

# Pollen Under The Microscope

6 Oct - 18 Nov 2011

CSIRO Discovery Centre



AUSTRALIAN NATIONAL  
*Botanic Gardens*



Australian Government  
Director of National Parks

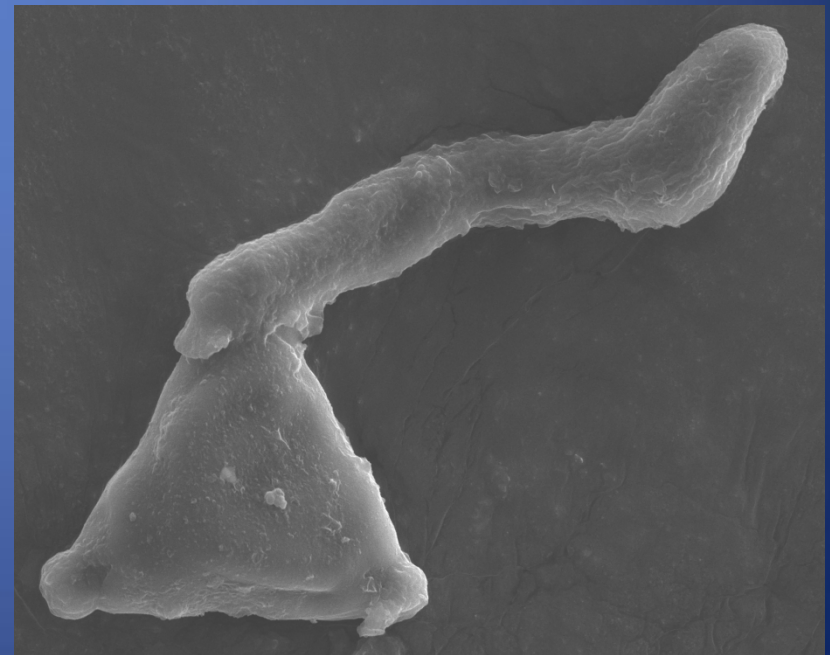
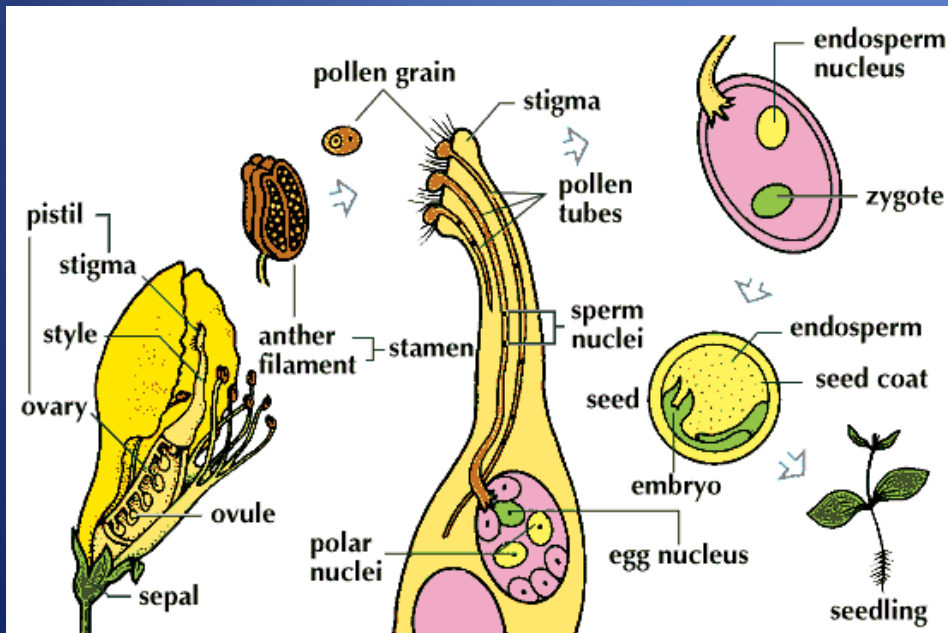
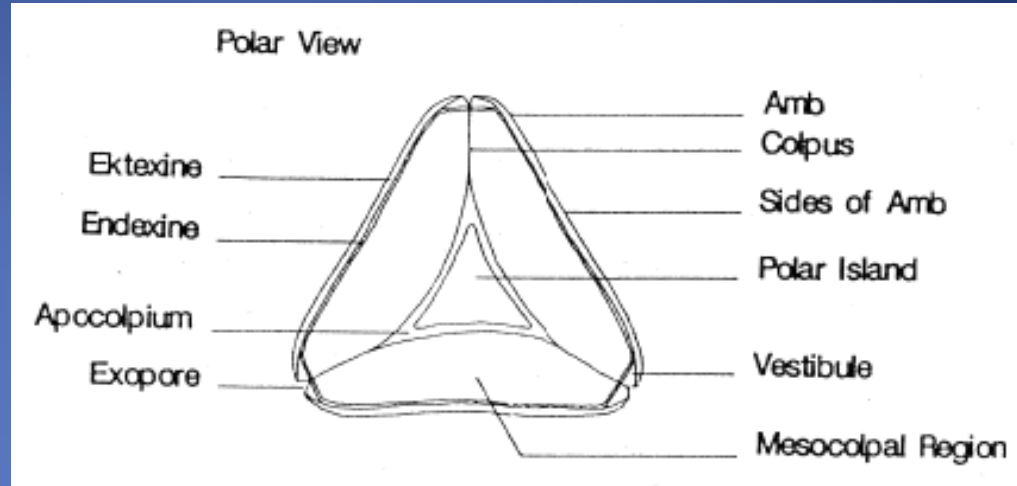
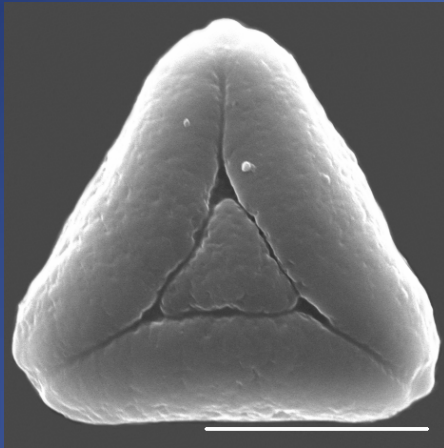


Australian  
National  
University



CSIRO

# What is Pollen?

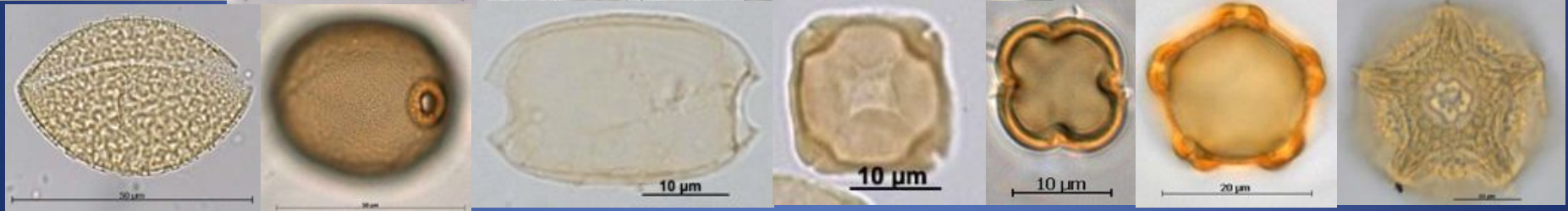
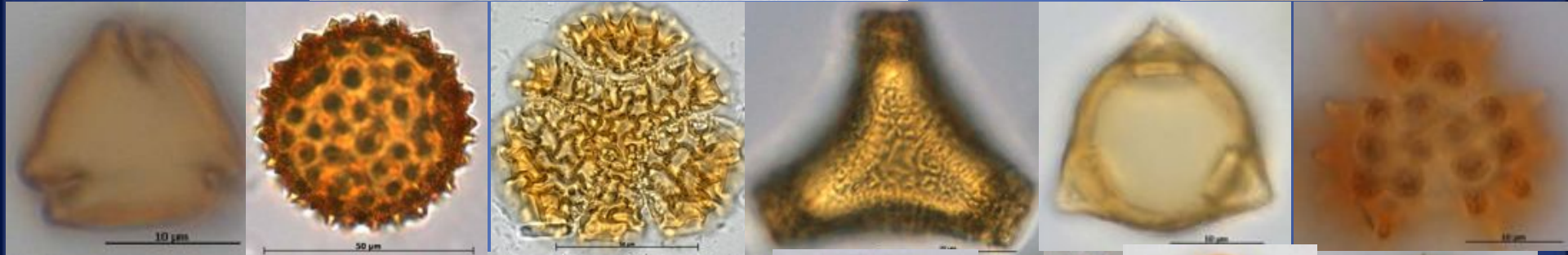




