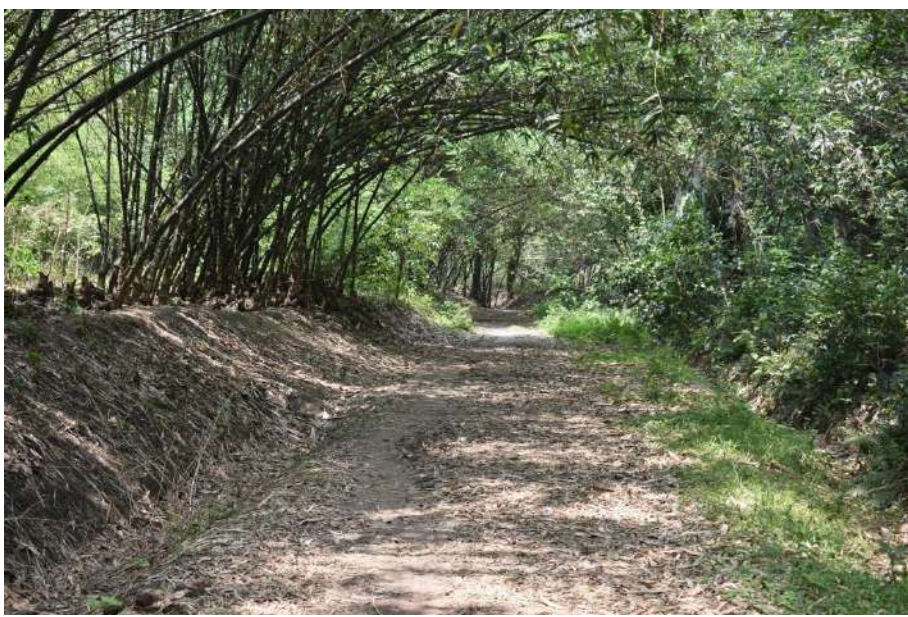


# **Your neighborhood Pteridophytes**

**Anish Bhattacharya  
Assistant Professor  
Durgapur Government  
college**



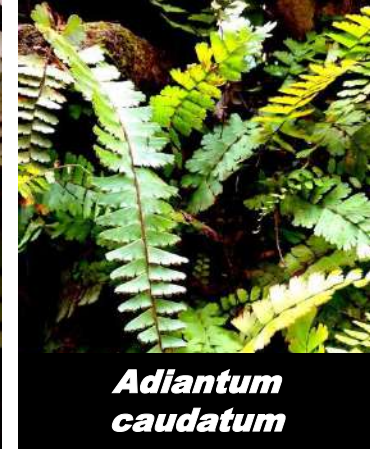
Where to find them ???



