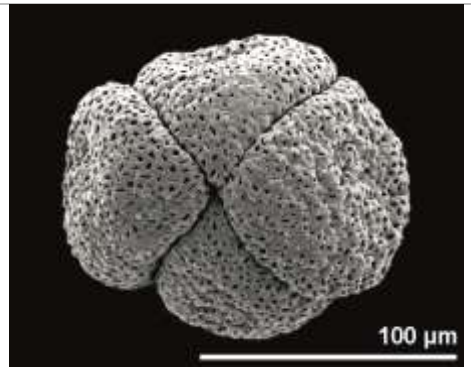
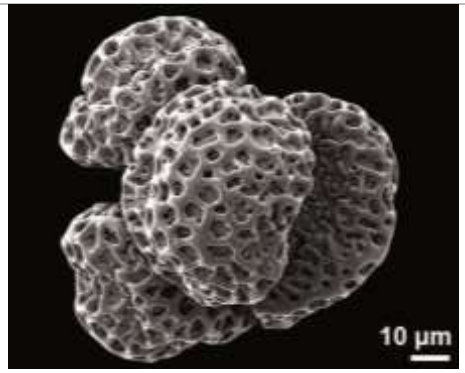
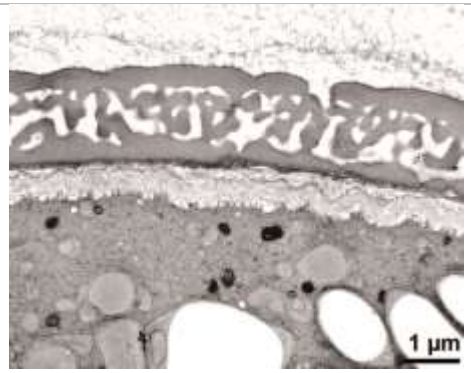
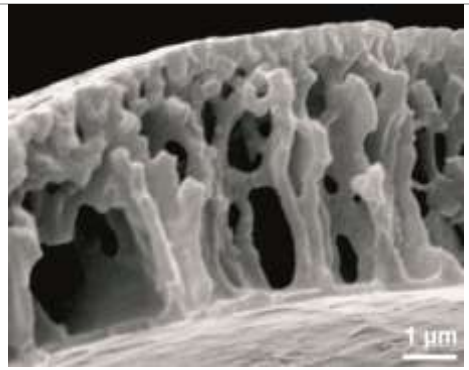
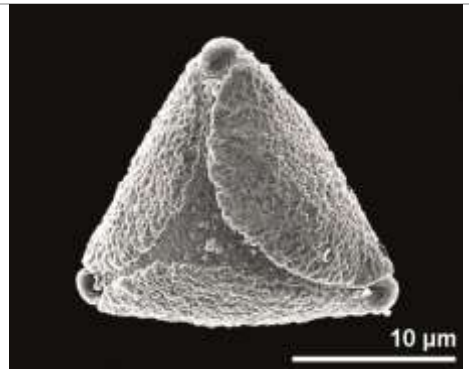
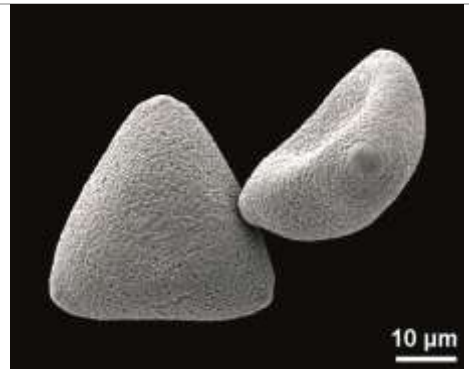
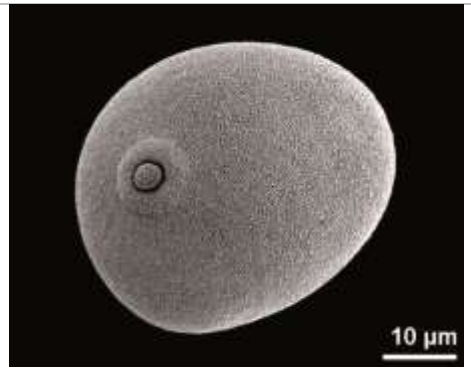
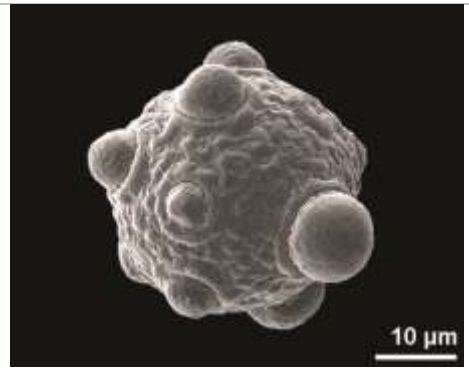
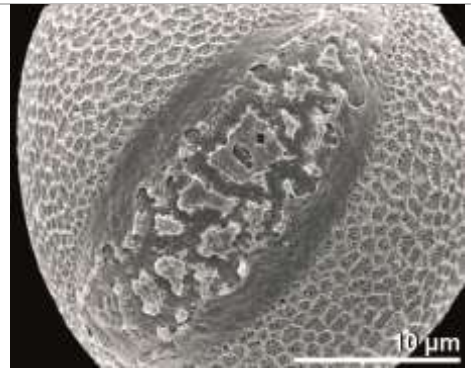
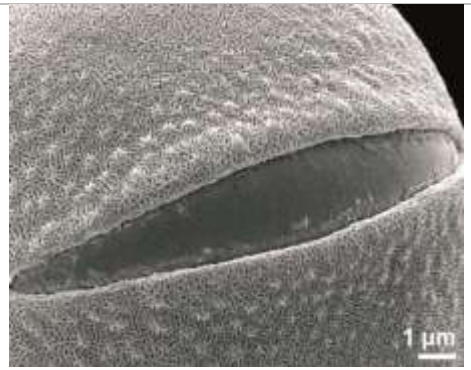
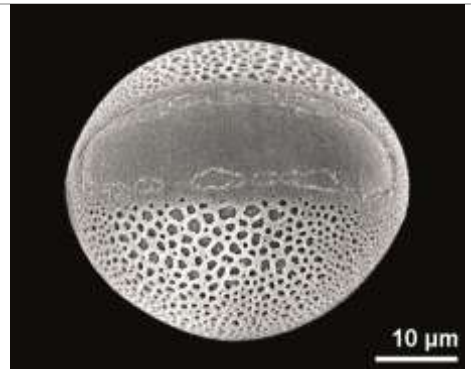
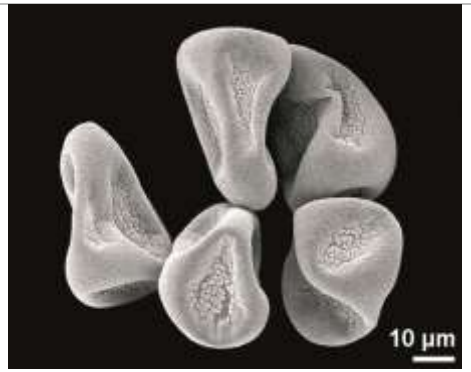
siehe: https://www.paldat.org/

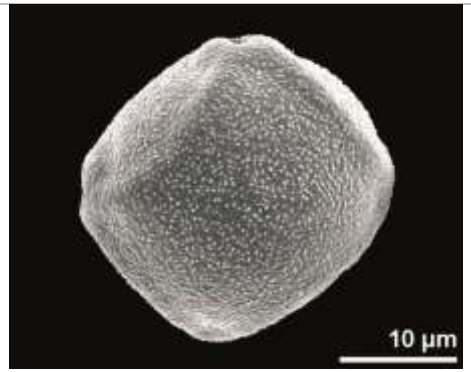
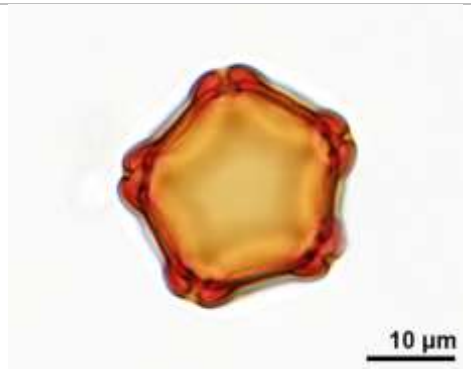
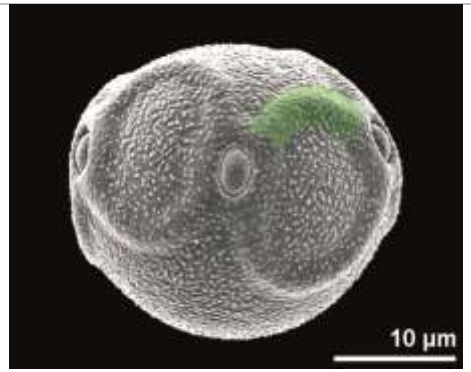