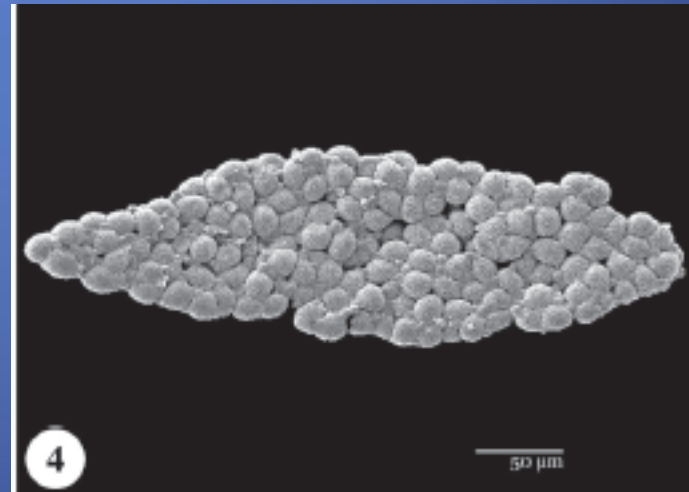
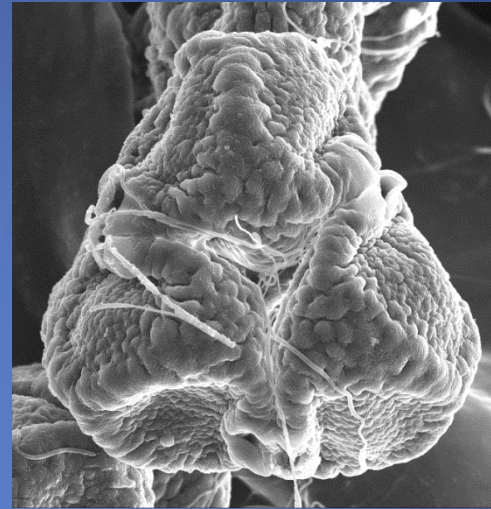
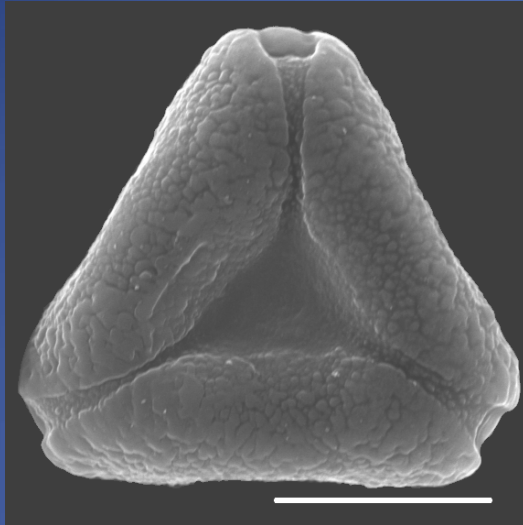
MICRONAUT / CATERS



# Pore Number



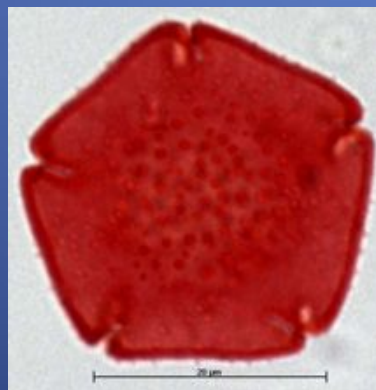
# Pollen Formations



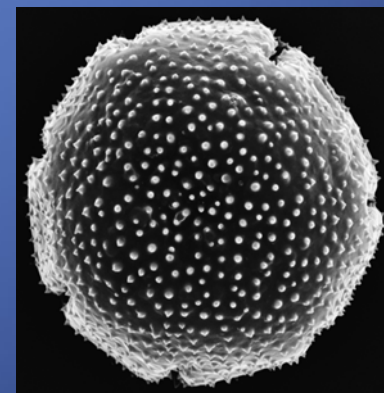
Dessein et al. 2005 *Bot. Rev.* 71



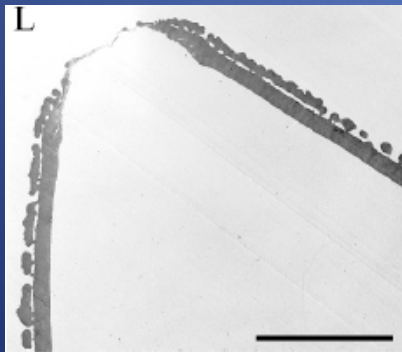
# Light Microscope



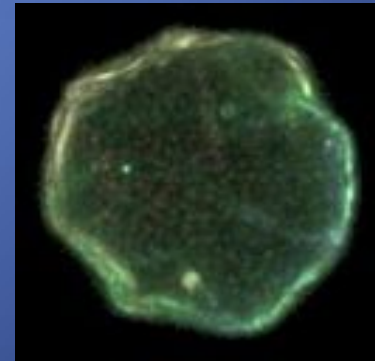
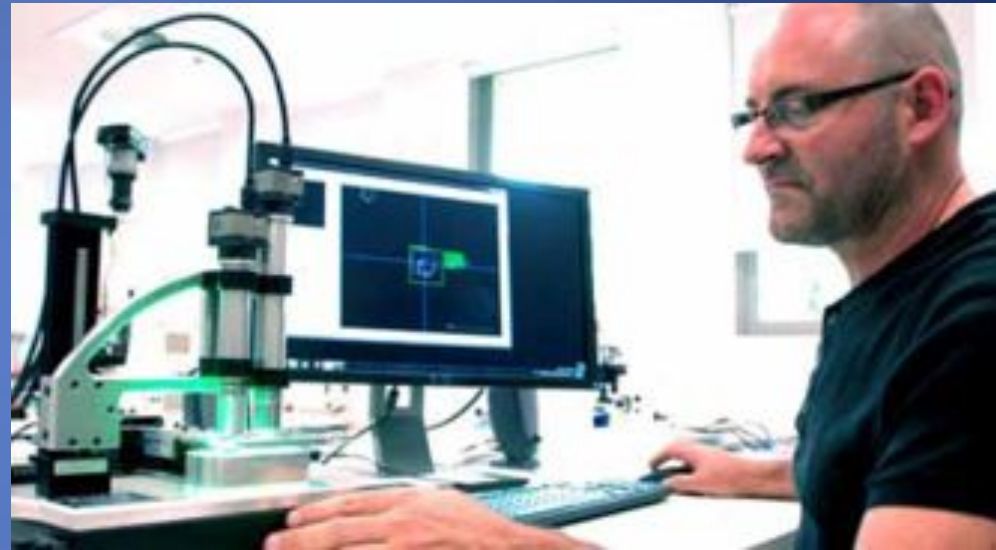
# Scanning Electron Microscope (SEM)



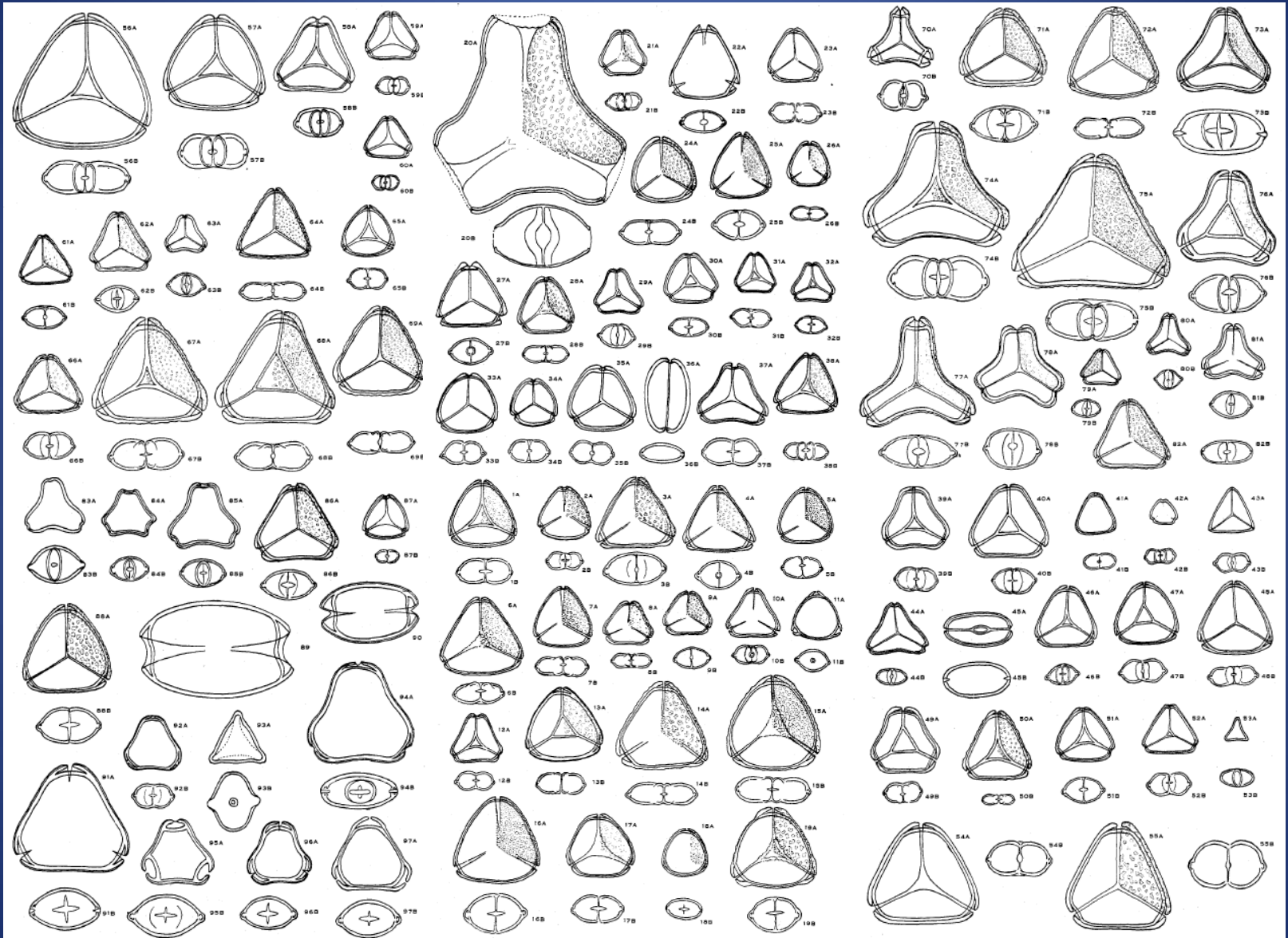
# Transmission Electron Microscope (TEM)



