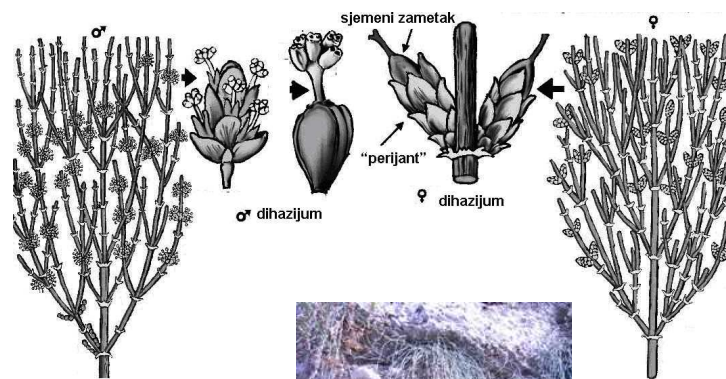


## Golosjemenjače

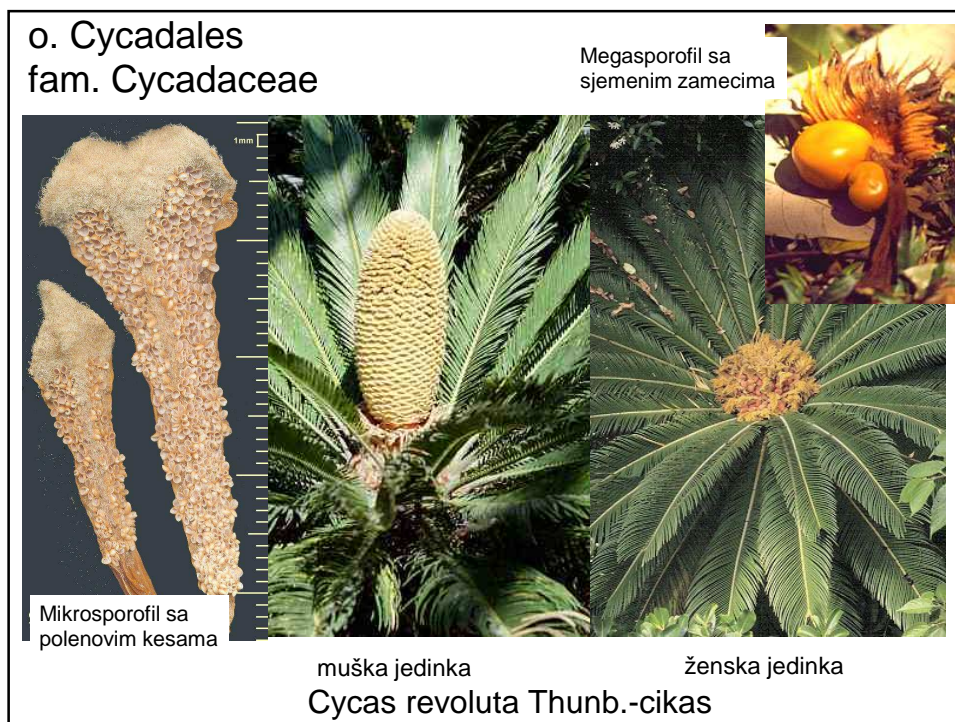
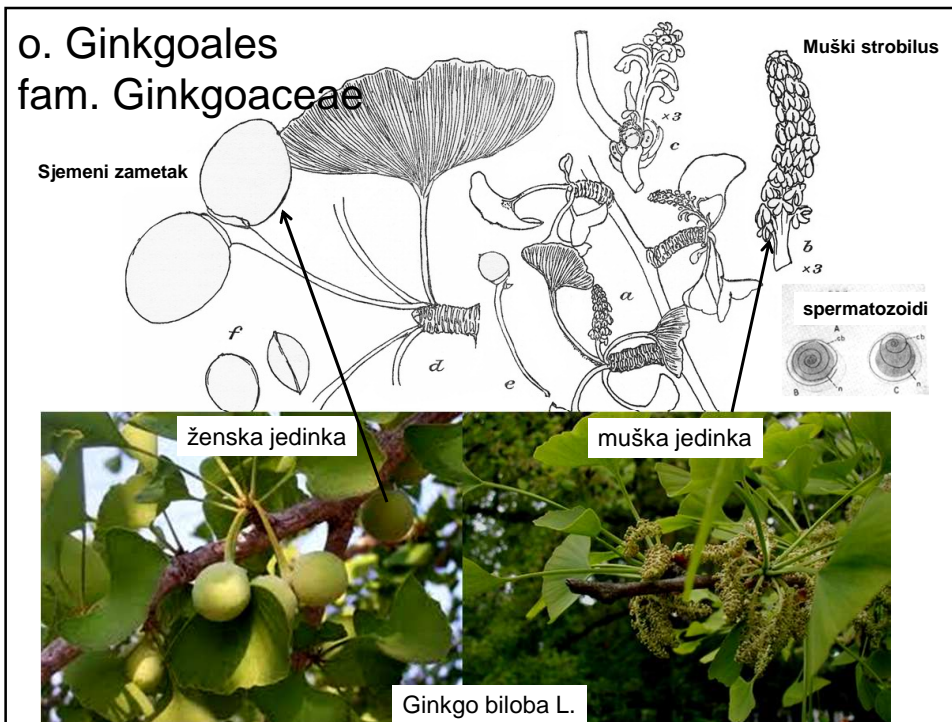
Gnetidae (Ephedrales)  
Ginkgooidae (Ginkgoales)  
Cycadidae (Cycadales)  
Pinidae (Pinales, Taxales)