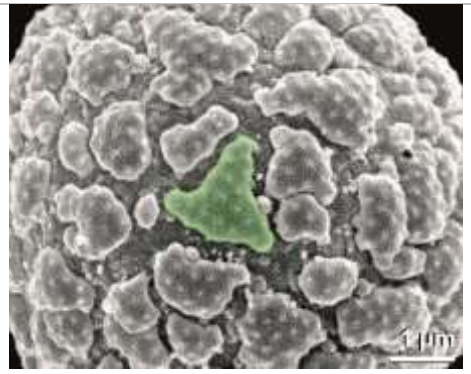
Illustrated Pollen Terms

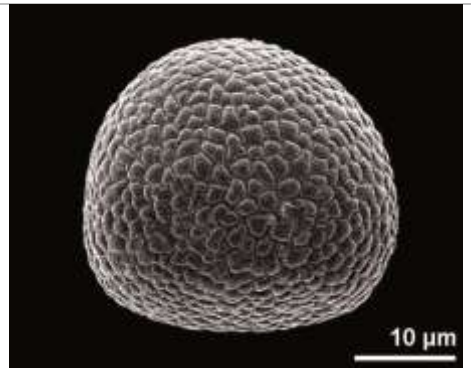
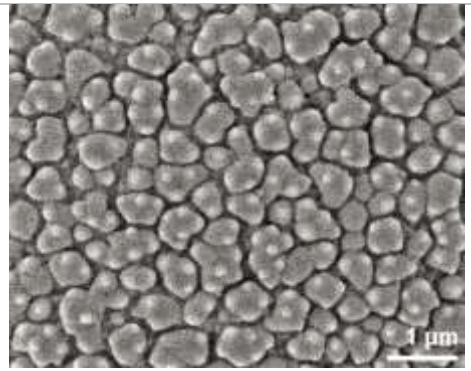
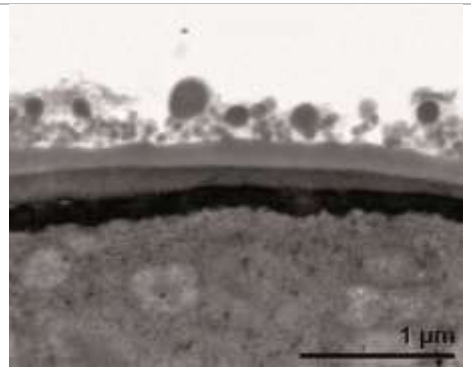
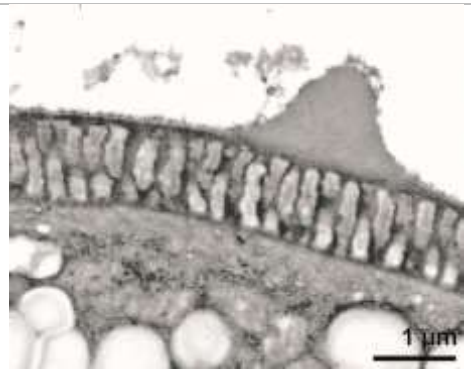
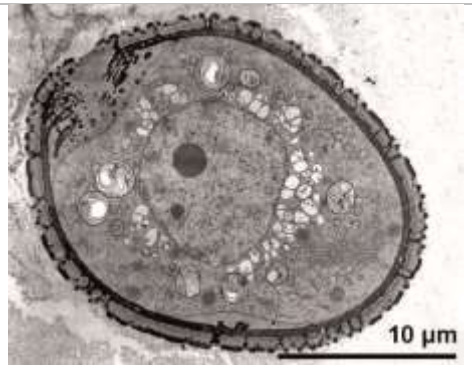
Pictures from PalDat are the main source for the illustrations.
See also: Hesse et al (2009) Pollen Terminology. An illustrated handbook. Springer Vienna

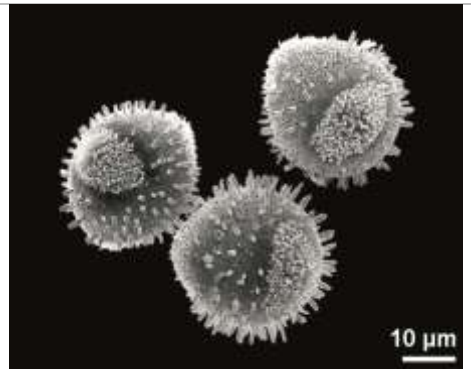
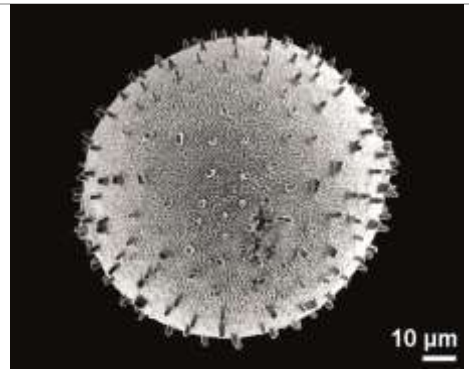
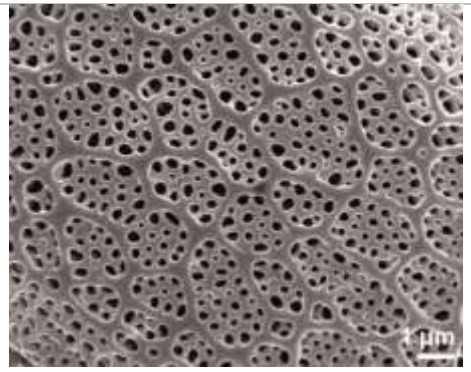
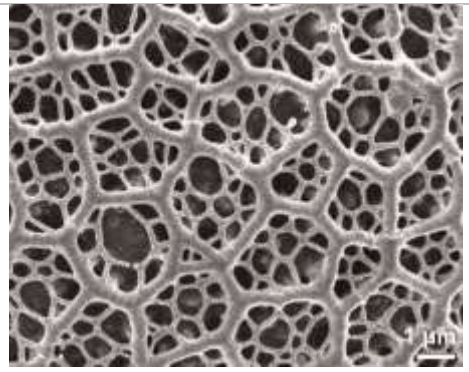
