

5

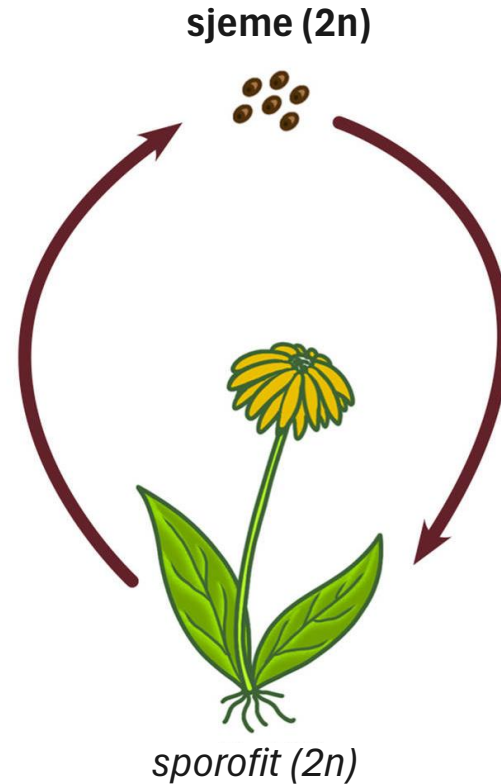
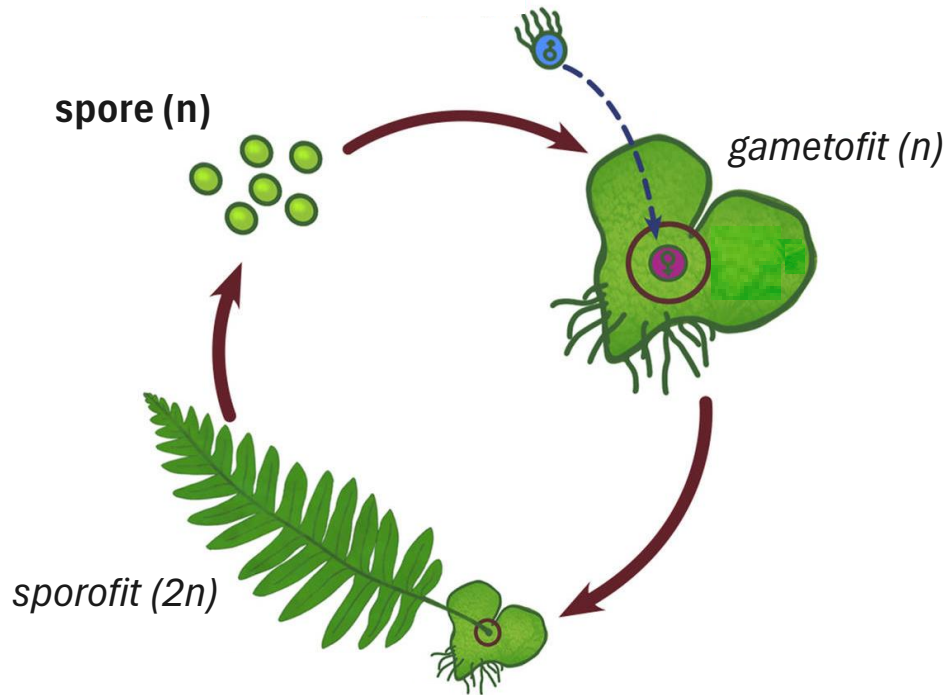


Sjeme
Plod
Vodni režim biljke
Fotosinteza i respiracija
Mineralna ishrana
Transport materija kroz biljku