o. Ephedrales  
fam. Ephedraceae



*Ephedra campylopoda* C.A.Mey.



# Pinidae

## O. Pinales

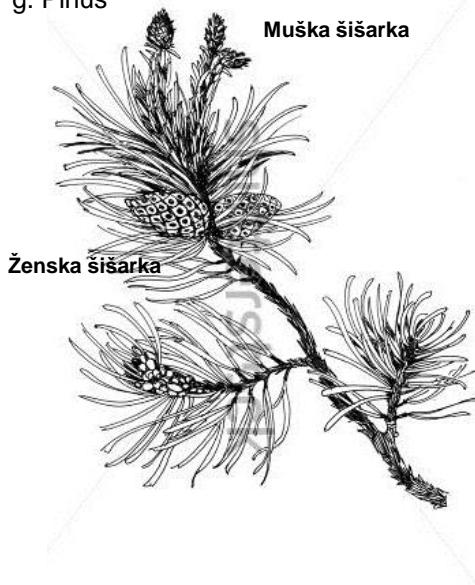
fam. Pinaceae & fam. Cupressaceae  
Pinus halepensis Mill.      Cupressus sempervirens L.  
Pinus heldreichii Christ    Juniperus oxycedrus L.  
Pinus mugo Turra            Juniperus communis L.  
Pinus nigra Arnold          Juniperus sabina L.  
Pinus peuce Griseb.  
Pinus sylvestris L.  
Picea excelsa (Lam.) Link.  
Picea omorika (Pančić) Purk.  
Abies alba Mill.  
Larix decidua Mill.

## O. Taxales

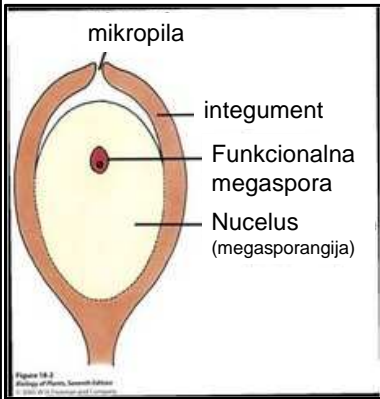
fam. Taxaceae  
Taxus baccata L.