acalymmate	feature describing a dispersal unit of two or more monads enclosed by an exine, which is discontinuous at the junctions between the monads	 *Asimina triloba*	 *Beschorneria yuccoides*
alveolate	infratectum with compartments of irregular size and shape	 *Gonatopus angustus*	 *Abies* sp. (fractured pollen wall)

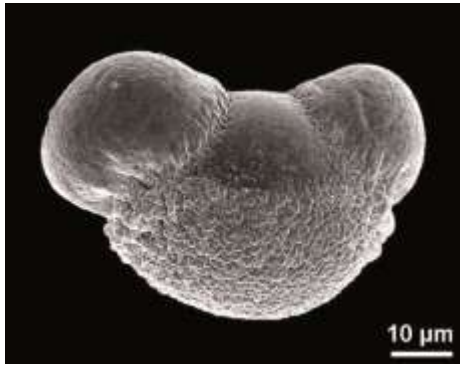
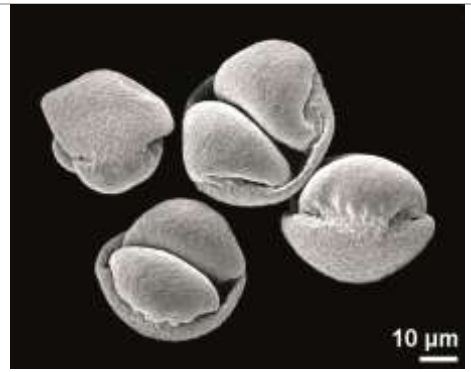
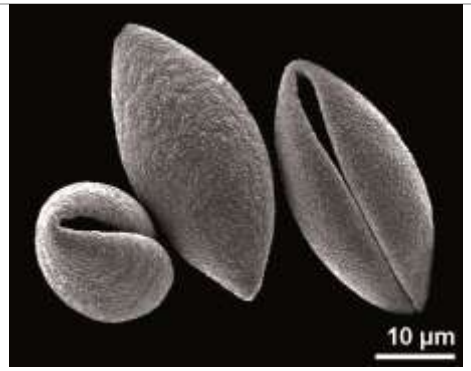
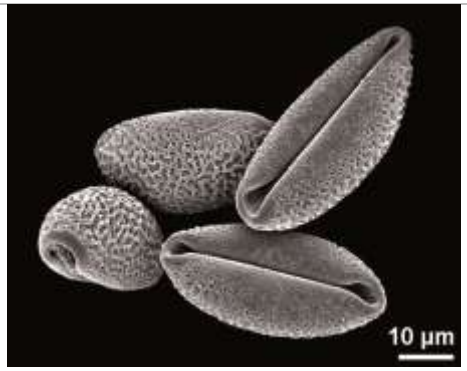
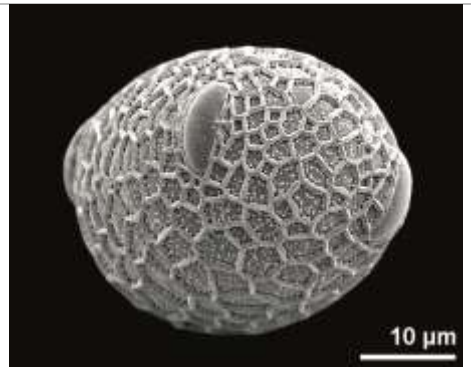
angulaperturate	pollen grain with an angular outline where the apertures are situated at the angles	 *Callistemon coccineus*	 *Leucadendron brunoides*