# Pollen Classifynder (Anthony with Simon)

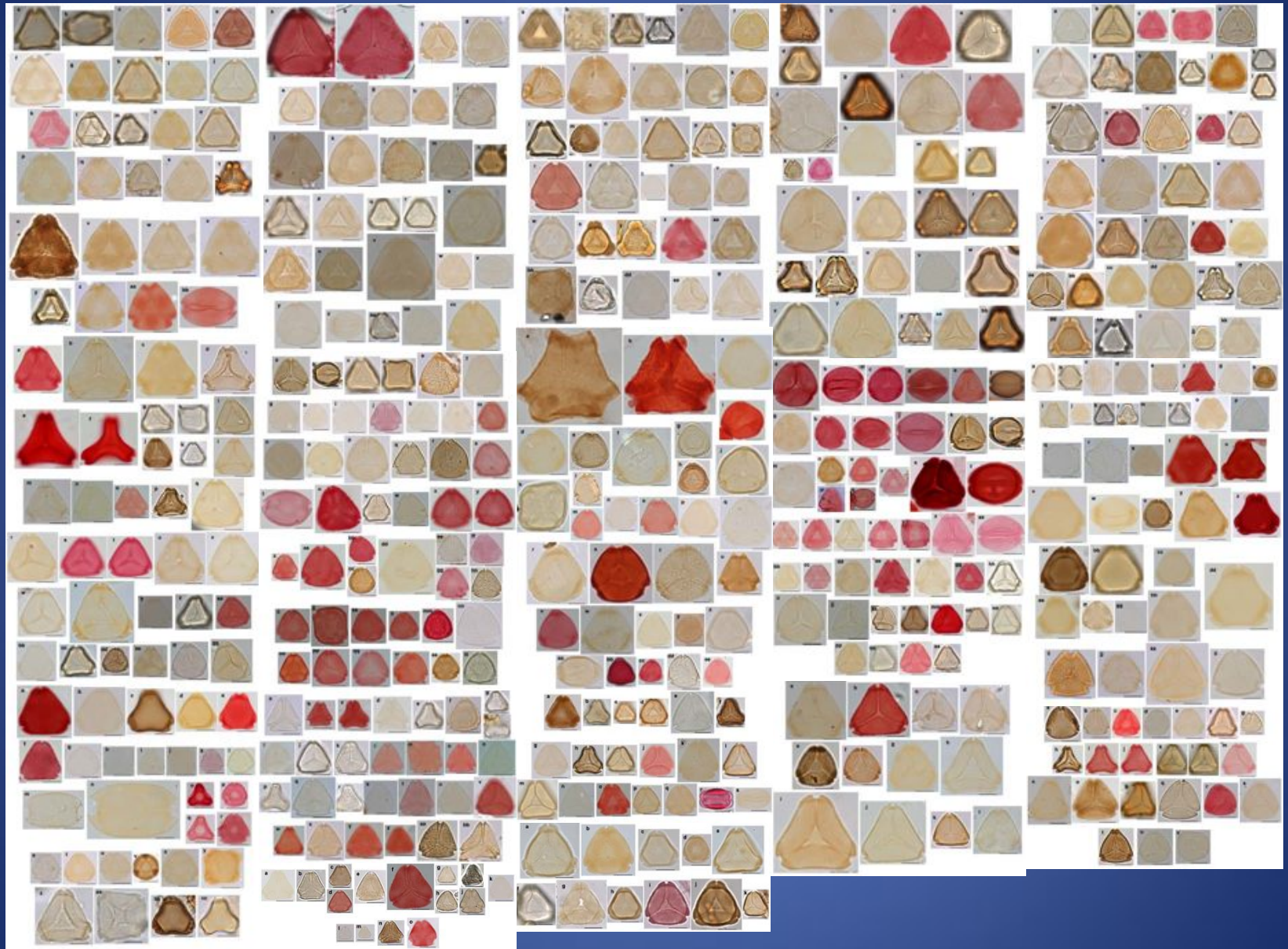


# Myrtaceae Pollen – Line Images



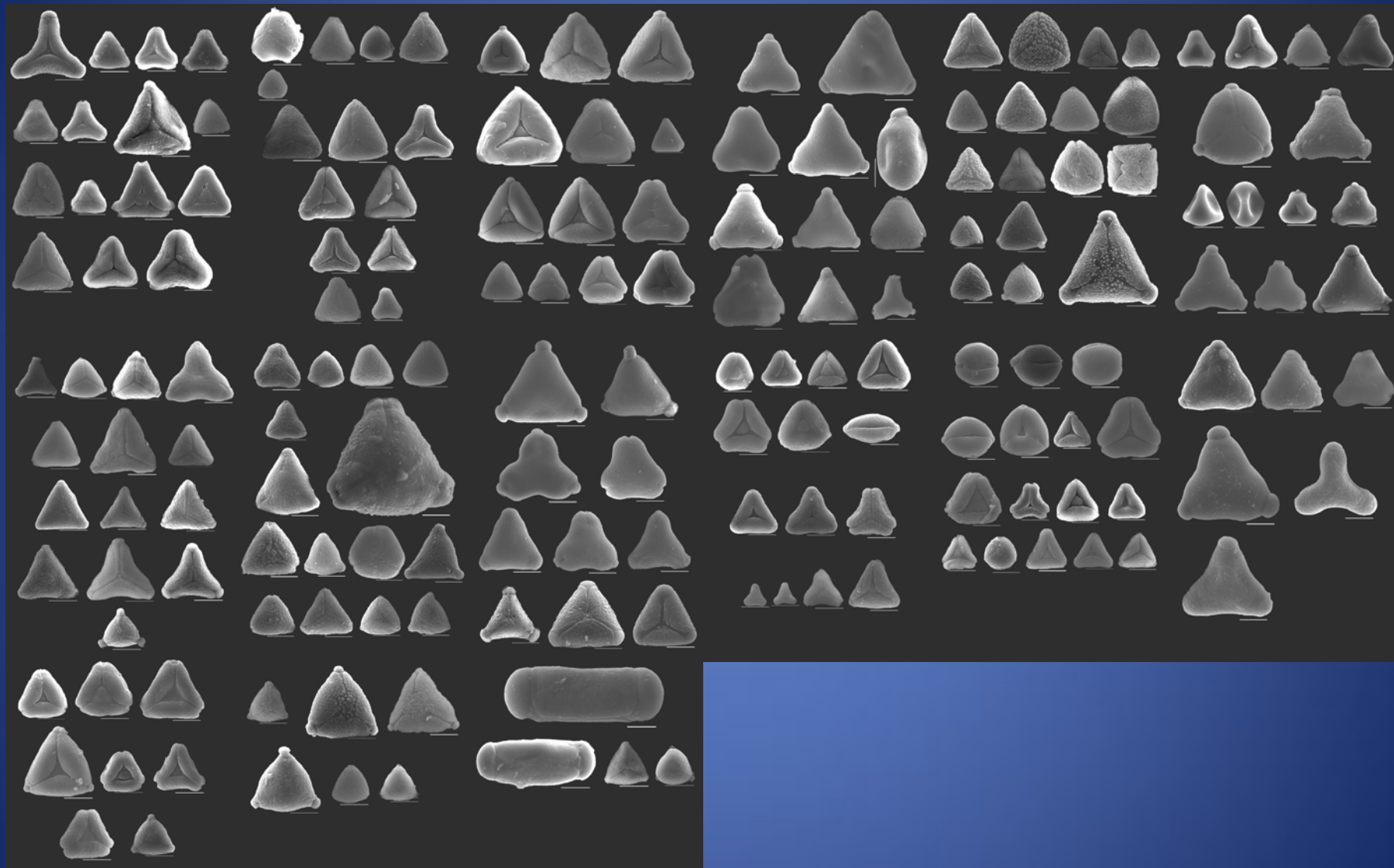


# Myrtaceae Pollen – Light Microscope



Thornhill et al. (in review *Aust. J. Bot.*)

# Myrtaceae Pollen – Scanning Electron Microscope

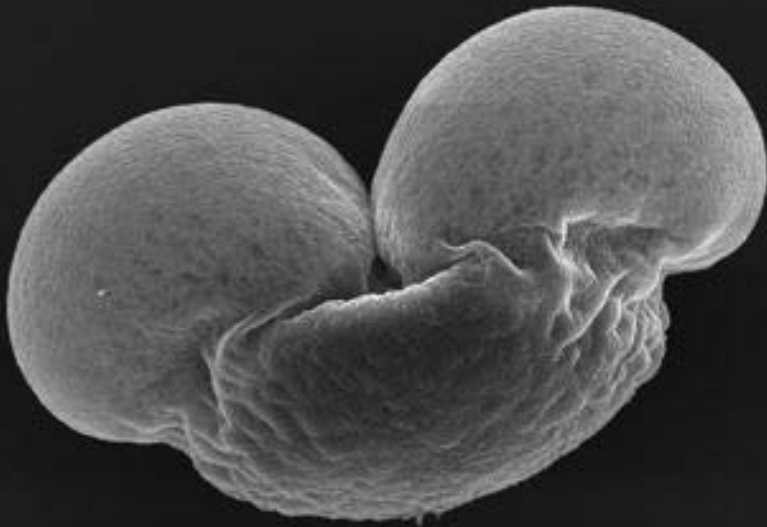


Thornhill et al. (in review *Aust. J. Bot.*)