***Adiantum capillus-veneris***



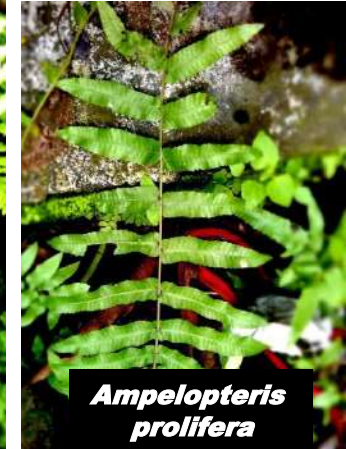
***Adiantum lunulatum***



***Adiantum caudatum***



***Pteris vittata***



***Ampelopteris prolifera***



***Microsorium punctatum***



***Pyrrosia lanceolata***



***Lygodium flexuosum***



***Selaginella vaginata***



***Stenochlaena palustris***

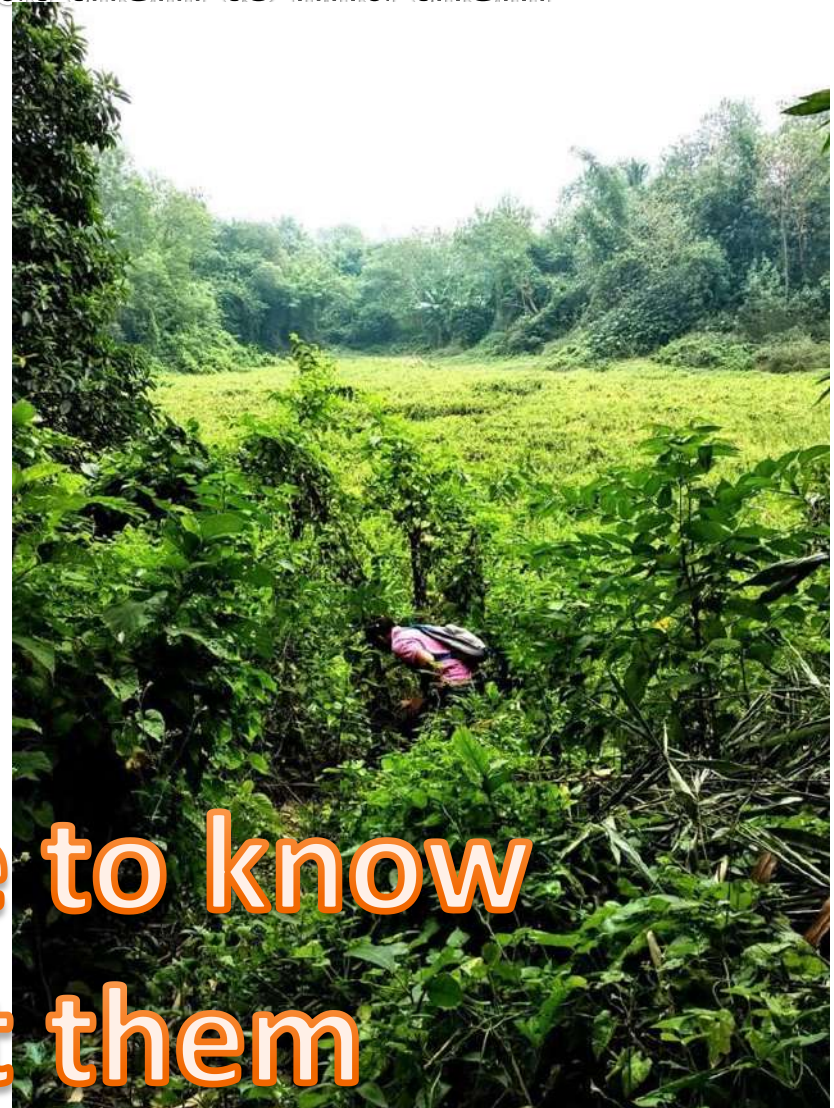
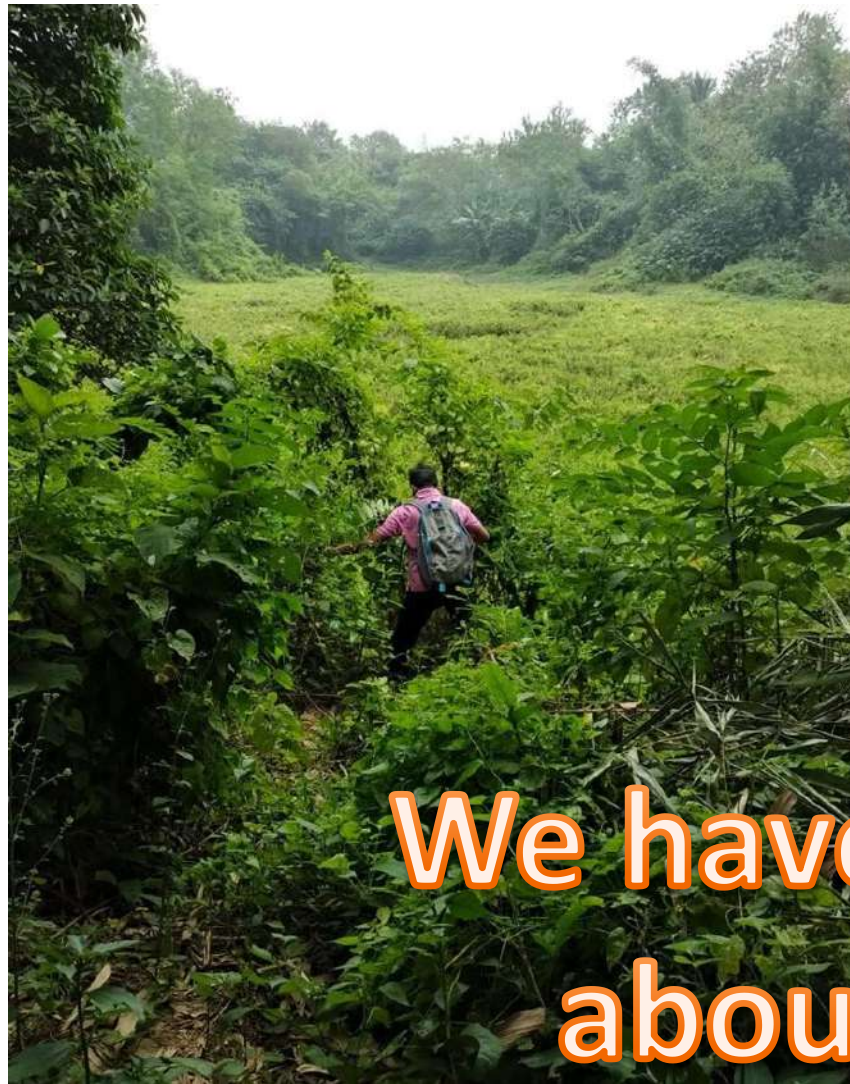


***Diplazium esculentum***



***Christella dentata***

BUT...We have to know about them to find them



**We have to know  
about them**

**What if they have their own  
facebook id**



## **Bryophytes** ( Amphi. Planty )

Softy..

Cute buddy..

Early coloniser..

Moist Lover..

 Add Friend



Owner and Founder at **Pioneer community**




Former employee at **Dominant Flora**



## **Pteridophyte** (Vas. Cryp.)

If the world is not suitable  
for you.. make it suitable  
and colonise

 Add Friend



Owner and Founder at **Terrestrial  
Vegetation**



First **Land Vascular Plant**

AniB



## Gymnosperms ( Nak. Seed)

Hill Dominator..  
Jurassic owner..  
Sensitive

 Add Friend



Owner and Founder at **Let's fill the Hill**



Former vegetation maker at **Trop-tempo agency**

What if.. Pteridophyte was  
a facebook user !?

It would also has some of its  
Own groups.. Right ?

### Embryophytes

(Bryophytes, Pteridophytes, Gymnosperms and Angiosperms)

### Archegoniates

(Bryophytes, Pteridophytes, Gymnosperms )

### Tracheophytes

(Pteridophytes, Gymnosperms and Angiosperms )

It has its own famous profile i.d as ....

**THE VASCULAR CRYPTOGAMS**



# What does vascular cryptogams actually means ??

**Vascularis = vasculum = small vessel**

**Kruptos = Hidden**

**Gamos = Marriage**

**So, Vascular Cryptogams are, therefore ,  
an assemblage of seedless vascular plants  
that have successfully invaded the land and reproduce by means of  
spores.**

**What about the term PTERIDOPHYTE ??**



**HAECKEL**

***Pteron* = feather, *Phyton* = plant**

# Habitat

## Terrestrial



## Swampy



## Semi-aquatic



## Epiphytic



## Aquatic



**But....  
How big  
or small  
they can  
be ?????**

# Size



# When did they appear on earth ?

## 430 mya !!!



## 280-230 mya !!!



Rishte me to  
hum tumhare  
baap hote hai ..  
Naam hai..