fam. Pinaceae

g. Pinus

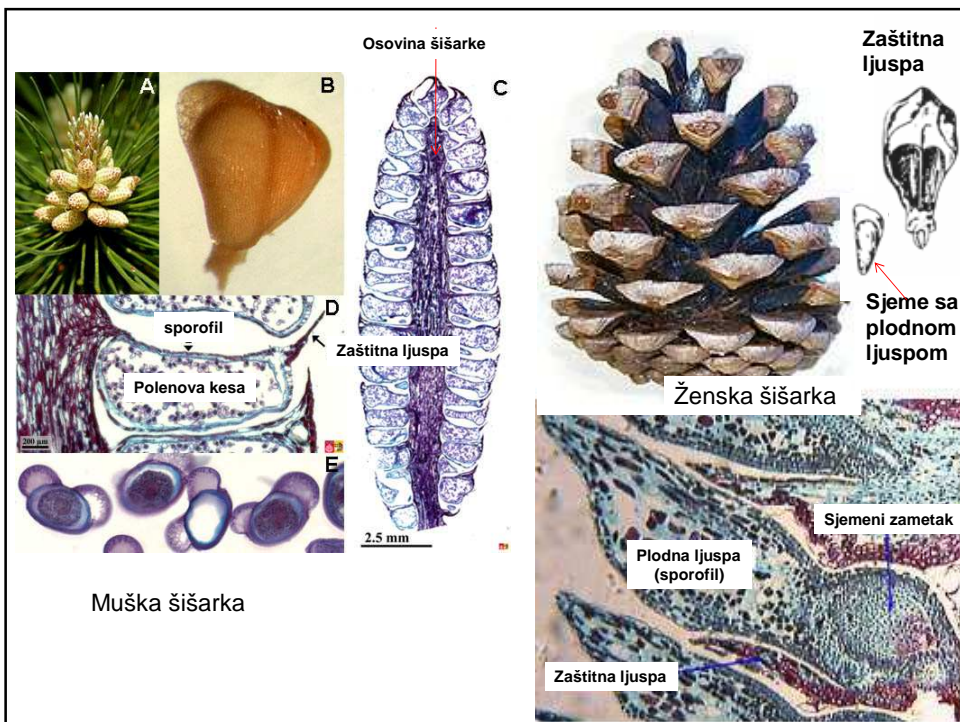
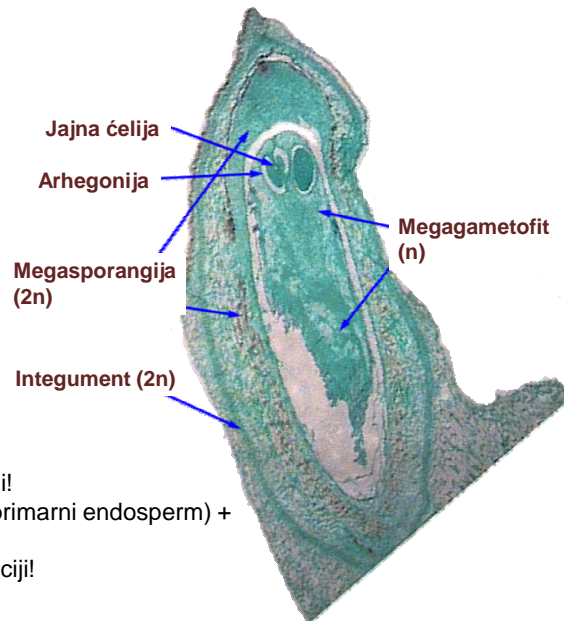


### Građa sjemenog zametka

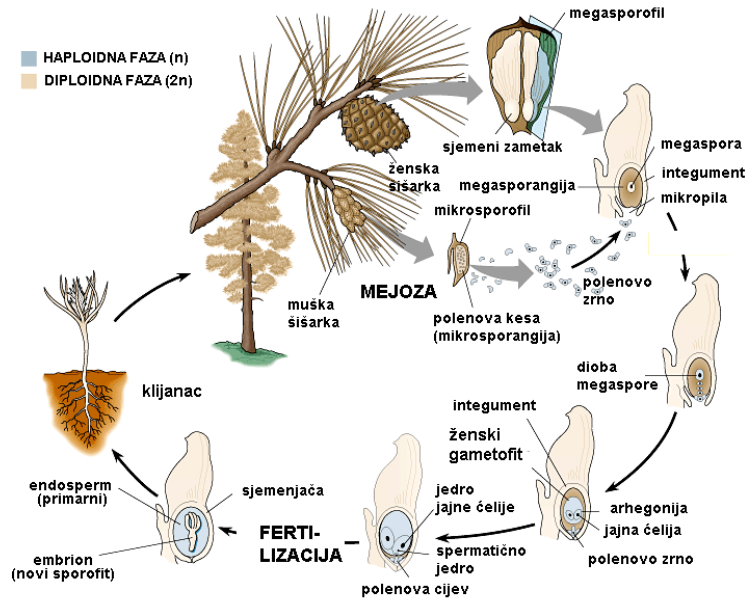


Nucelus je homolog megasporangiji!  
 U megaspori se razvija protaljum (primarni endosperm) +  
 2 arhegonije sa jajnom ćelijom.  
 Integument- nova tvorevina u evoluciji!