# Wind Pollinated

## Pine



15kV X1,600 10µm UMD SEM

University of Minnesota



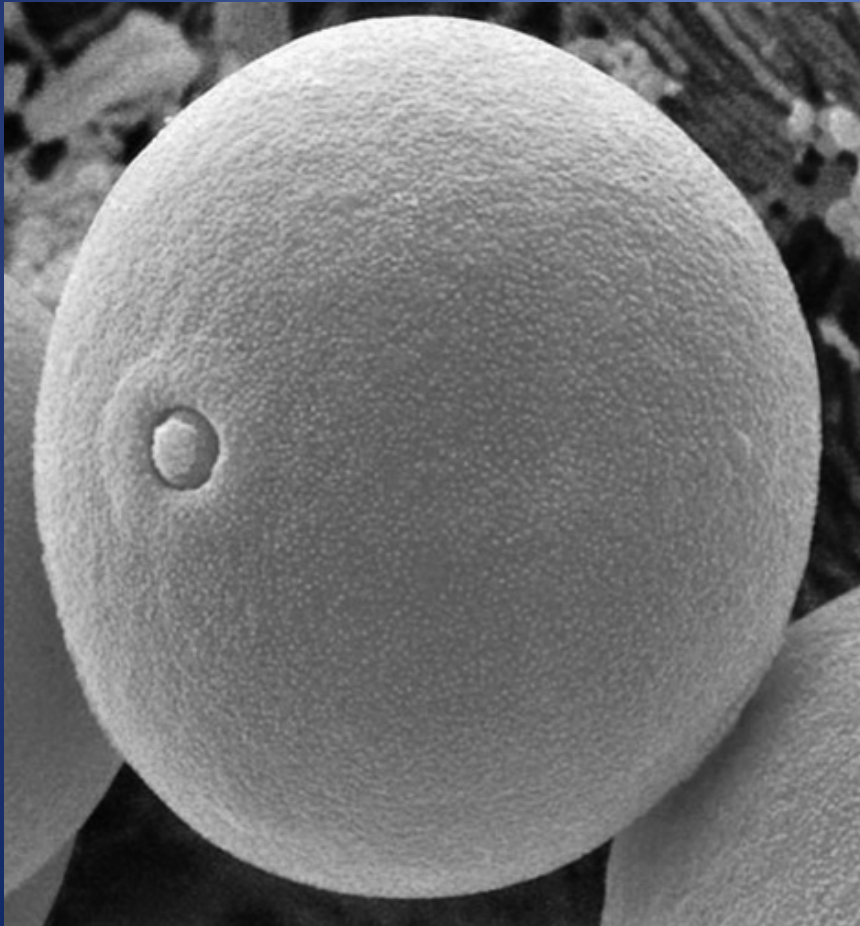
50 µm

Australasian Pollen and Spore Atlas

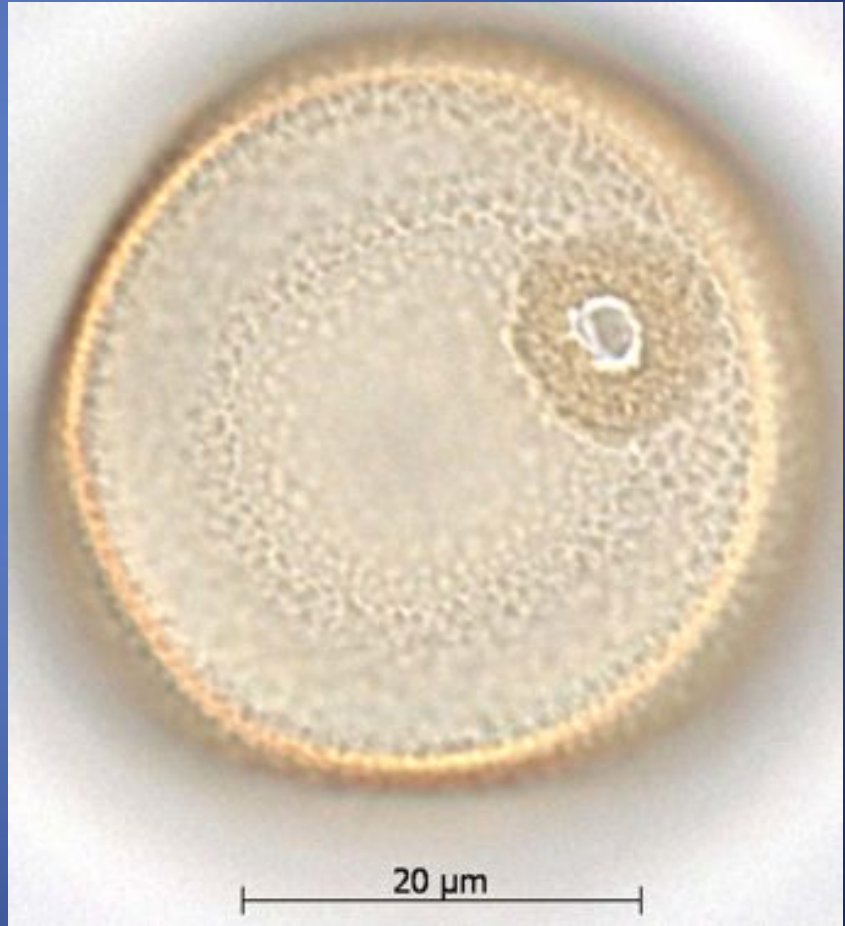


# Wind Pollinated

## Grass (Poaceae)



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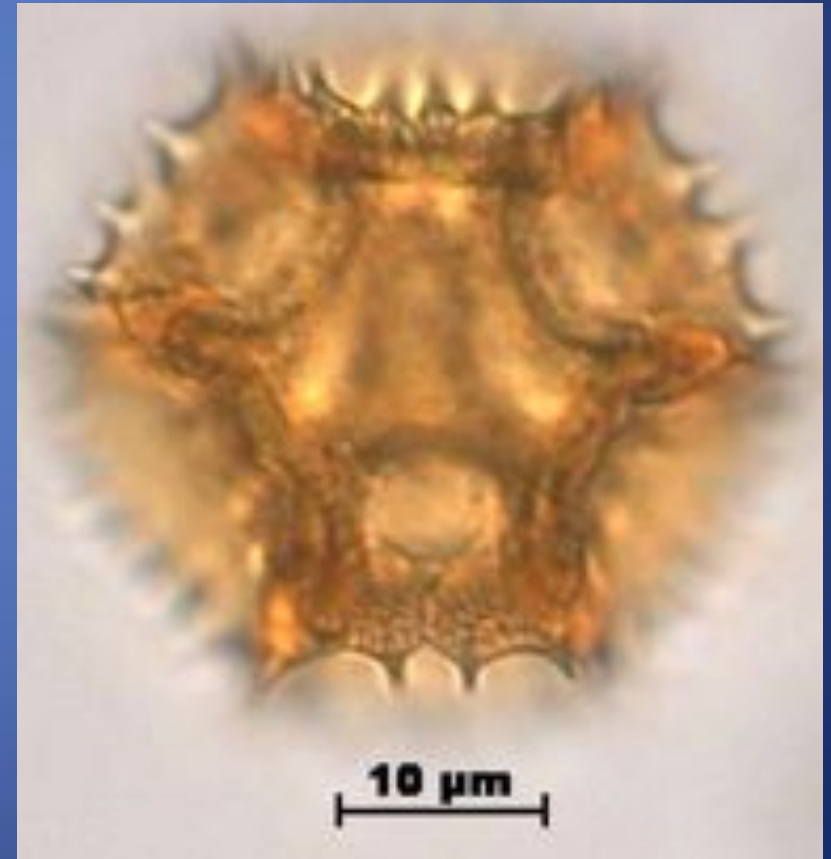
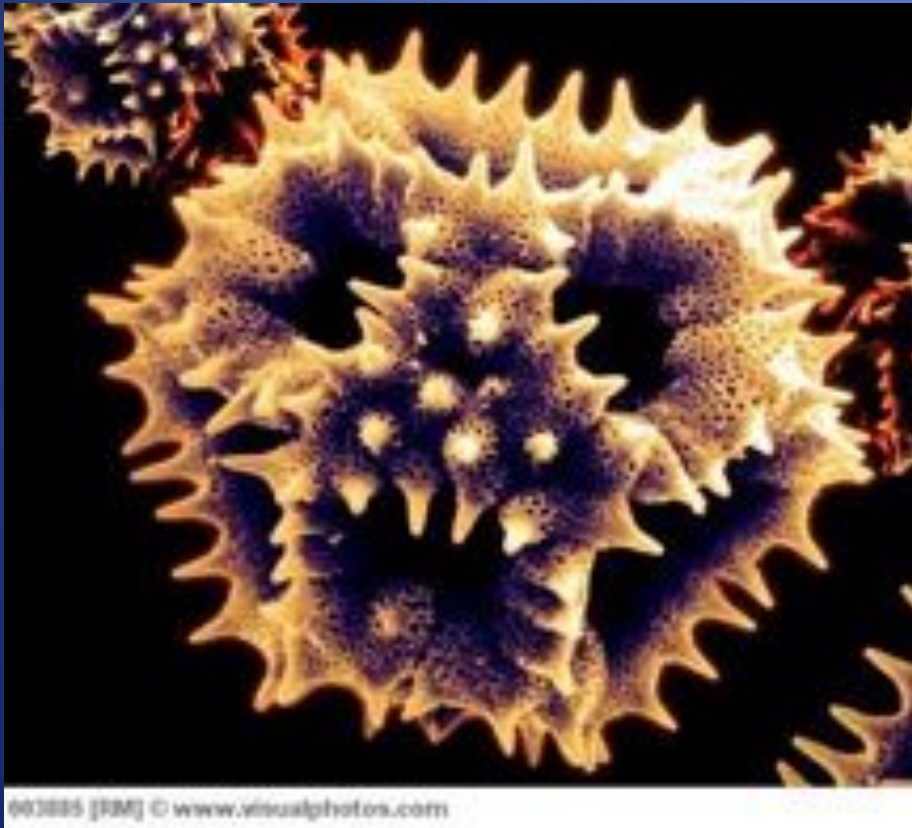