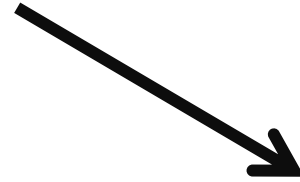
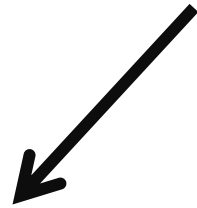
Pteridophytes → Phenerogams

# Sporophyte

The dominant, independent ,  
multicellular, diploid phase



# Rhizome



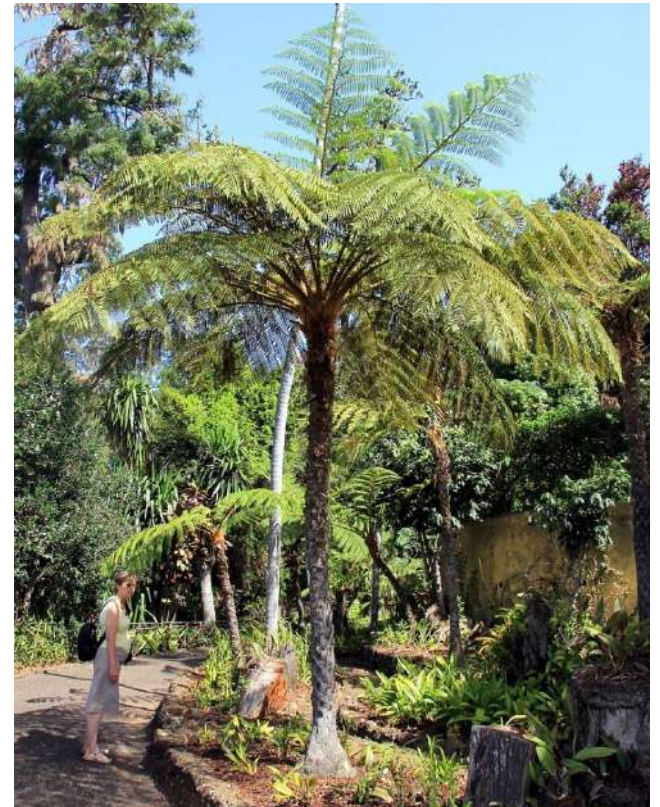
## Horizontal

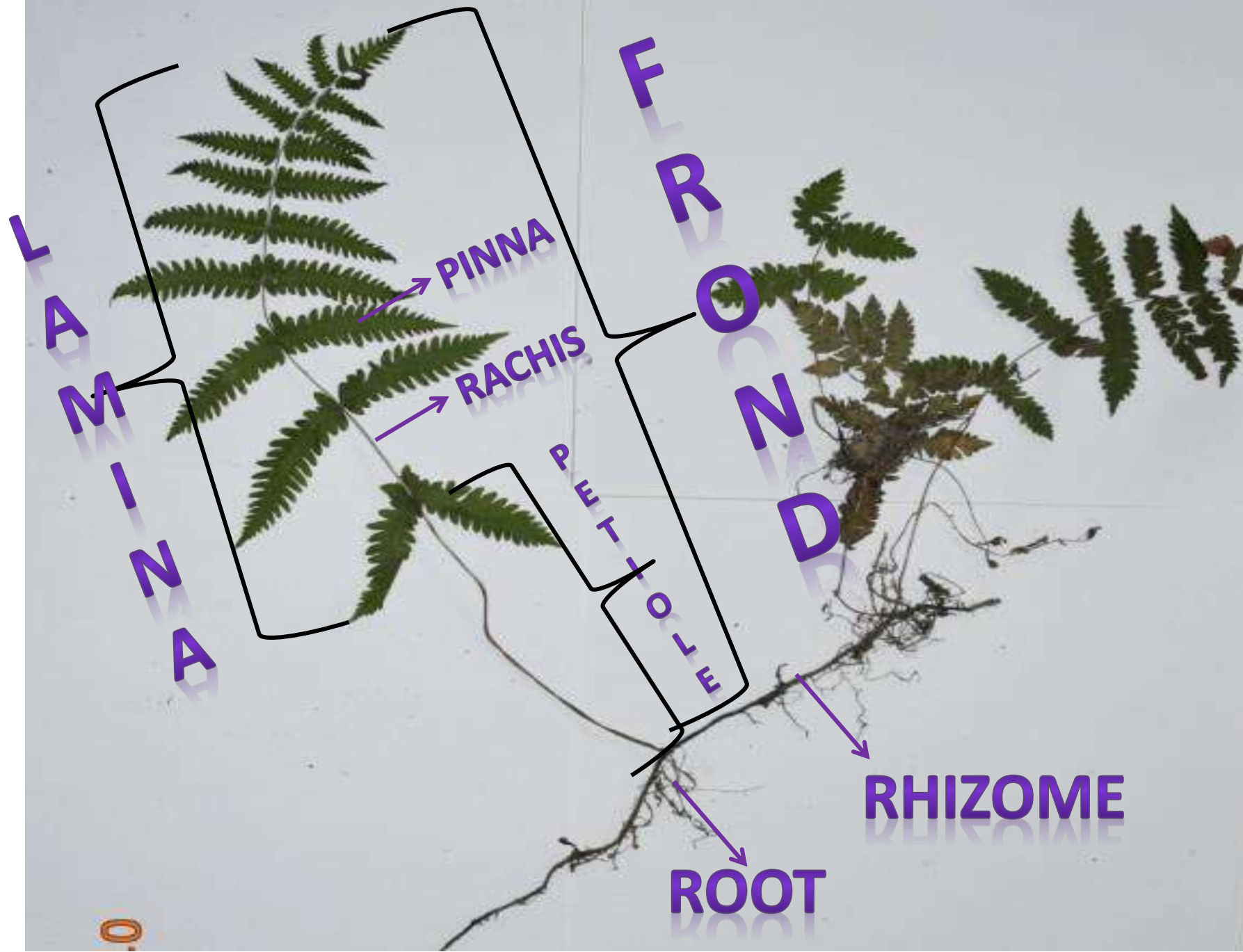
## Vertical



## Subterranean

## Surface





L  
A  
M  
I  
N  
A

F  
R  
O  
N  
D

PINNA