### Sjemeni zametak bora (Pinus spp.)



## Ciklus razvića



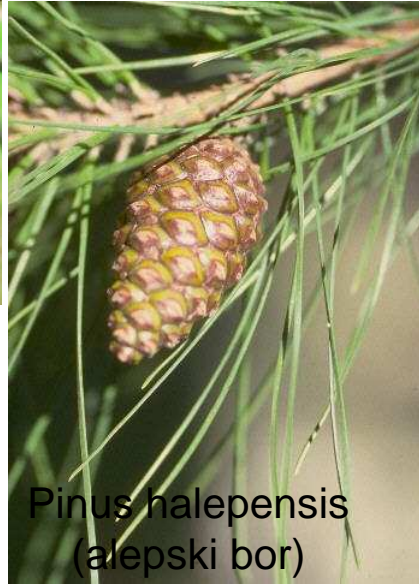
*Pinus peuce* (molika)



*Pinus heldreichii* (munika)



*Pinus sylvestris*  
(bijeli bor)



*Pinus halepensis*  
(alepski bor)



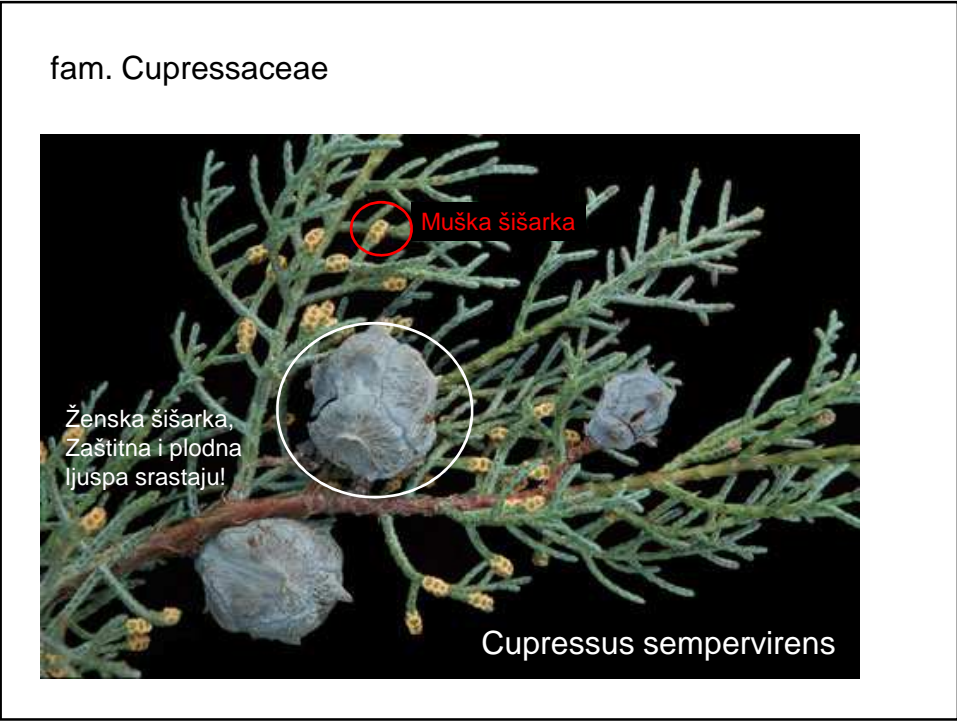
*Pinus mugo* (bor krivulj)