Semen



Spora vs. sjeme

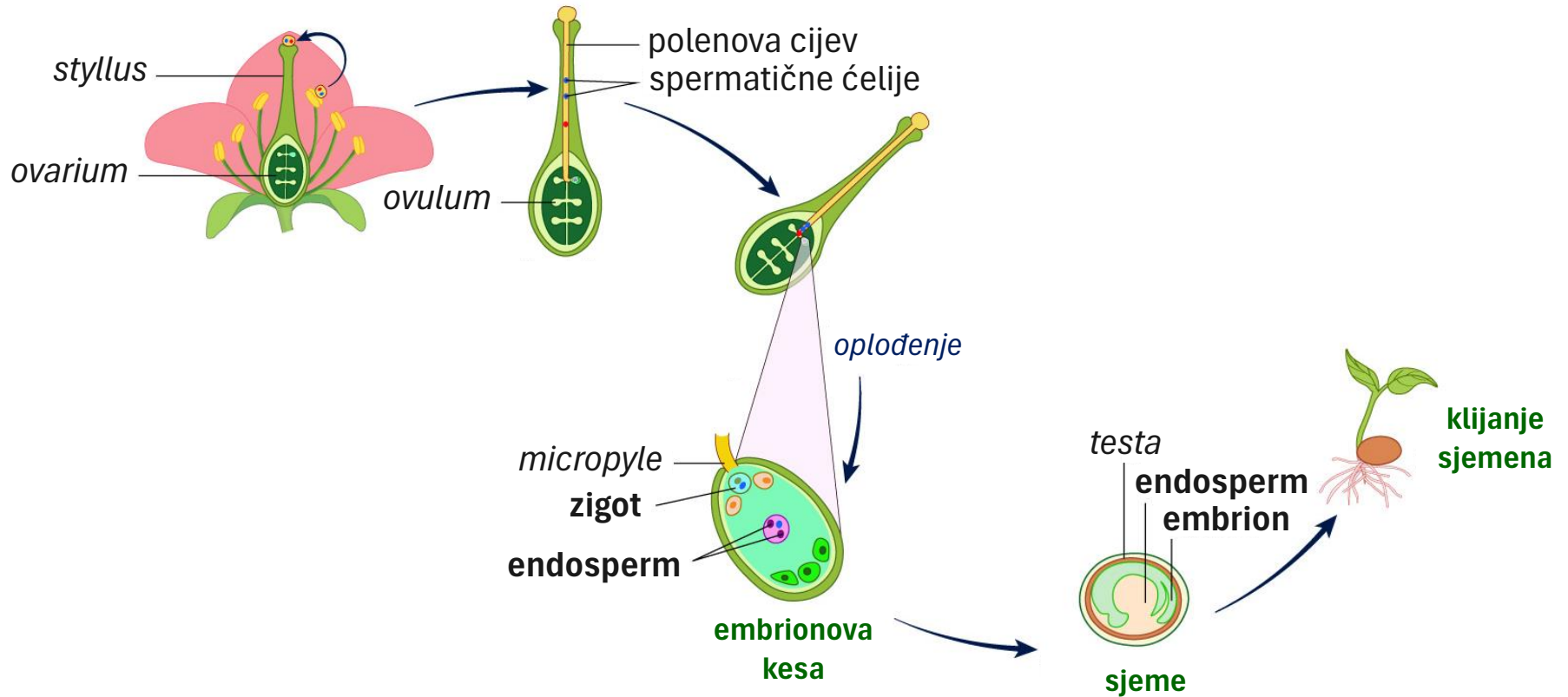




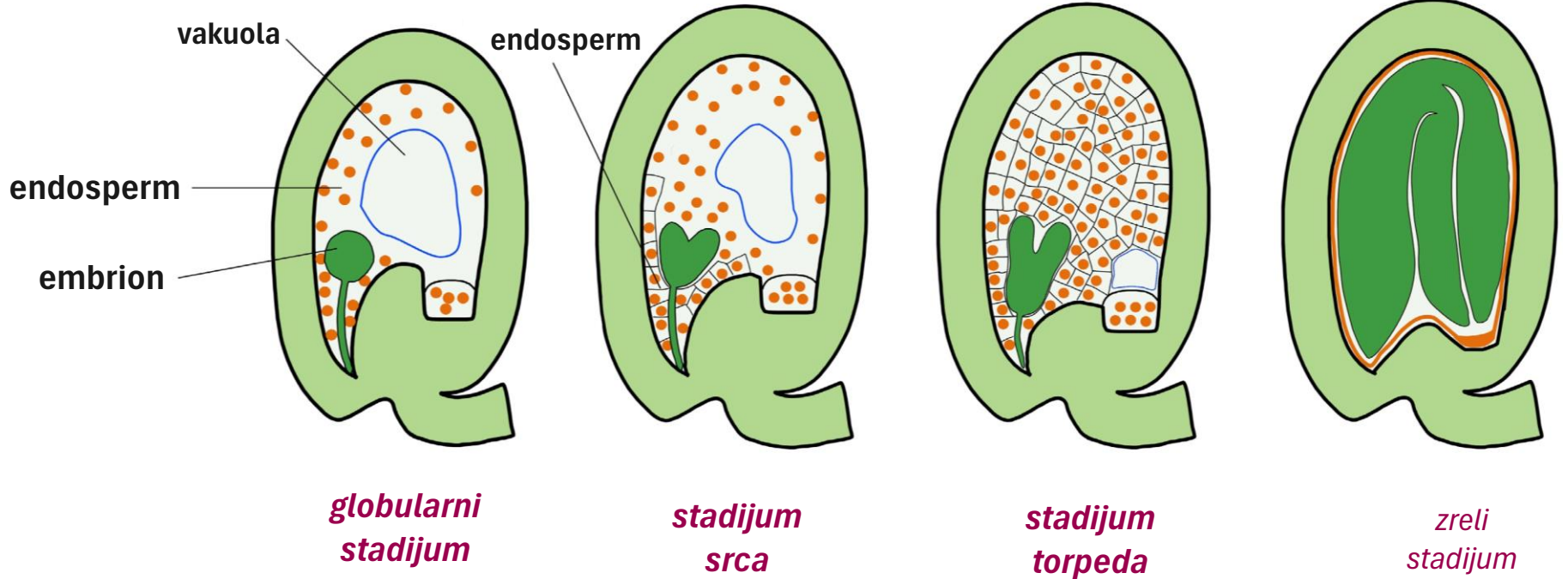
Biljke sjemenjače



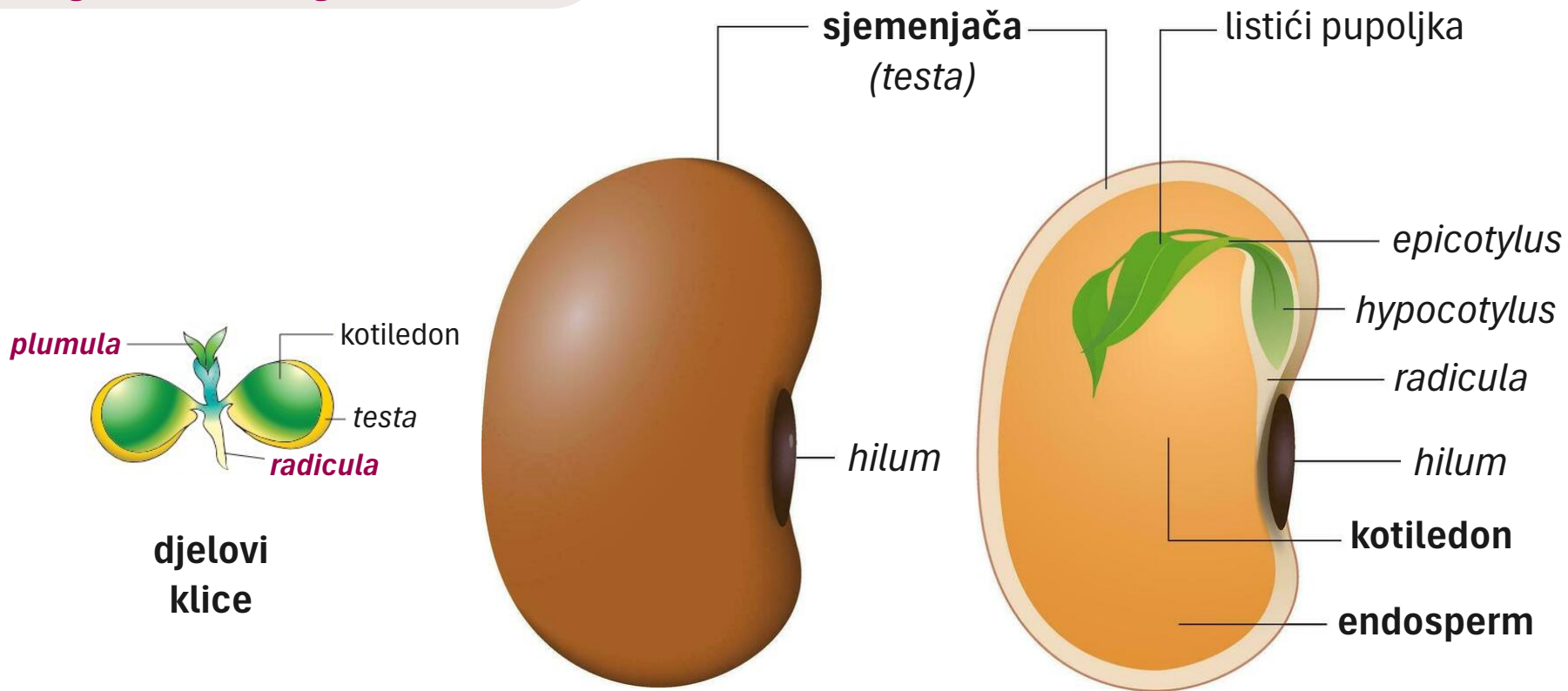
Od sjemenog zametka do sjemena



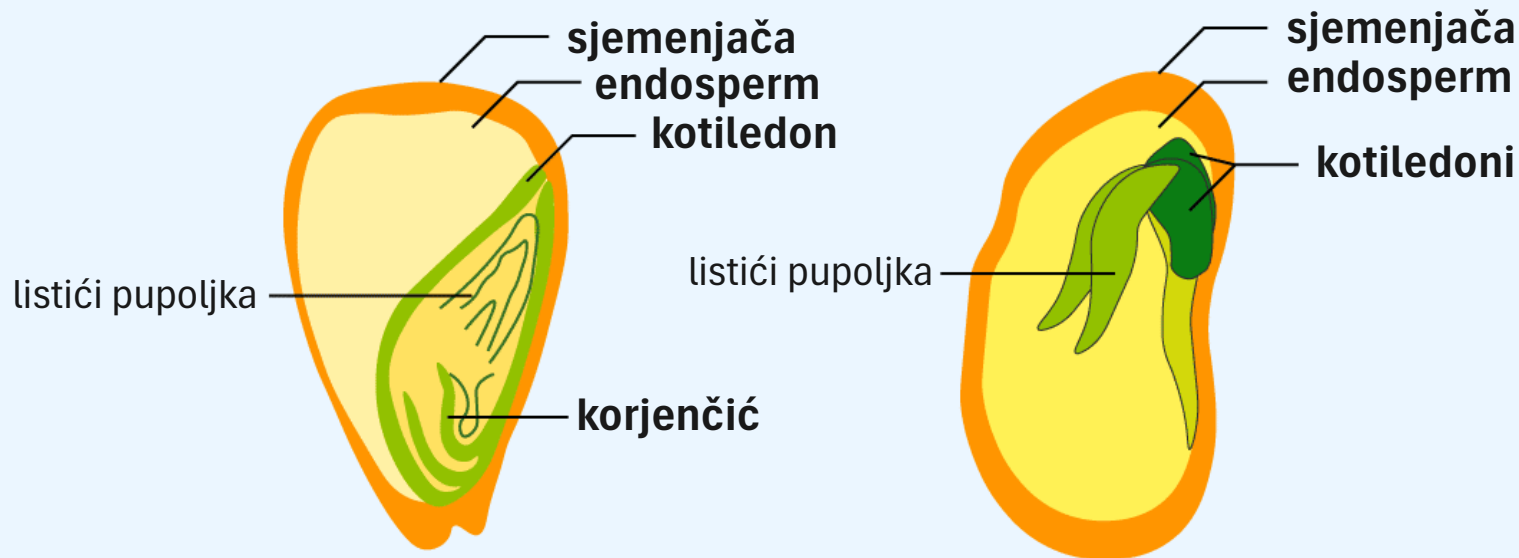
Embriogeneza



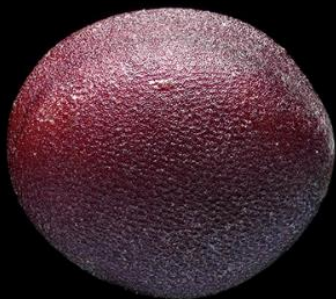
Djelovi sjemena



Sjeme monokotila vs. sjeme dikotila



Oblik i veličina sjemena kao taksonomski karakter

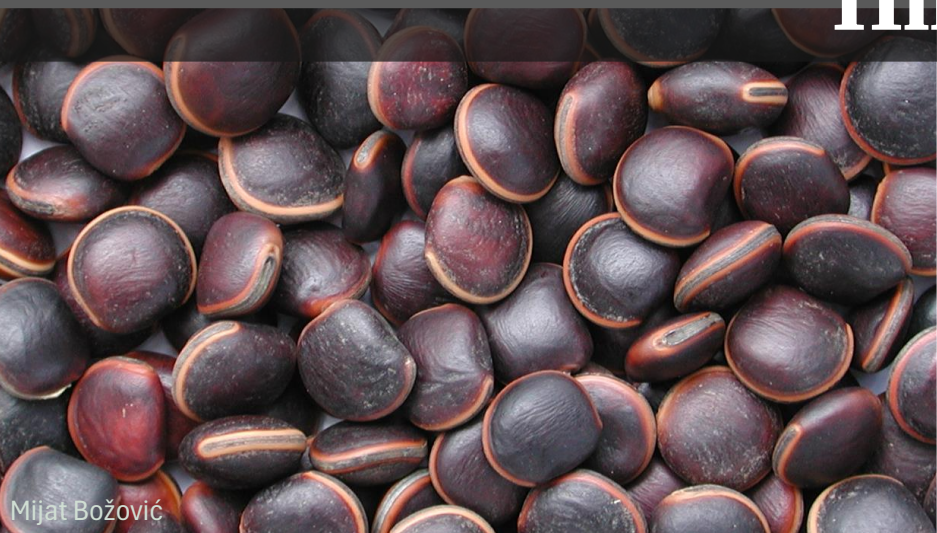


Sjemenjača





Hilum



Izraštaji na sjemenu

plod muškarnog oraščića
čije je sjeme obavijeno
crvenim arilusom



sjeme tise obavijeno
crvenim arilusom



plod
ricinusa



← karunkula
na sjemenu

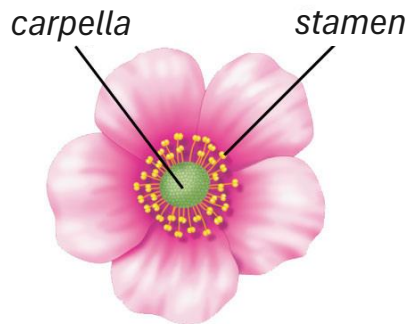
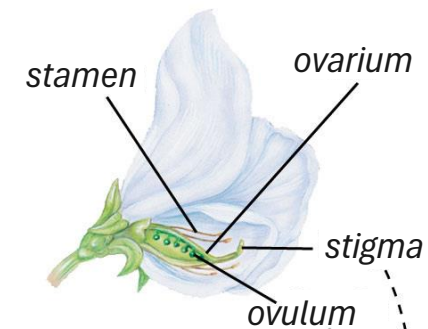
Nijesu sjemenca u botaničkom smislu



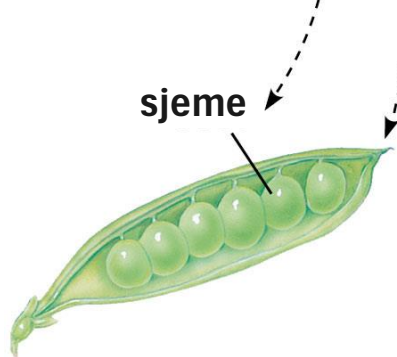
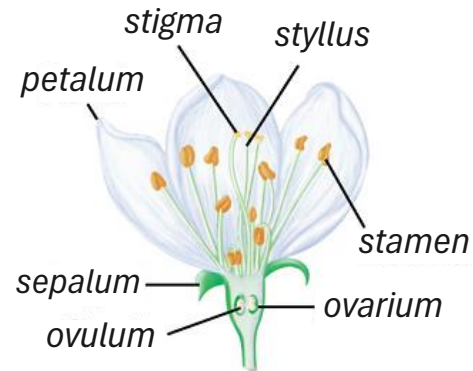
Fructus



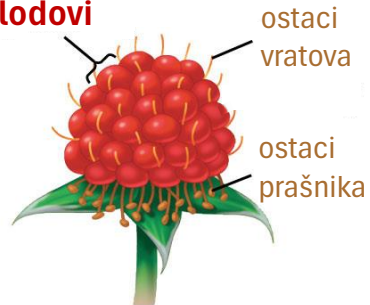
Od čega nastaju plodovi?