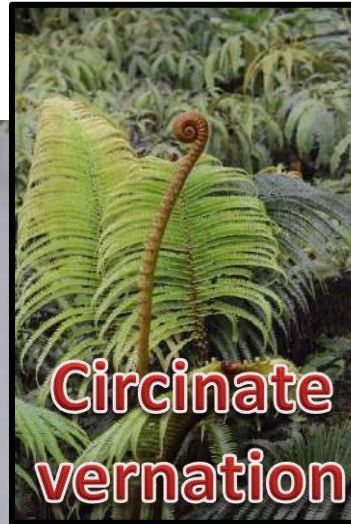
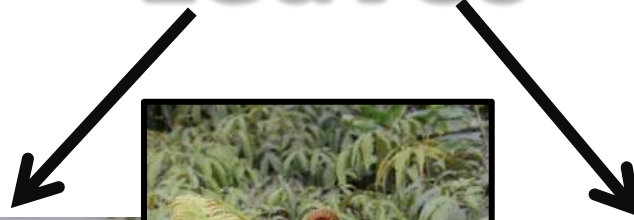
RACHIS

PETIOLE

RHIZOME

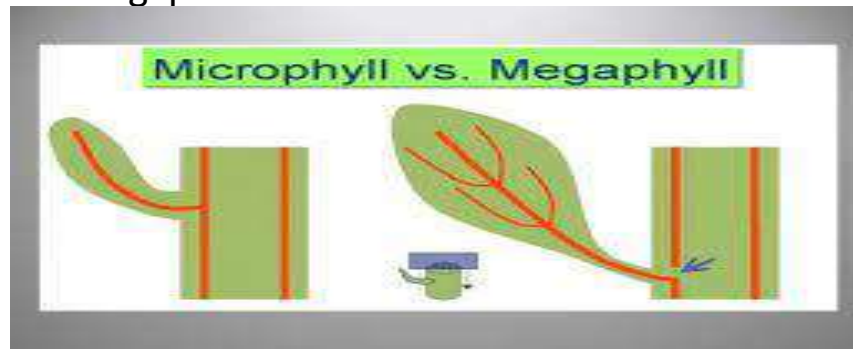
ROOT

# Leaves

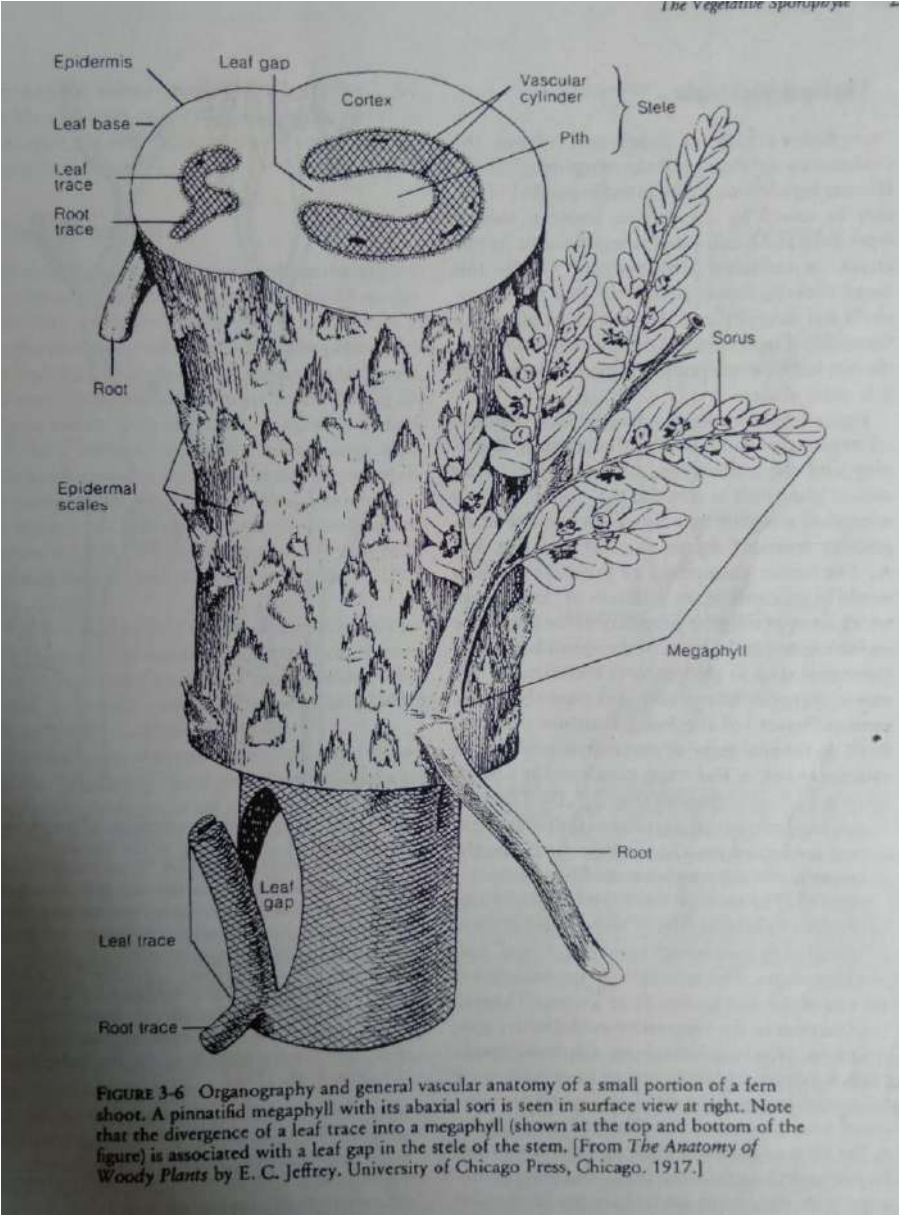


- Small size ( only to remember)
- Single unbranched midvein
- Leaf trace without leaf gap

- Large size ( only to remember)
- Single or 2 branched mid-vein
- Leaf trace with leaf gap