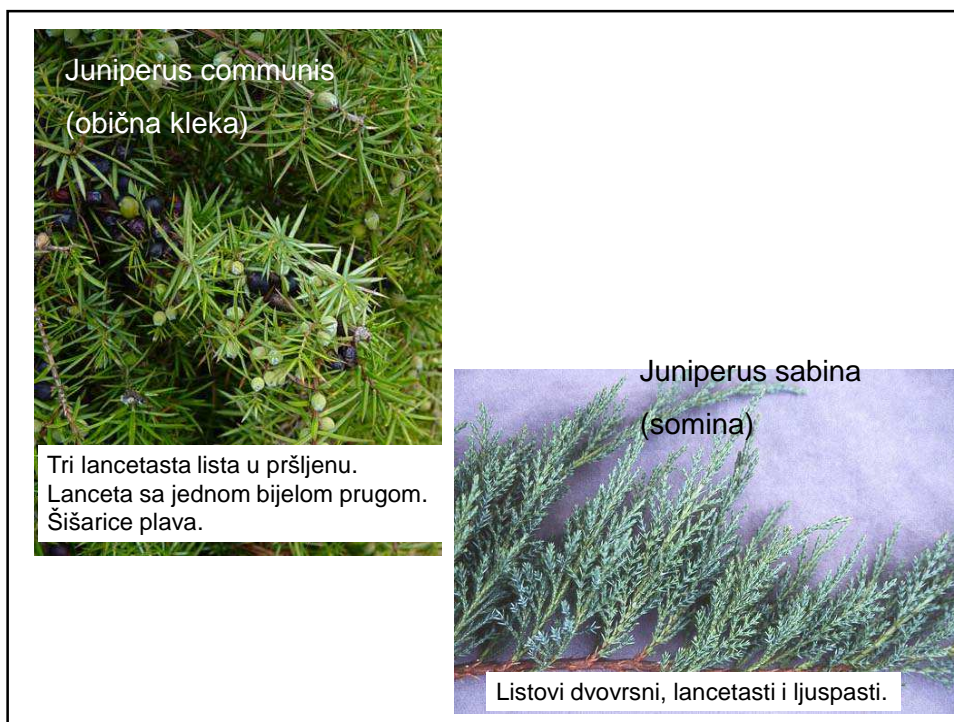
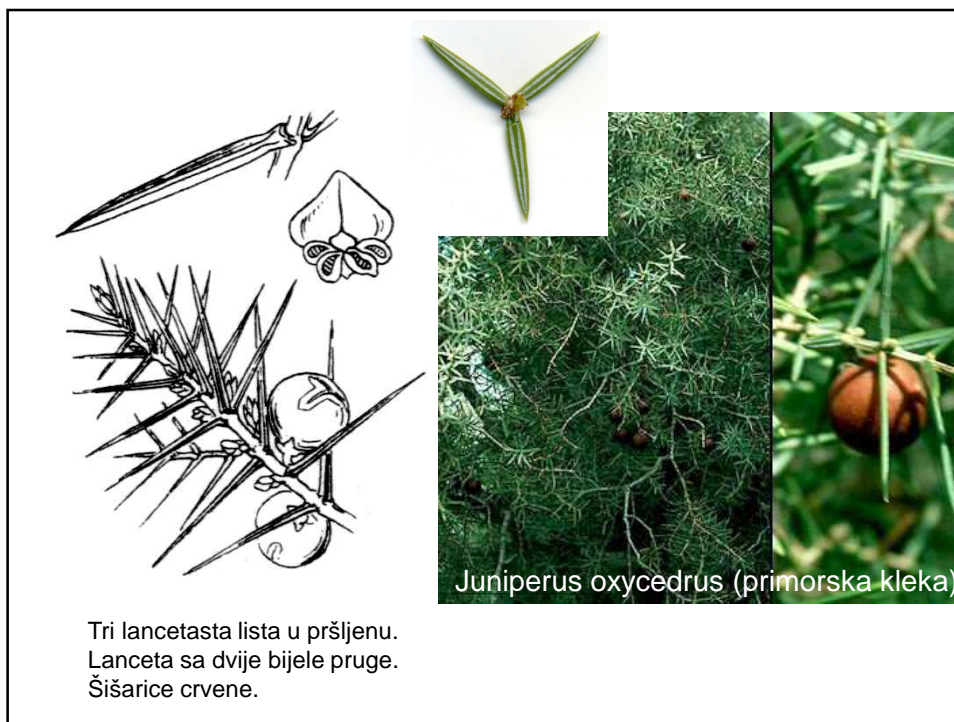
*Pinus nigra* (crni bor)











O. Taxales  
fam. Taxaceae



*Taxus baccata* (tisa)

Sjeme sa arilusom



Muški strobilus

*Taxus baccata*