pojedinačni cvjetovi



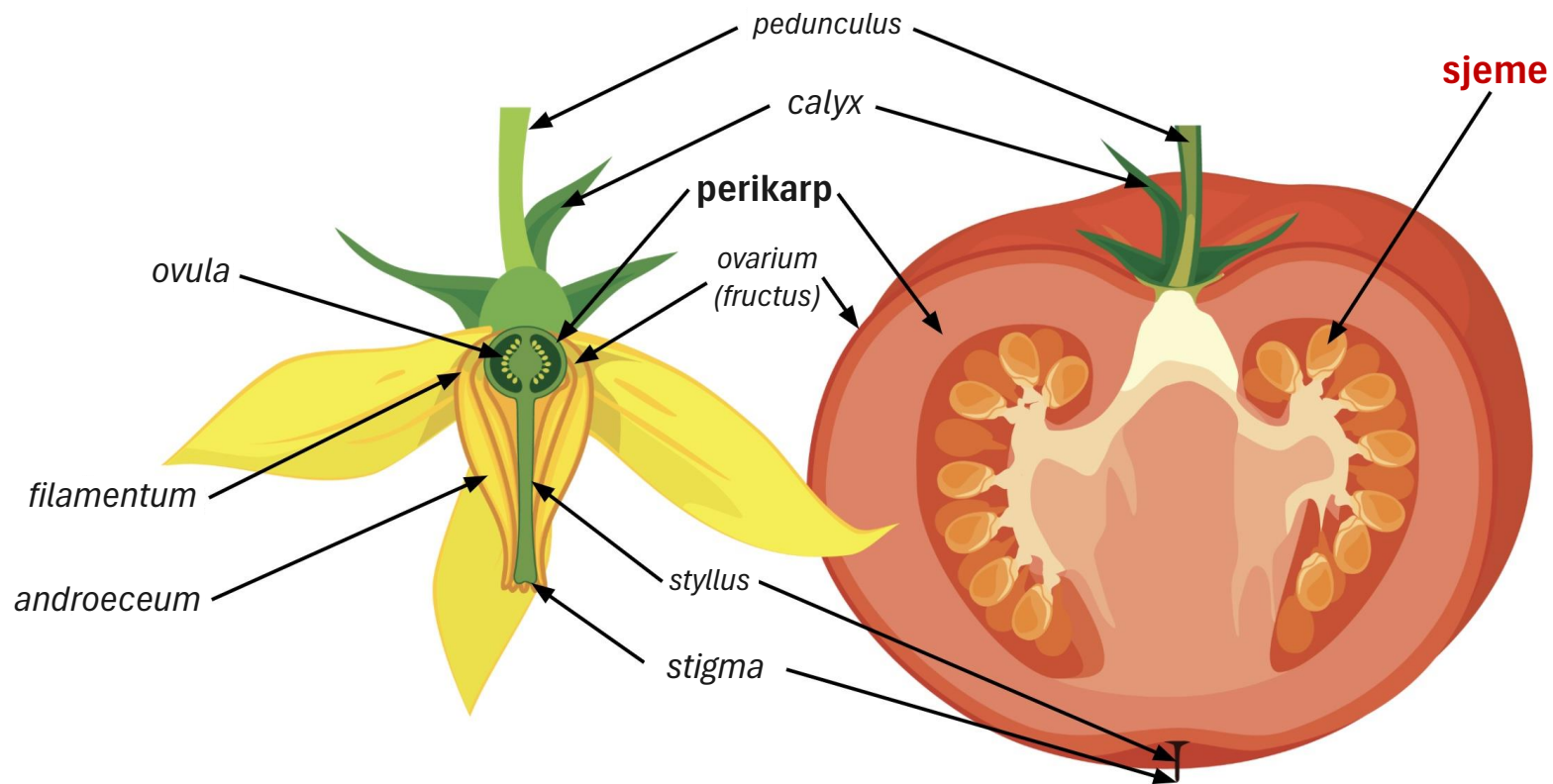
pojedinačni plodovi



pojedinačni plodovi



Cvijet vs. plod





Biljke skrivenosjemenjače

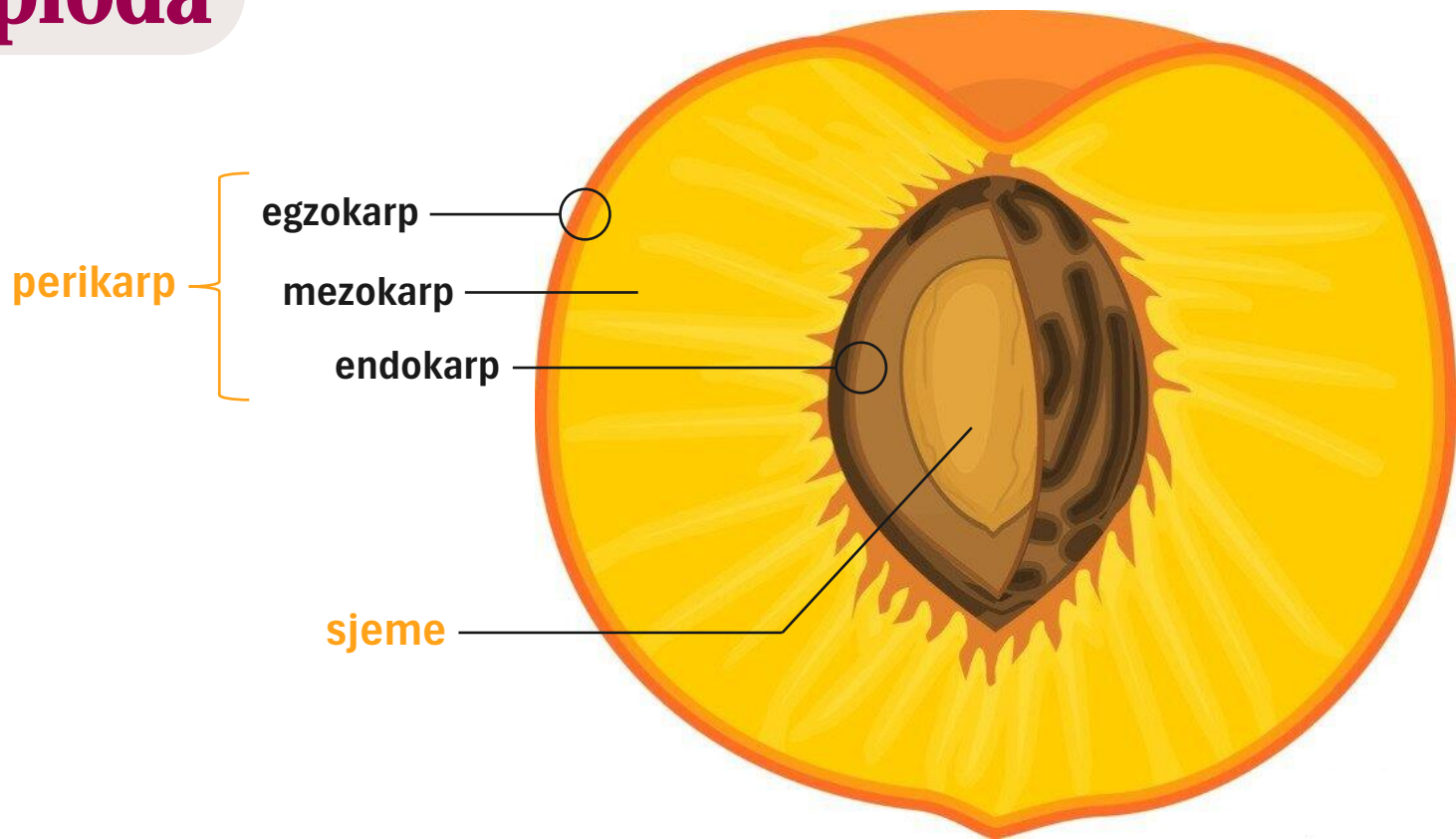




Akcesorije



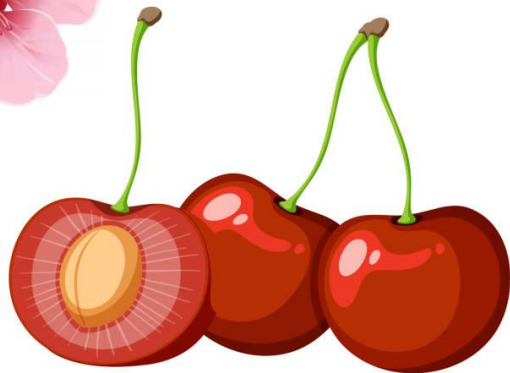
Djelovi ploda



Monoantokarpni plodovi



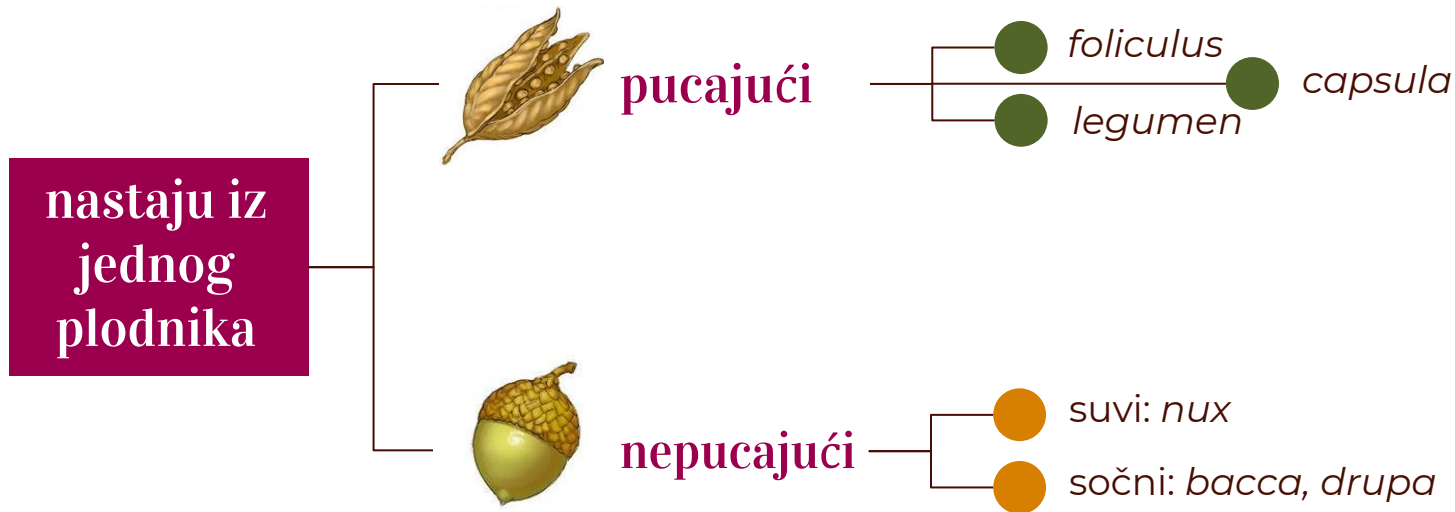
posebni
plodovi



zbirni
plodovi



Posebni (pojedinačni) plodovi



Pucajući plodovi



foliculus



legumen



capsula



Različiti tipovi čaure





Čaura krstašica



Nepucajući plodovi



nux



bacca



drupa



Različiti primjeri orašice



Posebni oblici orašice

caryopsis

perikarp je srastao
sa sjemenjačom

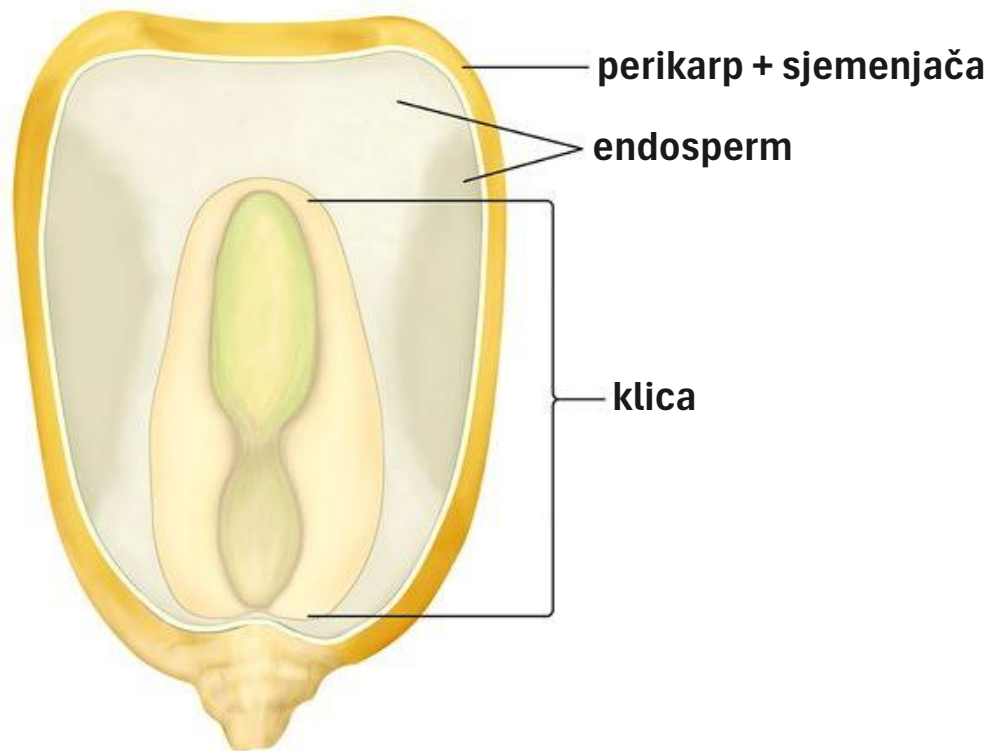


achenium

perikarp nije srastao
sa sjemenjačom



Srasla sjemenjača i perikarp zajedno štite embrion



krupa kukuruza

Ahenija je jednosjemena i jednooka orašica



**ahenija može
da sadrži papus**
(redukovanu čašicu)



ahenija suncokreta
(perikarp se jasno odvaja od sjemena)

Cijepajući i podijeljeni plodovi

schizocarpium

2 ili više karpela okupljenih oko zajedničke osovine (karpofora)



mericarpium

2 karpela se dijele na 4 dijela od kojih svaki daje po orašiću





Primjeri cijepajućih plodova





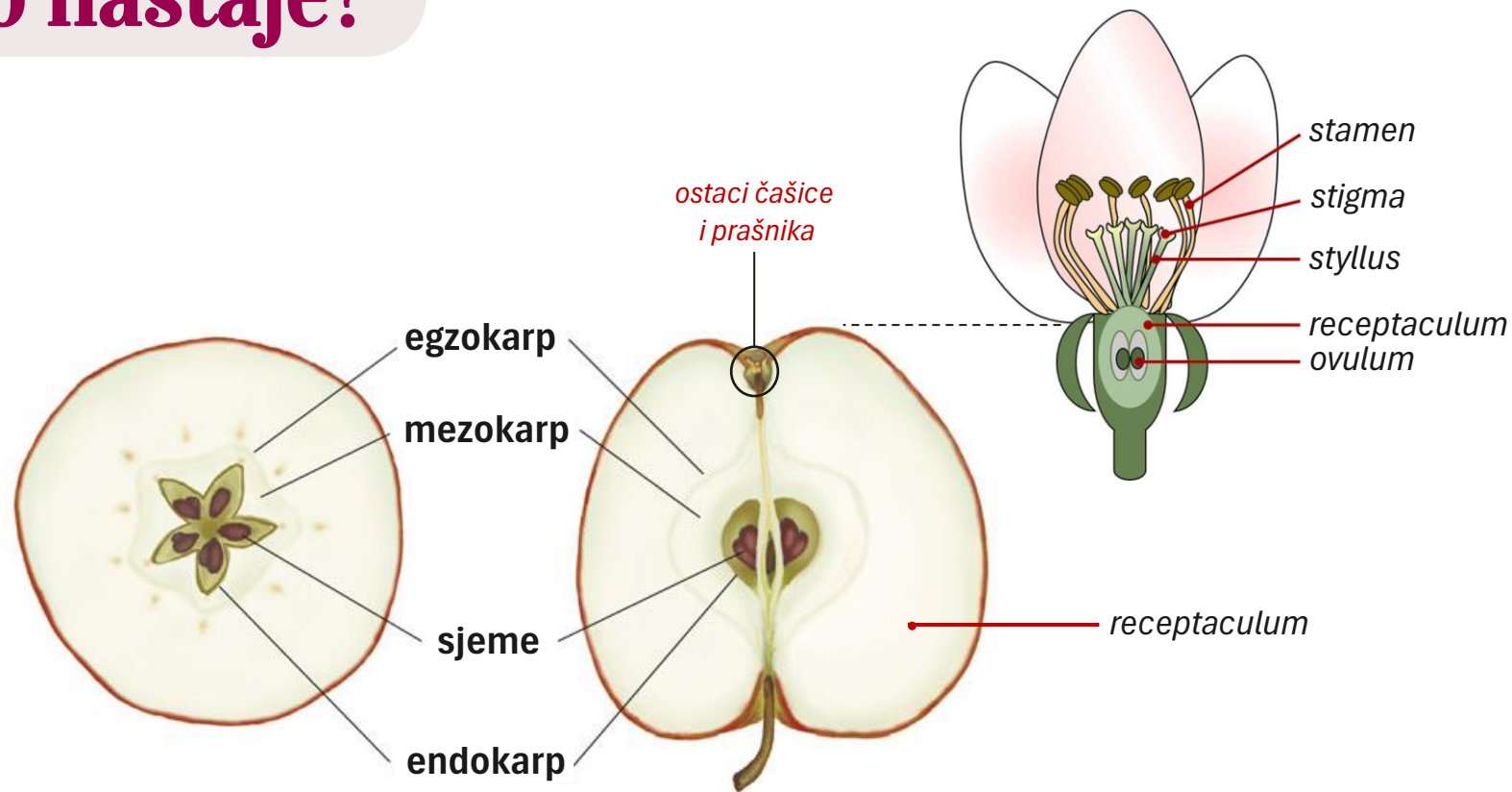
Različiti primjeri koštunice



Pommum: poseban tip koštunice



Kako nastaje?





Različiti primjeri bobice



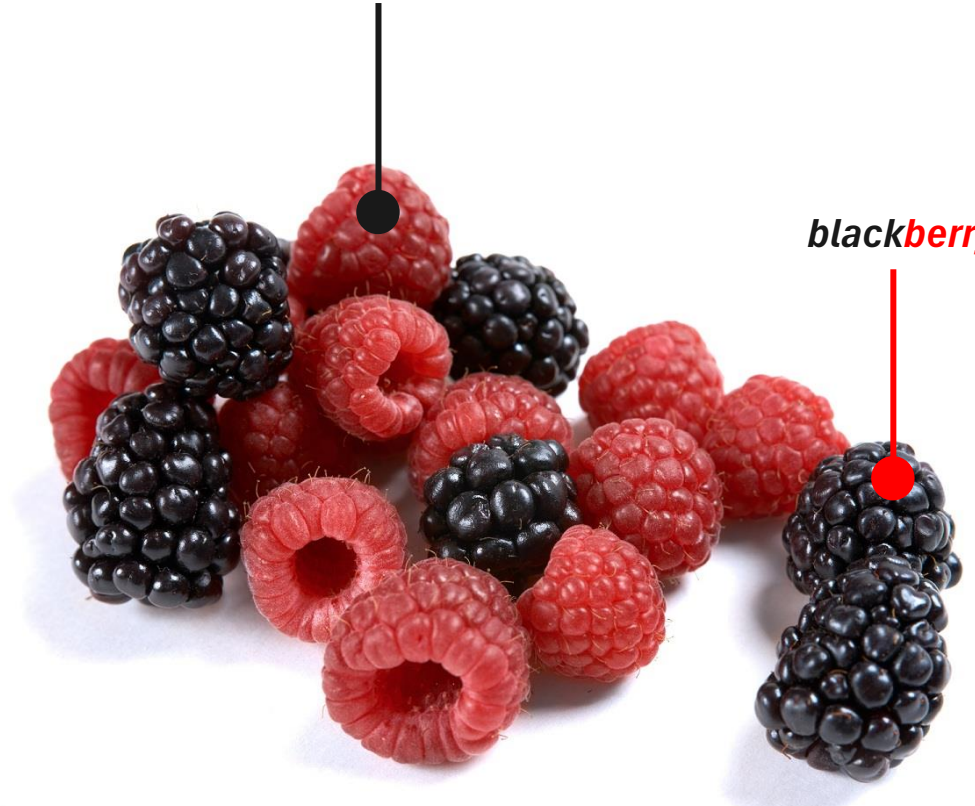
Nijesu *berries* u botaničkom smislu

*straw*berry



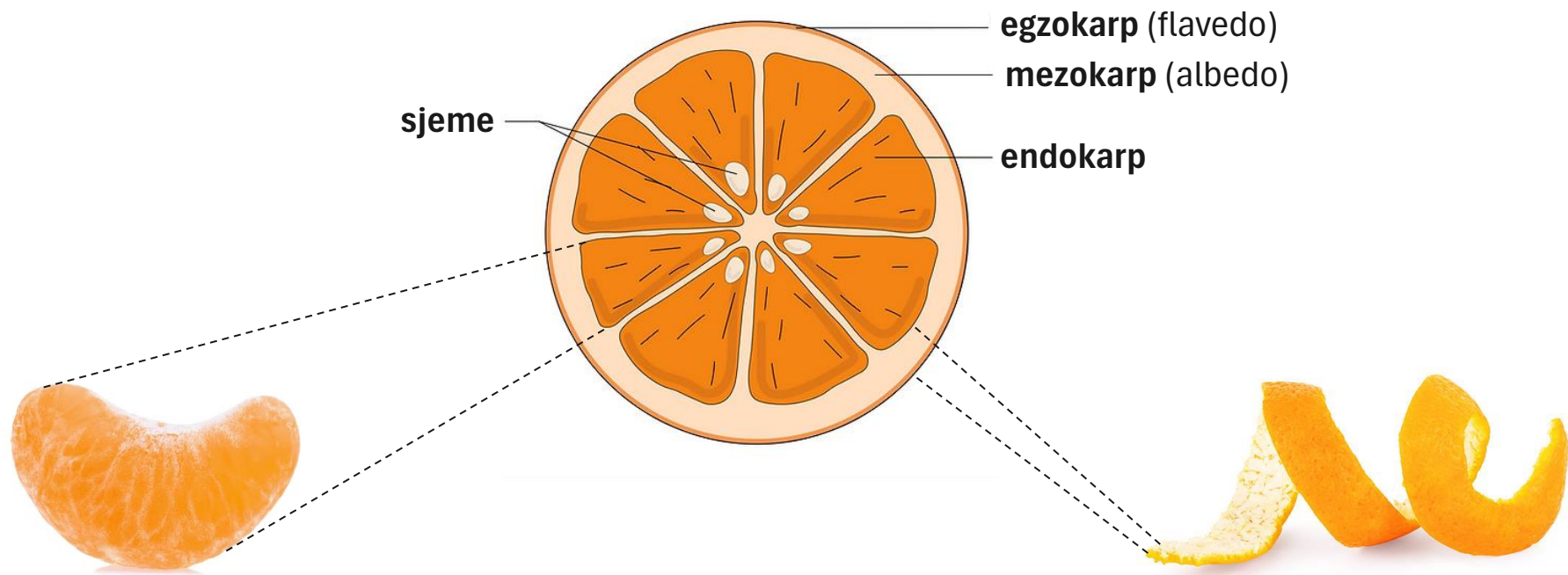
*mul*berry

*rasp*berry



*black*berry

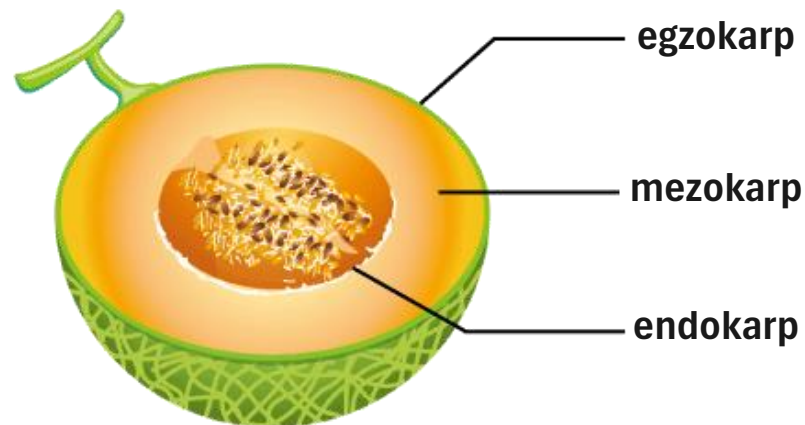
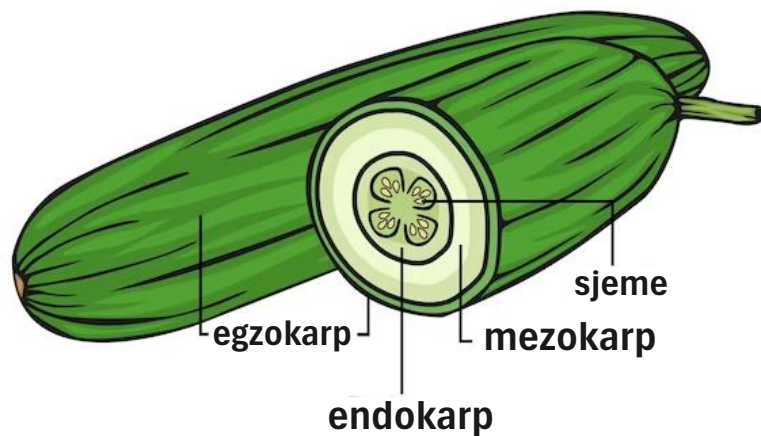
Hesperidium je poseban oblik bobice