annulate	pollen grain with an annulus or annuli	 *Secale cereale* (ulcerate)	 *Fumaria vaillantii* (pantoporate)
annulus (pl. annuli)	ring-like thickening of the pollen wall surrounding a porus or ulcus	 *Trichosanthes anguina*	
aperture	region of the pollen wall which differs significantly morphologically and/or anatomically from the rest of the pollen wall, presumed to function usually as germination site and to play a role in harmomegathy		

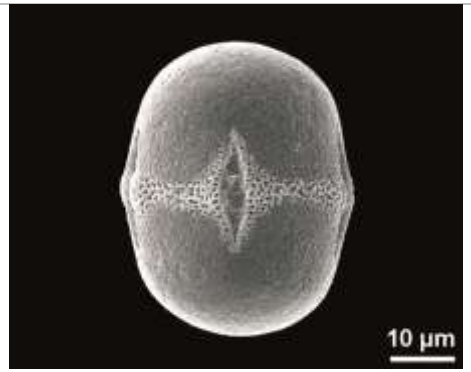
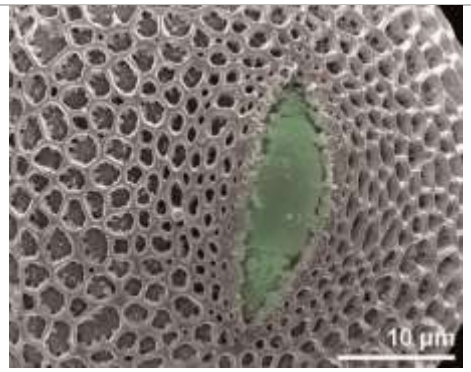
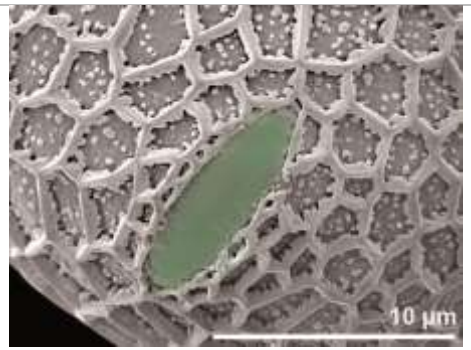
aperture membrane	exine layer covering an aperture; aperture membrane can be smooth or ornamented Comment: