LECTURE 5

THEME:

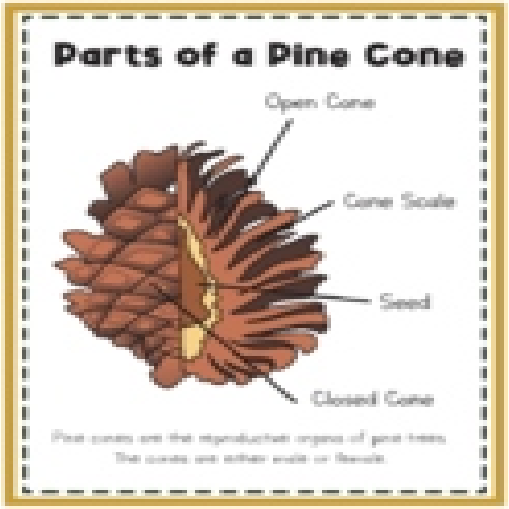
Plant kingdom. Seed plants. Division Gymnospermae. Gymnosperms of medical importance.

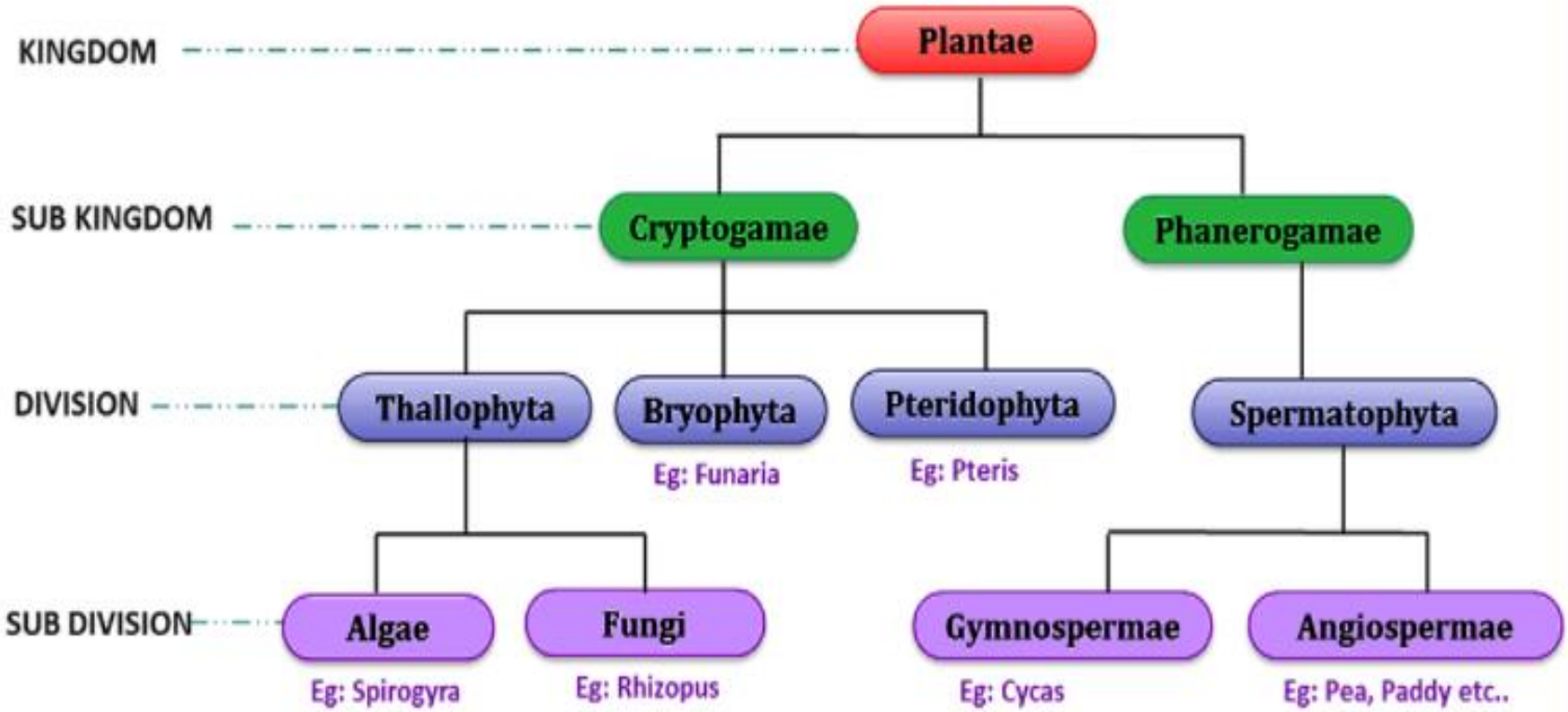
GENERAL İNFORMATİON about

Conifers(Gymnosperms)

Pinophyta(Gymnospermae)

- GYMNOSPERMS are the most ancient representatives of higher plants, common in all zones of the Earth. Mostly-trees, less -woody lianas and shrubs. Seeds are located on scales strobil open, without protection. Very much developed asexual generation (sporophyte), which has a well developed root, stem, needle-shaped and sometimes scale leaves.




