

Introduction to Botany

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Lecture 24

Outline

1 Questions and answers

- Quiz

2 Leaf

- Anatomy of leaf
- Ecological adaptations of leaves

3 Leaf

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Questions and answers

Quiz

Quiz question (2 points)

...

Quiz question (2 points)

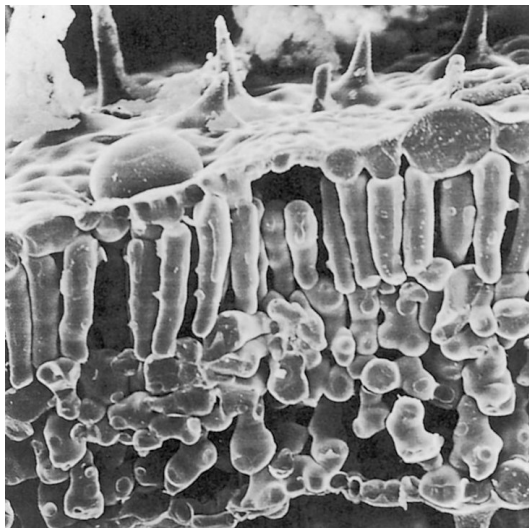
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● ...

Leaf

Anatomy of leaf

Palisade and spongy cells



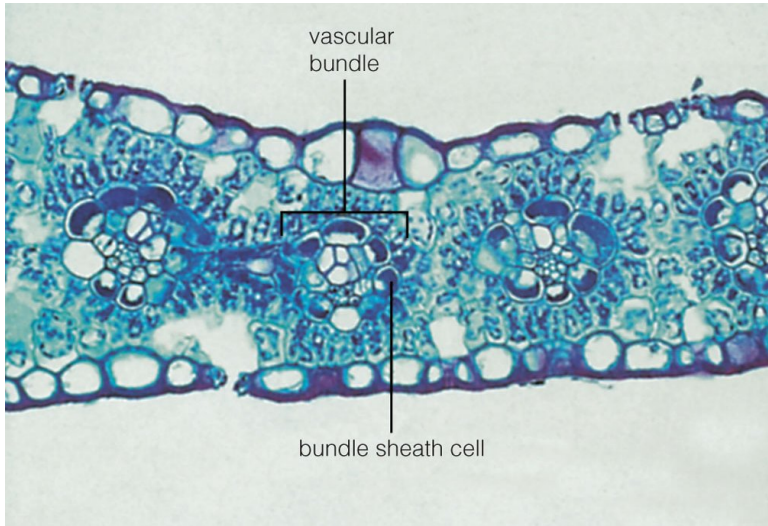
palisade
mesophyll

spongy
mesophyll

Veins/vascular bundles and stomata

- Phloem typically faces downwards, xylem—upwards
- Bundles of C_4 -plants have additional bundle sheath cells
- Stomata work with the “bacon principle”

Bundle sheath cells



Leaf

Ecological adaptations of leaves

Plants and water

- Xerophytes: sclerophytes and succulents (stem and leaf)
- Mesophytes
- Hygrophytes
- Hydrophytes

Leaf succulent (*Crassula argentea*)



mesophyll
cells

Xerophyte leaf—needle of pine (*Pinus contorta*)



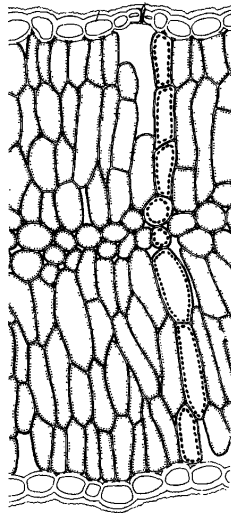
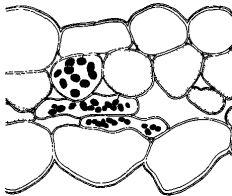
Leaf

Ecological adaptations of leaves

Plants and light

- Sciophytes
- Heliophytes

Sciophyte and heliophyte

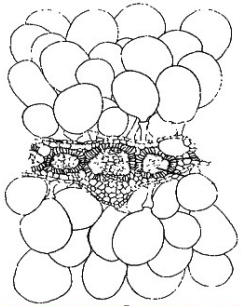


Oxalis acetosella and *Sylphium laciniatum*

Leaves and soil

- Halophytes (accumulate, excrete or avoid NaCl)
- Nitrate halophytes (grow on soils rich of NaNO_3)
- Oxylophytes (grow on acidic soils)
- Calciphytes (grow on chalk soils rich of CaCO_3)

Leaf of salt-accumulating halophyte



Atriplex prostrata

Leaves and substrate

- Psammophytes (grow on sand)
- Petrophytes (grow on rocks)
- Rheophytes (grow in fast springs)

Rheophyte



Macarenia clavigera from Venezuela

River with rheophytes



They are flowering, too



Podostemum ceratophyllum (may be found even in ND!)

Podostemum in North Carolina



Leaves and metabolism

- Mycoparasites
- Hemiparasites
- Phytoparasites (root and stem)

Mycoparasite



Triuris hyalina from South America

Hemiparasite



Krameria parvifolia from southern Texas

Root parasite



Hydnora africana from South Africa

Stem parasite



Cuscuta europaea from Germany

For Further Reading



A. Shipunov.

Introduction to Botany [Electronic resource].

Mode of access:

http://ashipunov.info/shipunov/school/biol_154