The terms "smooth" and "ornamented" should be used when the feature is remarkably expressed.		
aperture membrane ornamented		 *Convolvulus tricolor*	 *Galeopsis tetrahit*
aperture membrane smooth		 *Melampyrum subalpinum*	 *Doryanthes palmeri*
aperture sunken	infoldings of dry pollen as a consequence of harmomegathy	 *Orthilia secunda* (dry pollen)	 *Carex alba* (dry pollen)

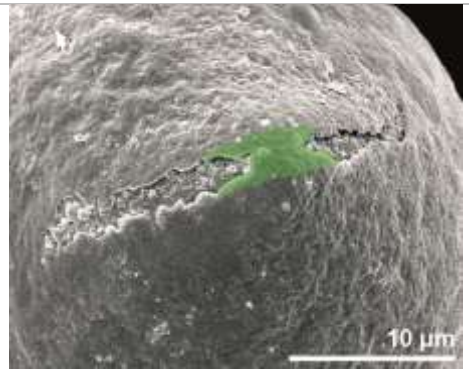
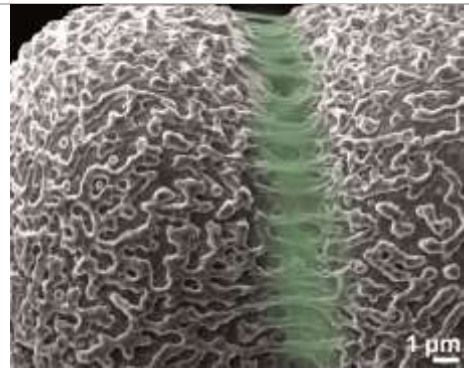
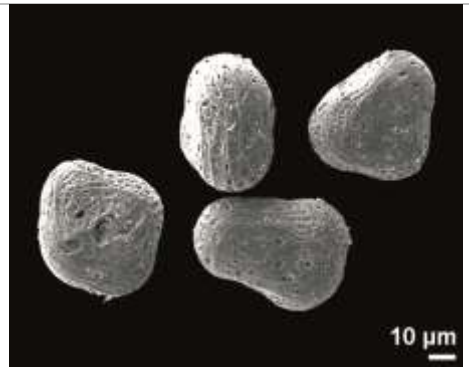
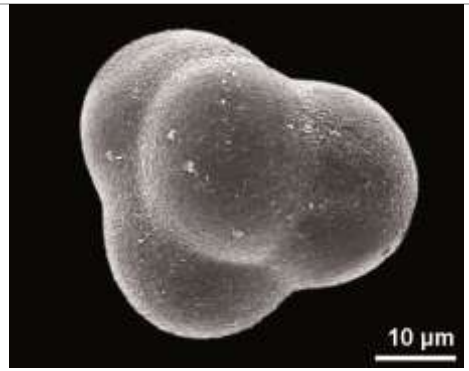
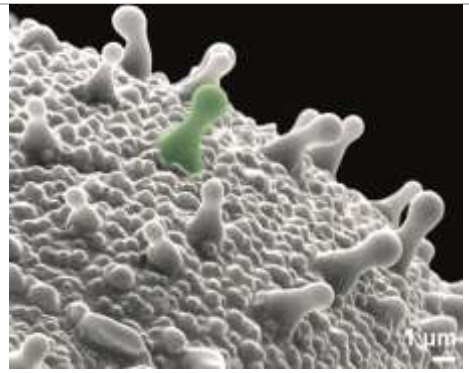
arcuate	pollen grain with arcus	 *Alnus incana*	 *Alnus* sp.