Hesperidijum je plod *Citrus* vrsta



Izmijenjenja, tvrda bobica – pepo

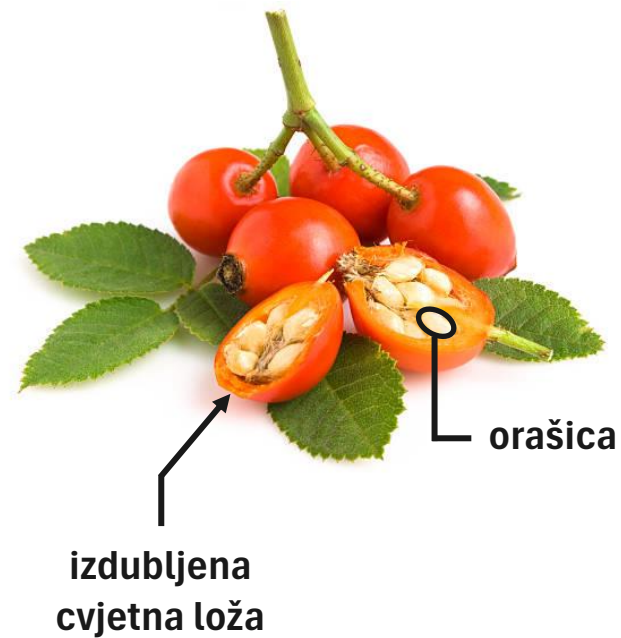
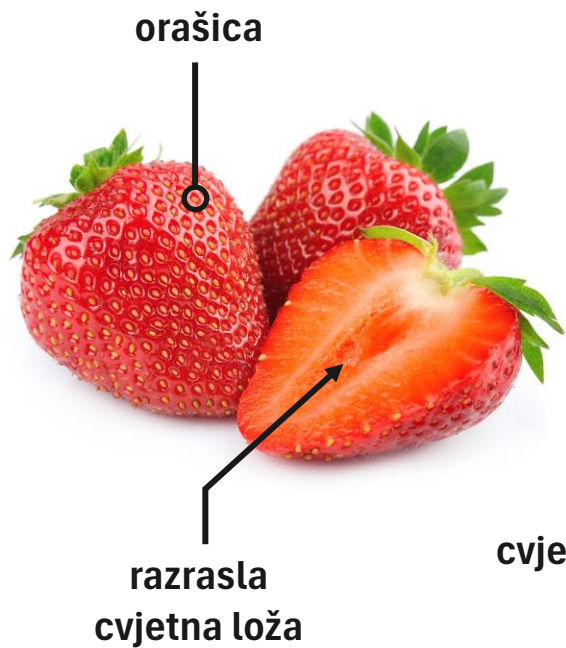




Pepo se javlja kod Cucurbitaceae porodice

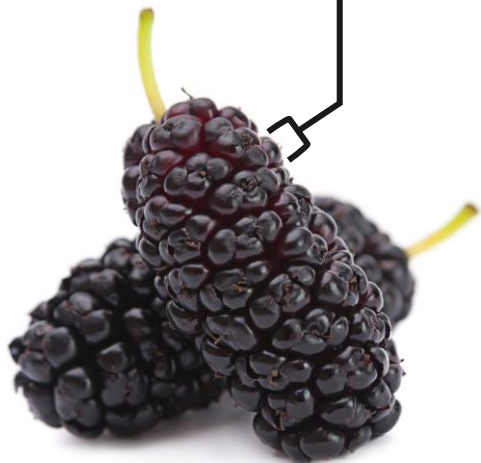


Discocarpium (zbirni plodovi)

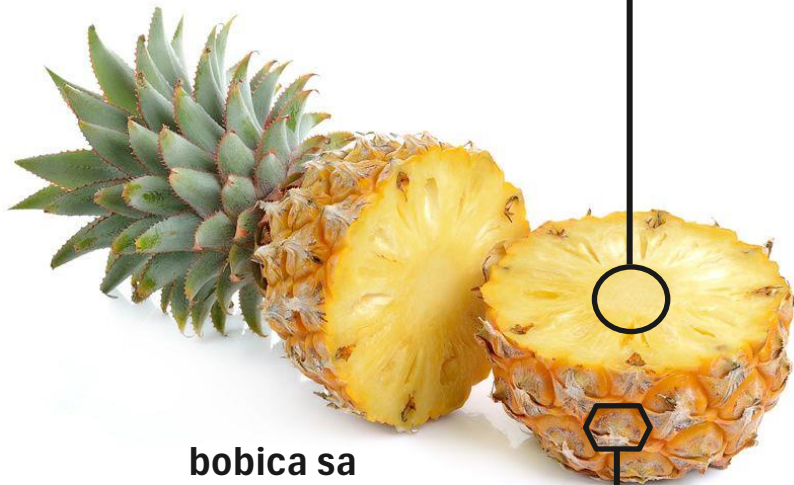


Poliantokarpni plodovi

orašica obrasla
sočnom čašicom



mesnata
osovina
cvasti



bobica sa
razraslom
cvjetnom ložom

orašica
utisnuta u zid
osovine cvasti



Složeni plodovi nastaju od cvasti





Plod ili sjeme?



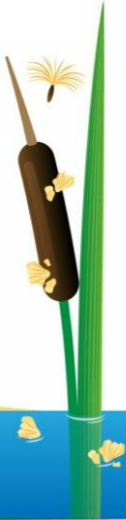
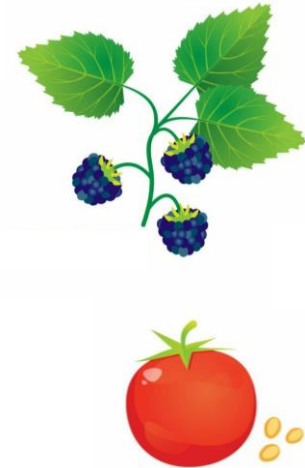
Rasprostiranje sjemena i plodova



samorasijavanje
(autohorija)



posredstvom spoljašnjih faktora
(alohorija)





Značaj i upotreba sjemena i plodova

01

hrana

voće i povrće, žitarice i pseudožitarice

02

začin

kulinarstvo, konzervansi, korigensi

03

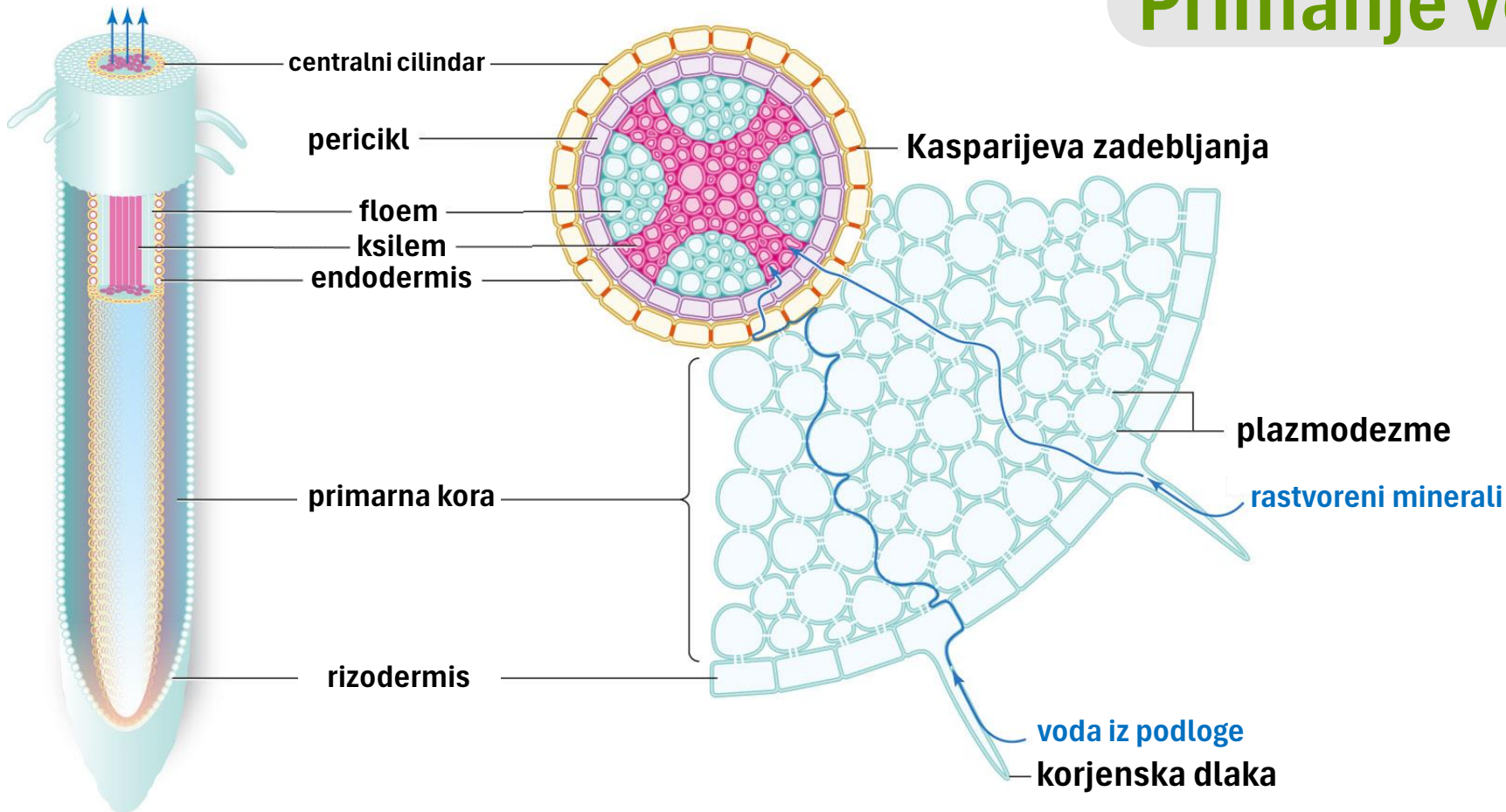
lijek

sekundarni metaboliti, hranljive materije,
vitamini, organske kiseline, nutraceutici

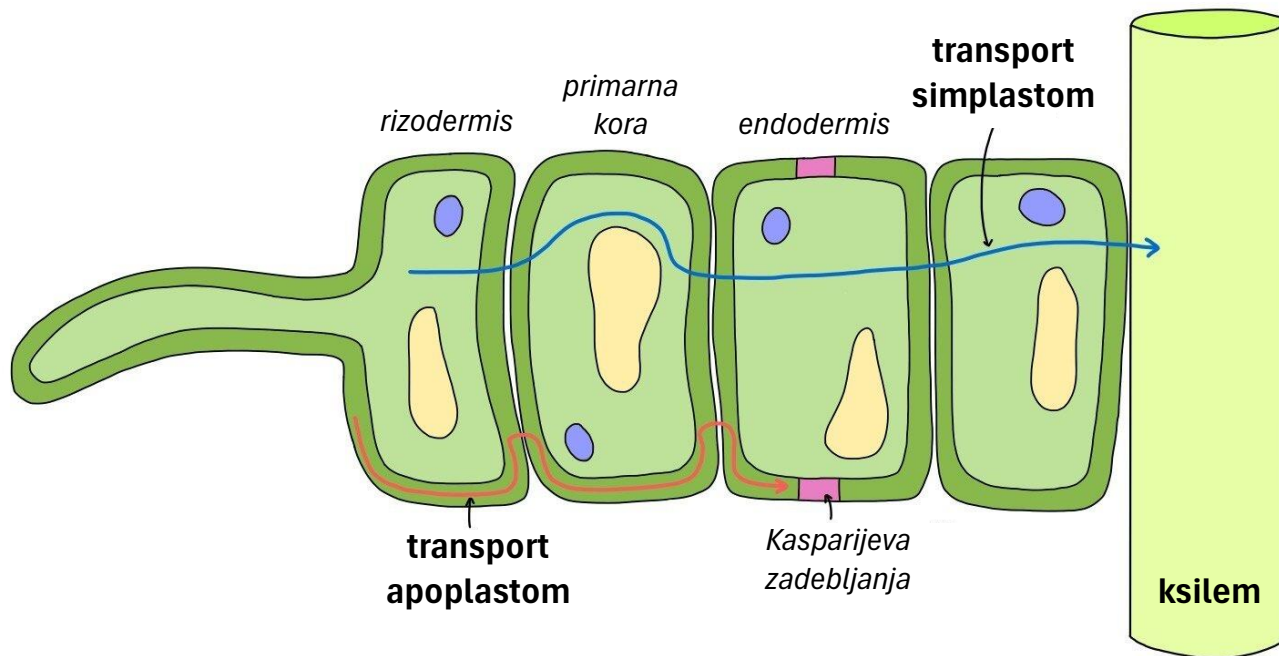
Fiziološki procesi

A close-up photograph of several green leaves, likely from a citrus tree, covered in numerous small, clear water droplets. The droplets are of various sizes and are scattered across the surface of the leaves, which are a vibrant green color. The background is dark and out of focus, making the leaves and droplets stand out prominently.

