1.1 Oogsten en Verwerken Product

Les Donderdag Deniece

Opdracht De Cel

Bespreken

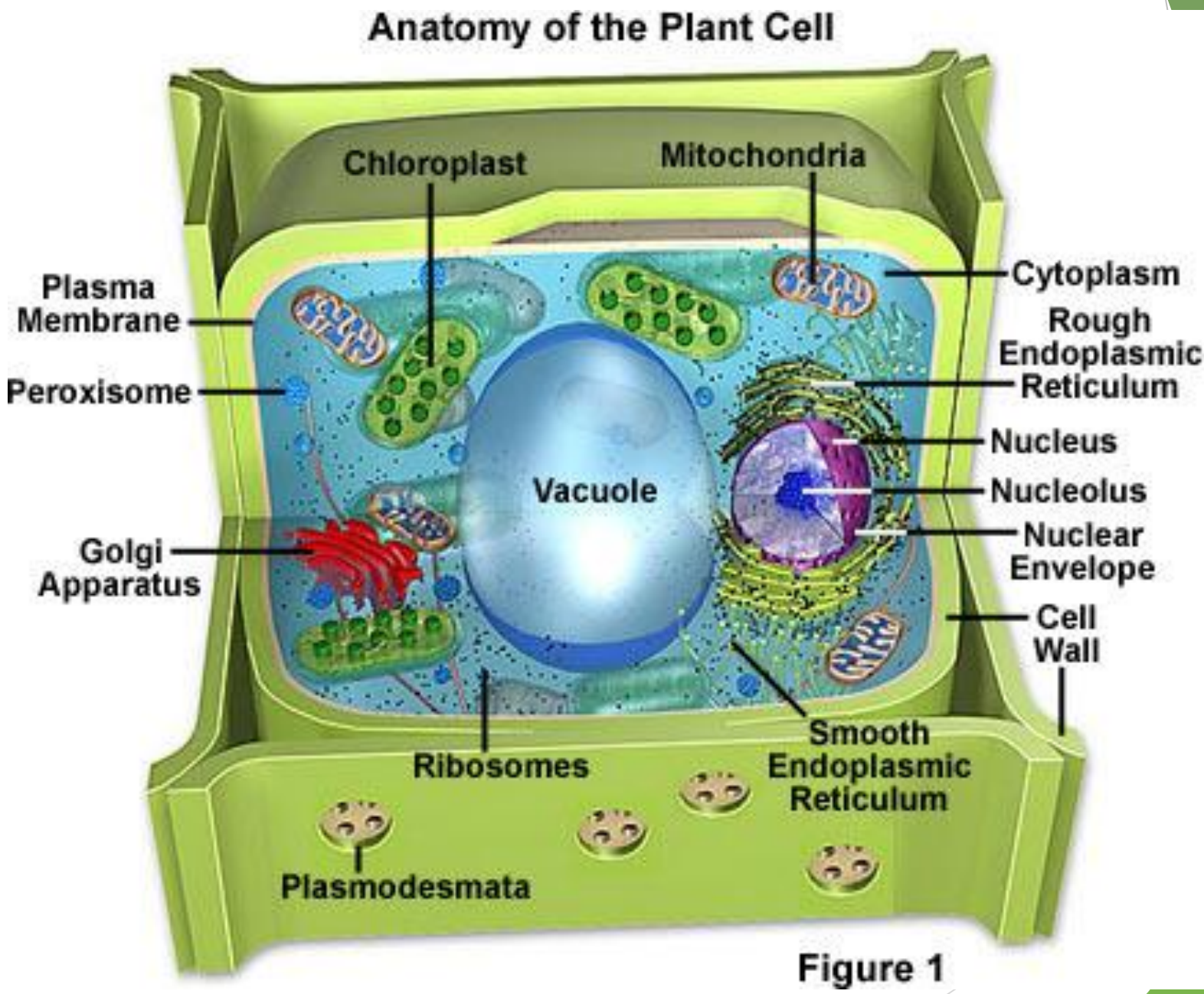
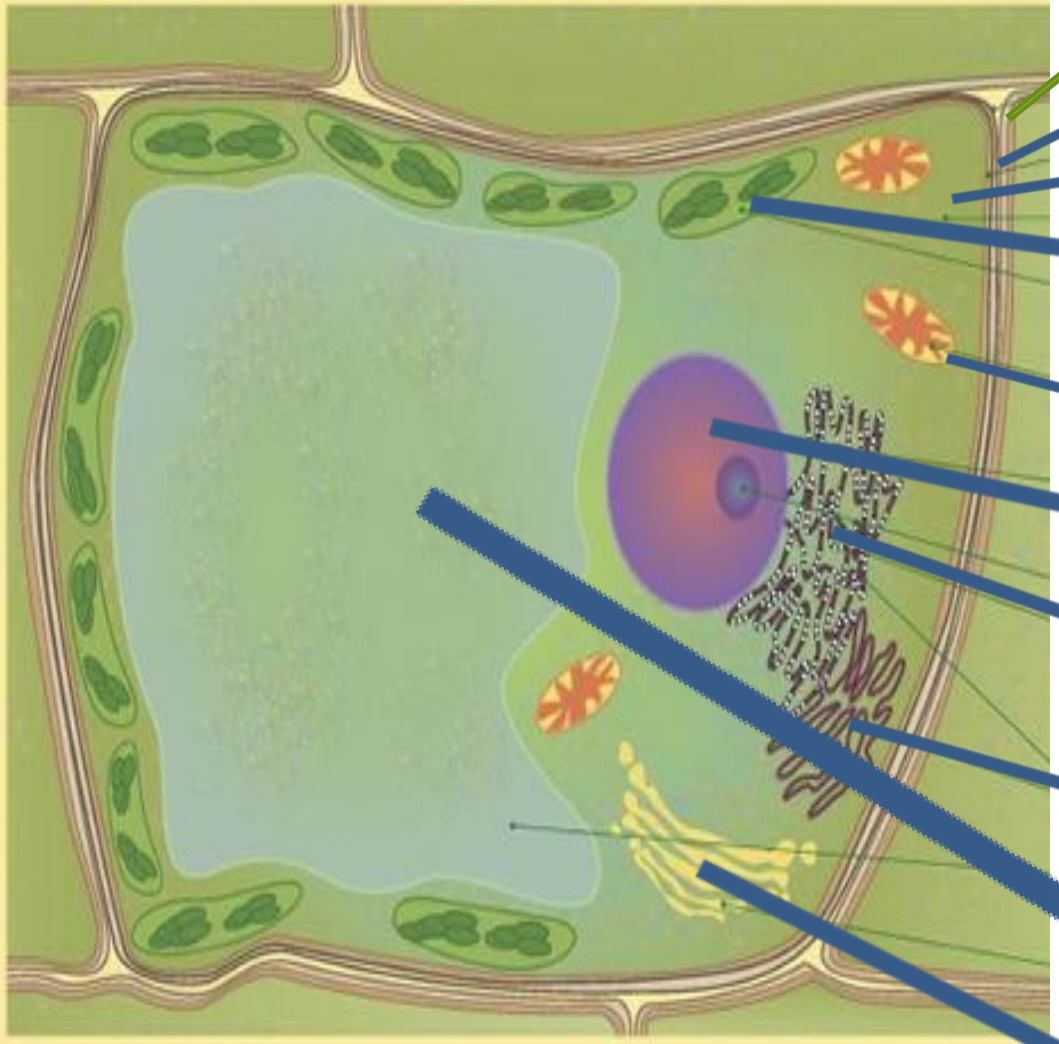

Anatomy of the Plant Cell
Chloroplast
Mitochondria
Plasma Membrane
Cytoplasm
Rough Endoplasmic Reticulum
Peroxisome
Nucleus
Vacuole
Nucleolus
Golgi Apparatus
Nuclear Envelope
Cell Wall
Ribosomes
Smooth Endoplasmic Reticulum
Plasmodesmata

Figure 1



Celwand (fabrieks muur)

Celmembraan (poort)

Cytoplasma (werkvloer)

Chloroplast/bladgroenkorrel (zonnepanelen)

Mitochondrium (energie centrale)

Kern (directie)

Ribosomen (werkers bij de inpaklijn)

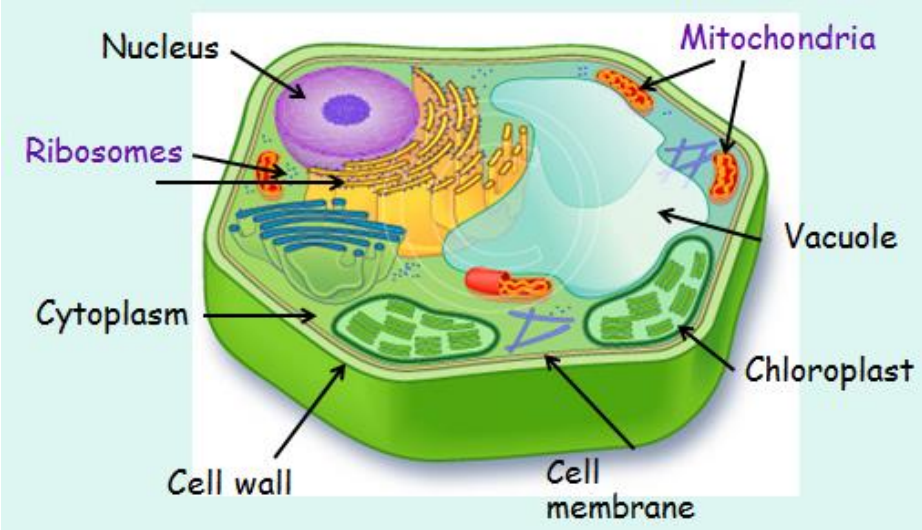
Endoplasmatic reticulum (inpaklijn)

Vacuole (Opslagplaats/afvalcontainer)

Golgi systeem (verpakkings en verstuur afdeling)

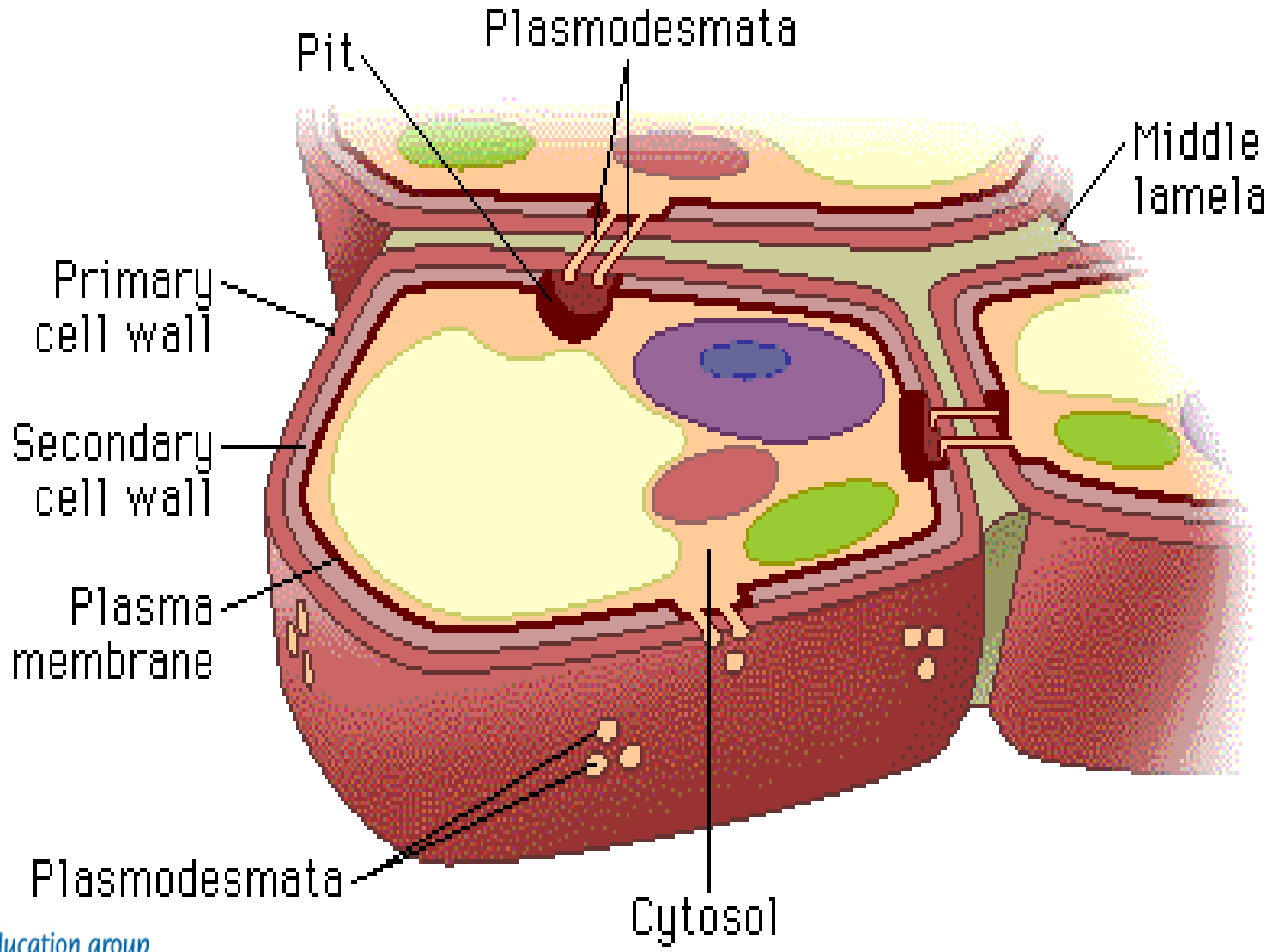
Plantencel structuur

- Alle plantcellen hebben een primaire celwand, die vooral uit cellulose bestaat. Sommige cellen hebben een tweede celwand die vaak is gevuld met lignine, een polymer die het hoofdonderdeel is van hout.



Source:
http://mybiology22.blogspot.nl/2015/05/a-cell.html

Plant celstructuur



De plant en zijn onderdelen

Opdracht : De Plant + Product

- Je gaat een poster maken van een plant naar keuze + het bijbehorende product
  - Na afstemming met docent.
- Teken het volgende:
  - De Plant, de bloeiwijze en de vrucht
  - Hoe ziet het weefsel eruit van de wortel, de stengel, het blad, de bloem, de vrucht?
  - Welke processen vinden waar plaats?
    - Denk aan: watertransport, fotosynthese, assimilatie, suikeropslag, verdamping.

Voorbeelden

This plant is Solanum tuberosum, dicot.

External structure and function:

Root:

Structure: taproot, lateral root and root hairs.

Function: can absorb and transport water and minerals;
can hold the soil and support plant body;
can store nutrients.