arcus (pl. arcus)	a curved wall thickening interconnecting apertures	 *Alnus glutinosa*	
areola (pl. areolae)	small, mostly convex exine island	 *Peperomia rubella*	

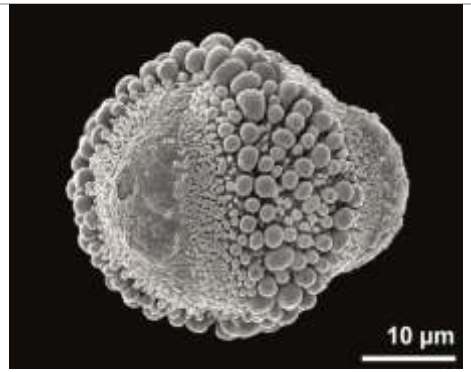
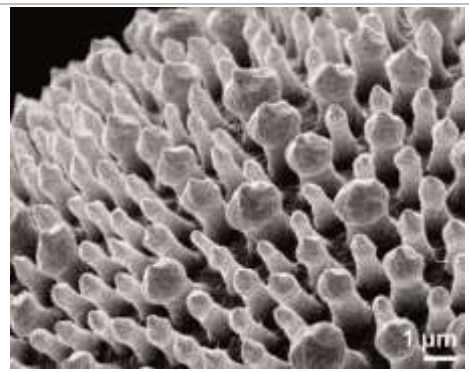
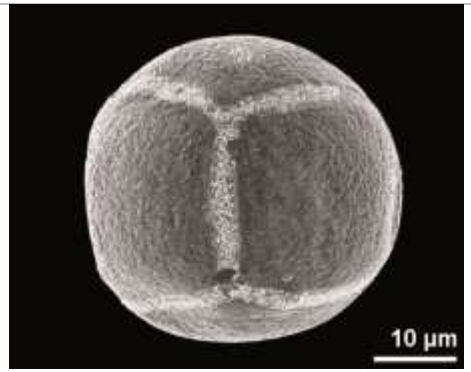
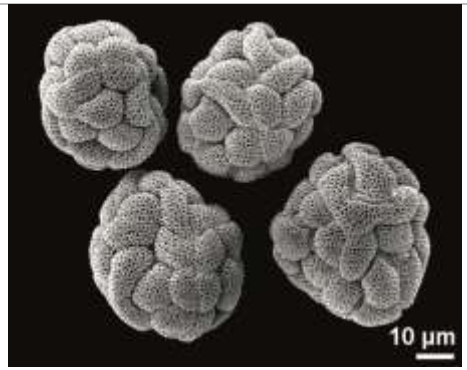
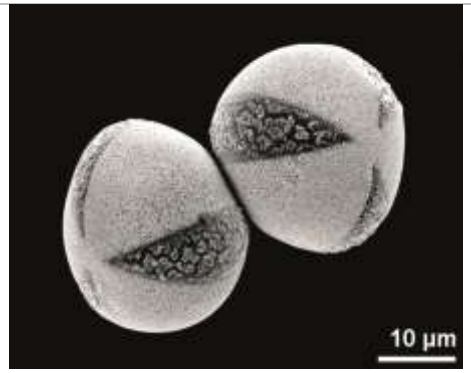
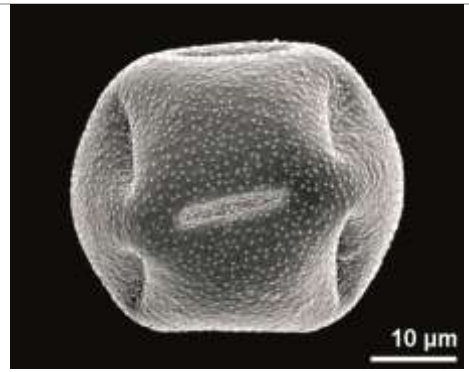
areolate	pollen wall with areolae	 *Dracunculus vulgaris*	 *Cynodon dactylon*
atectate	pollen grain lacking a tectum	 *Rhaphidophora africana*	 *Globba schomburgkii*
atrium (pl. atria)	space between diverging exine layers within the aperture	 *Tilia platyphyllos*	 *Tilia platyphyllos*

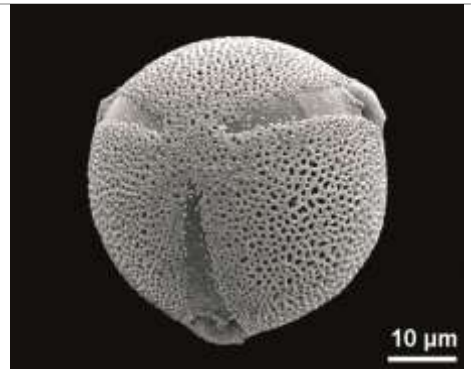
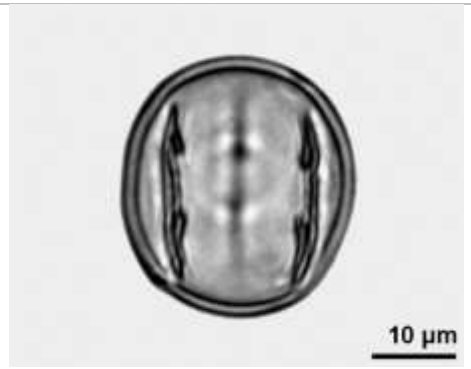