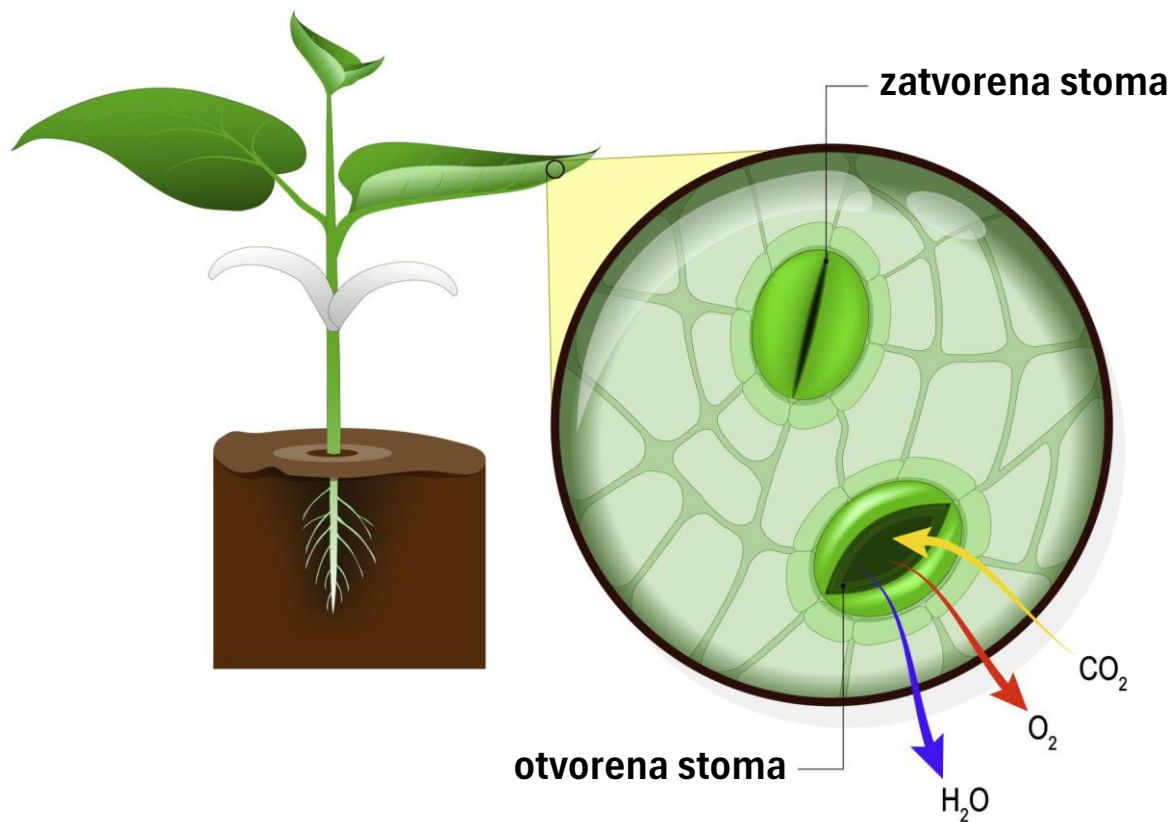
Primanje vode



Transport se obavlja i simplastom i apoplastom

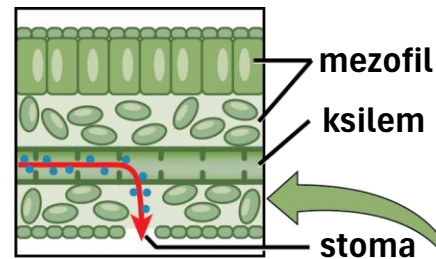


Osnovni pokretač sprovođenja vode je transpiracija

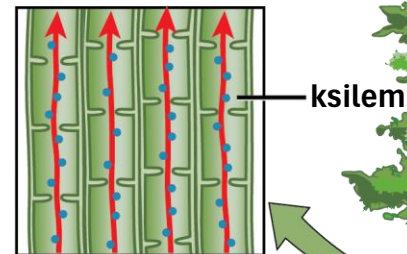


Kretanje vode

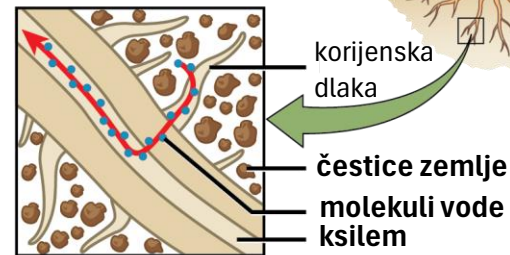
najveća razlika u potencijalu:
voda izlazi iz lista što je osnovni
pokretač transpiracionog toka



kohezija i adhezija:
sprječavaju kidanje vodene niti



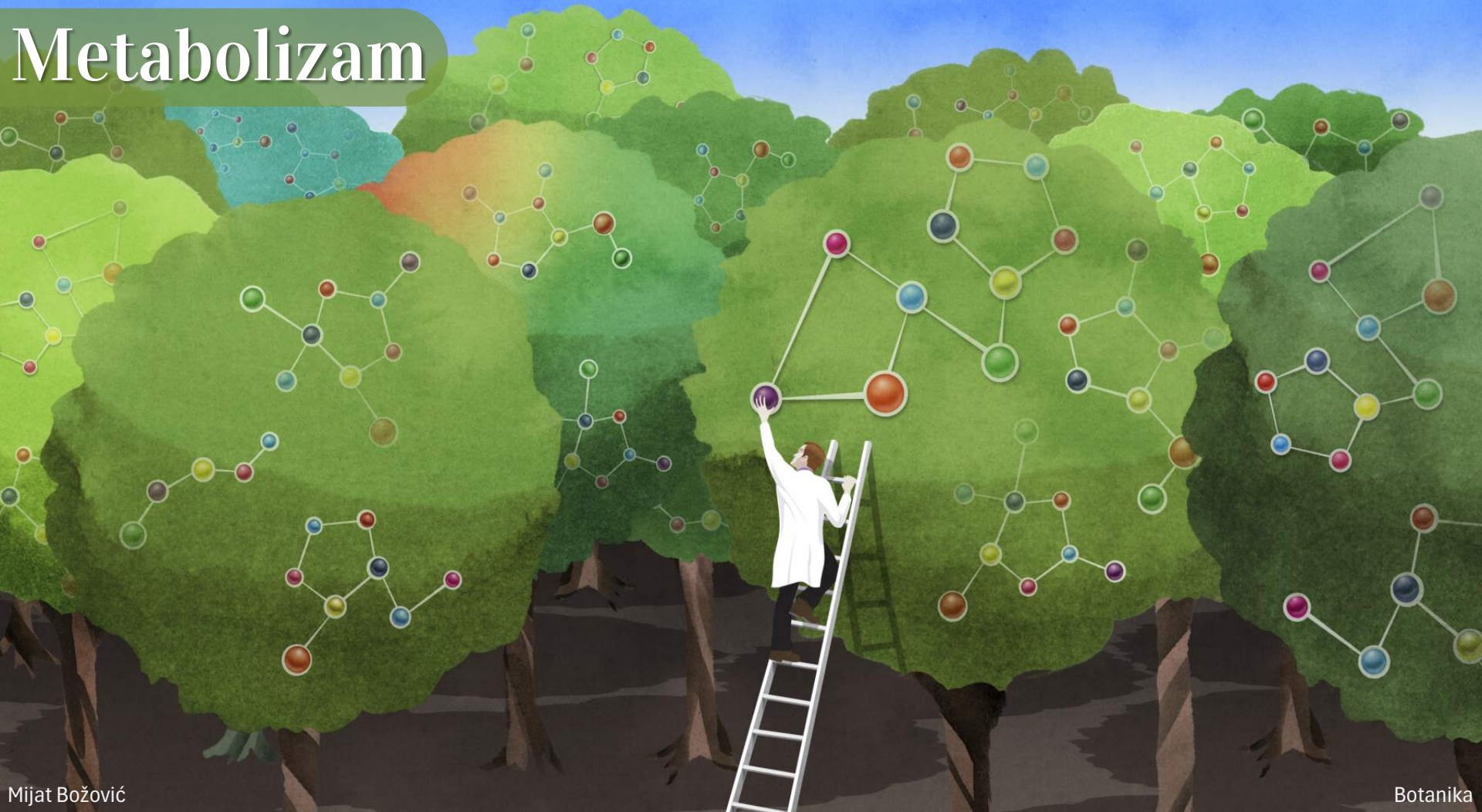
**negativniji potencijal u korijenu
nego potencijal u zemljištu:**
omogućava usisavanje vode



gradijent potencijala vode

A vertical blue arrow on the right side of the diagram points upwards, indicating the direction of the water potential gradient from the soil at the bottom to the leaves at the top.