Stem:

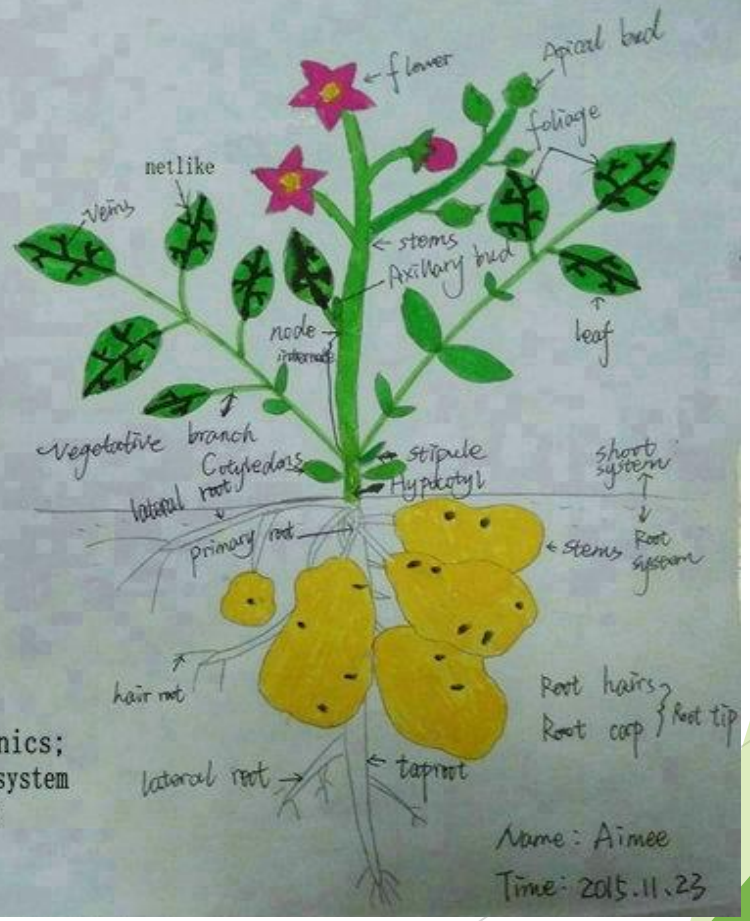
Structure: leaf bud and branch.

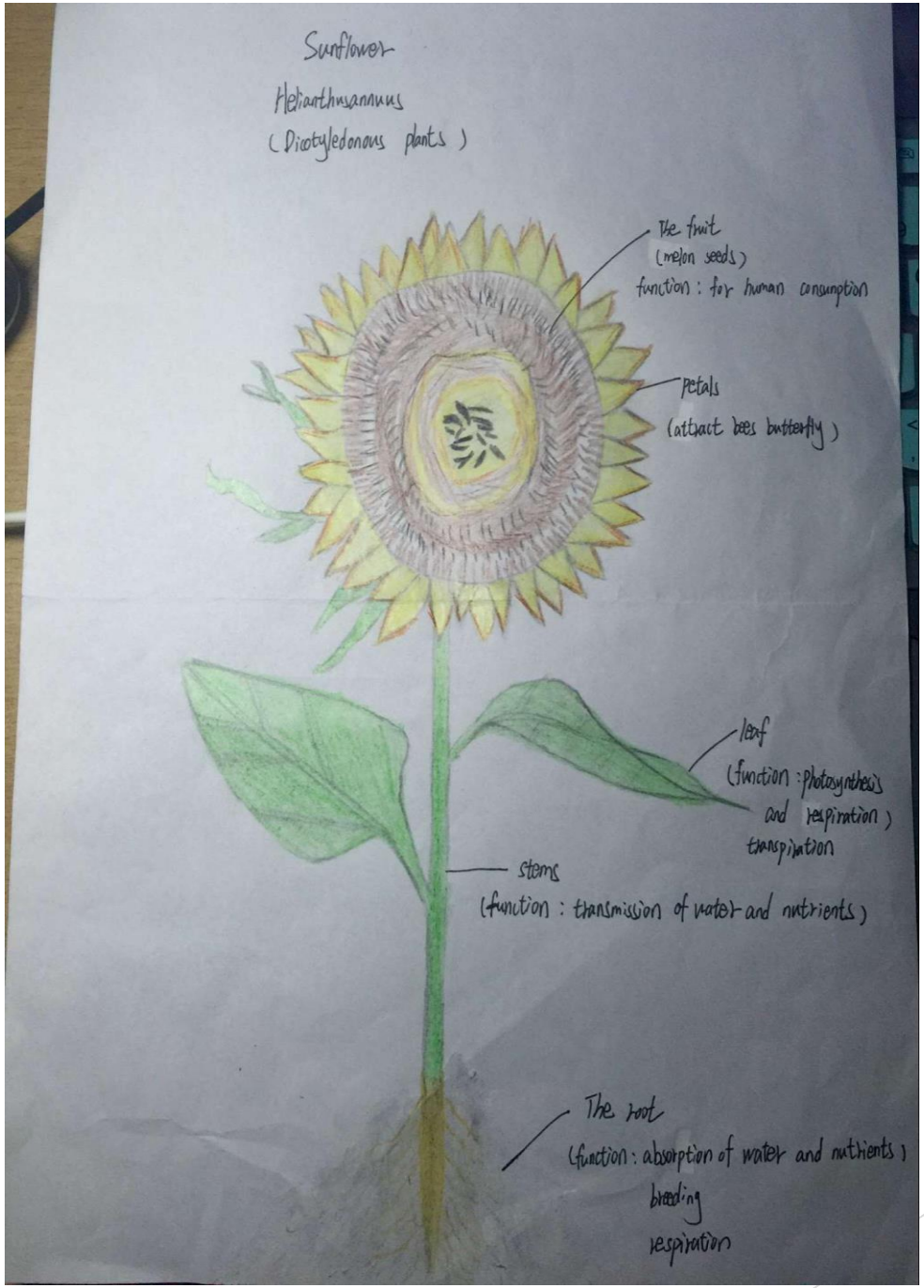
Function: can support leaf, bud, flower and fruit;
can transport water and nutrients;
can store nutrition;
can reproduce a new plant.
can grow new branch.

Leaf:

Structure: blade and petiole.

Function: can carry out photosynthesis and produce organics;
can carry out transpiration and promote root system to absorb water while promote transport of minerals and adjust the temperature of the blade;
can transport nutrients to petiole.

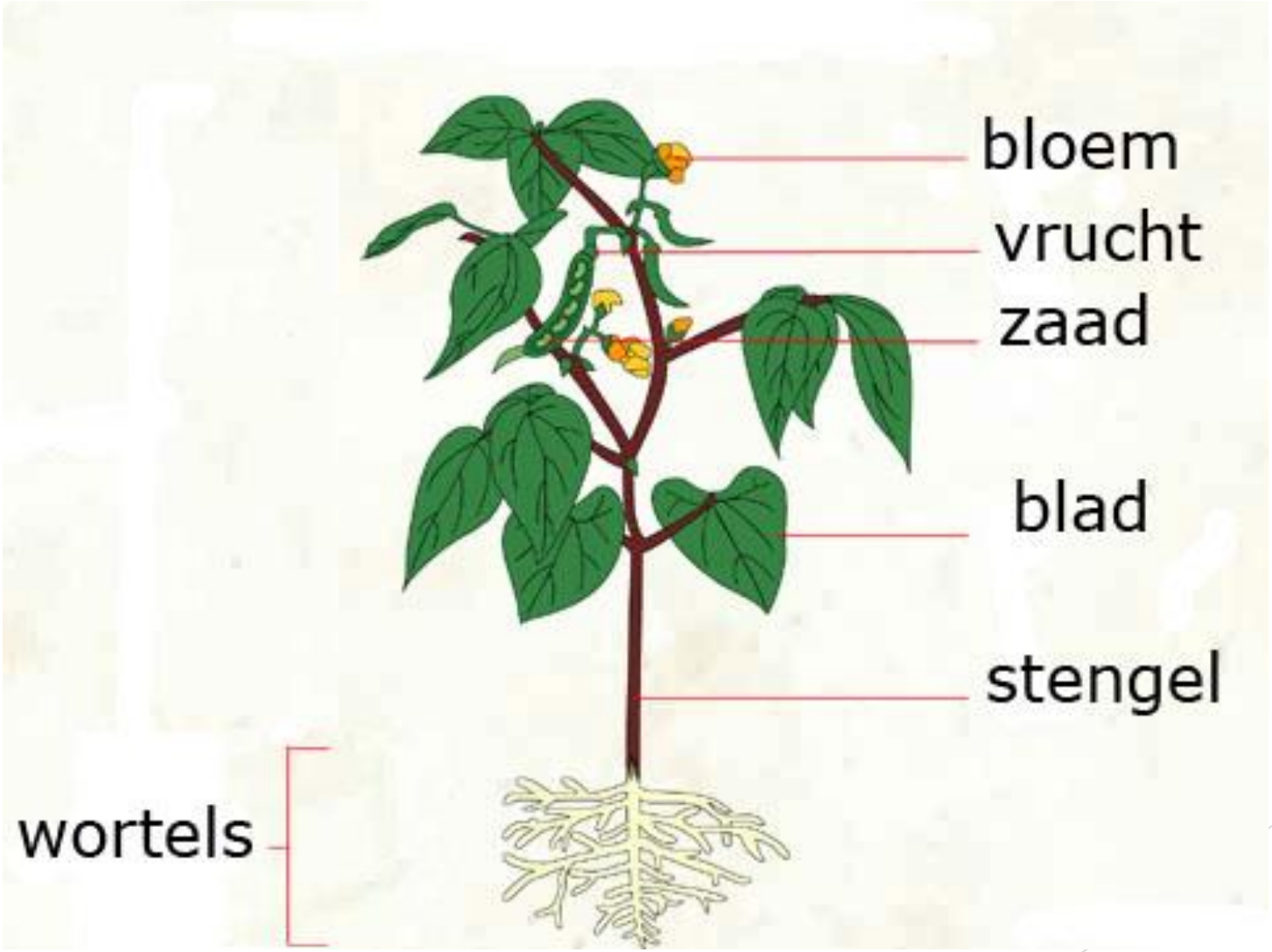


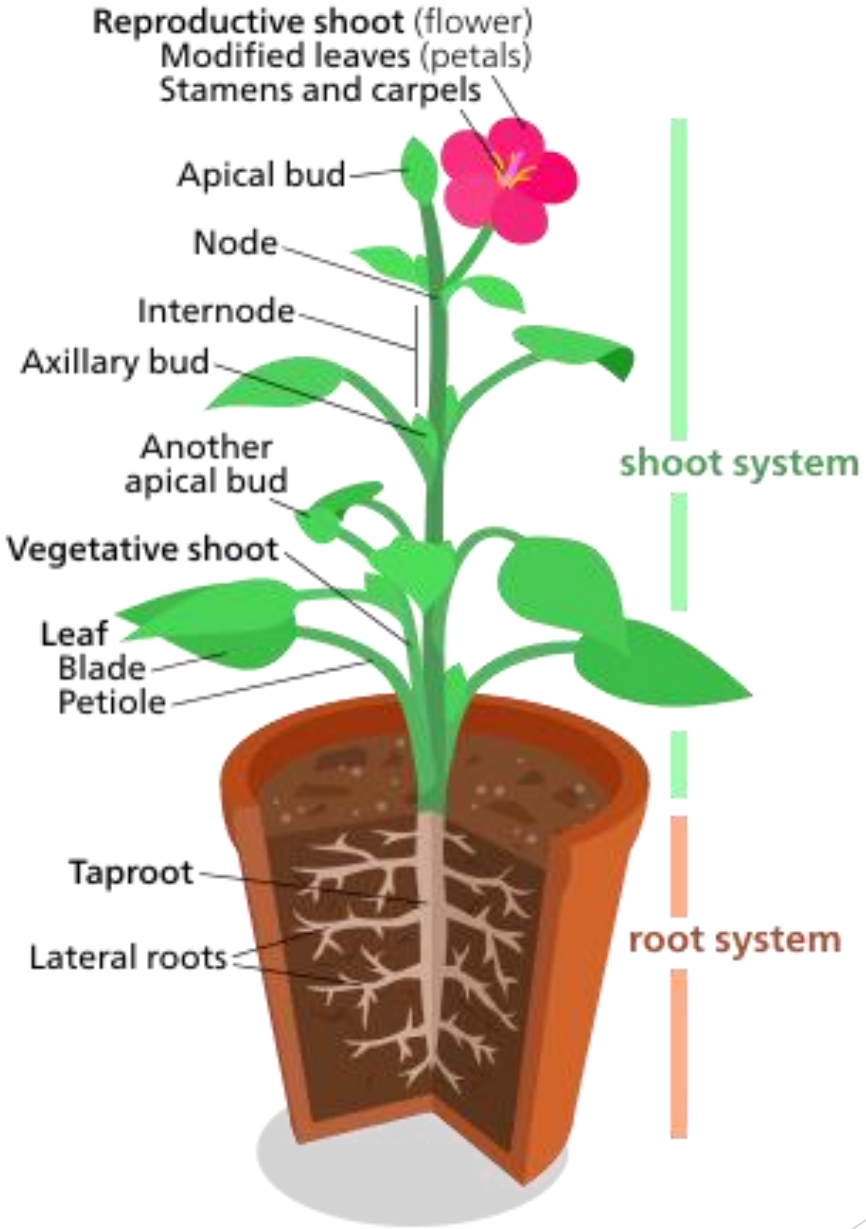

Sunflower
Helianthusannuus
(Dicotyledonous plants)
The fruit
(melon seeds)
function: for human consumption
petals
(attract bees butterfly)
leaf
(function: photosynthesis and respiration)
transpiration
stems
(function: transmission of water and nutrients)
The root
(function: absorption of water and nutrients)
breeding
respiration