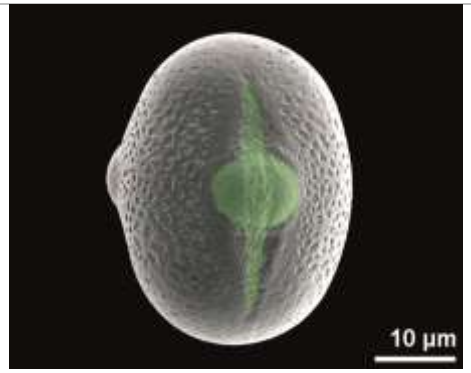
baculate	pollen wall with bacula	 *Viscum laxum*	 *Erythrochiton brasiliensis*
baculum (pl. bacula)	rod-like, free standing element, more than 1 µm in height and never pointed	 *Viscum laxum*	
bi-	prefix meaning 2 (bireticulate, bisaccate)		
bireticulate	special type of reticulate ornamentation, where the brochi of the large-meshed reticulum are filled by a small-meshed reticulum	 *Prunella grandiflora*	 *Salvia argentea*

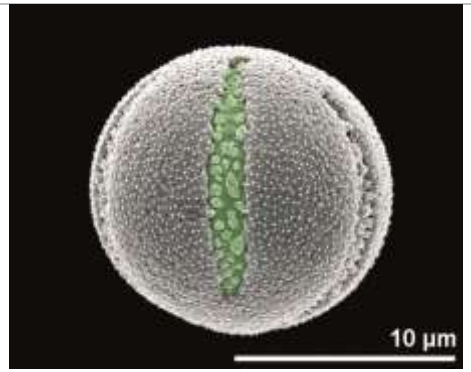
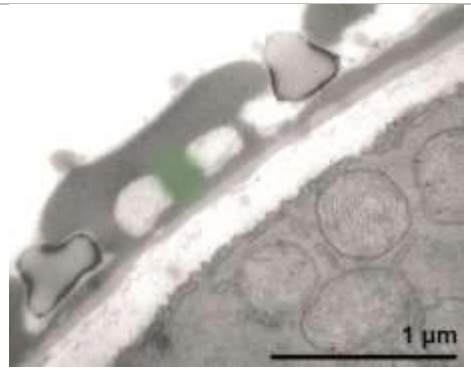
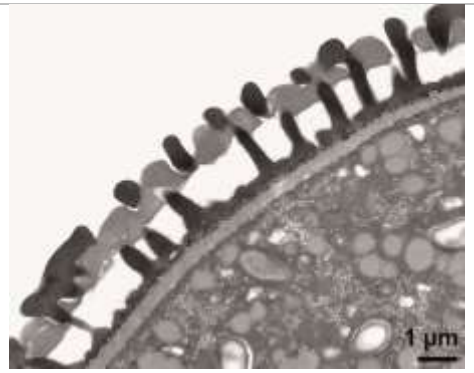
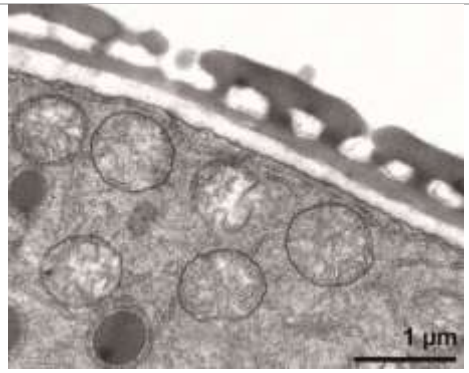
bisaccate	pollen grain with 2 sacci	 *Pinus mugo*	 *Pinus heldreichii* (dry pollen)