Metabolizam



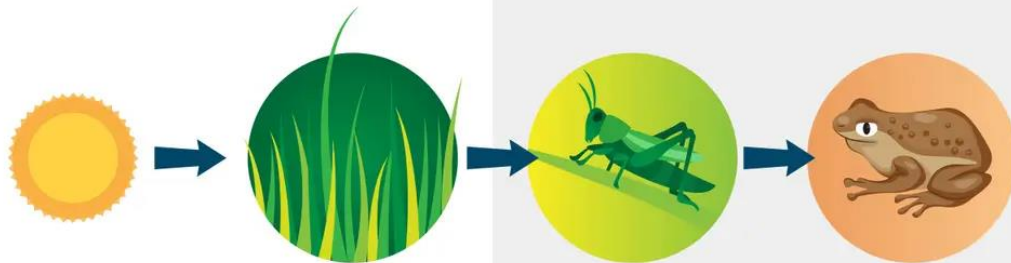
Oblici asimilacije

autotrofna

producenti

heterotrofna

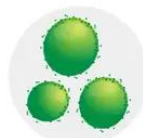
konzumenti



biljke



neke bakterije



alge



životinje

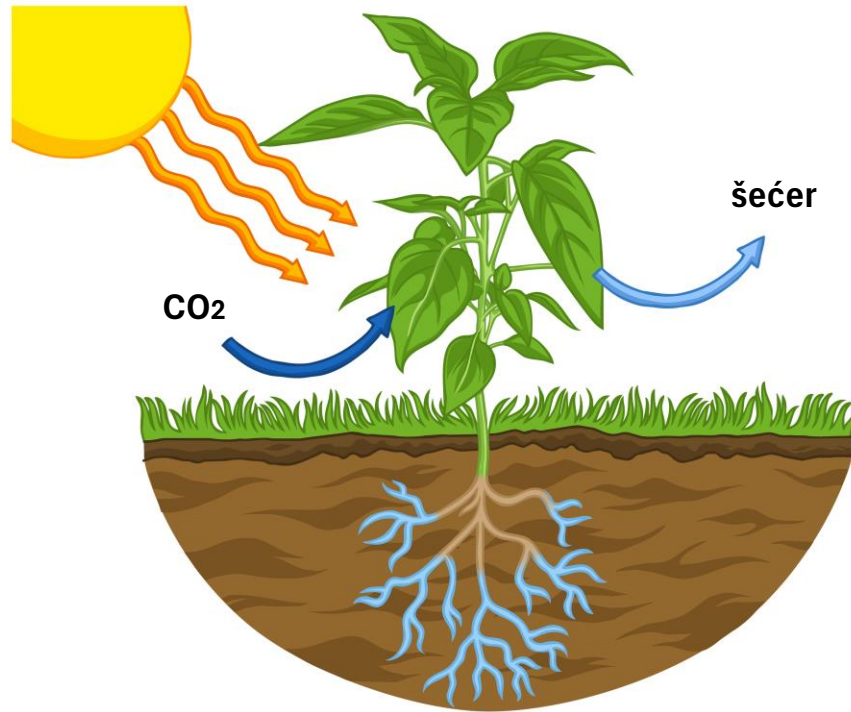


većina bakterija



gljive

Autotrofna asimilacija



Heterotrofna ishrana biljaka



paraziti



saprofiti

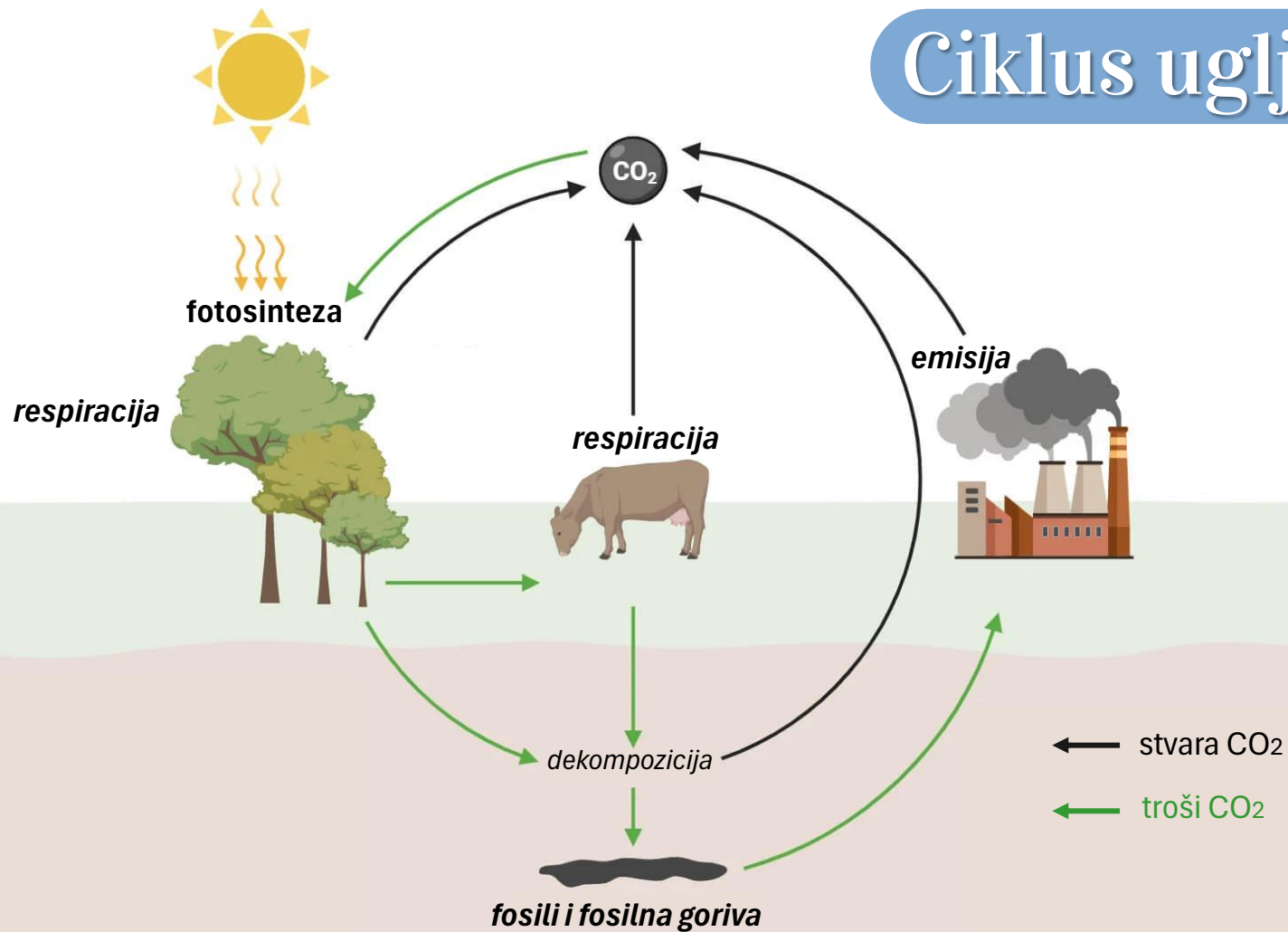


insektivorne biljke

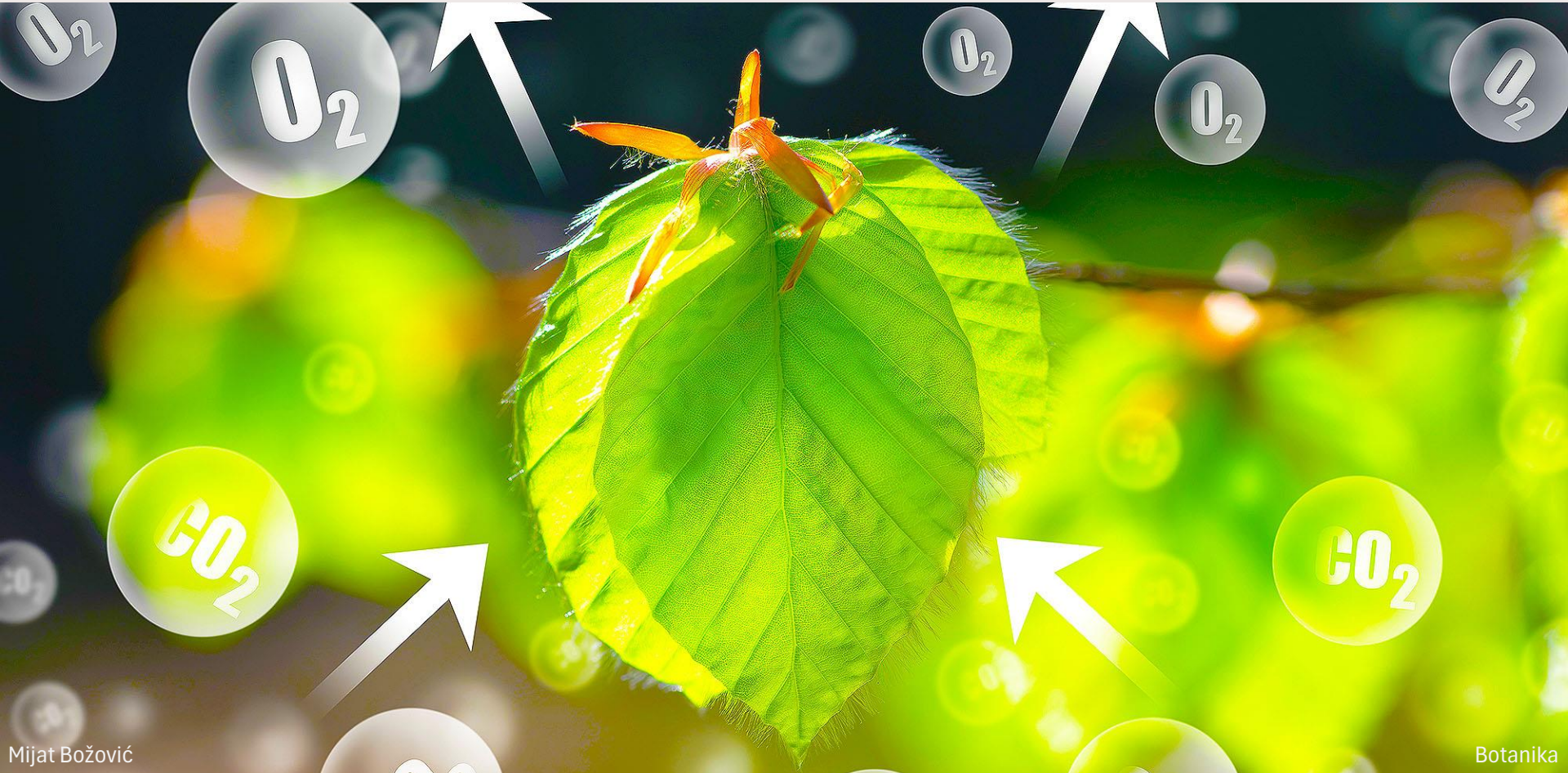


simbiotski odnosi

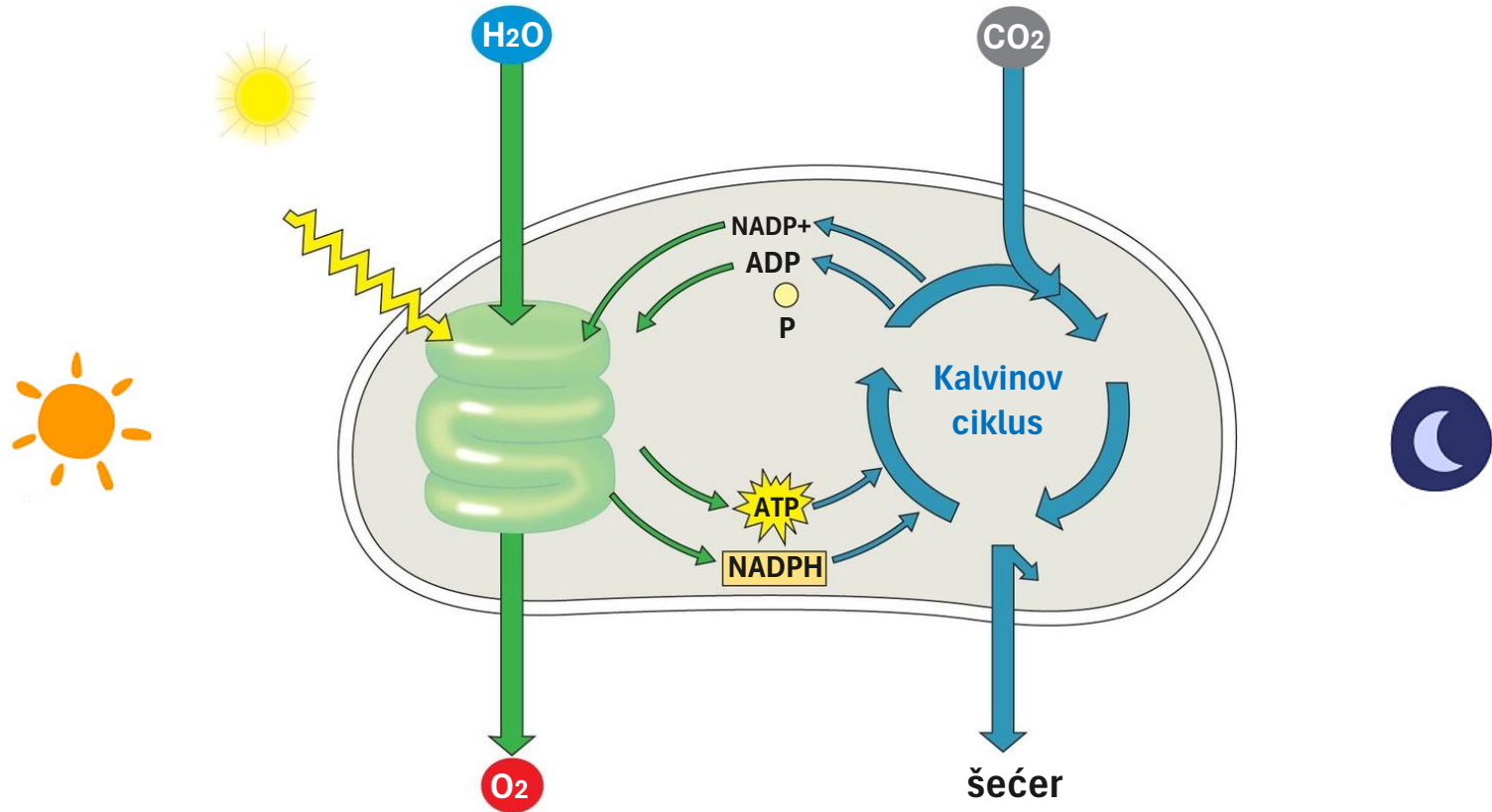
Ciklus ugljenika



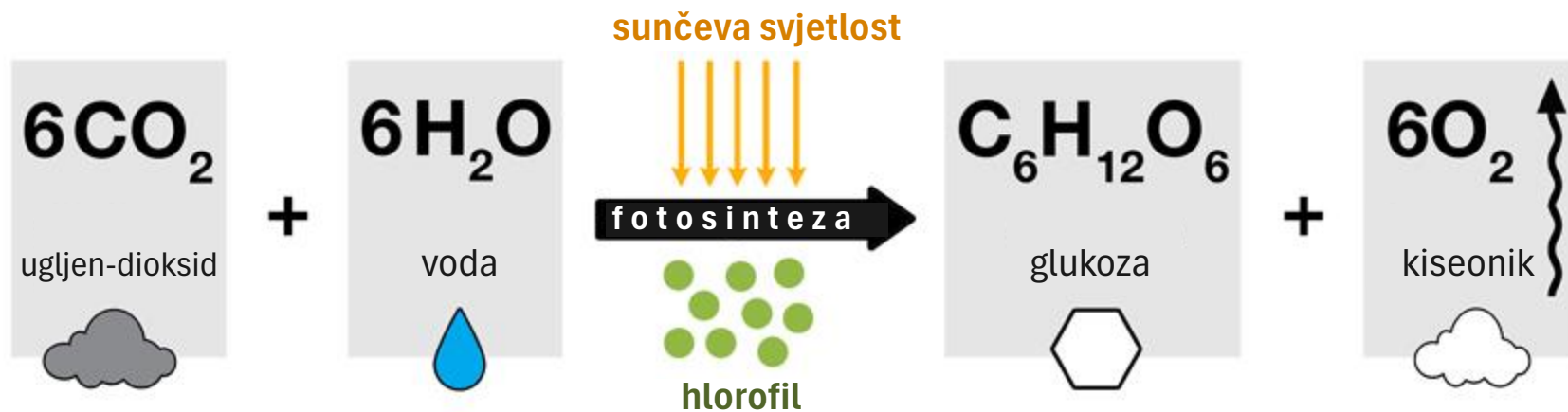
Šta je fotosinteza?



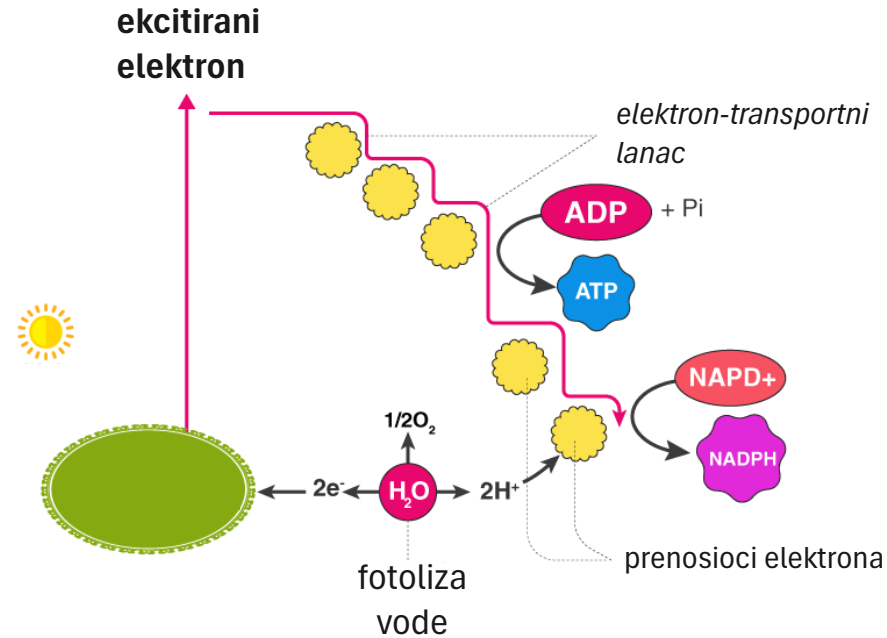
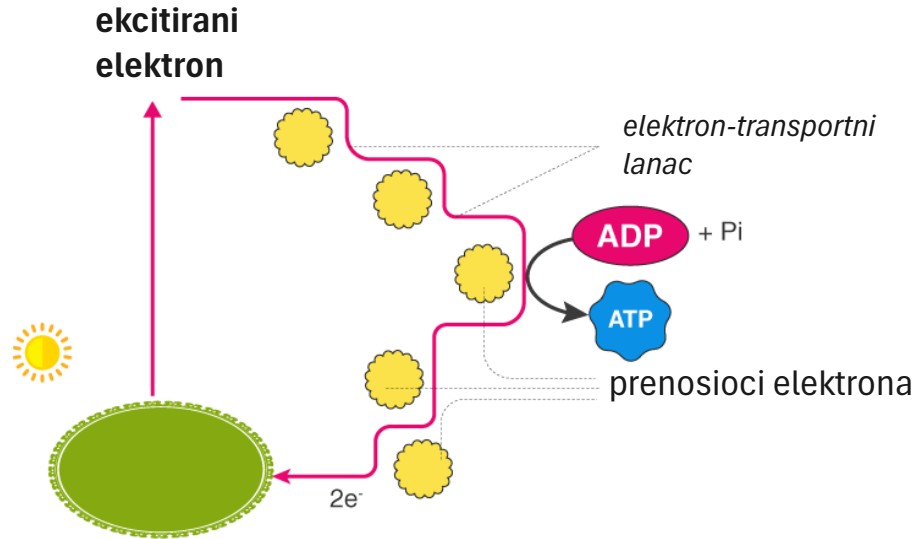
Svijetla i tamna faza fotosinteze



