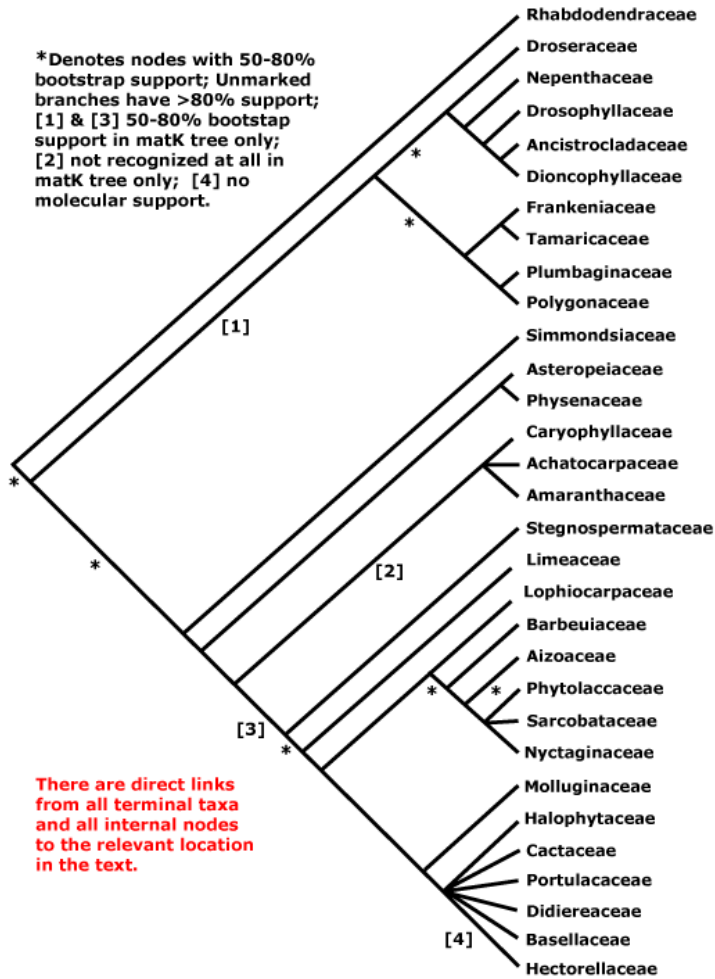


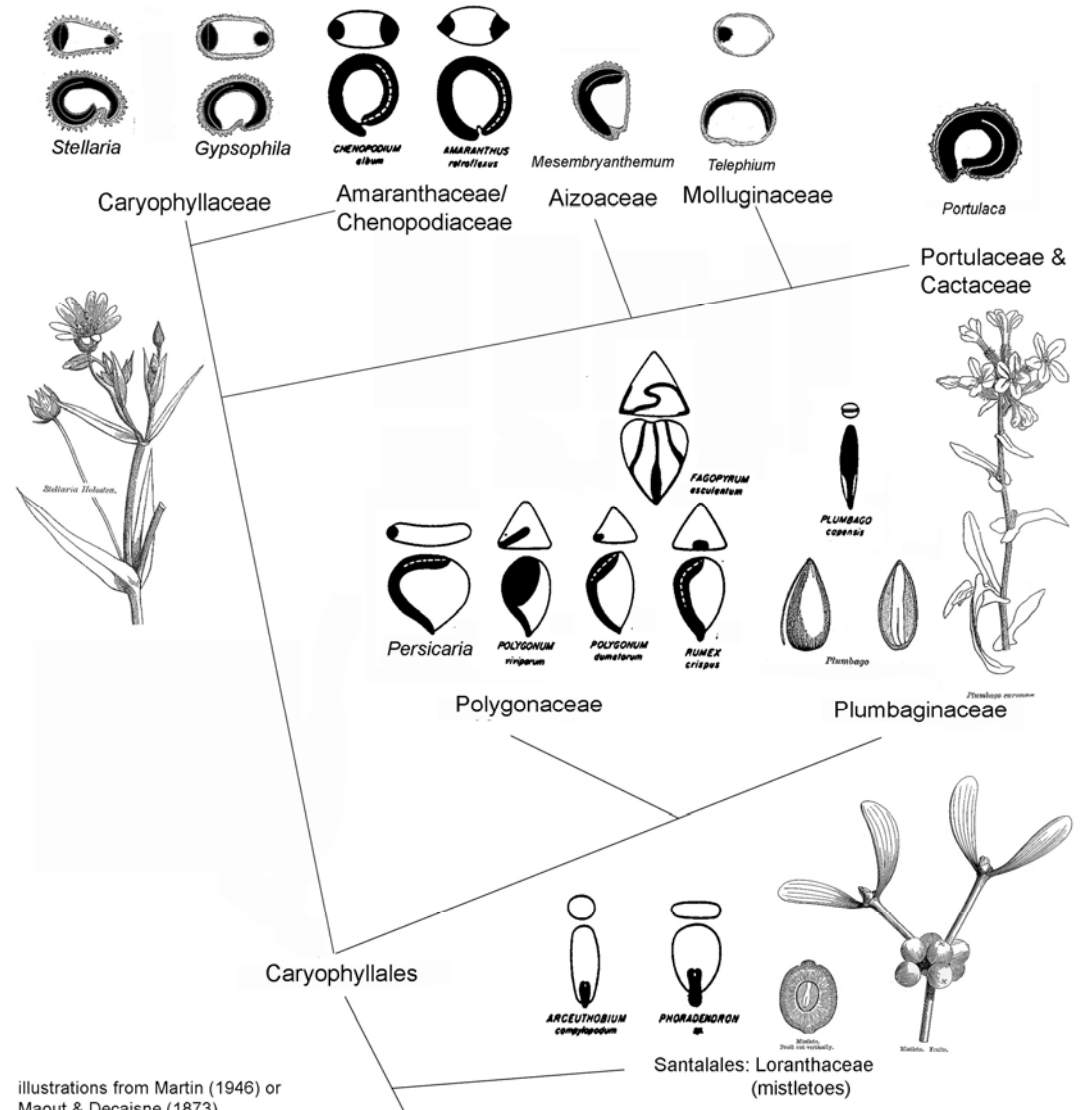
# Towards curled embryos: Caryophyllid seeds