Australasian Pollen and Spore Atlas



# Insect Pollinated

## Daisy (Asteraceae)

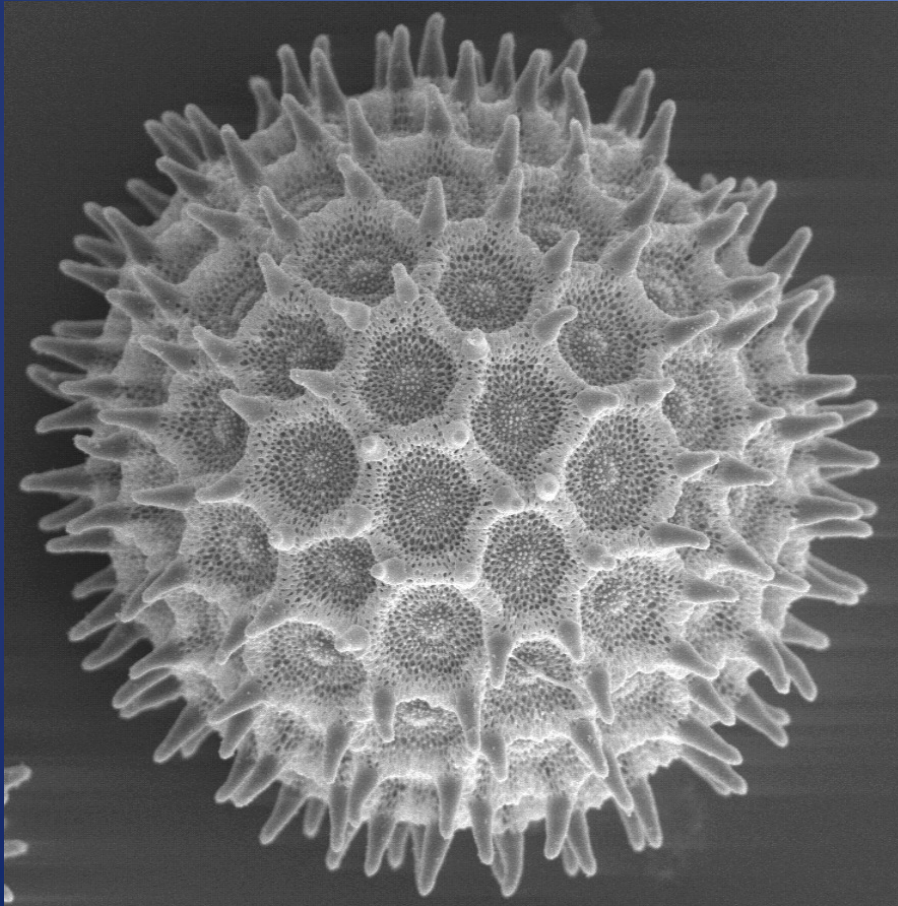


Australasian Pollen and Spore Atlas



# Insect Pollinated

## Morning Glory (Convolvulaceae)



Dartmouth College

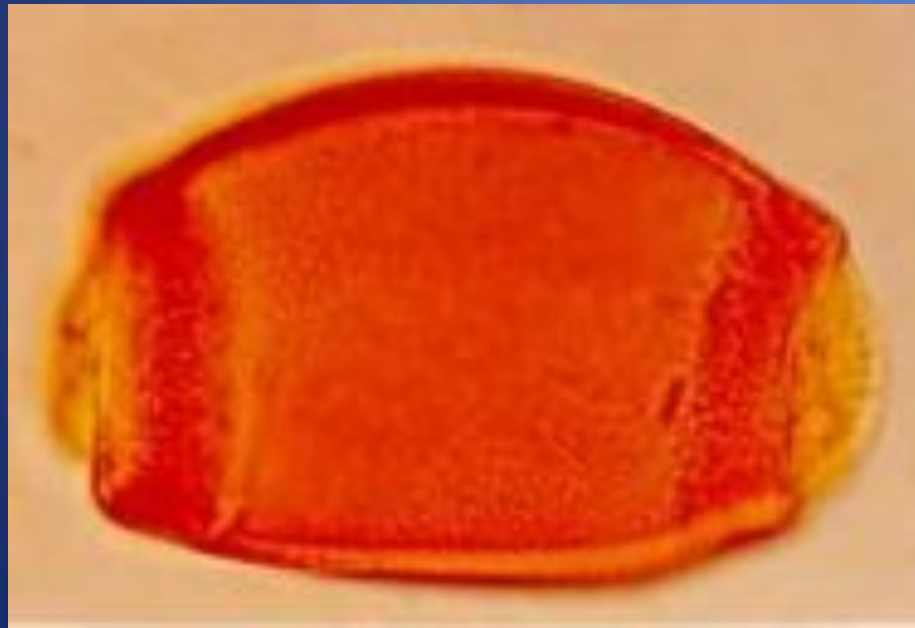


Australasian Pollen and Spore Atlas