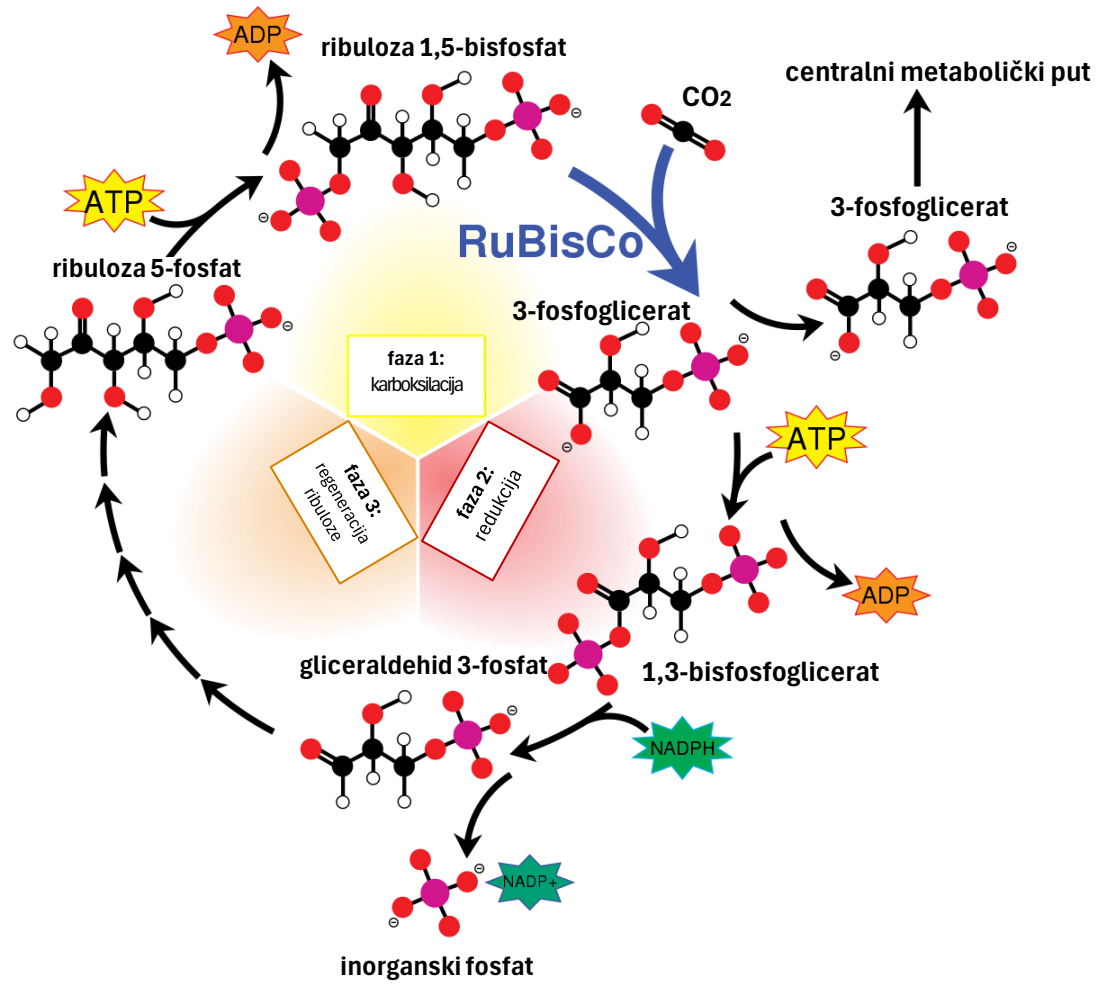
Sumarna jednačina fotosinteze



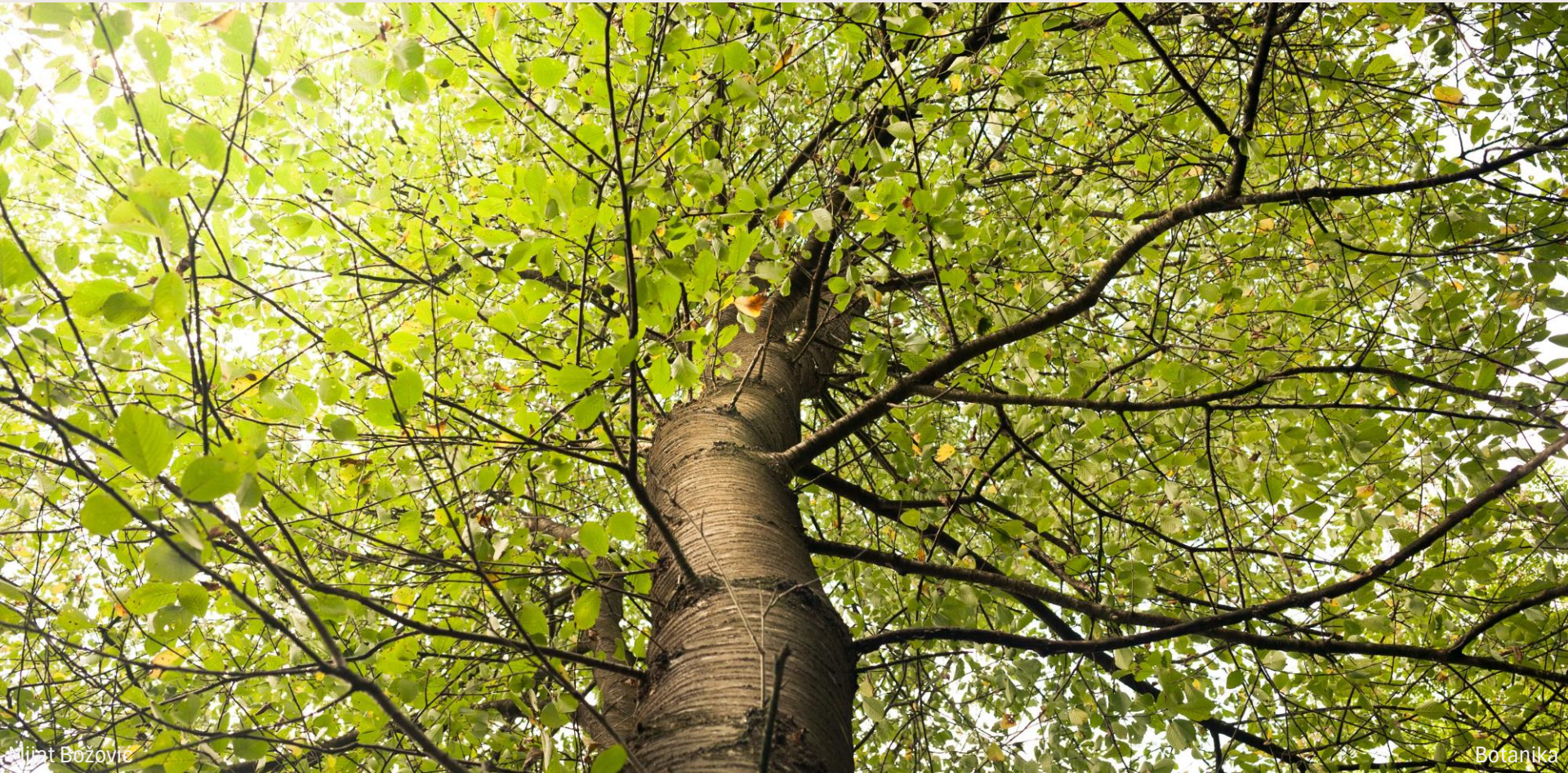
Ciklična i neciklična fotofosforilacija



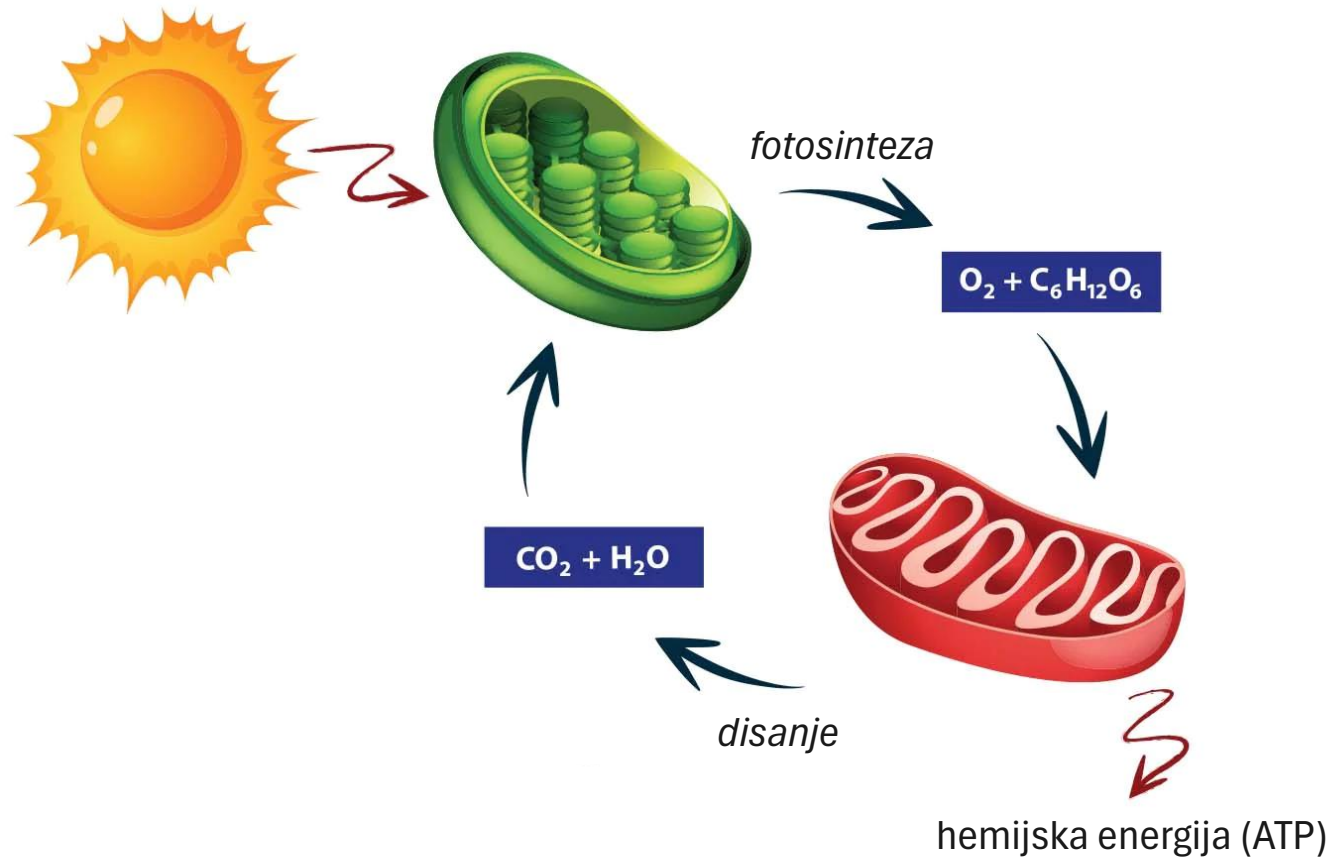
Kalvinov ciklus



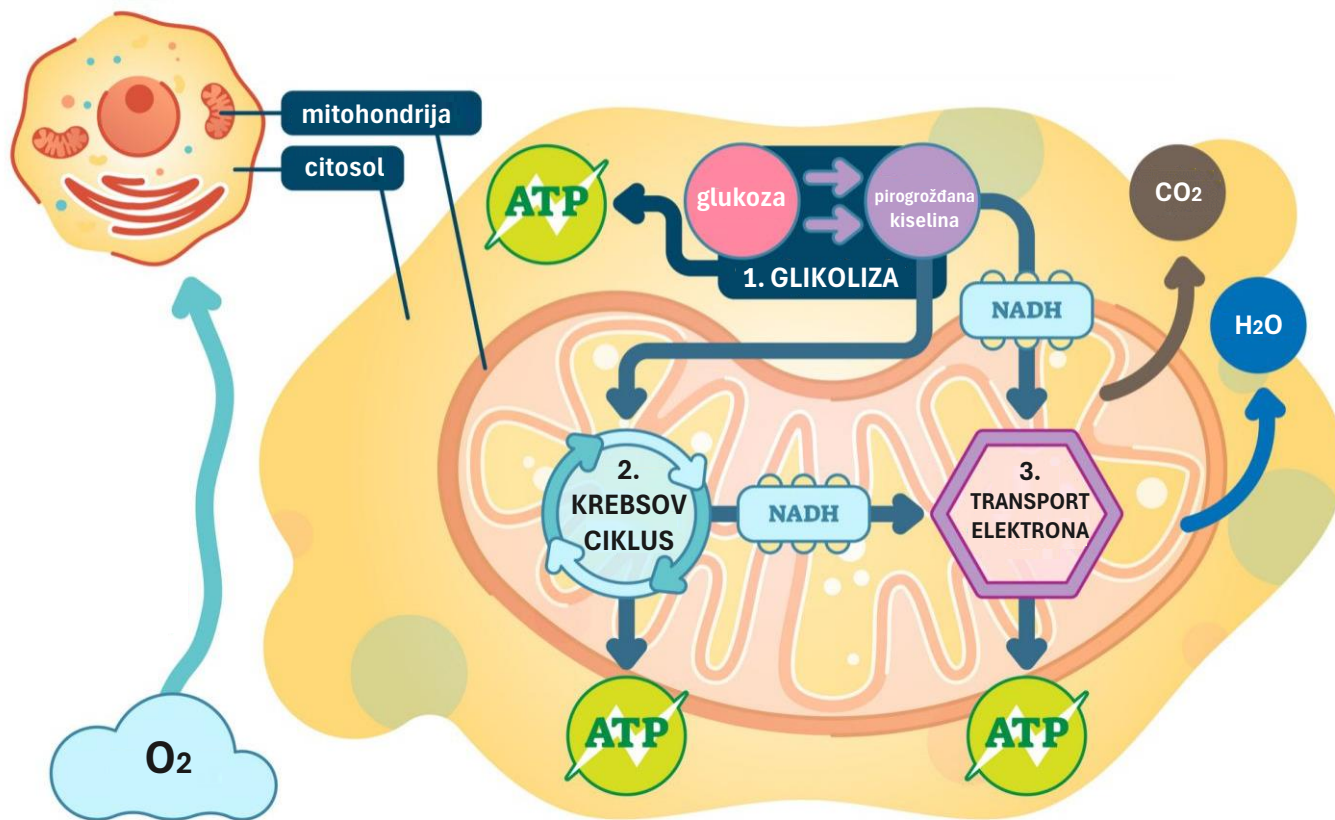
Biljke dišu



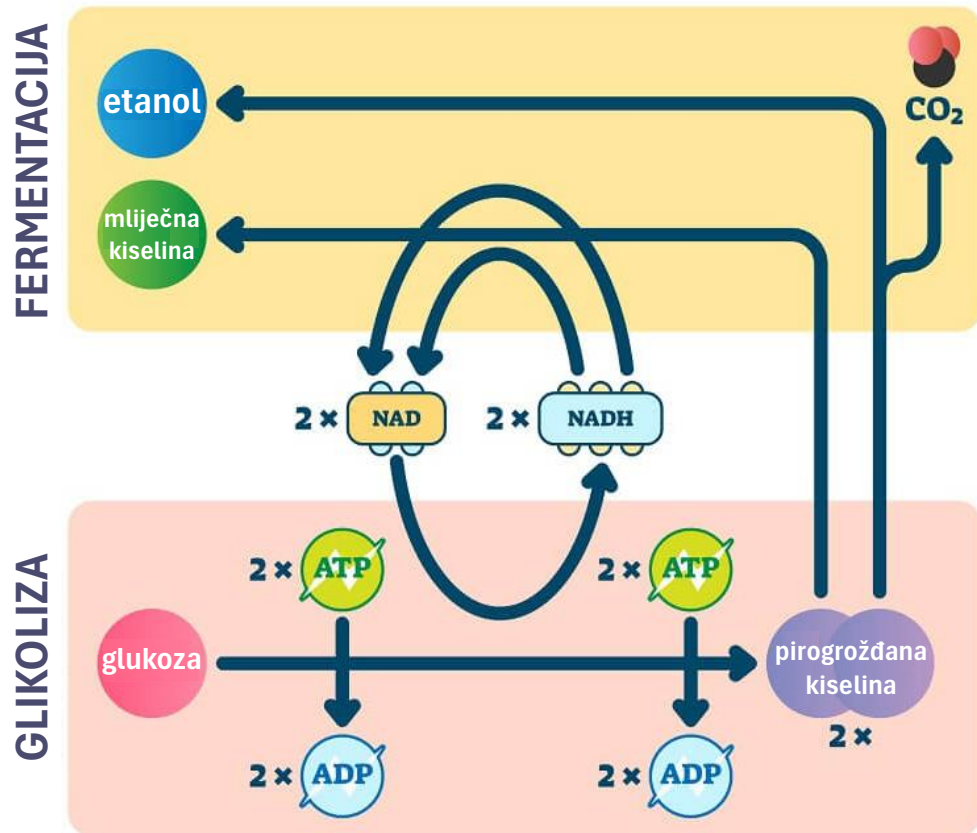
Fotosinteza vs. respiracija



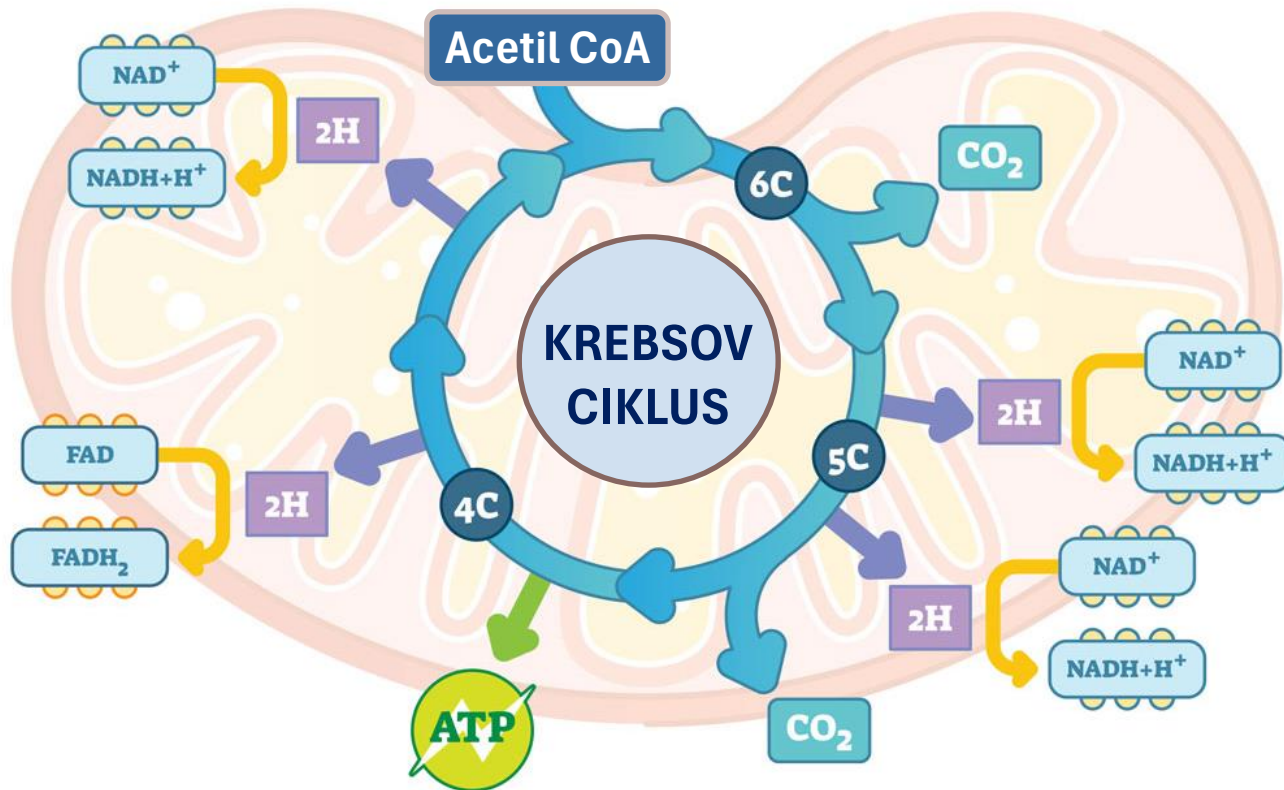
Respiracija se odvija kroz tri procesa



Anaerobno disanje



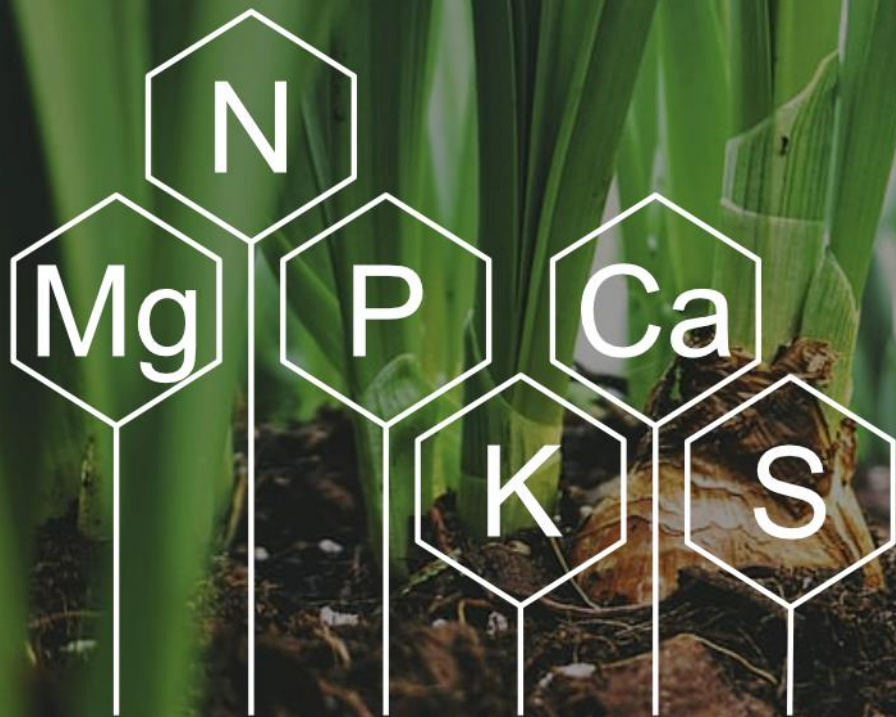