Externe structuren

Wortel, Stengel, Blad, Bloem, Vrucht

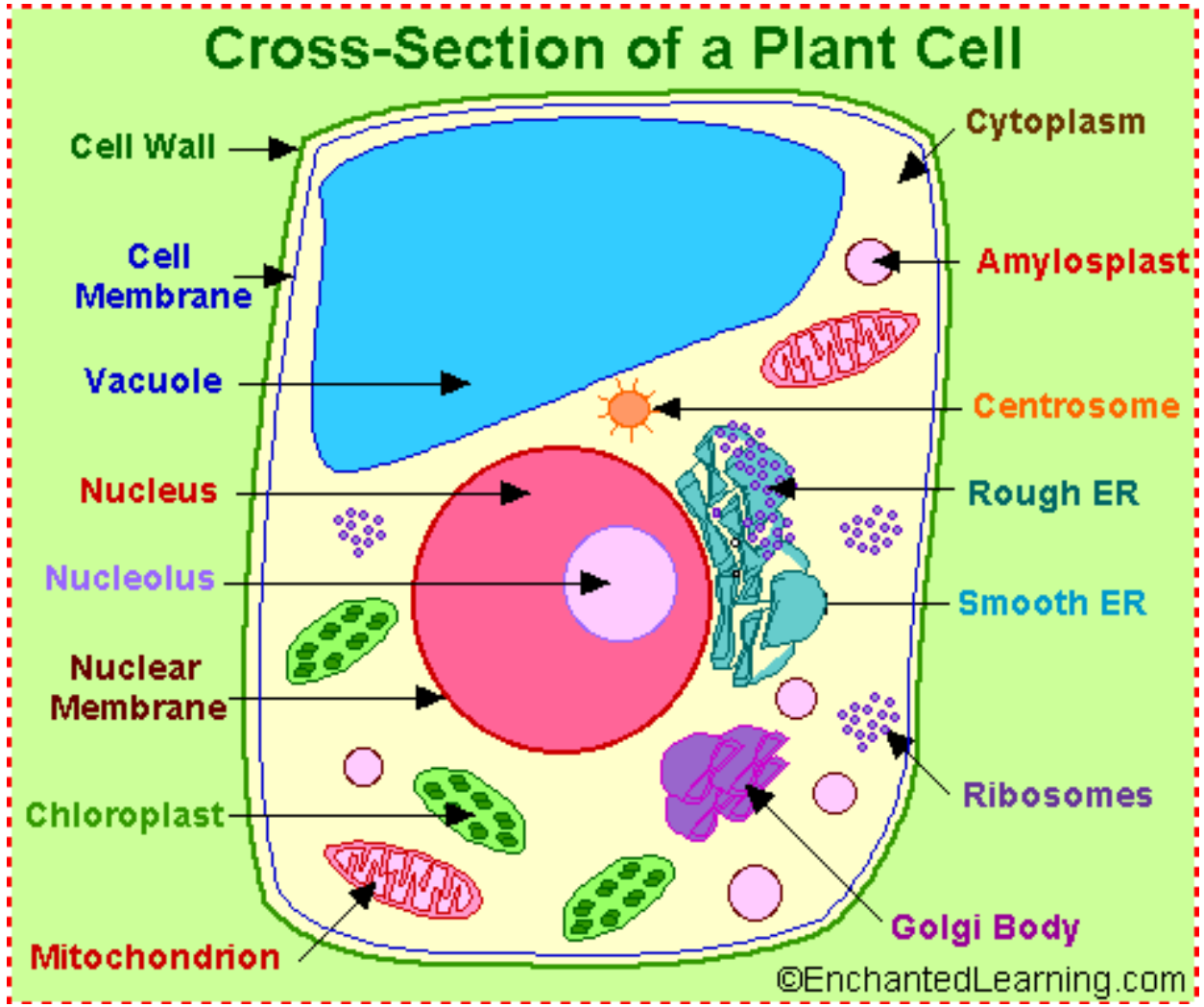
Uitleg




Reproductive shoot (flower)
Modified leaves (petals)
Stamens and carpels
Apical bud
Node
Internode
Axillary bud
Another apical bud
Vegetative shoot
Leaf
Blade
Petiole
Taproot
Lateral roots
shoot system
root system

Interne Structuren

De Cel

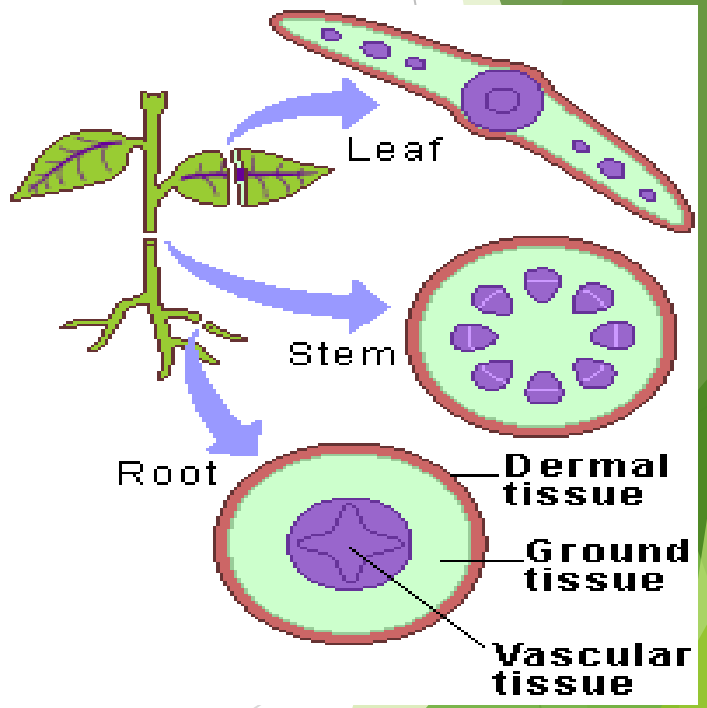

Cross-Section of a Plant Cell
Cell Wall
Cytoplasm
Cell Membrane
Amylosplast
Vacuole
Centrosome
Nucleus
Rough ER
Nucleolus
Smooth ER
Nuclear Membrane
Ribosomes
Chloroplast
Golgi Body
Mitochondrion
©EnchantedLearning.com

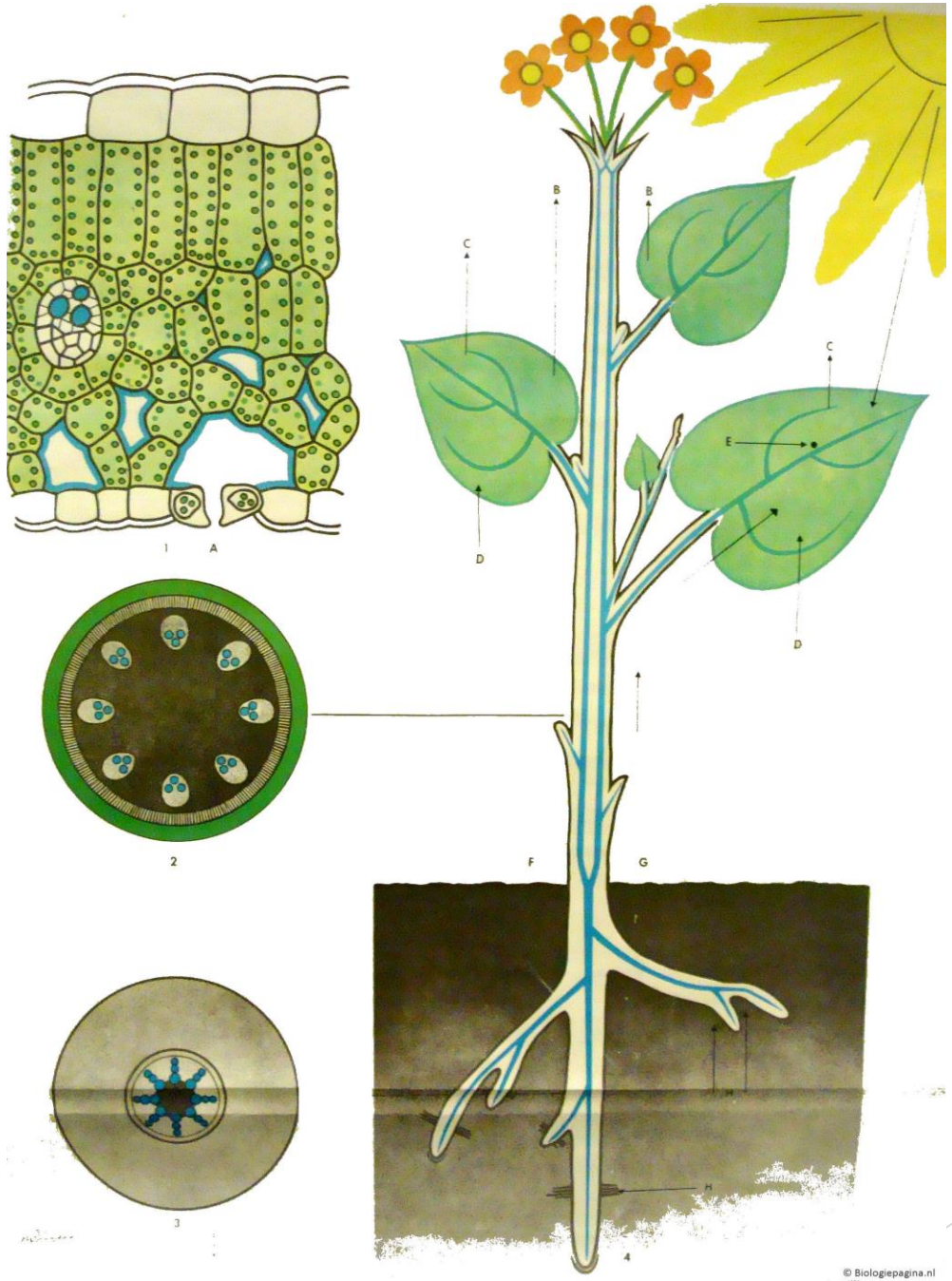
Weefsels

Plant Weefsel Systemen

- De weefsels van een plant zijn verdeeld in drie weefsel systemen:
  - ✓ Het dermale(huid) weefselsysteem
  - ✓ Het grondweefsel systeem
  - ✓ Het vasculaire weefselsysteem

Plant Weefsel Systemen

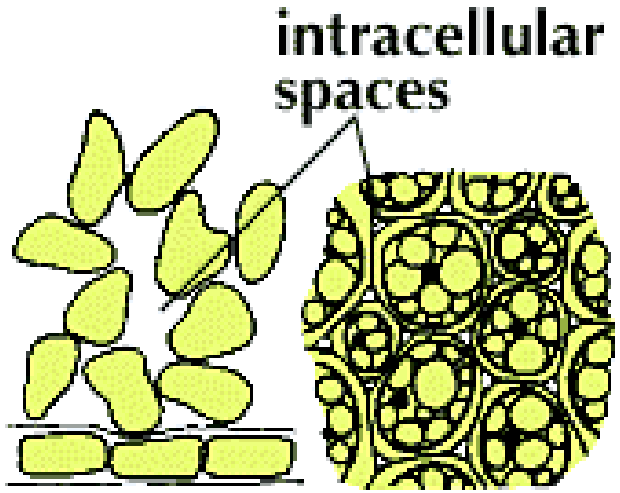
Weefselsysteem en de functies	Onderdeel weefsels	Locatie van weefselsystemen
Dermale weefselsysteem • bescherming • Voorkomen waterverlies	Epidermis Periderm (in oudere stengels en wortels)	
Grondweefselsysteem • photosynthese • Voedselopslag • Heropbouw • Ondersteuning • Bescherming	Parenchyma tissue Collenchyma tissue Sclerenchyma tissue	
Vascular Tissue System • transport van water en mineralen • transport van voedsel	Xylem tissue (houtvaten) Phloem tissue (bastvaten)	


A
B
B
C
C
D
D
D
E
F
G
H
1
2
3
4
© Biologiepagina.nl

Types grondweefsel

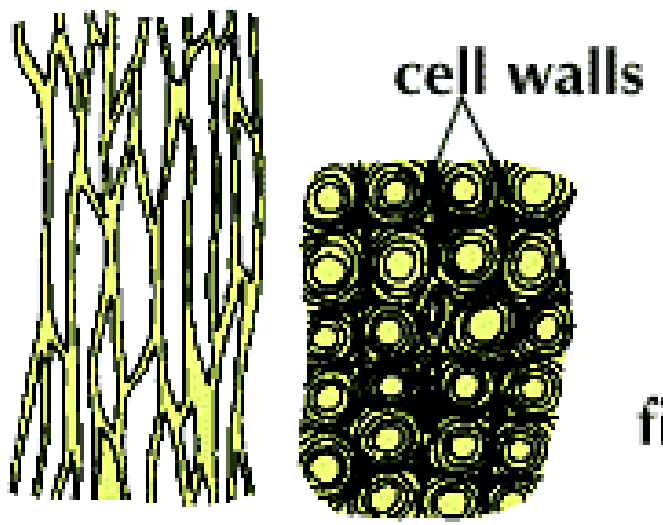
- Er zijn drie soorten grondweefsel:
  - parenchym
  - collenchym
  - sclerenchym
- Functie in fotosynthese, opslag, regeneratie, ondersteuning en bescherming

THE THREE BASIC TYPES OF PLANT TISSUE

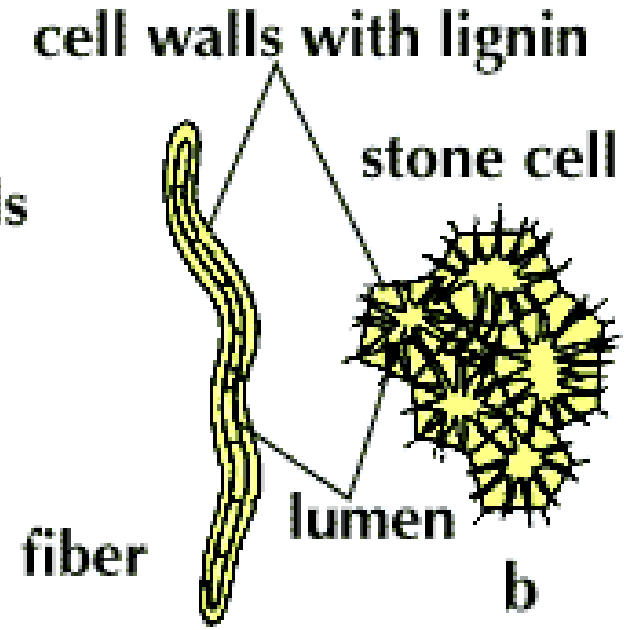


Parenchyma Tissue

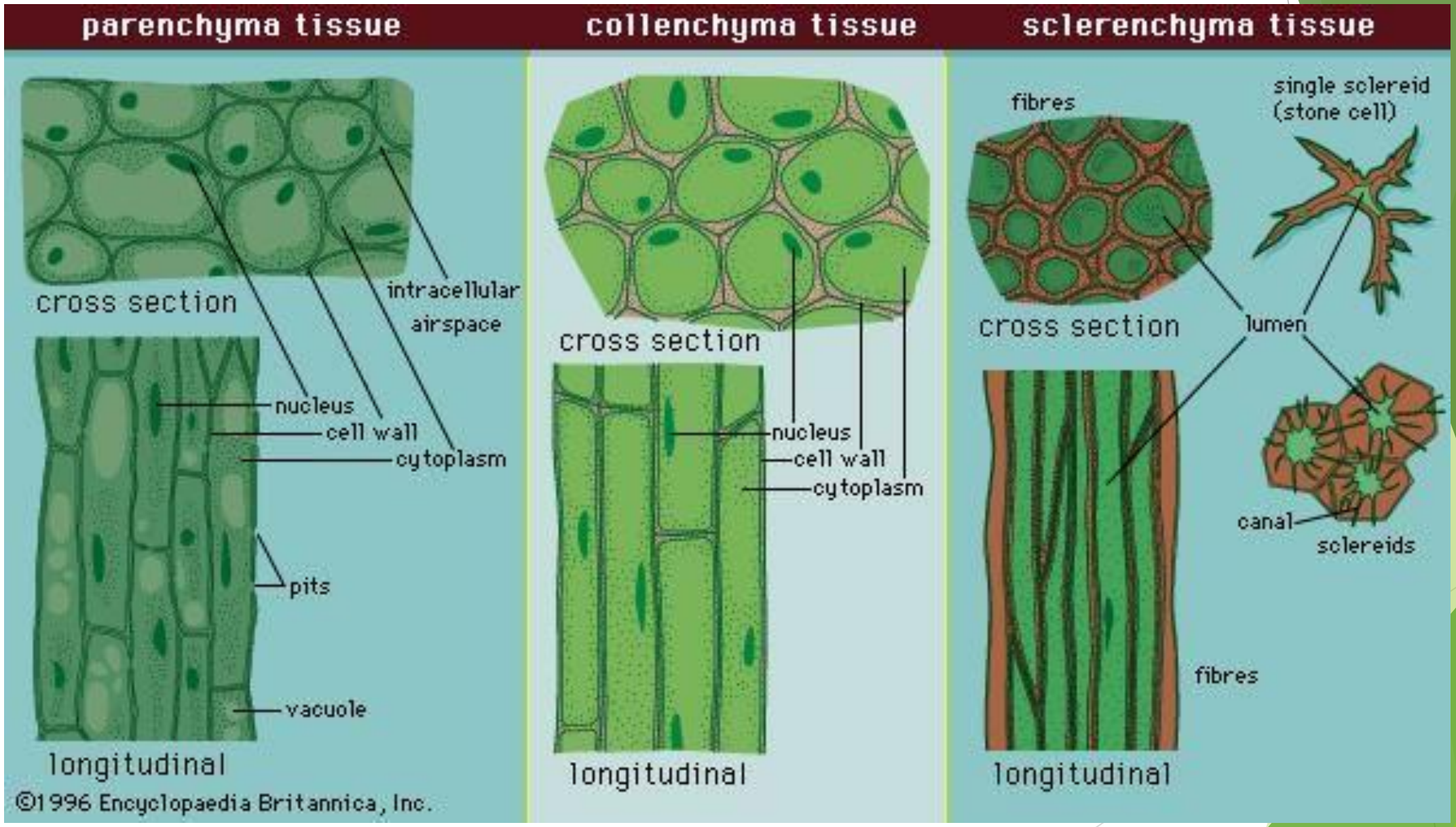
a lengthwise
b cross section



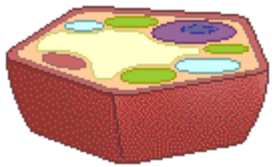
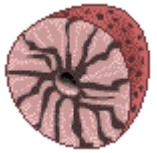
Collenchyma Tissue