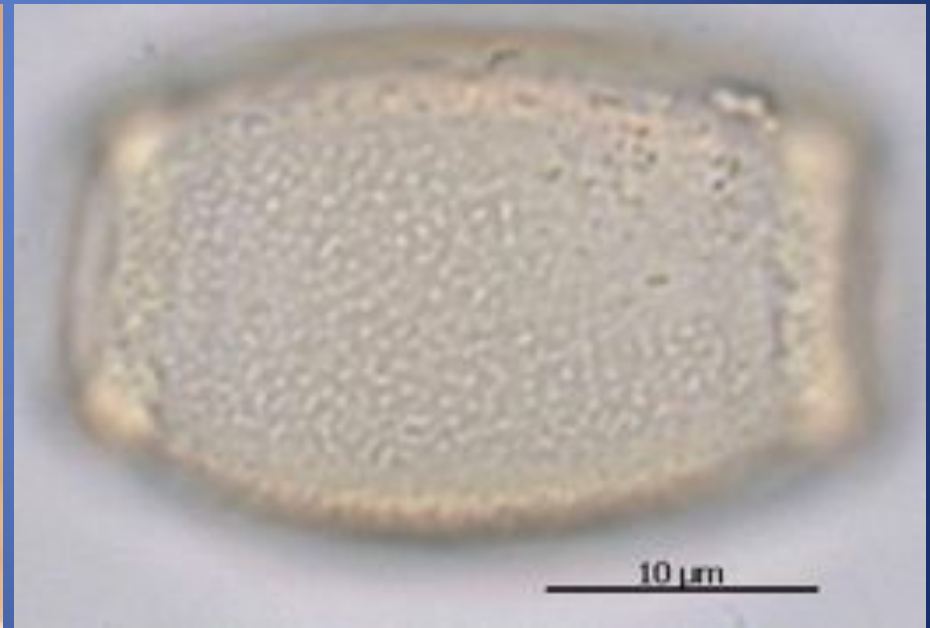


# Bird Pollinated

## Banksia (Proteaceae)



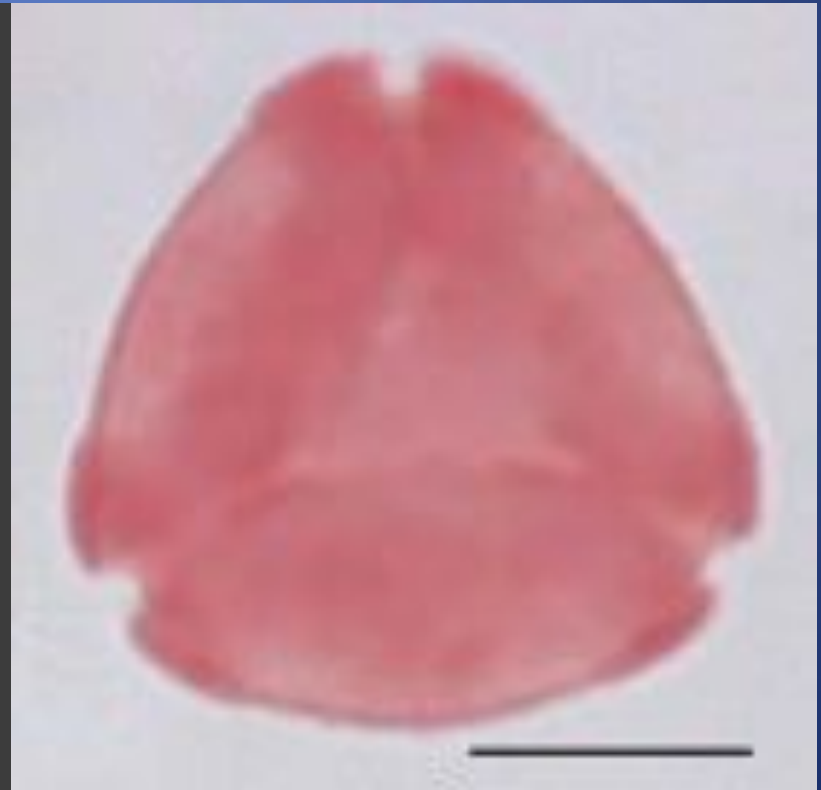
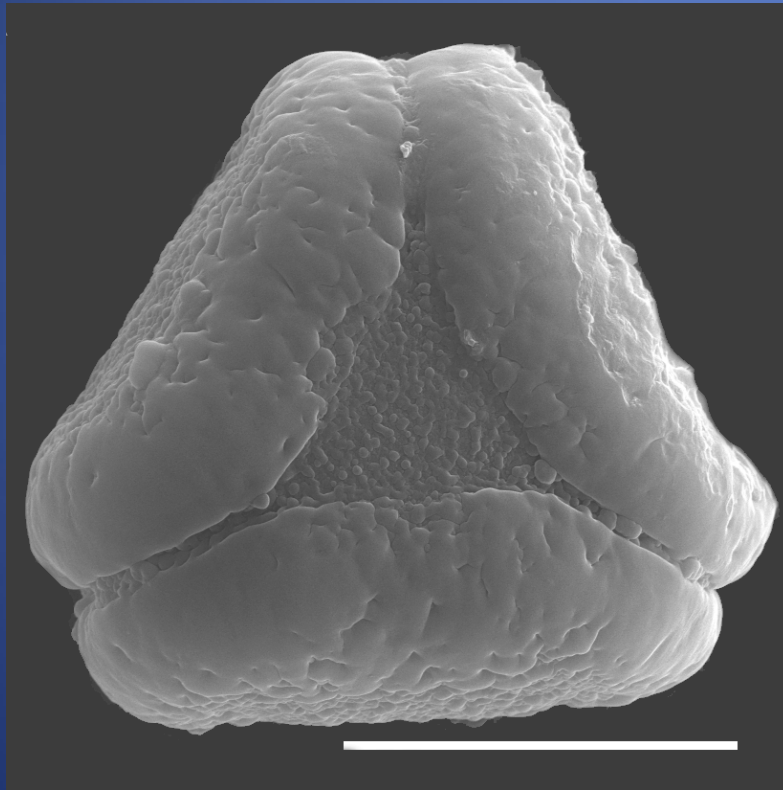
AQUA



Australasian Pollen and Spore Atlas

# Mammal Pollinated

## Gum Trees (Myrtaceae)



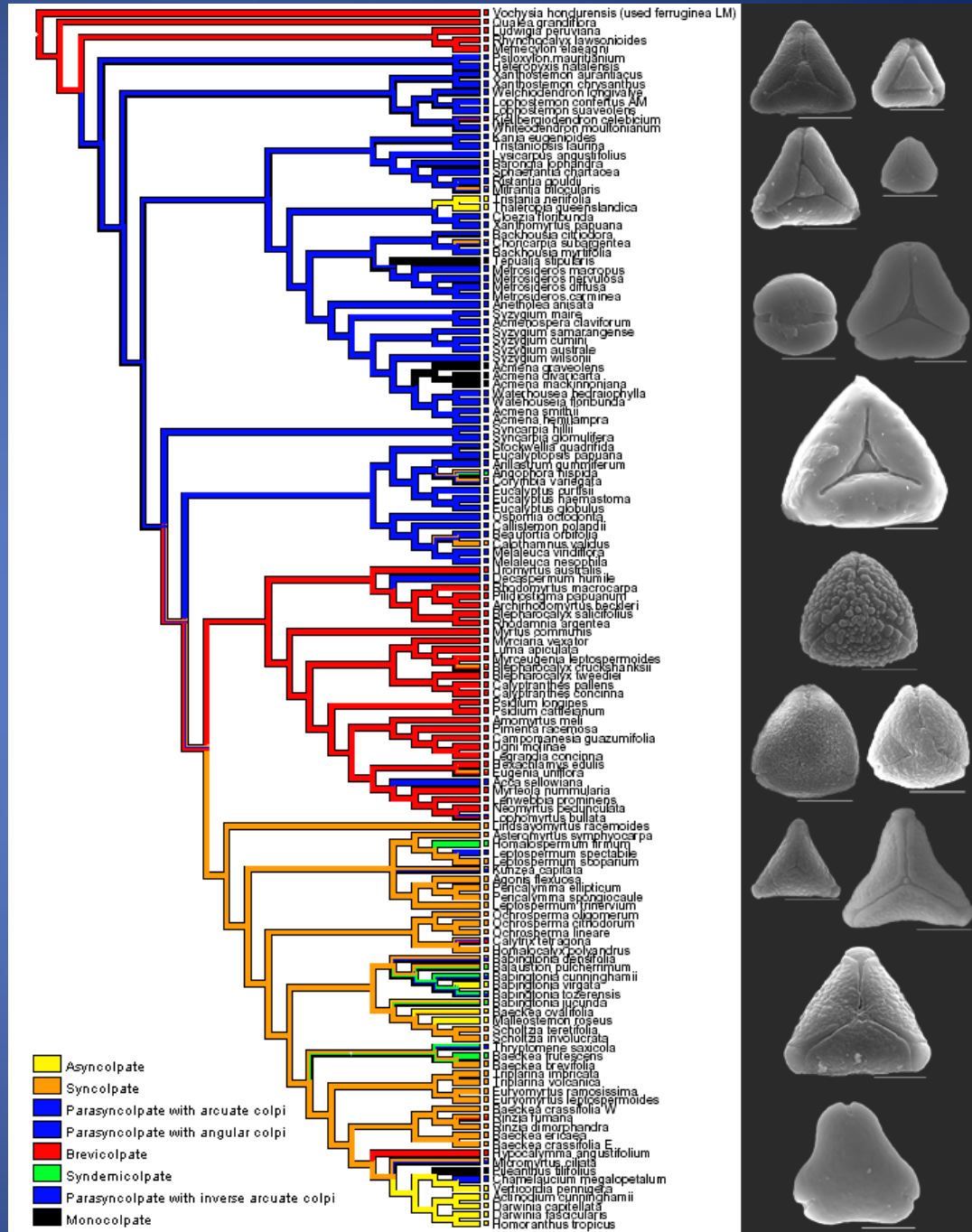
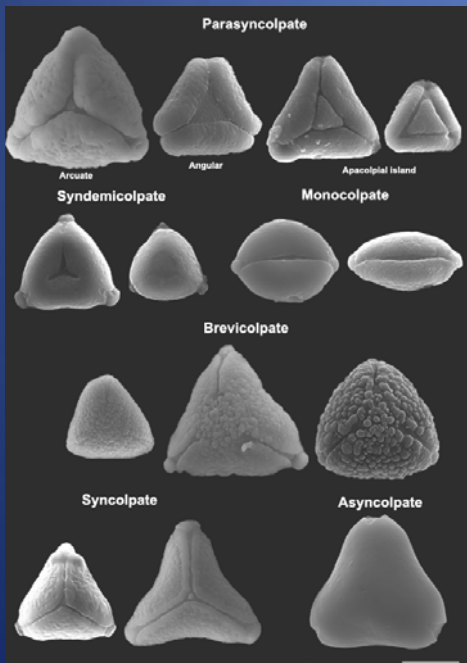