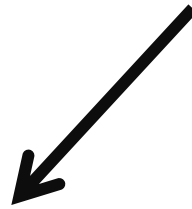






# Reproductive structures

## ( Sporangia )



### Stem related



### Leaf related ( sporophyll )



Terminal  
Sporangia



Synangium



Strobillus



Large sporophyll

# Sorus

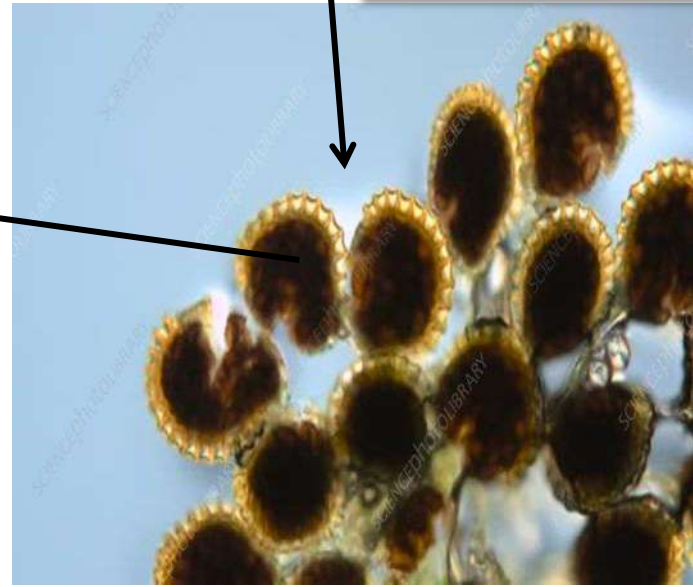
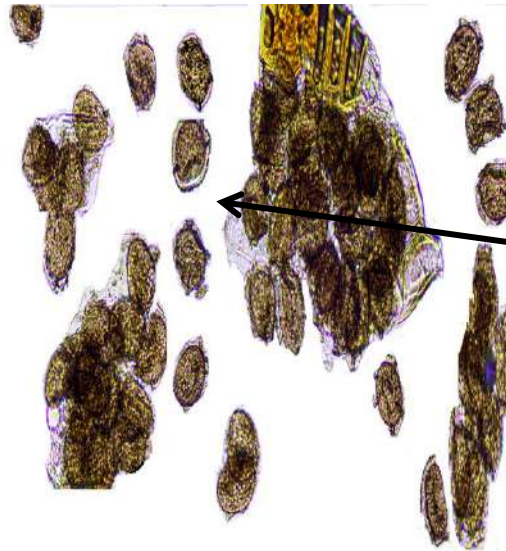
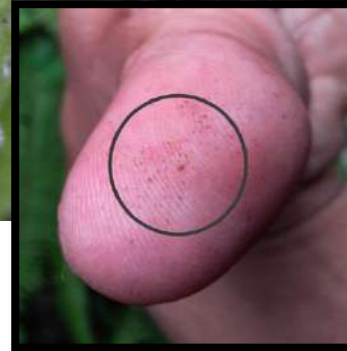
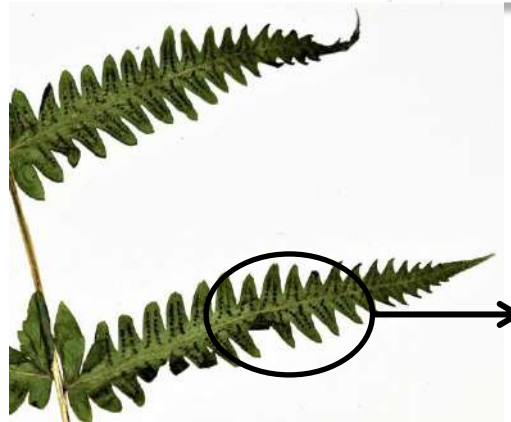
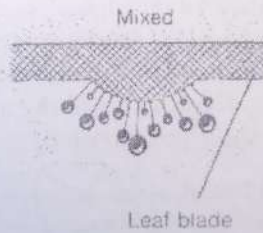
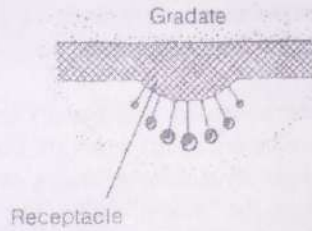
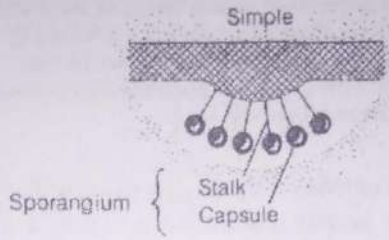
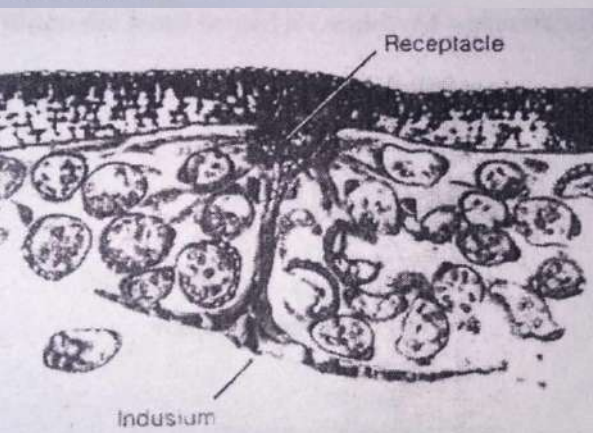


FIGURE 13-15 Three types of sporangial maturation in sori of leptosporangiate ferns.