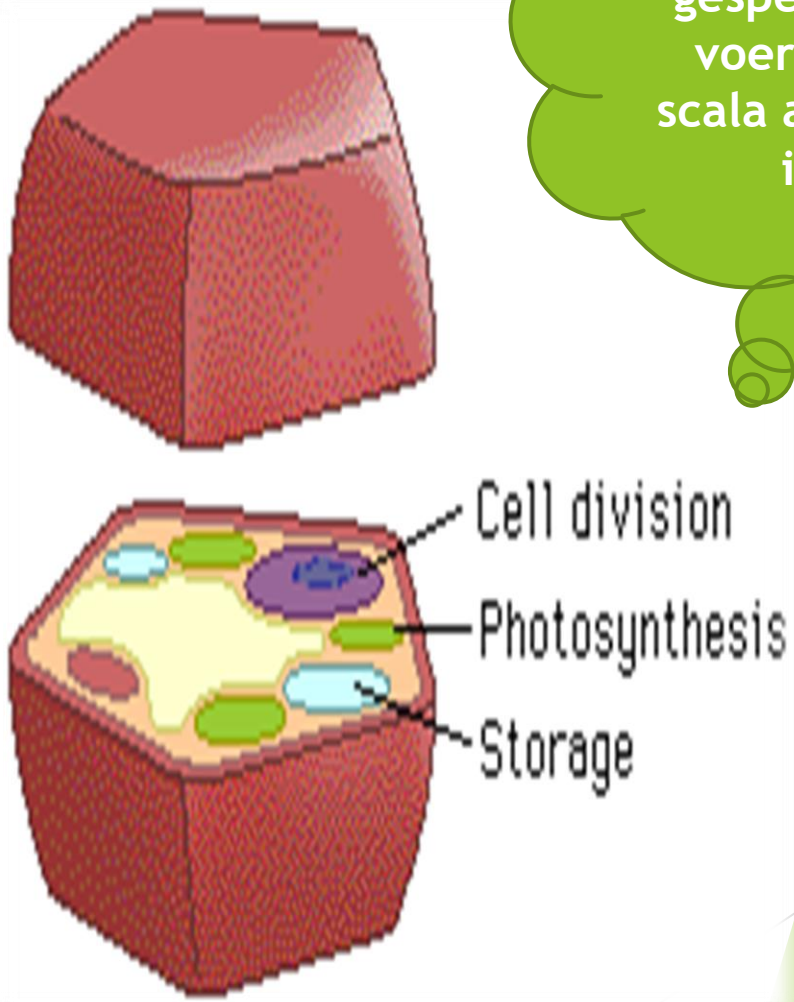
Sclerenchyma Tissue


parenchyma tissue
collenchyma tissue
sclerenchyma tissue
cross section
intracellular airspace
nucleus
cell wall
cytoplasm
pits
vacuole
longitudinal
cross section
nucleus
cell wall
cytoplasm
longitudinal
fibres
single sclereid (stone cell)
cross section
lumen
canal
sclereids
fibres
longitudinal
©1996 Encyclopaedia Britannica, Inc.

Types grondweefsel

Ground Tissue	Parenchym	Collenchym	Sclerenchym
Functie	• Fotosynthese • Voedselopslag • Genees- en herstelweefsel	• Steun in jonge stengels, wortels en bladstelen	• Stijve ondersteuning • bescherming
Celtypes in dit weefsel	Parenchyma cellen 	Collenchyma cellem 	Sclereid cellen en vezelcellen  

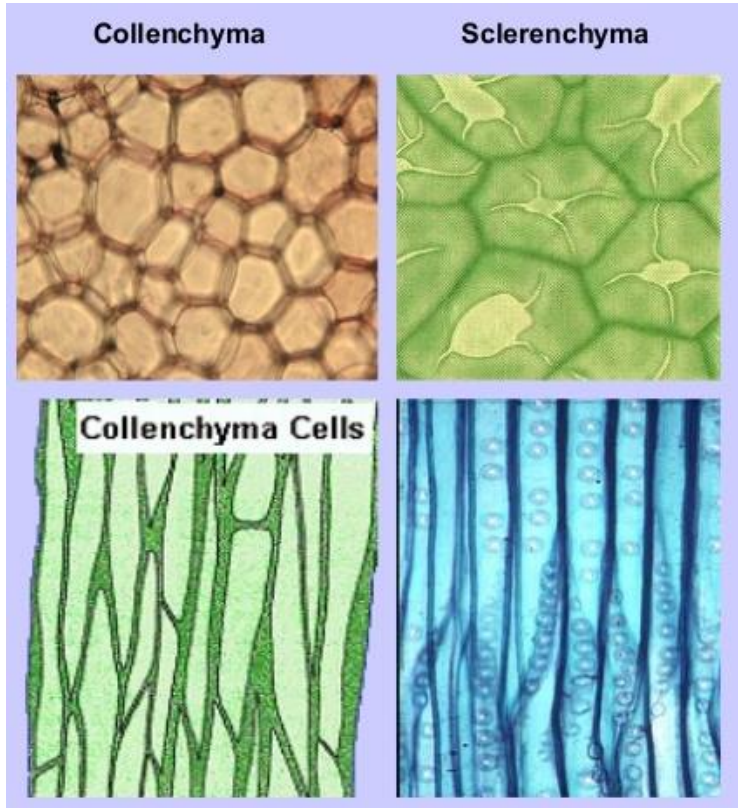
Celtype	Parenchym cellen
Karakteristieken	• Dunne primaire celwand • Levend bij volwassenheid • Behoud de capaciteit om te delen
Functies	• Fotosynthese • Voedselopslag • Wondgenezing en weefselregeneratie



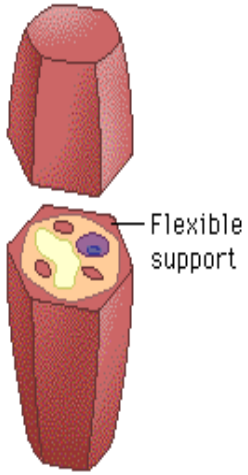
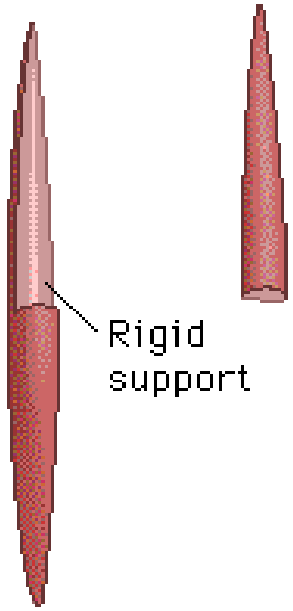
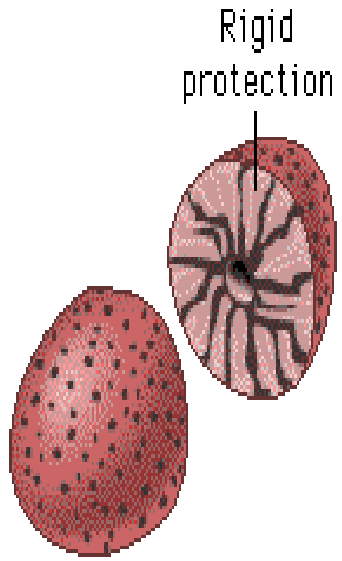
Parenchymecellen zijn de minst gespecialiseerde en voeren een breed scala aan functies uit in planten

Cellen die ondersteunen en beschermen

- Collenchyma en sclerenchymecellen zijn gespecialiseerd om ondersteuning en bescherming in planten te bieden

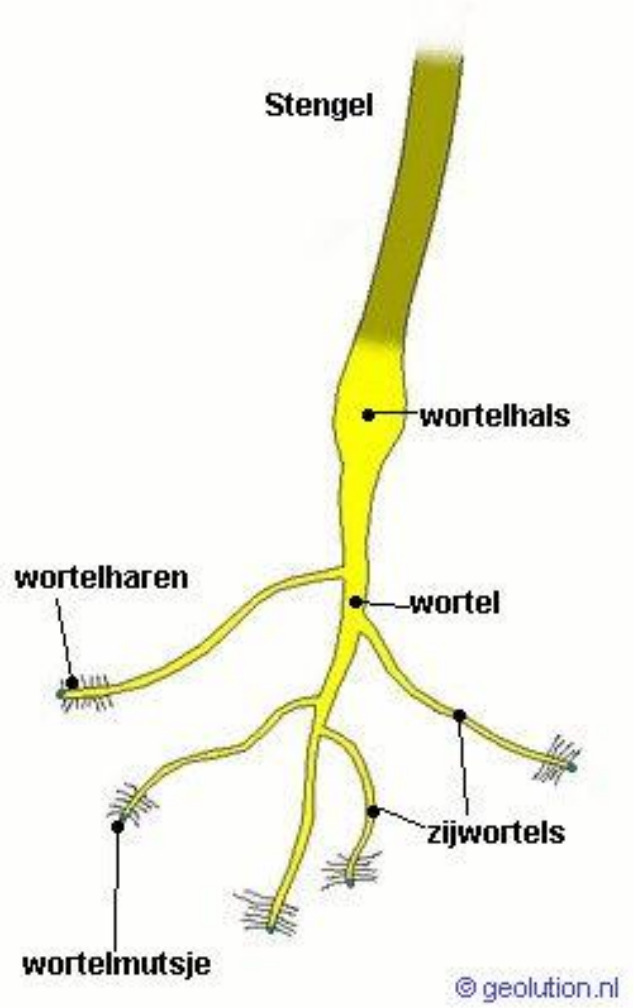


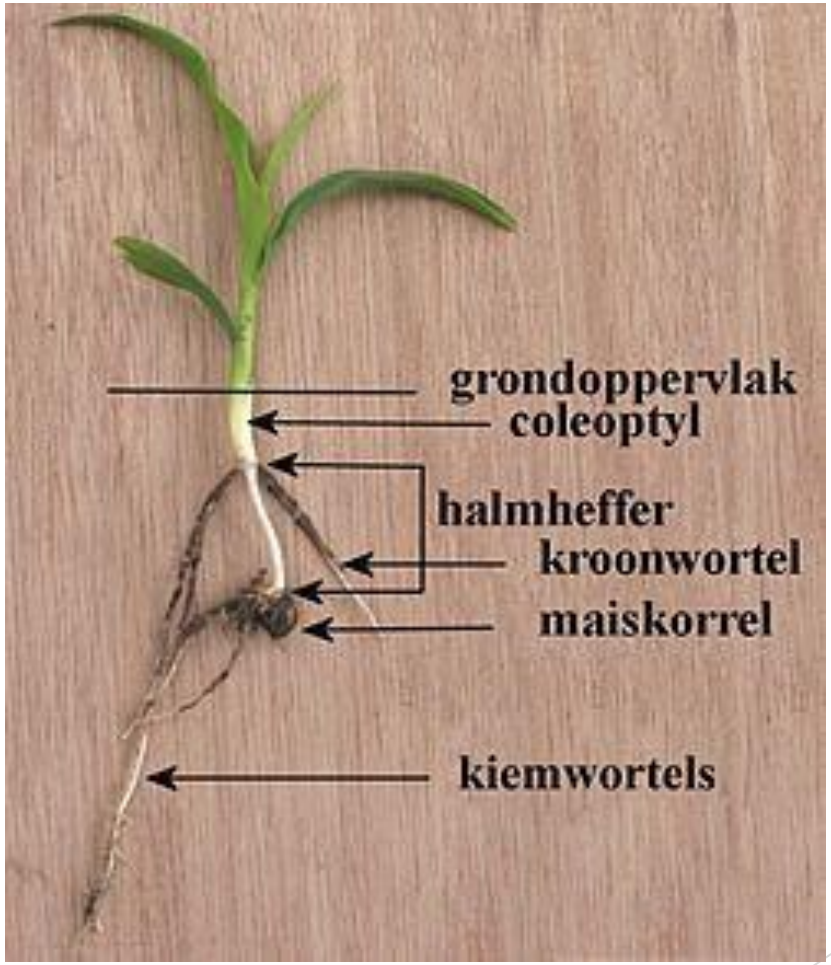
Source:
http://www.slideshare.net/librarianponam/tissue-44425554

Cel Type	Collenchym	Vezelcellen	Sclereid cellen
			
Karakteristieken	• Levend bij volwassenheid • Oneven dike primaire celwand	• Dood bij volwassenheid • Secundaire cel wand	• Dood bij volwassenheid • Dikke secundaire cel wand
Functies	• Ondersteuning in blaadjes, jonge stengels en wortels	• Bescherming • Ondersteuning	• Bescherming • Ondersteuning

