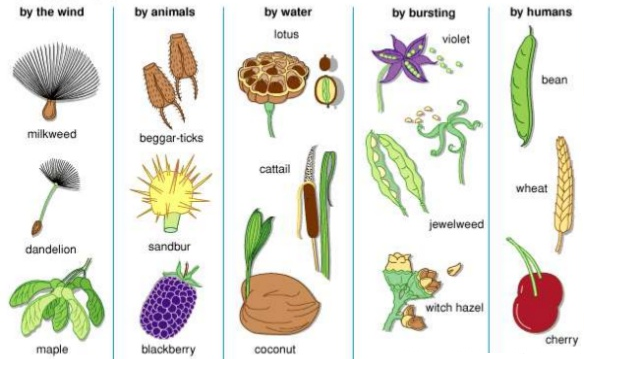
**Pollination and Fertilization**



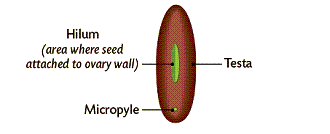
After fertilization, the ovule develops into:

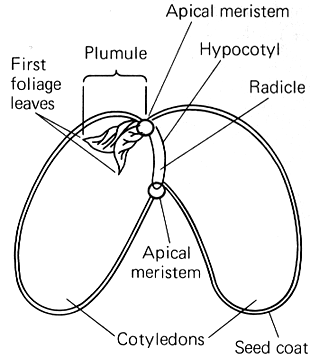
After fertilization, the ovary develops into:

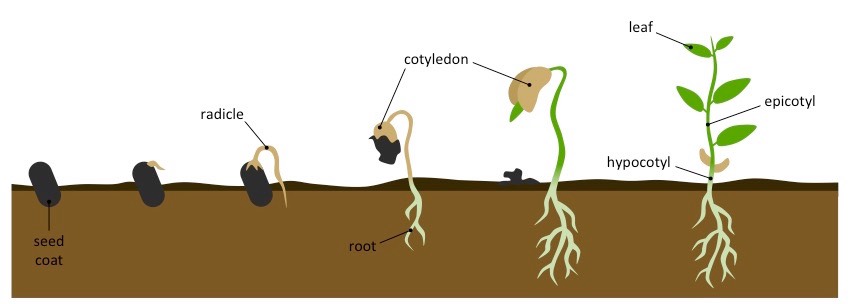
**Seed Dispersal**

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**Seed Structure**





**Germination**

|  |  |  |
| --- | --- | --- |
| Water | Oxygen | Warmth |
| Gibberellin: | | |