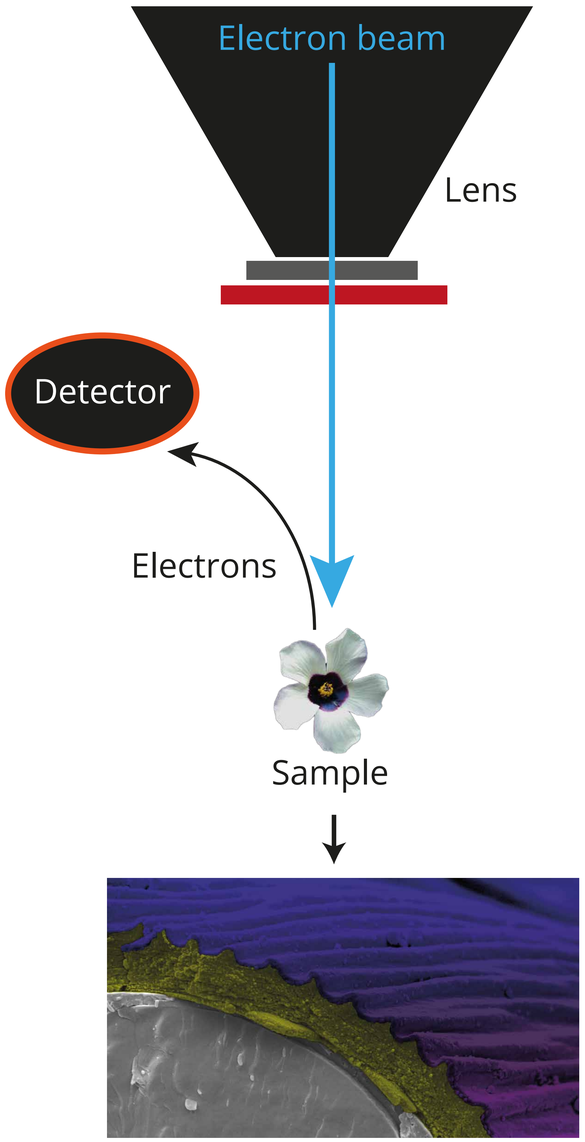
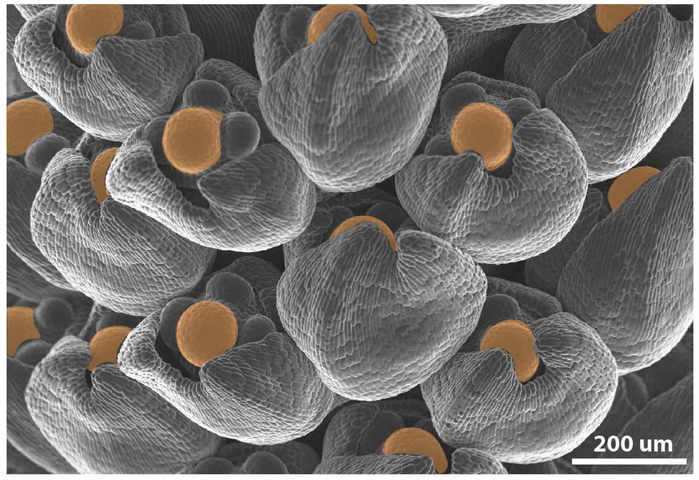
Zooming in: Flowers at the Microscale

How scanning electron microscopes reveal a hidden plant world

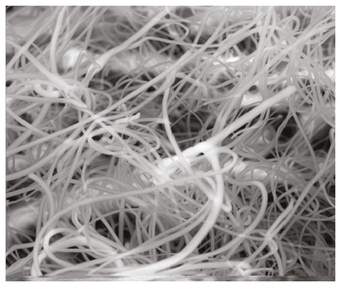
Unlike the microscope that you might have used in high school biology, a scanning electron microscope (SEM) uses a beam of electrons instead of light to "see" an image.



Scanning electron microscopes (SEM) let us observe nanoscale structures as small as one millionth of a millimetre. Both conventional and cryo-SEM (a technique where samples are rapidly frozen to preserve their natural hydrated state) are often coated with metals like gold, palladium, platinum, or iridium to improve image quality.



Zea mays ear flowers. Each orange region will develop into a corn kernel after pollination. Image by Harry Klein.



Woolly fibres on the leaves of the alpine plant ***Dionysia tapetodes***. Images by Raymond Wightman and Trevor Groves.

Arabidopsis thaliana floral meristem. Image by Weibing Yang.

Hibiscus trionum petal fracture with false colour processing showing the cuticle has two physically distinct layers. Image by Raymond Wightman. False colour processing by Gareth Evans.

We also use visible light, fluorescence and x-rays to image plants