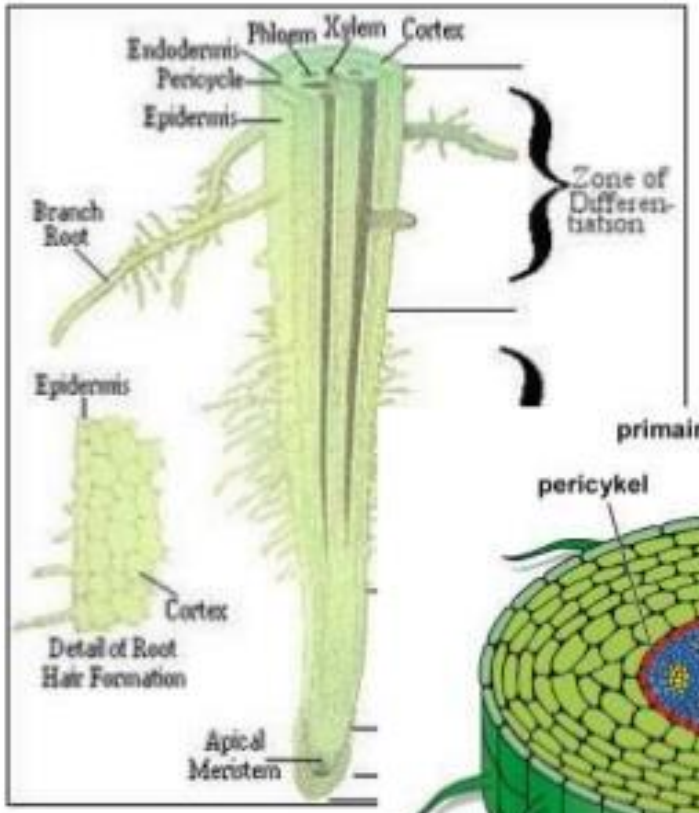
Wortels

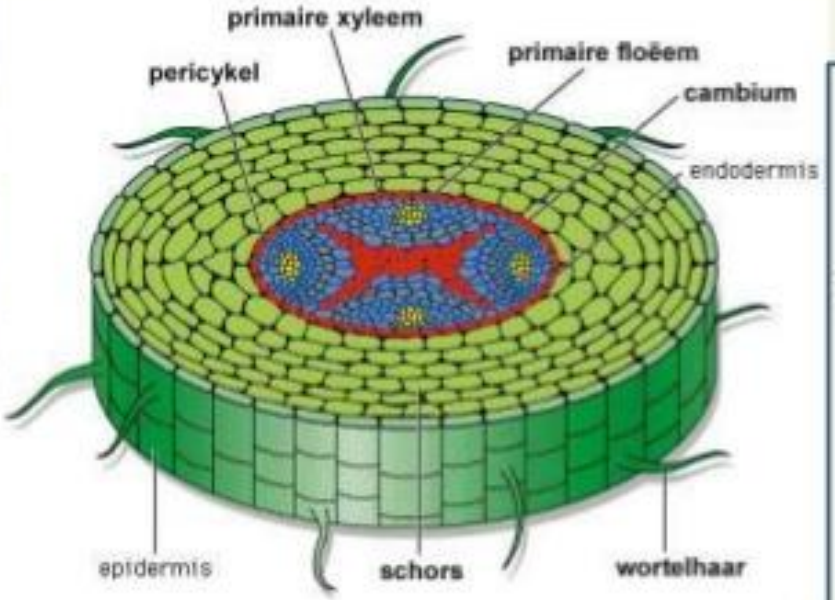
Wortels

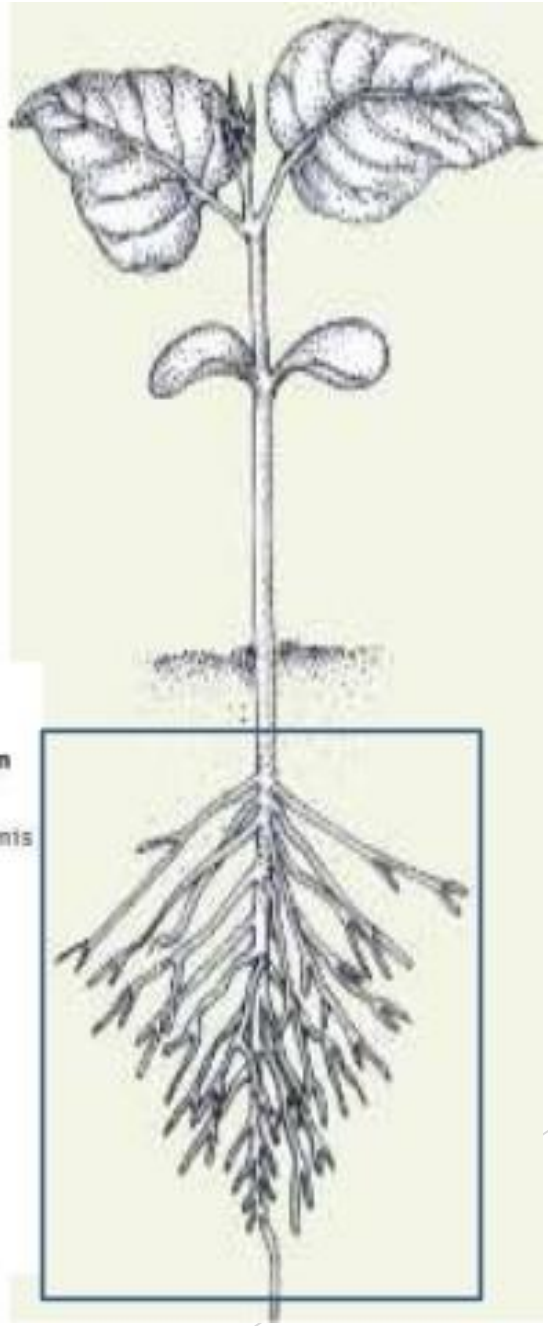

Stengel
wortelhals
wortelharen
wortel
zijwortels
wortelmutsje
© geolution.nl


grondoppervlak
coleoptyl
halmheffer
kroonwortel
maiskorrel
kiemwortels

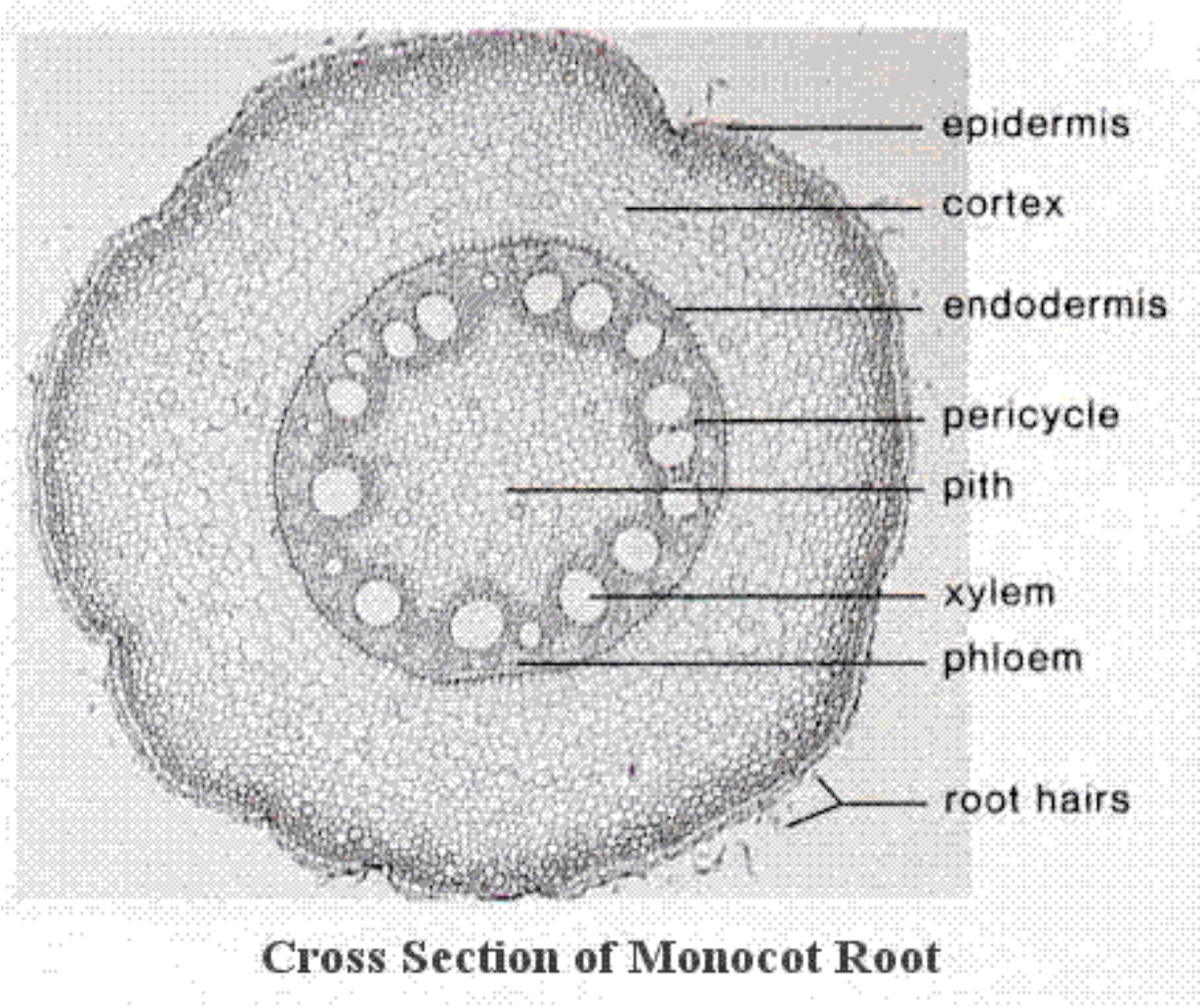
De wortels


Endodermis
Phloem
Xylem
Cortex
Pericycle
Epidermis
Zone of Differentiation
Branch Root
Epidermis
Cortex
Detail of Root Hair Formation
Apical Meristem


primaire xyleem
primaire floëem
pericykel
cambium
endodermis
epidermis
schors
wortelhaar



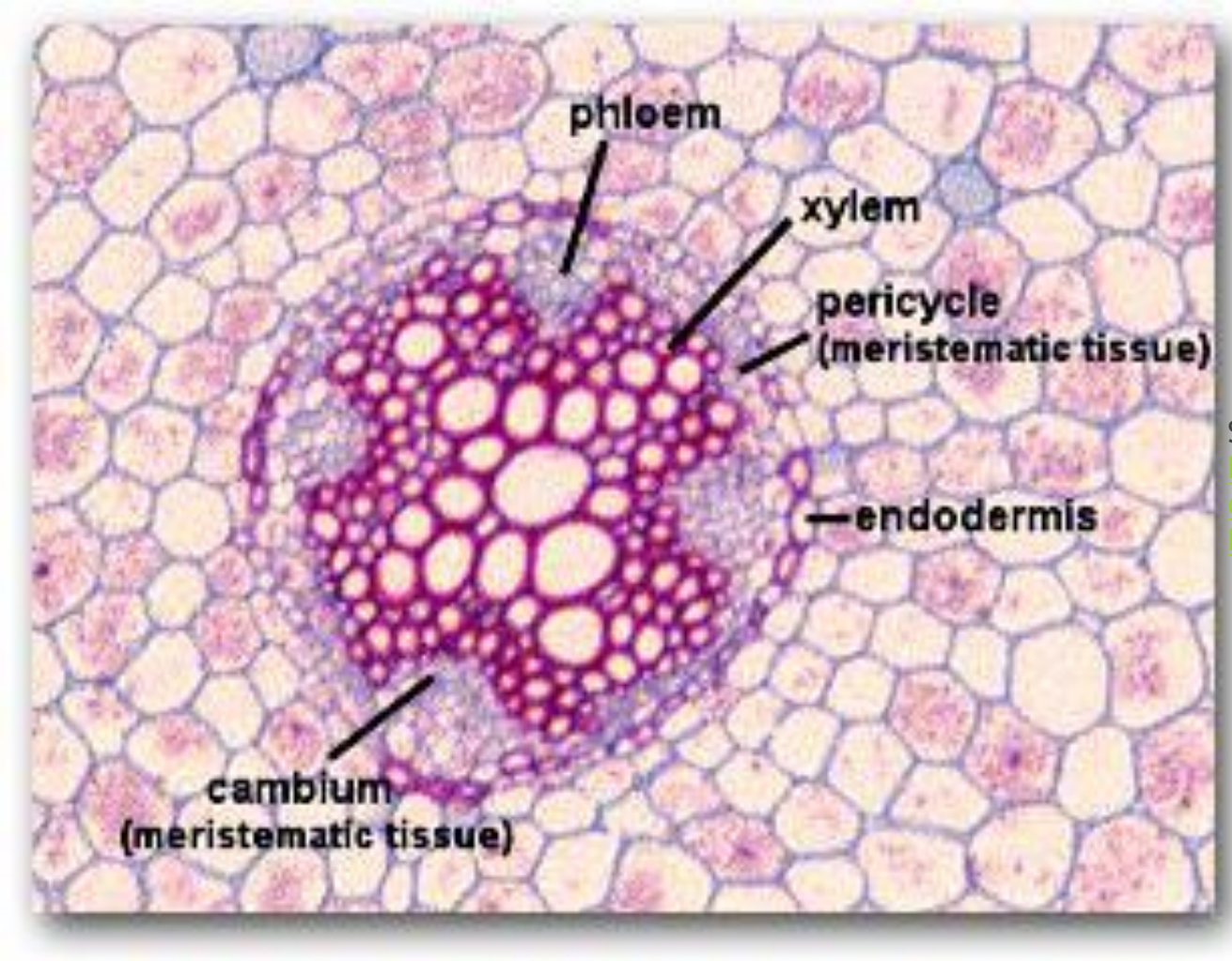
Monocotyl wortel



Cross Section of Monocot Root

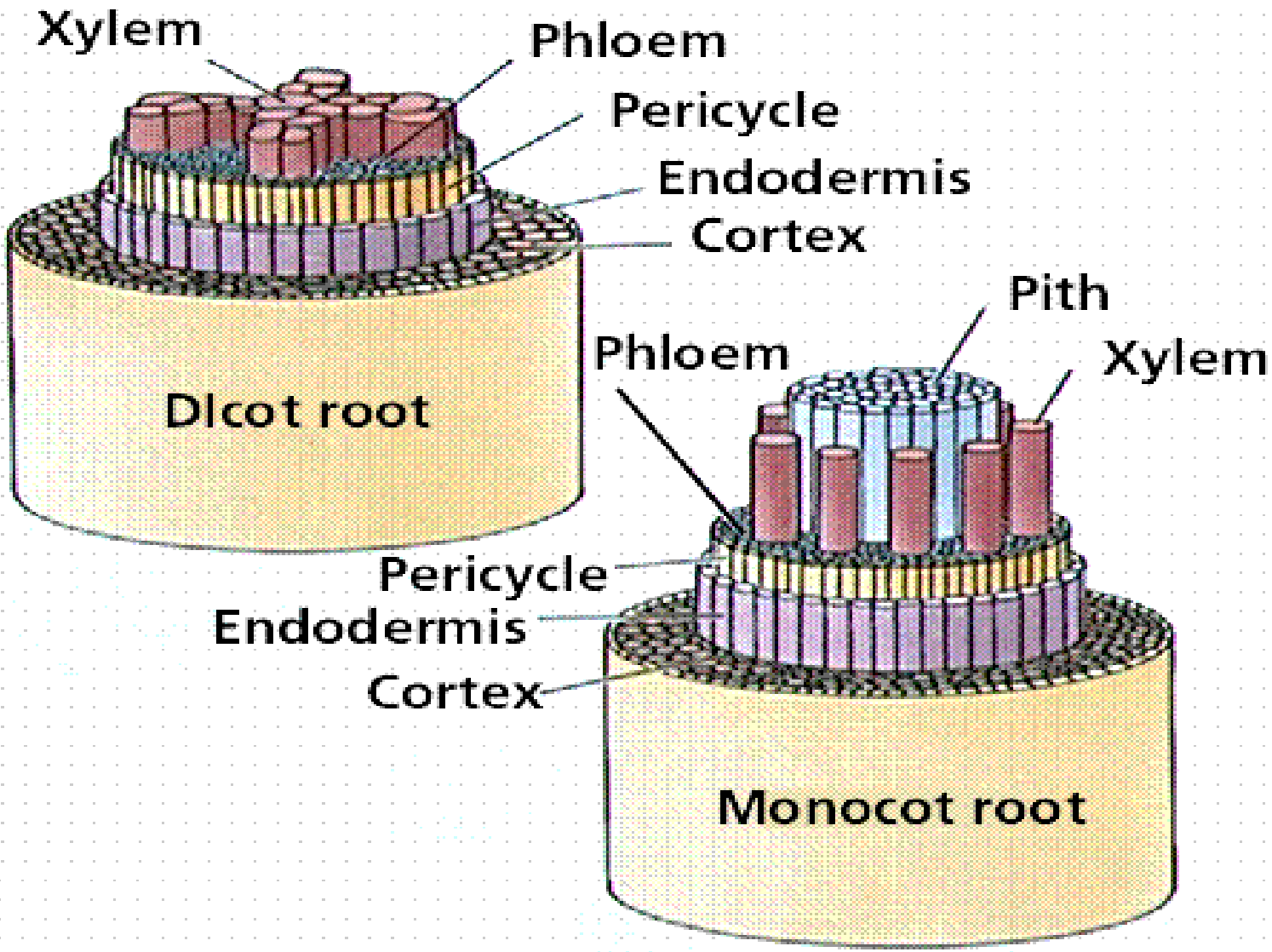
Source:
http://biologytricks.blogspot.nl/2012/05/anatomy-of-flowering-plant.html