# Character mapping

matK tree

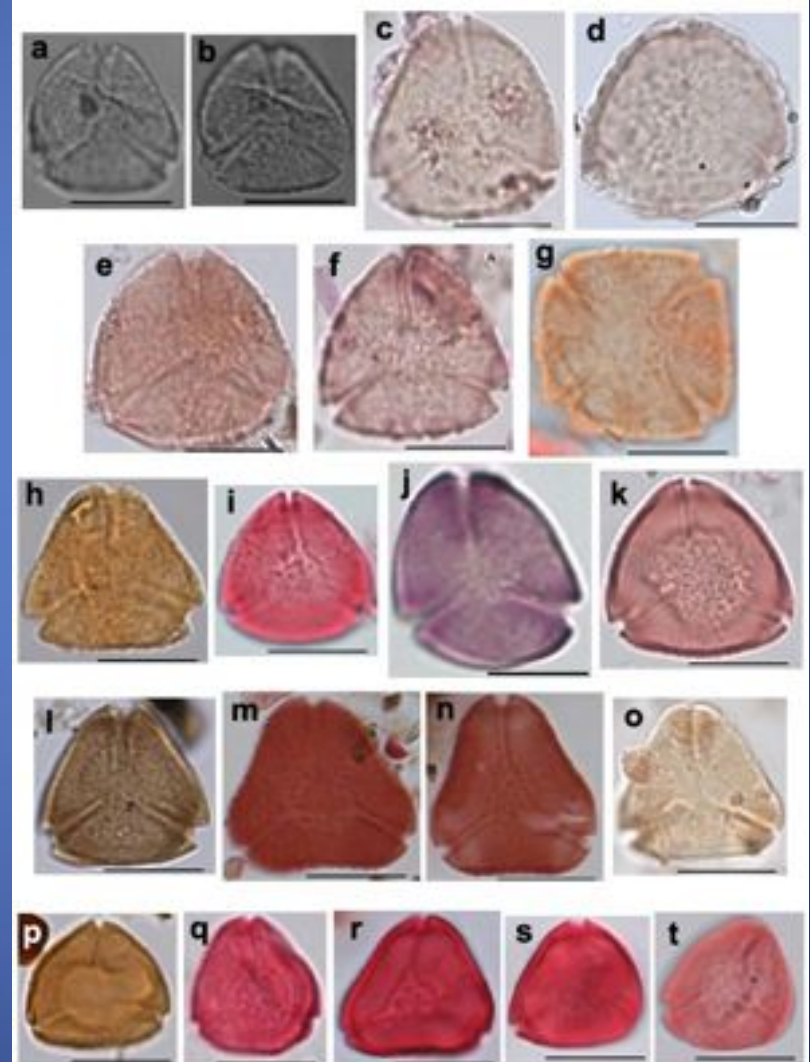
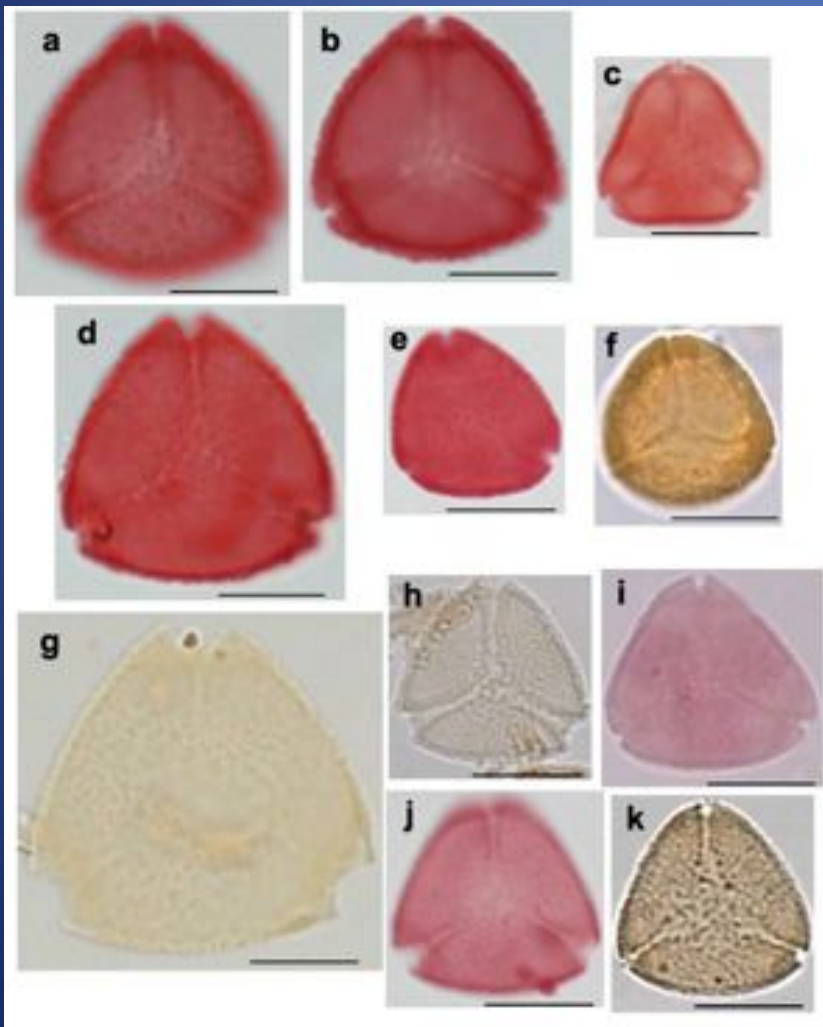
SEM colpi morphology  
parsimony mapping

- four distinct pollen groups



# Modern

# Fossil (up to 40 Ma)

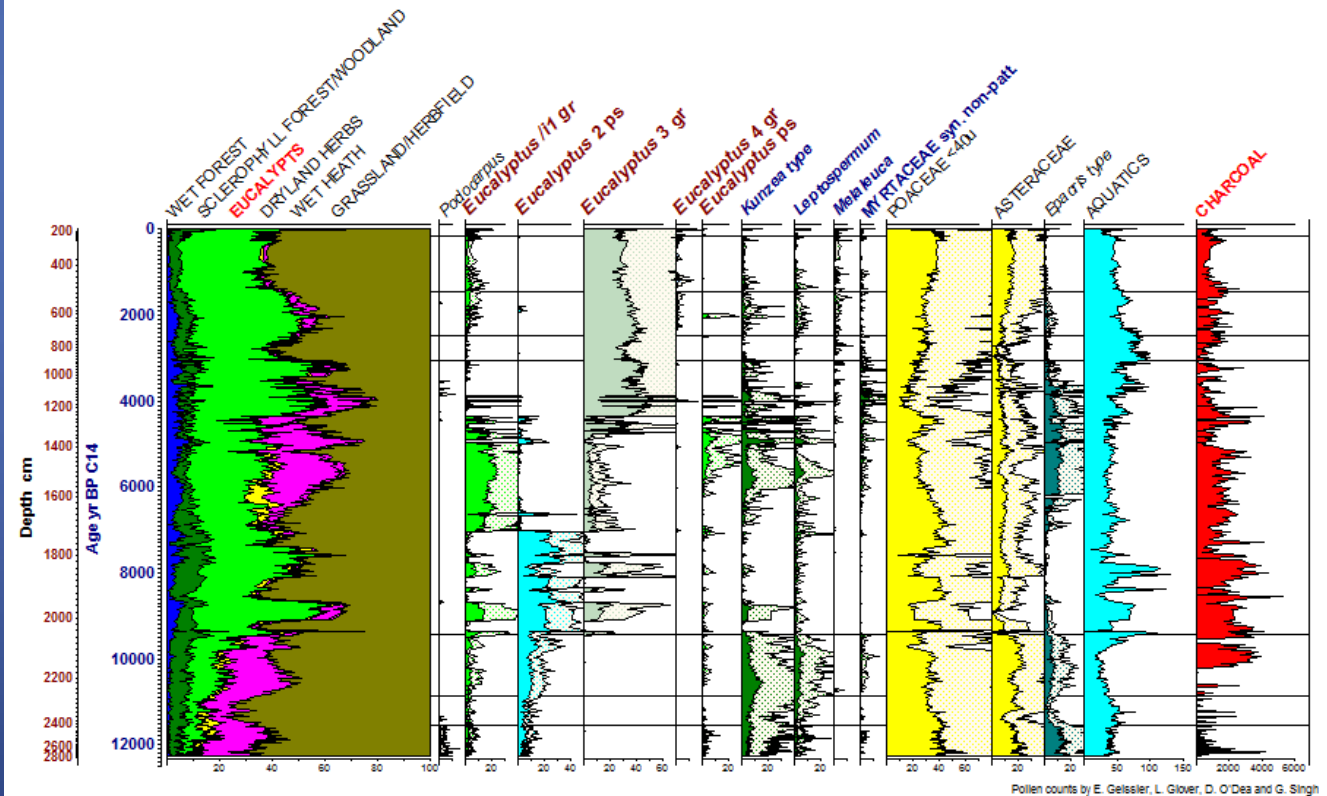
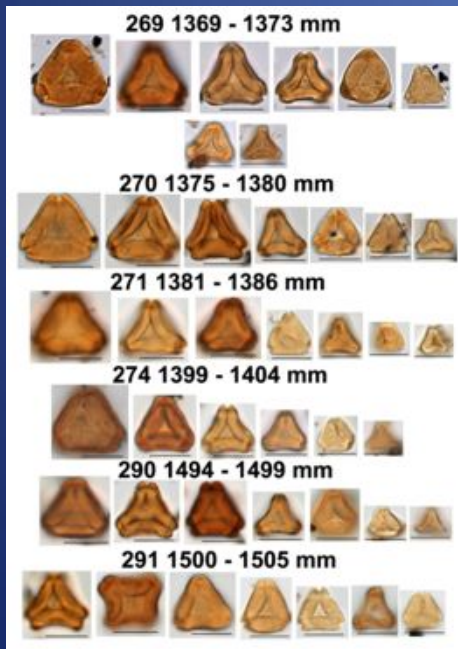