# SPORANGIUM

## EUSPORANGIUM

- Produced from group of sporangial initial
- Sporangial wall many cell layer thick
- No, three rowed stalk

## LEPTOSPORANGIUM

- Produced from single sporangial initial
- Sporangial wall is single cell layered thick
- Three rowed stalk

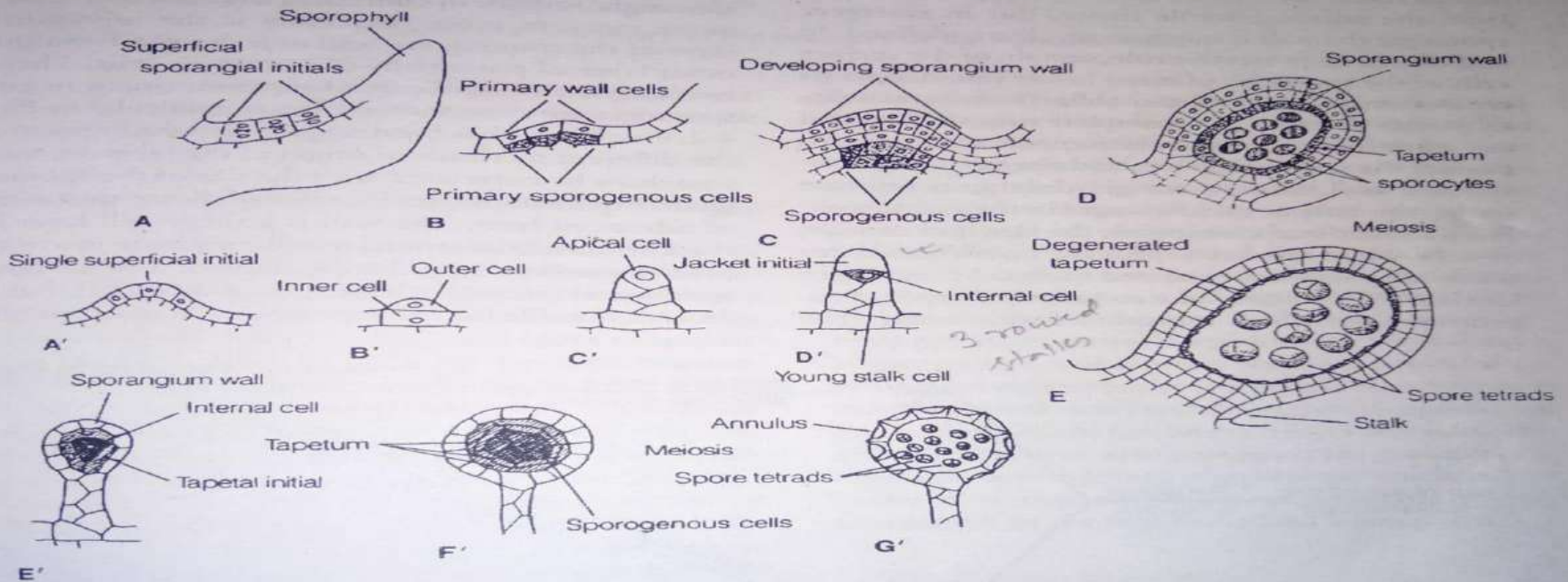
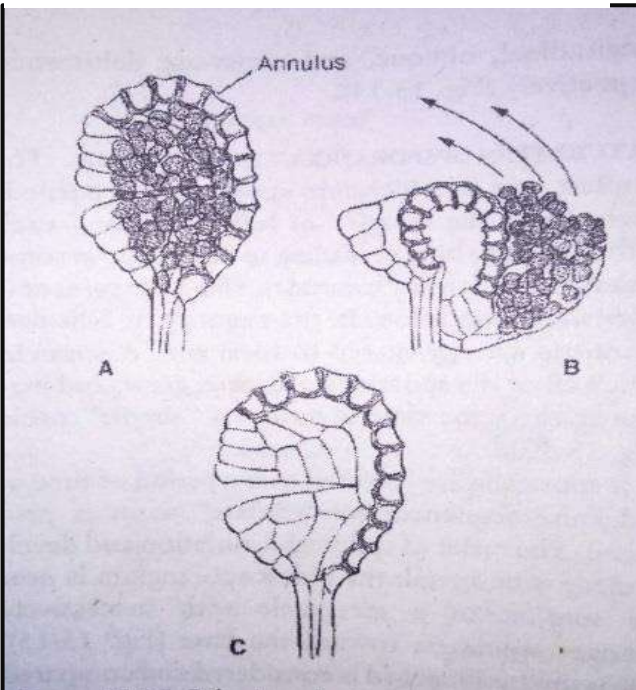


FIGURE 4-1 Ontogeny and structure of the two principal types of sporangia in vascular plants. A-E, the eusporangium; A'-G', the leptosporangium. See text for detailed discussion of this diagram.