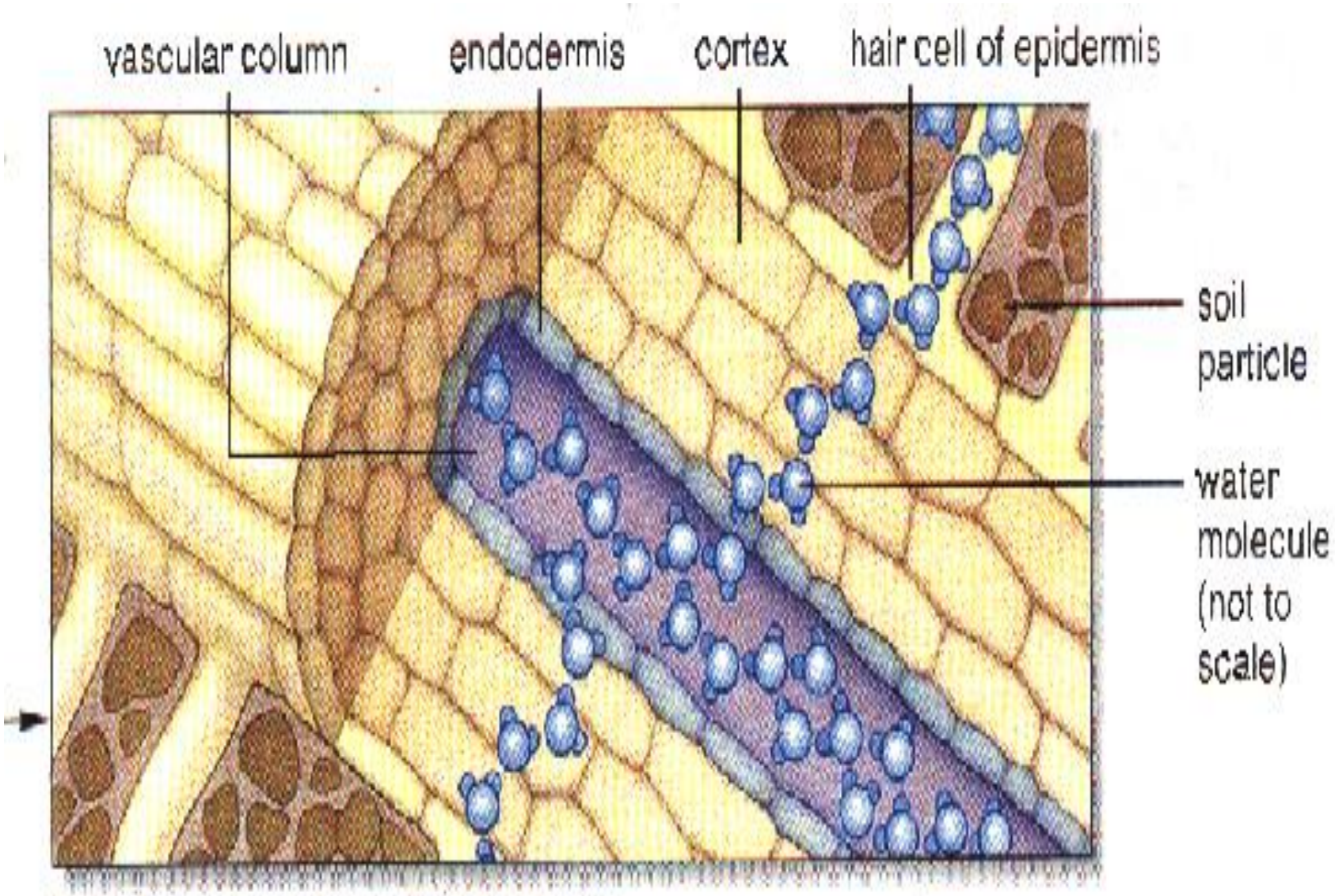
Dicotyl wortel



Source:
http://www.tutorvista.com/content/biology/biology-iii/plant-histology/anatomy-dicot-root.php

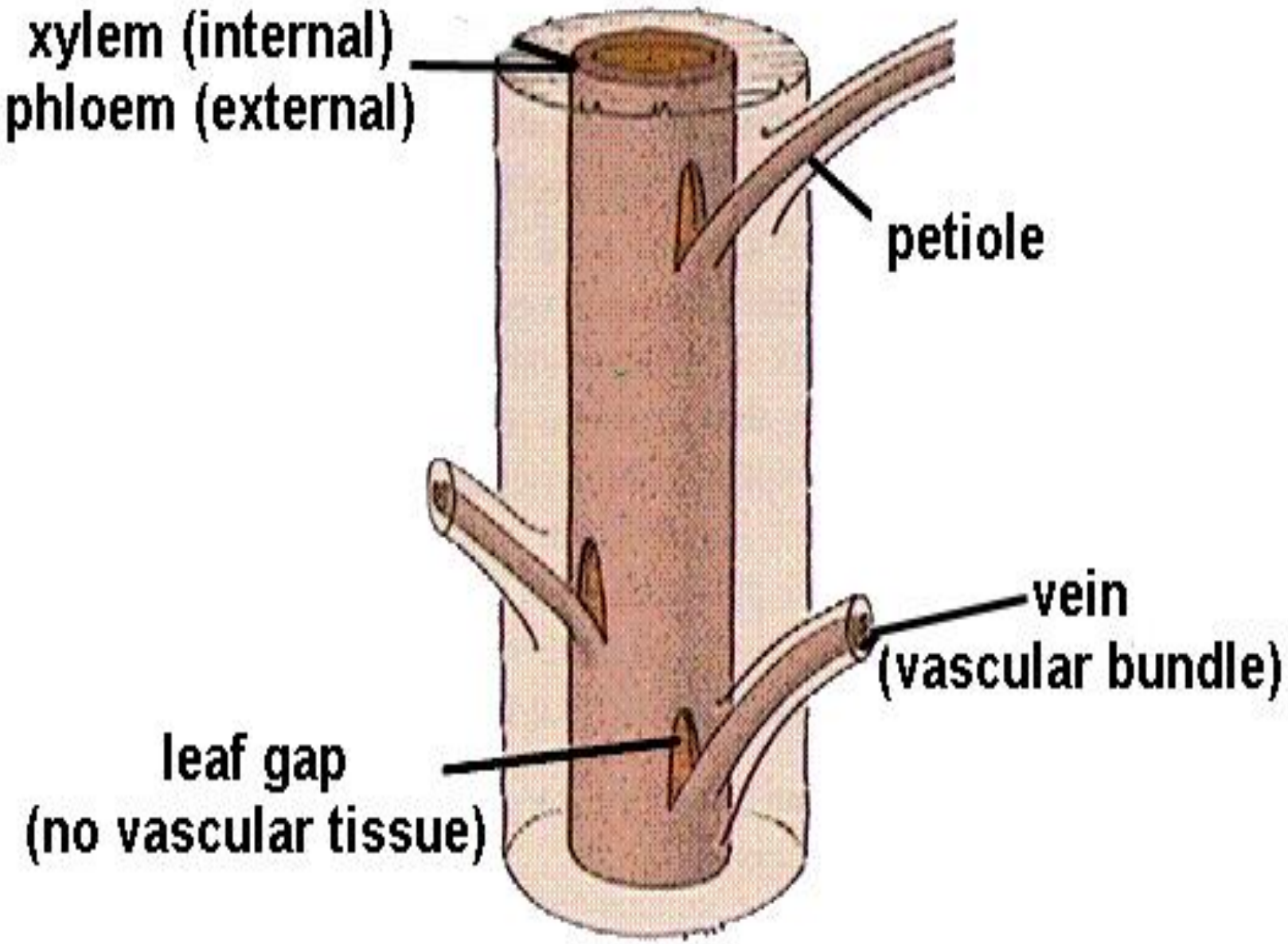
Monocotyl en dicotyl wortels



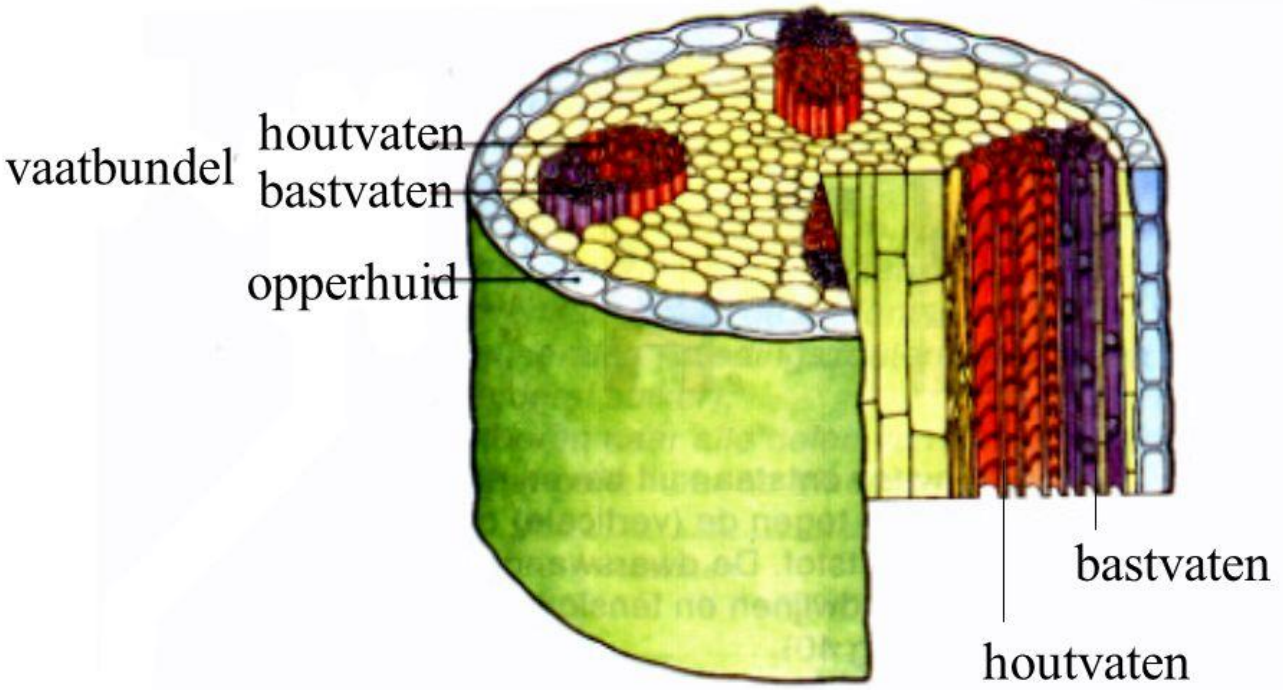


1 Water Uptake From Soil by Roots

Stengel


xylem (internal)
phloem (external)
petiole
vein
(vascular bundle)
leaf gap
(no vascular tissue)