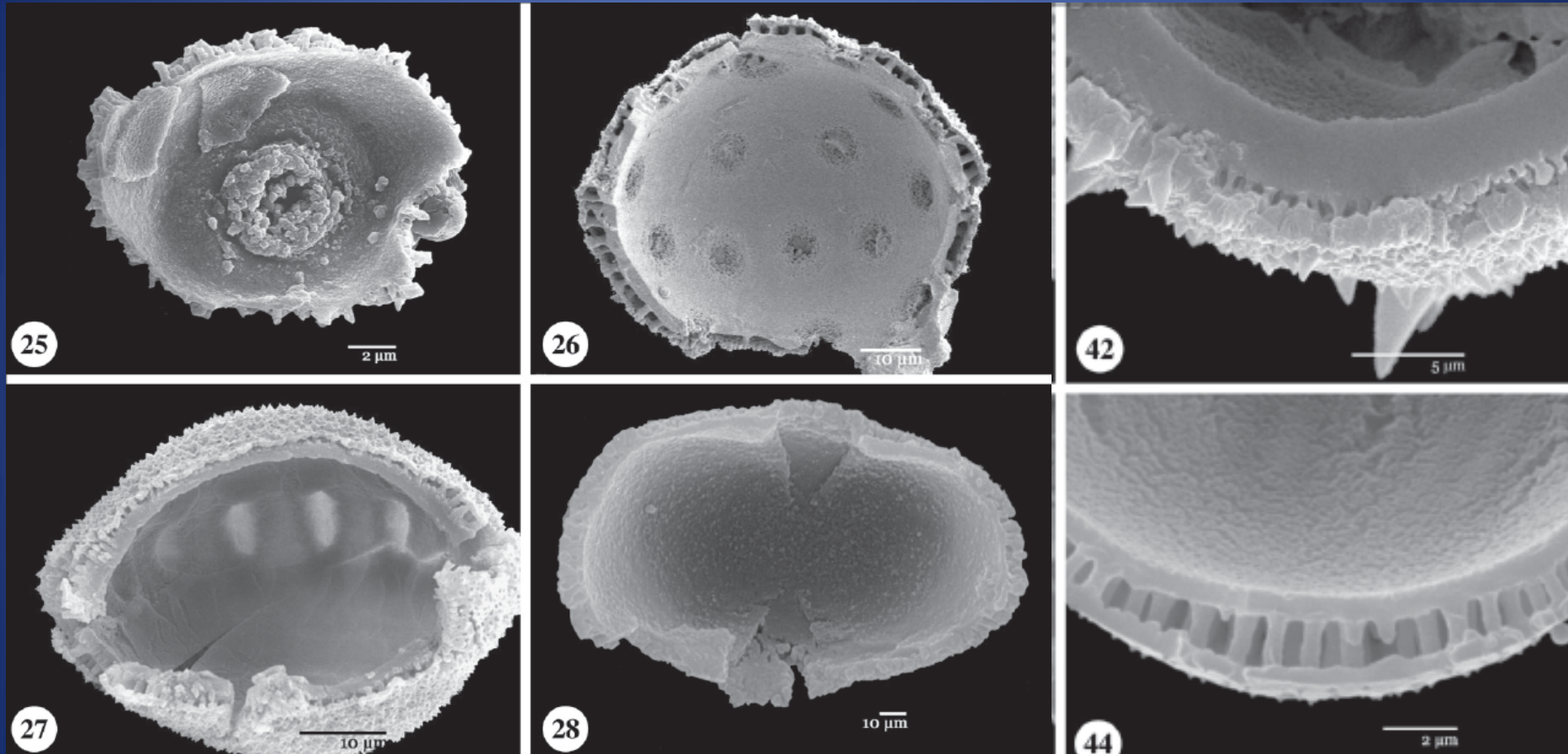
# Quaternary Research



BEGA SWAMP 1025m, SOUTHERN NEW SOUTH WALES



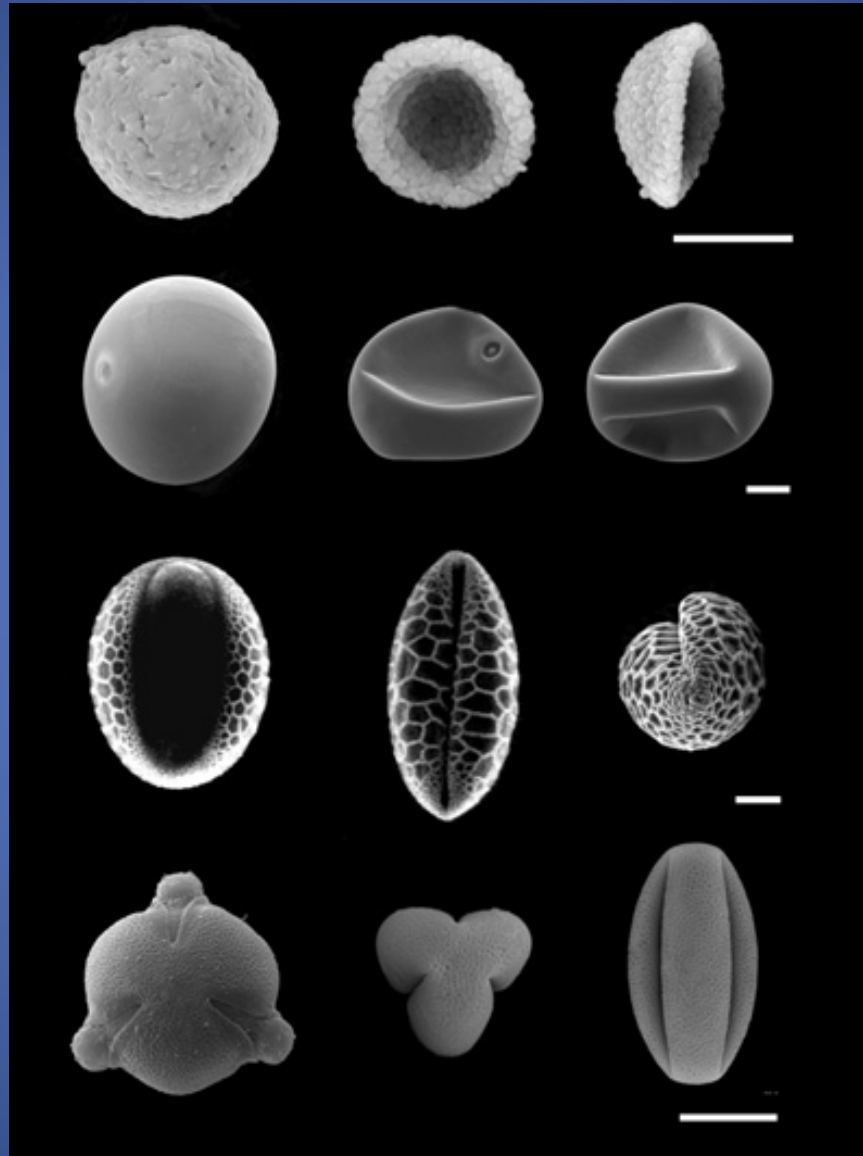
# Inside Pollen



Dessein et al. 2005 *Bot. Rev.* 71



# Harmomegathic Effect



Eleni Katifori and Jacques Dumais

# Harmomegathic Effect

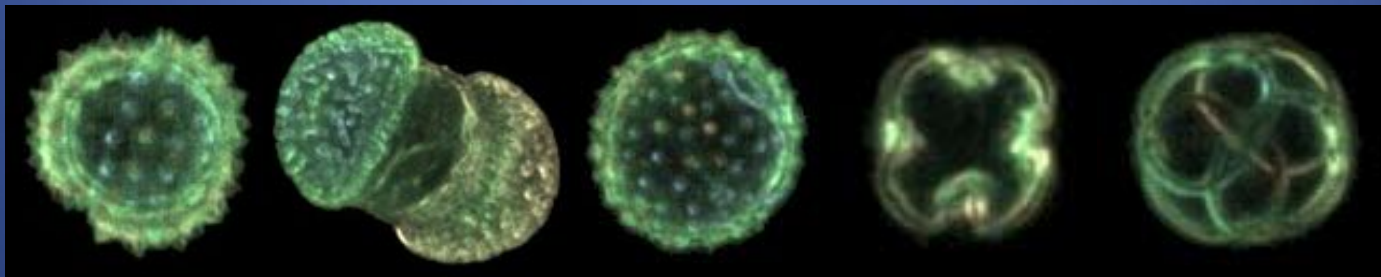
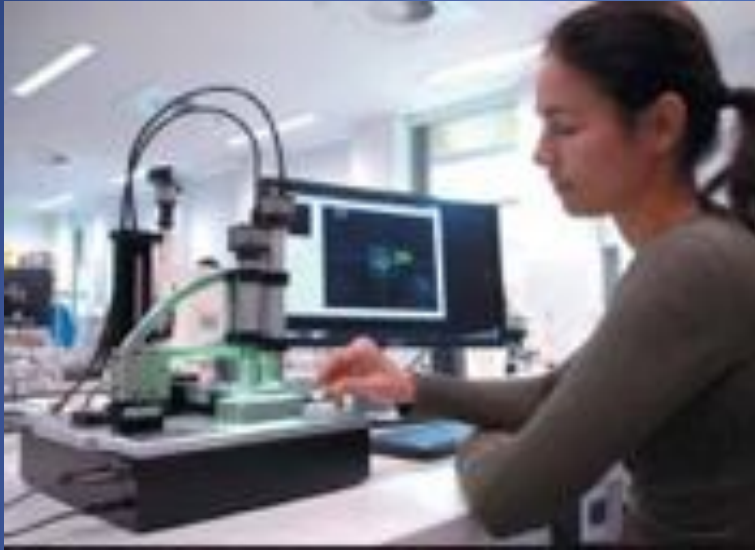


Video: Eleni Katifori et al. 2010 *PNAS* 107:17





# Classifynder (Anthony)



# Questions...

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sharing biodiversity knowledge



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