# Gametophytic generarion

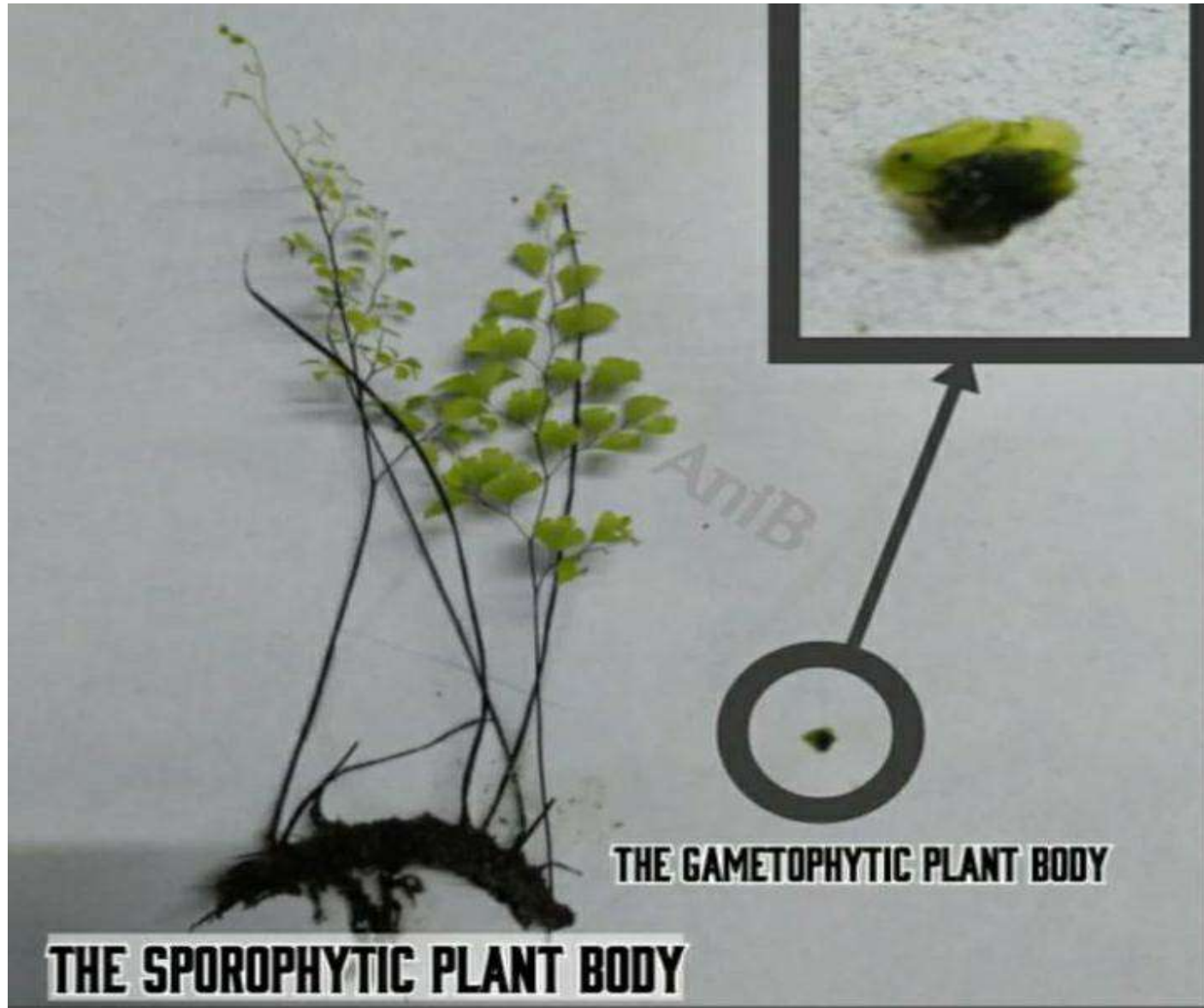


Photosynthetic prothallus



Subterranean Non-photosynthetic prothallus  
( depend on mycorrhizal association )