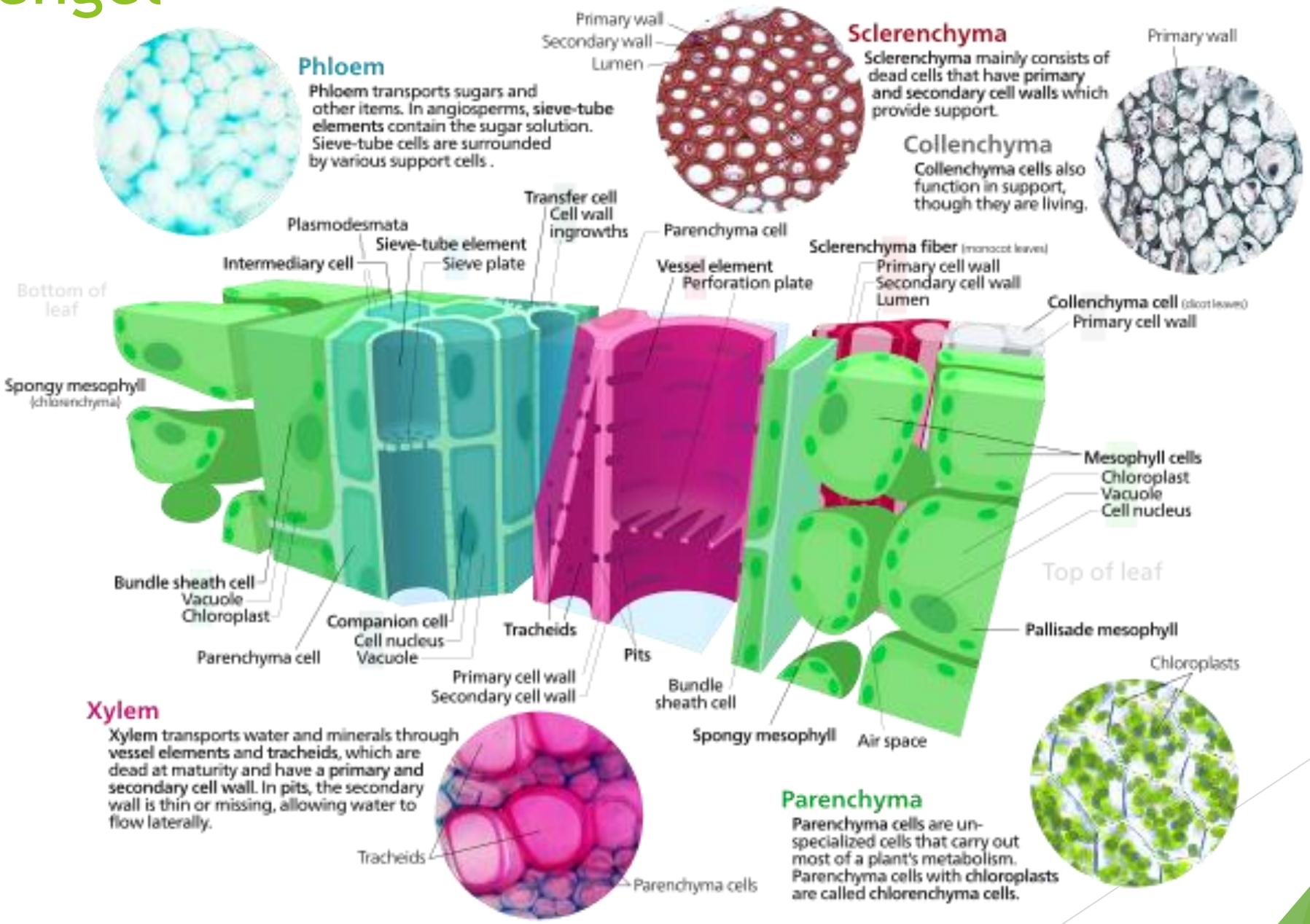
Houtvaten en Bastvaten

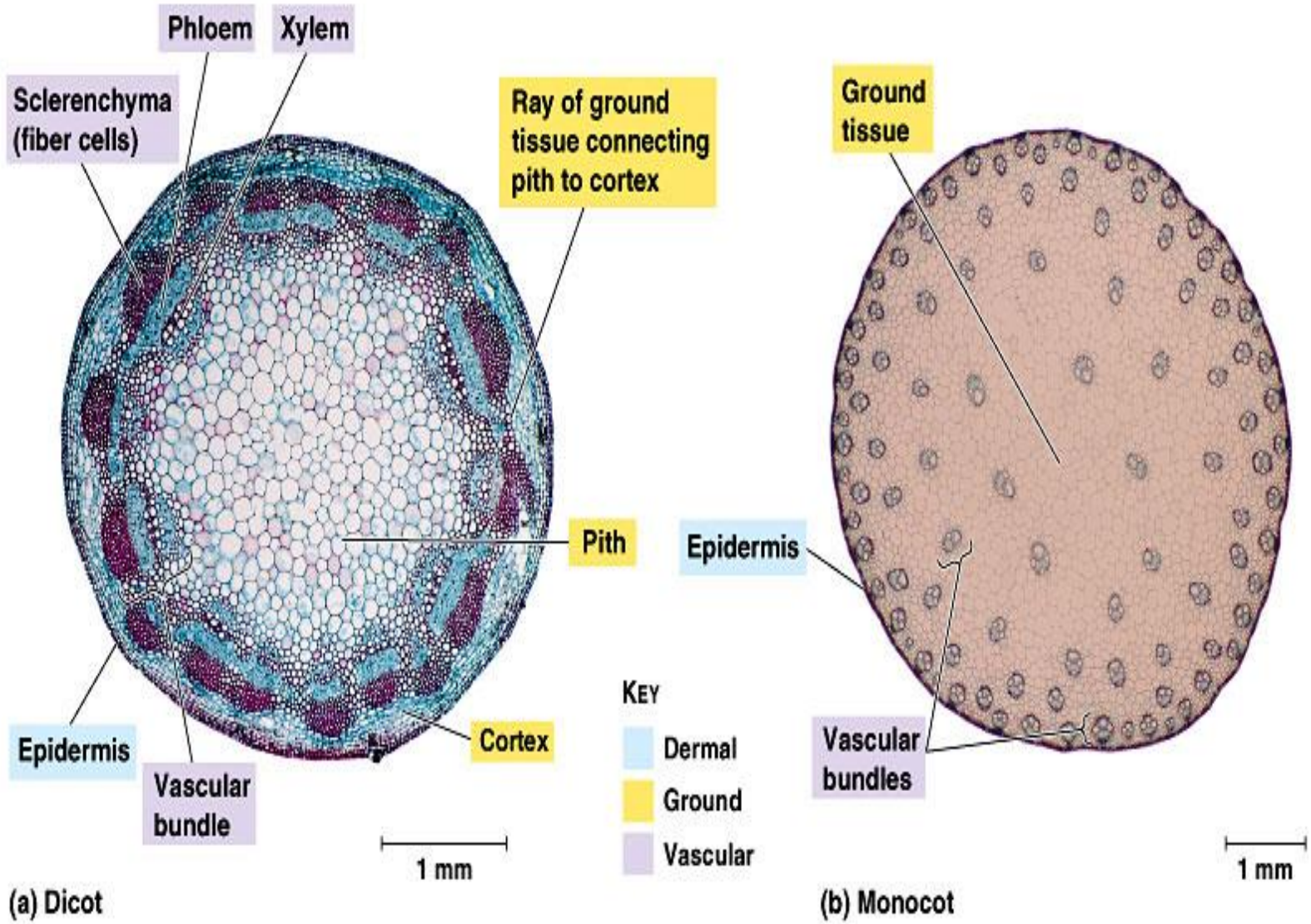


De houtvaten vervoeren water en mineralen van de wortels naar de bladeren

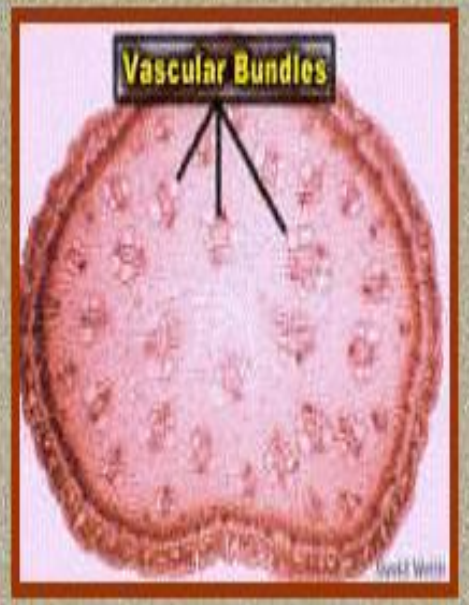
De bastvaten vervoeren glucose van de bladeren naar alle delen van de plant

Stengel


Phloem
Phloem transports sugars and other items. In angiosperms, sieve-tube elements contain the sugar solution. Sieve-tube cells are surrounded by various support cells .
Primary wall
Secondary wall
Lumen
Sclerenchyma
Sclerenchyma mainly consists of dead cells that have primary and secondary cell walls which provide support.
Collenchyma
Collenchyma cells also function in support, though they are living.
Primary wall
Transfer cell
Cell wall ingrowths
Plasmodesmata
Sieve-tube element
Intermediary cell
Sieve plate
Parenchyma cell
Vessel element
Perforation plate
Sclerenchyma fiber (monocot leaves)
Primary cell wall
Secondary cell wall
Lumen
Collenchyma cell (dicot leaves)
Primary cell wall
Bottom of leaf
Spongy mesophyll (chlorenchyma)
Mesophyll cells
Chloroplast
Vacuole
Cell nucleus
Top of leaf
Bundle sheath cell
Vacuole
Chloroplast
Companion cell
Cell nucleus
Vacuole
Parenchyma cell
Tracheids
Pits
Primary cell wall
Secondary cell wall
Bundle sheath cell
Pallisade mesophyll
Spongy mesophyll
Air space
Chloroplasts
Xylem
Xylem transports water and minerals through vessel elements and tracheids, which are dead at maturity and have a primary and secondary cell wall. In pits, the secondary wall is thin or missing, allowing water to flow laterally.
Tracheids
Parenchyma cells
Parenchyma
Parenchyma cells are un-specialized cells that carry out most of a plant's metabolism. Parenchyma cells with chloroplasts are called chlorenchyma cells.

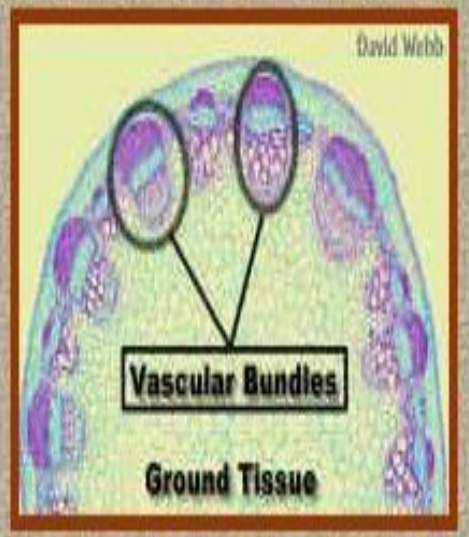


Monocot Stems have many Vascular Bundles arranged in a complex pattern within the Ground Tissues.



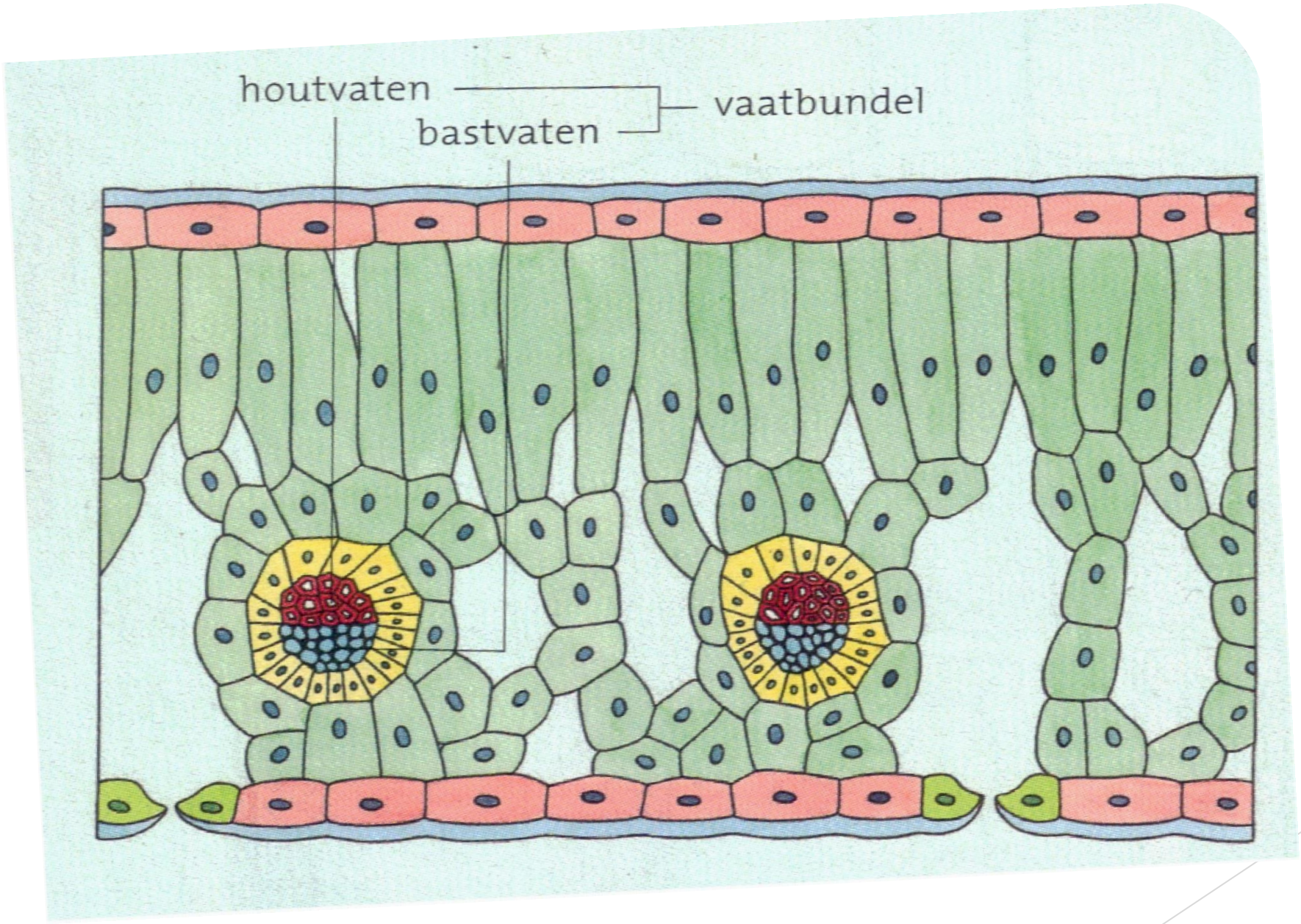
Monocot Stem x-section

Dicot Stems have one ring of Vascular Bundles located in the periphery of the Ground Tissues