KINGDOM
Plantae
SUB KINGDOM
Cryptogamae
Phanerogamae
DIVISION
Thallophyta
Bryophyta
Pteridophyta
Spermatophyta
Eg: Funaria
Eg: Pteris
SUB DIVISION
Algae
Fungi
Gymnospermae
Angiospermae
Eg: Spirogyra
Eg: Rhizopus
Eg: Cycas
Eg: Pea, Paddy etc..

CHARACTERISTICS OF GYMNOSPERMS

- The gymnosperm is a woody plant with seeds on the inner side of scale leaves that are usually arranged spirally to form cones or strobili but without flowers.
- Intermediated group between Cryptogams and Angiosperms.
- As gymnosperm lacks an ovary, it can't produce fruit.
- They are perennial and show extreme xerophytic and terrestrial adaptation but never aquatic.
- In the steam and root, secondary growth occurs.
- Seeds present in a gymnosperm are naked that develop from ovules.
- Generally, gymnosperms are polyembryony, oospore forms embryo. Sexual reproduction is of oogamous type.
- They have formed male and female cones that bear microsporophylls on which microsporangia are born and megasporophylls on which megasporangia are born, respectively.
- Endosperm (of seeds) helps in the storage of food for the development of the plant.
- They are the dominant vegetation where snow is the source of water rather than water (i.e, in cold regions of the world).
- The wind is a significant source of pollination.
- The gymnosperms are unisexual and may be monoecious or dioecious.
- Absence of double fertilization and triple fertilization.
- There is a lack of colorful sepals and petals in their reproductive organs.
- At the end of the suspensor, the embryo is fully developed.

Morphology and Anatomy of Gymnosperms

- These are usually medium to large trees with some shrub species present in them.
- The plant body is sporophytic, which is differentiated into roots, stem, and leaves.
- Gymnosperm bears tap root. They may have symbiotic relations for roots with blue-green algae and fungi.
- The stems are branched(pines) and unbranched (Cycas), usually tail, straight, and covered with scaly bark.
- Two types of leaves are usually seen i.e., foliage leaves and scale leaves.
- Foliage leaves are green, simple, needle-shaped (pines), and large and pinnately compounds

Classification of Gymnosperms (divisions)

GYMNOSPERMS

- Cycadophyta
- Ginkgophyta
- Gnetophyta
- Coniferophyta

MEDICINAL PLANTS

Ginkgo (Ginkgo biloba)

- A Ginkgo biloba from family Ginkgoaceae, division Ginkgoaphyta , tree can reach 30 or 40 meters height and a spread of 8 meters. The trunk can become about 3 or 4 meters wide in diameter. It is straight columnar and sparingly branched. Young trees have usually a central trunk, pyramidal in shape, with regular, lateral, ascending, asymmetrical branching . The bark is brown and rough. It fissures rough furrows with the age.
- The male tree usually has a slim column form and is slightly longer, the female tree has a wider crown and a more spread out form.
- Ginkgo has a long history of use in treating blood disorders and memory issues. It is best known today as way to potentially keep your memory sharp. Laboratory studies have shown that ginkgo improves blood circulation by opening up blood vessels and making blood less sticky. It is also an antioxidant.

Pinus sylvestris -Scots pine, Scotch pine or Baltic pine,

- A tree to 25–40 m tall from family Pinaceae, division Coniferophyta . It can readily be identified by its combination of fairly short, blue-green leaves and orange-red bark.
- It has quite a wide range of medicinal uses but is mostly used against bronchitis, its leaves and young shoots being antiseptic, diuretic and expectorant. The turpentine obtained from the resin also has several medicinal uses.

Ephedra sp.- **Joint-pine, jointfir**

- **Genus from Ephedraceae is a family belonging to Gnetophyta, E.equisetina, э. средняя- E.intermedia and others have a medical importance. They contain alkaloid ephedrine. The ephedrine in ephedra is responsible for its therapeutic effects and also its serious safety concerns. It stimulates the heart, lungs, and nervous system.**

- **People use ephedra for weight loss and athletic performance. It's also used for allergies, nasal congestion, asthma, common cold, headache, and many other conditions, but there is no good scientific evidence to support these uses. Ephedra is also unsafe.**

- **Ephedra has been banned by the US FDA since April 2004. It's also banned by the National Collegiate Athletic Association (NCAA), International Olympic Committee (IOC), and National Football League (NFL). Only Mormon tea comes from Ephedra nevadensis, an Ephedra species that doesn't contain ephedrine.**

Juniperus communis- common juniper

Juniperus communis, the common juniper, is a species of small tree or shrub in the cypress family Cupressaceae.**-** ***Collective fruits have a diuretic effect***

THANK YOU FOR ATTENTION!

DOCENT

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