# Size comparison between two generations



# Spore production

**Homosporous**



**Monoecious Prothallus  
with both Antheridium  
and Archegonium**

**Heterosporous**



**Microspores produce  
Male prothallus and  
Megaspores produce  
Female prothallus**

**Some also show  
Incipient heterospory**

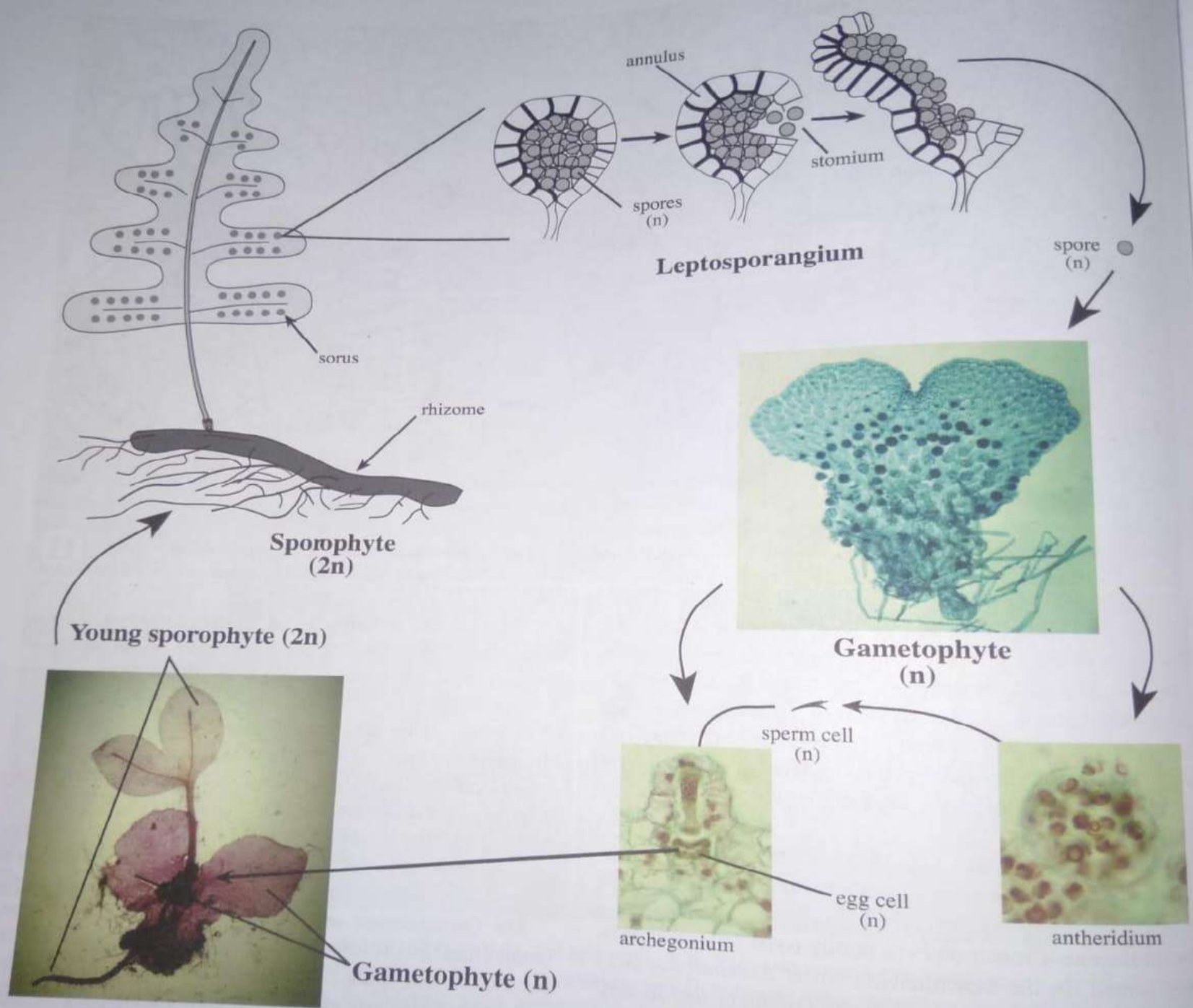
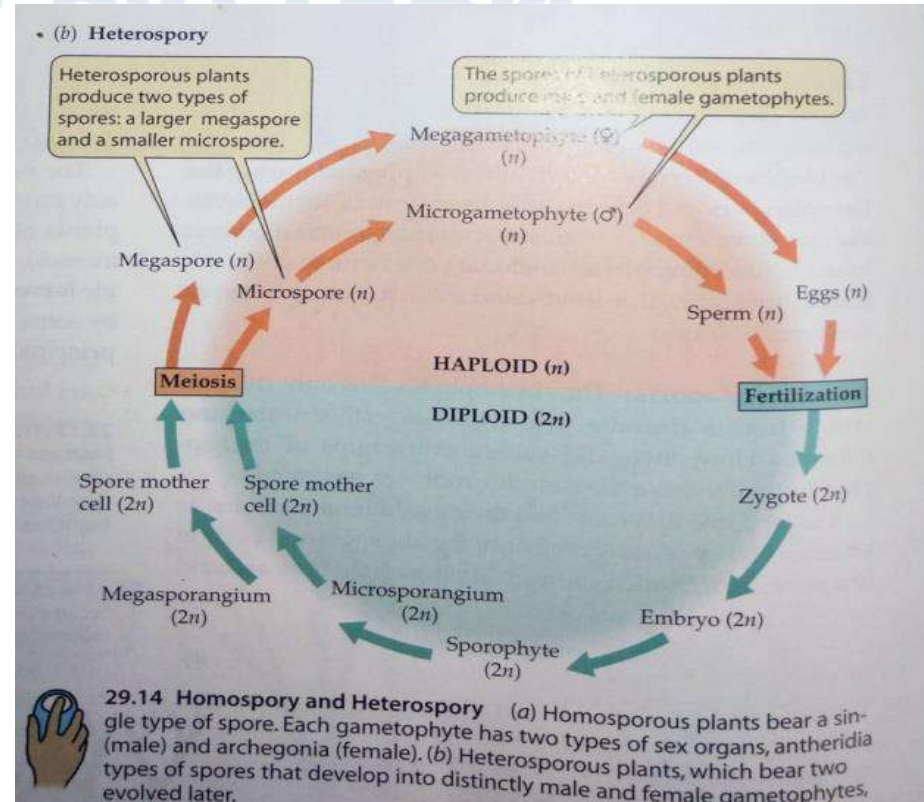
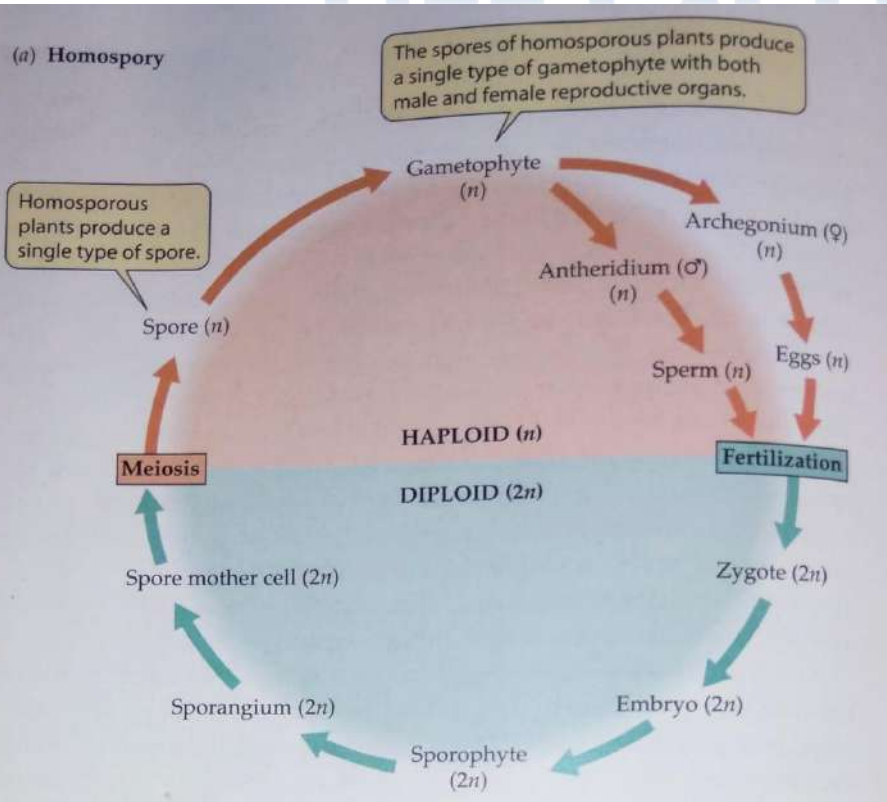


Figure 4.32 Life cycle of a fern



# LIFE CYCLE PATTERN



29.14 Homospory and Heterospory (a) Homosporous plants bear a single type of spore. Each gametophyte has two types of sex organs, antheridia and archegonia. (b) Heterosporous plants, which bear two types of spores that develop into distinctly male and female gametophytes, evolved later.

## REFERENCE

- **Pteridiophyta by Dr. P.C.Vashishta, Dr. A.K. Sinha and Dr.Anil Kumar**
- **Morphology and Evolution of Vascular Plants (3<sup>rd</sup> Edition ) by Ernest M.Gifford and Adriance S.Foster**
- **Plant Systematics ( 3<sup>rd</sup> Edition ) by Michael G. Simpson**



**THANK YOU**

**HAVE FERN**

1. 2017