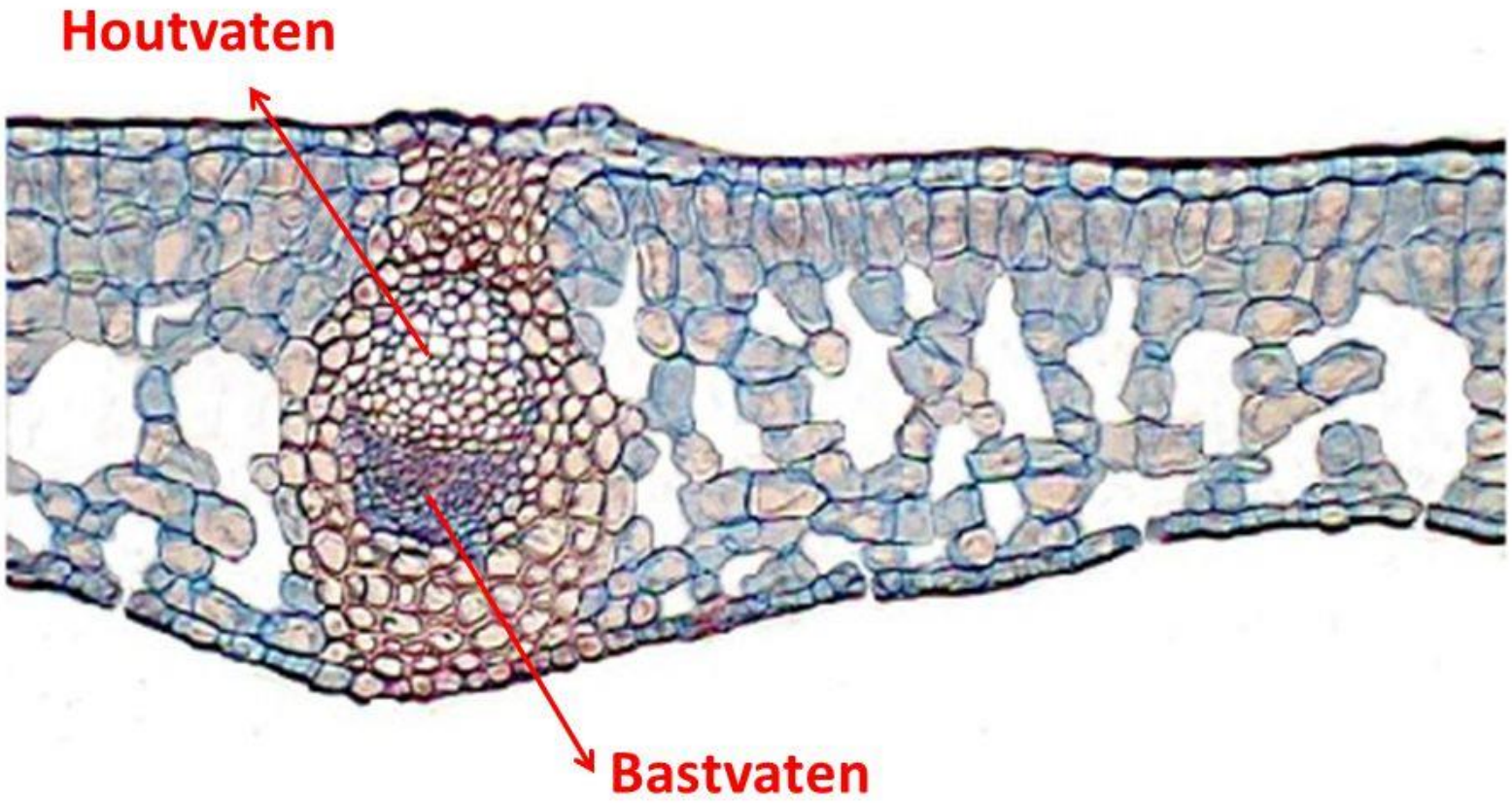


Dicot Stem X-section

Blad


houtvaten
bastvaten
vaatbundel

dwarsdoorsnede van een blad



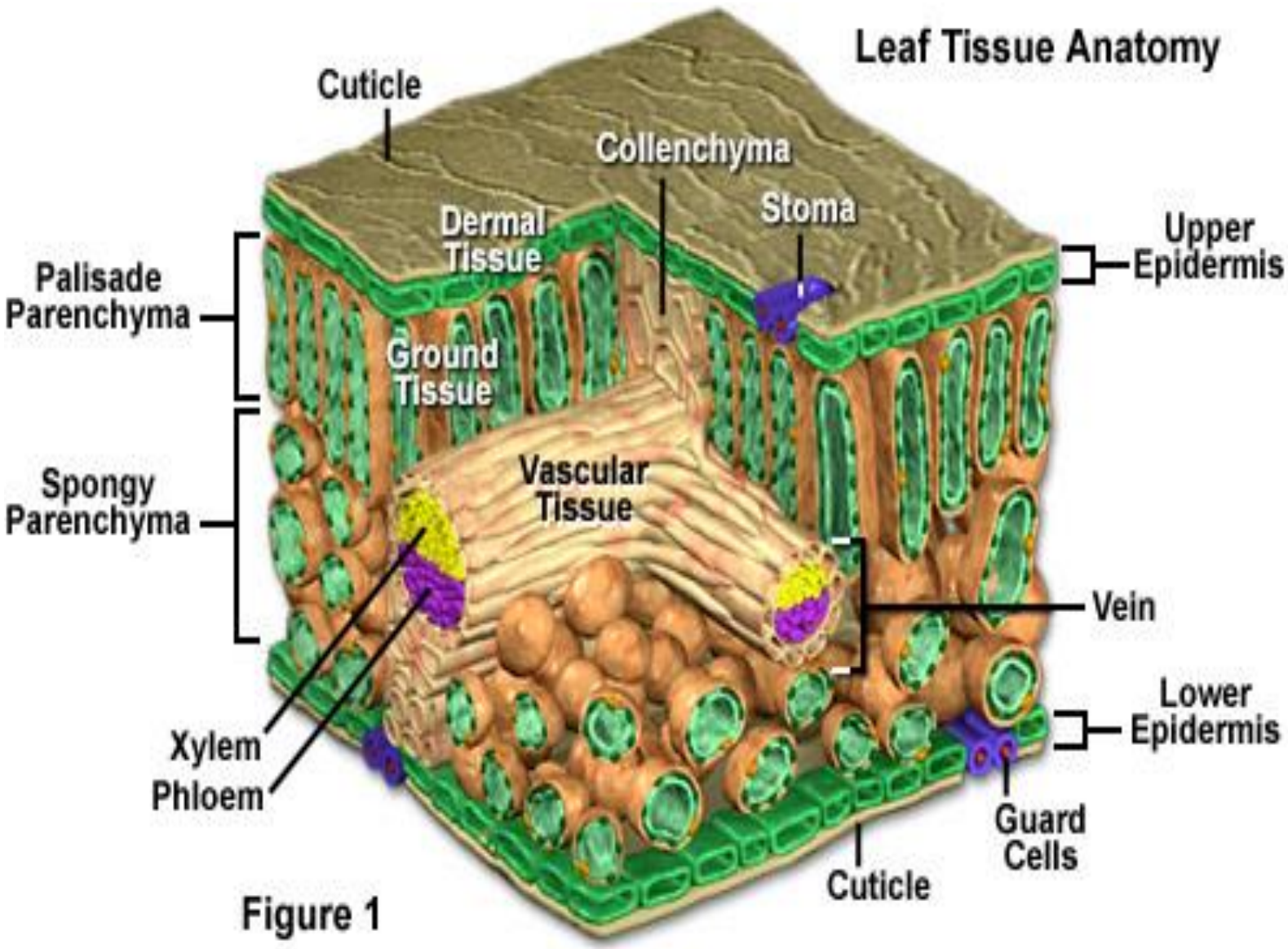
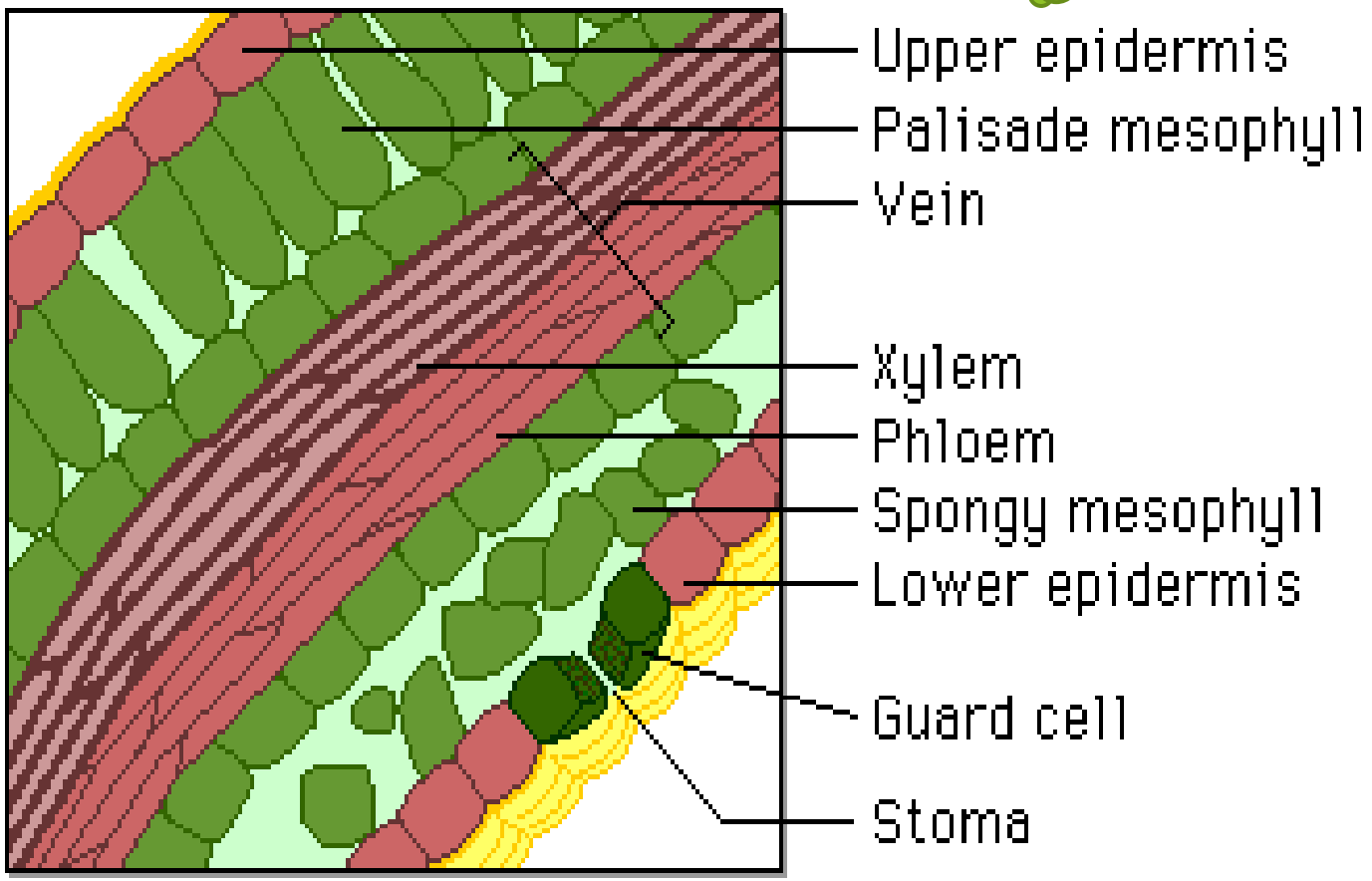

Leaf Tissue Anatomy
Cuticle
Collenchyma
Stoma
Dermal Tissue
Upper Epidermis
Palisade Parenchyma
Ground Tissue
Vascular Tissue
Spongy Parenchyma
Vein
Lower Epidermis
Xylem
Phloem
Guard Cells
Cuticle

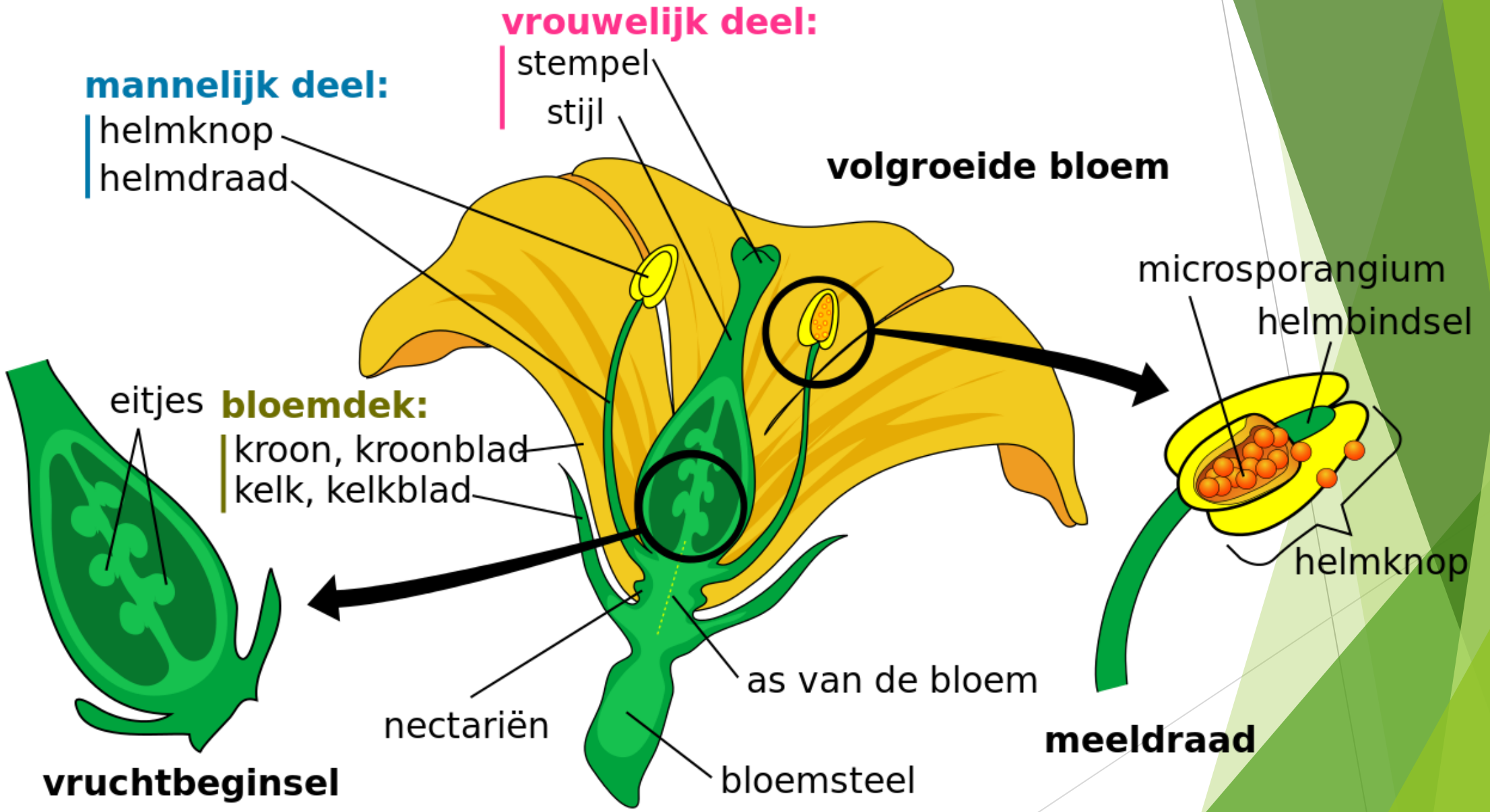
Figure 1

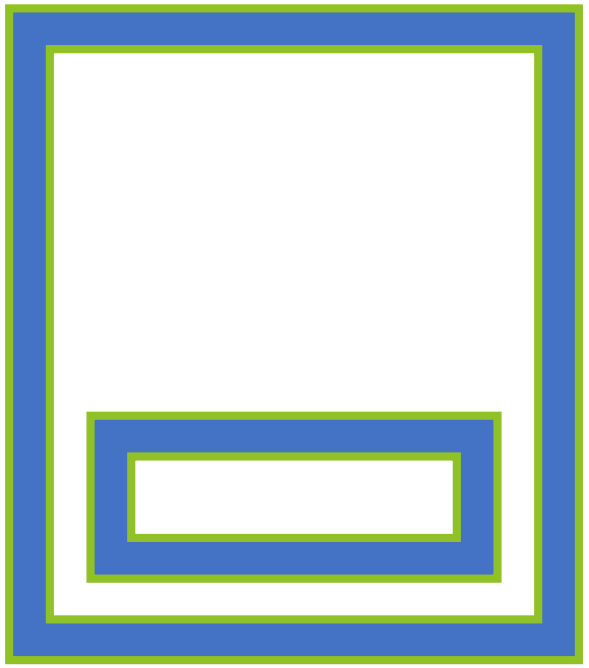
Blad structuur

De structuur van bladeren spoort fotosynthese aan en zorgt voor de controle van gasuitwisseling en waterverlies



Bloem


vrouwelijk deel:
stempel
stijl
mannelijk deel:
helmknop
helmdraad
volgroeide bloem
microsporangium
helmbindsel
eitjes
bloemdek:
kroon, kroonblad
kelk, kelkblad
helmknop
as van de bloem
nectariën
meeldraad
bloemsteel
vruchtbeginsel



Afsluiting van de les

Welke begrippen heb jij vandaag onthouden?

- Welke neem jij mee na deze les?