DQ Fuller 8.iii.2007



Caryophyllales phylogeny from :  
<http://www.mobot.org/MOBOT/Research/APweb/welcome.html>

## Caryophyllid Seed Evolution





*Melandrium dioicum.*  
Fruit



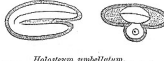
*Melandrium dioicum.*  
Seed (mag.).



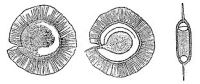
*Buffonia macrocarpa.*  
Seed, entire, and with vertical and transverse sections showing the accumbent cotyledons (mag.).



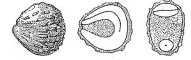
*Zibotsem.*  
Depressed seed, ventral keeled face (mag.).



*Holostem nabotletum.*  
Seed, cut vertically and transversely, with incumbent cotyledons (mag.).



*Sperularia marginata.*  
Winged seed, entire, and with vertical and transverse sections, with incumbent cotyledons (mag.).



*Cerastium arvense.*  
Seed, entire, and with vertical and transverse sections, with incumbent cotyledons (mag.).

## Caryophyllaceae



*Stellaria.*



*Cucubalus baccifer.*



*Stellaria.*



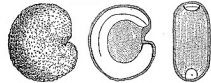
*Agrotemma Githao.*



*Gypsophila repens.*



*Drypis spinosa.*



*Saponaria officinalis.*

## Amaranthaceae



*Amaranthus.*  
Fruit.



*Amaranthus.*  
Seed, entire and cut vertically (mag.).



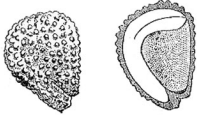
## Aizoaceae



*Mesembryanthemum.*  
Ripe fruit (mag.).



*Mesembryanthemum.*  
Ripe fruit cut vertically (mag.).



*Mesembryanthemum.*  
Seed, entire and cut vertically (mag.).



*Mirabilis.*  
Fruit, entire and with vertical and transverse sections (mag.).



## Phytolaccaceae



*Phytolacca.*  
Fruit.



*Phytolacca.*  
Seed, entire and cut vertically (mag.).

## Nyctaginaceae

## Molluginaceae



*Telesphium.*  
Seed, entire and with vertical and transverse sections (mag.).



*Portulaca oleracea.*



*Portulaca.*  
Fruit, entire and dehiscent.



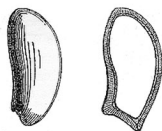
*Portulaca.*  
Seed, entire and cut vertically (mag.).



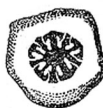
*Talium cuneifolium Willd.*

## Portulacaceae

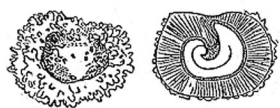
## Cactaceae



*Rhipsalis.*  
Seed, entire and cut vertically (mag.).



*Cactus grandiflora.*  
Transverse section of ovary (mag.).



*Opuntia.*  
Seed, entire and cut vertically (mag.).