Aerobno disanje



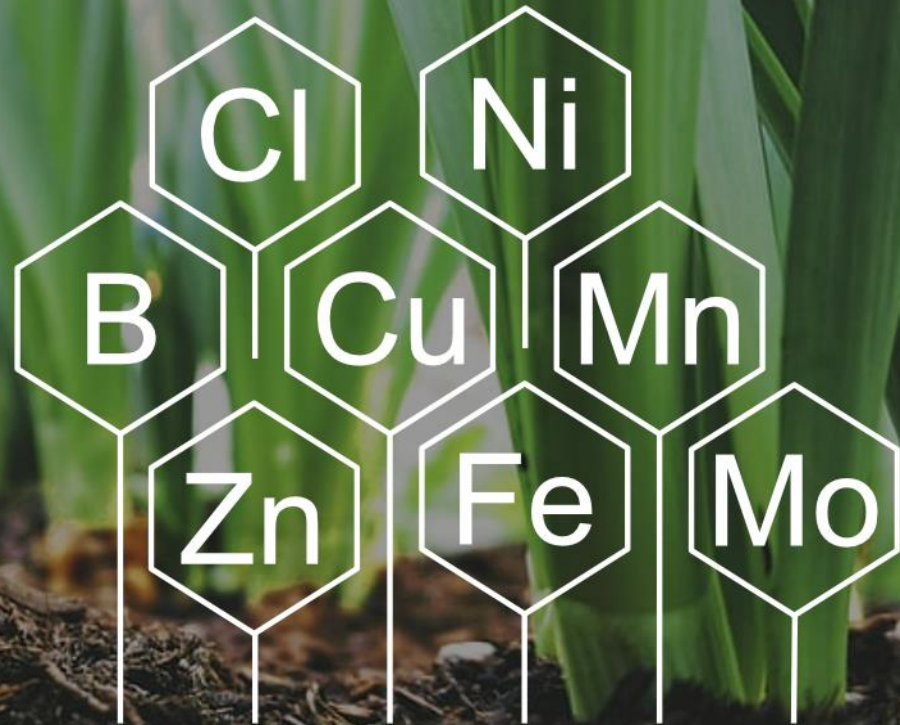
Mineralna ishrana



Podjela u zavisnosti od koncentracije

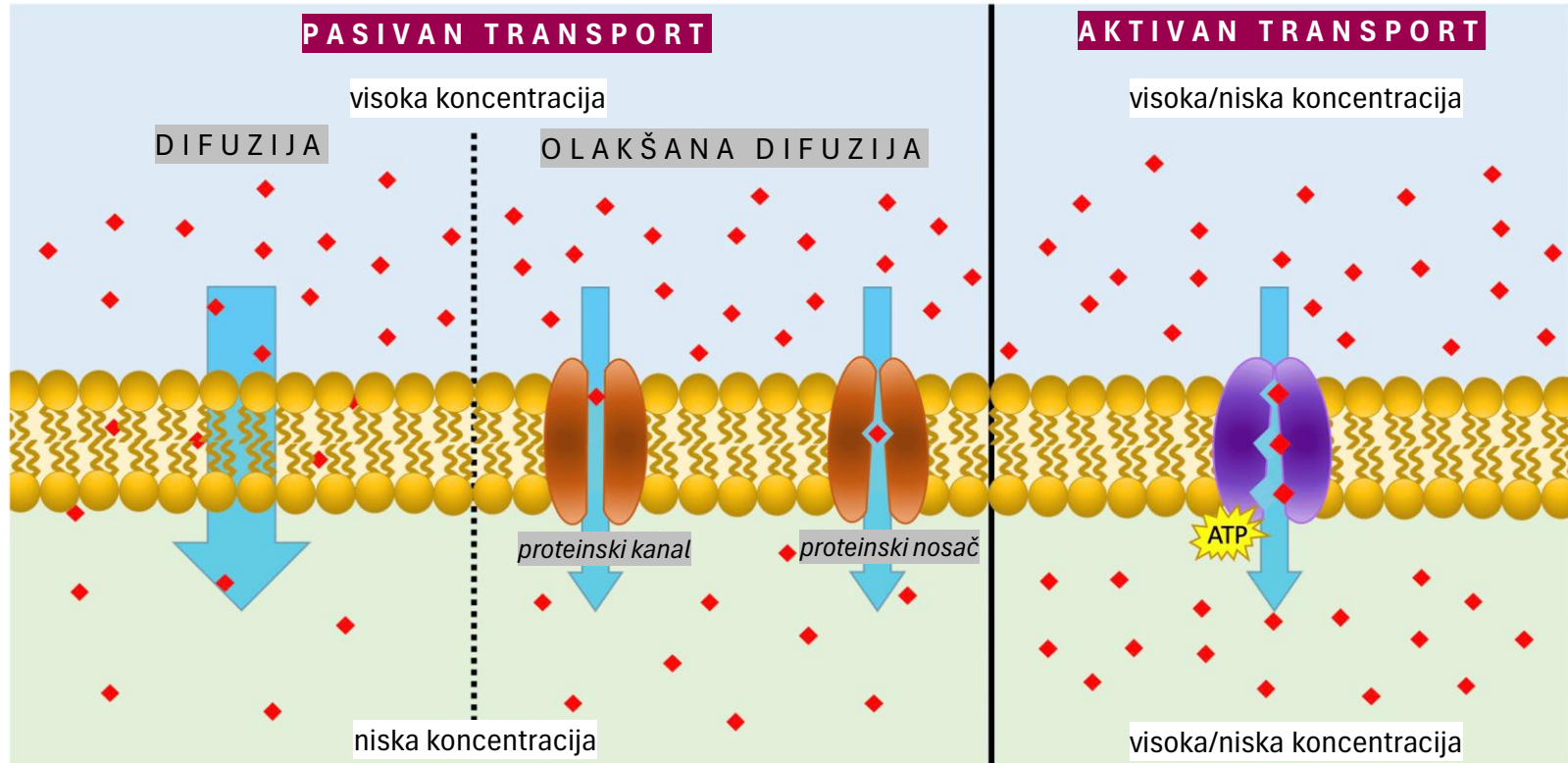


makroelementi



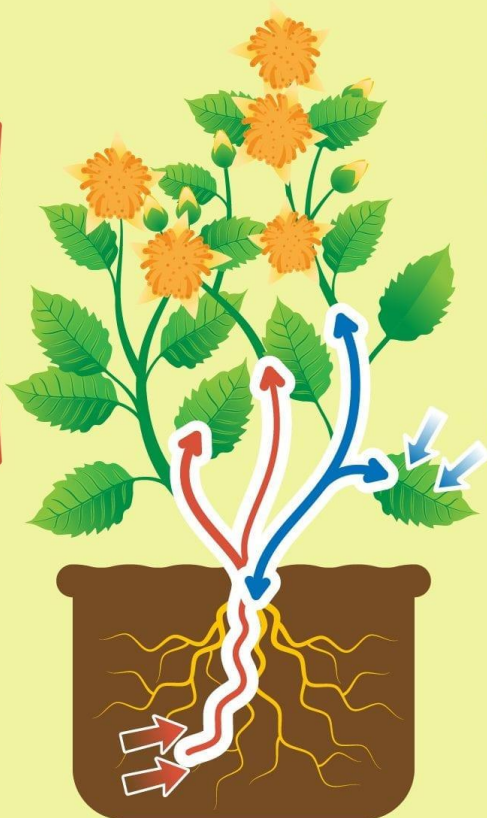
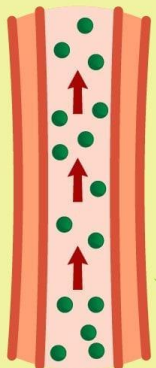
mikroelementi

Transport materija

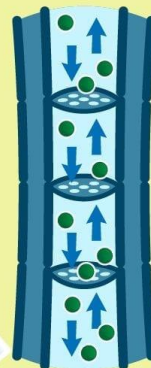


Dva toka

transpiracioni tok
(ksilemskim elementima)



asimilacioni tok
(floemskim elementima)



Botanika

Mijat BOŽOVIĆ

Pitanja?