boat-shaped	characteristic shape of sulcate pollen grains in dry condition as a consequence of harmomegathy	 *Ginkgo biloba* (dry pollen)	 *Lysichiton americanus* (dry pollen)
brevicolpate	pollen grain with brevicolpi	 *Impatiens columbaria*	 *Scabiosa ochroleuca*

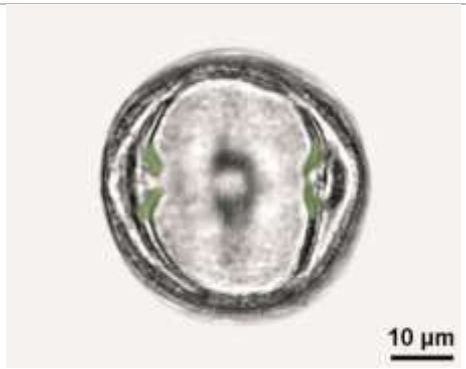
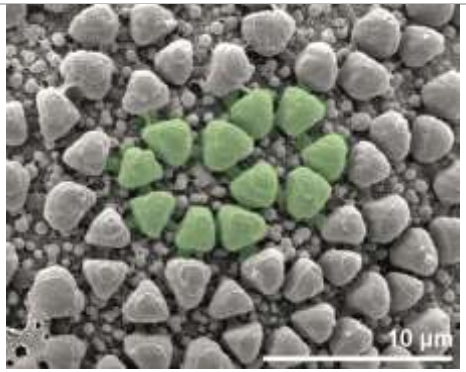
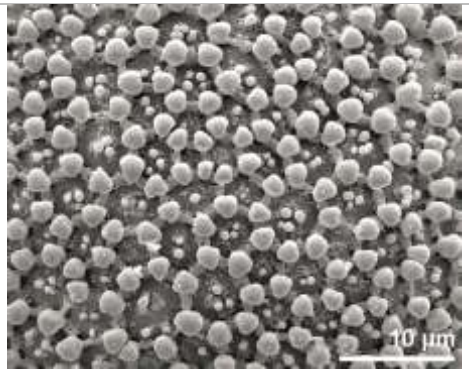
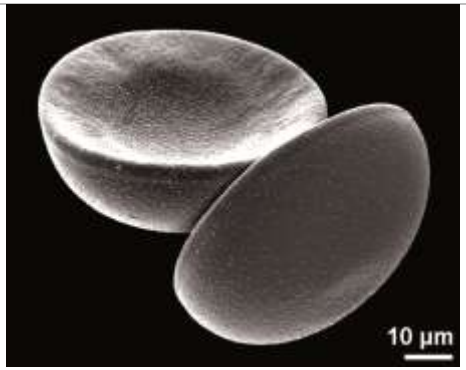
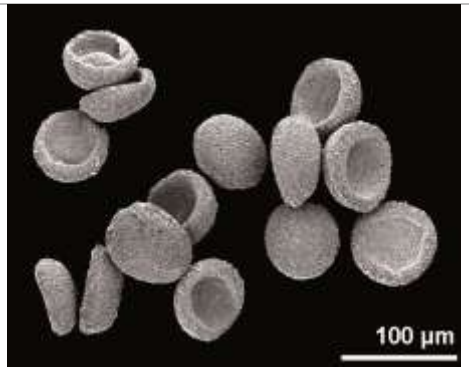
brevicolporate	pollen grain with brevicolpori	 *Pulmonaria mollissima*	 *Symphytum orientale*
brevi-	prefix meaning short		
brevicolporus (pl. brevicolpori)	short colpus in a compound aperture	 *Dalechampia roezliana*	
brevicolpus (pl. brevicolpi)	short colpus	 *Impatiens columbaria*	

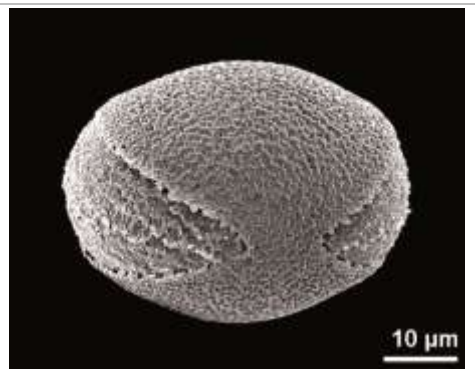
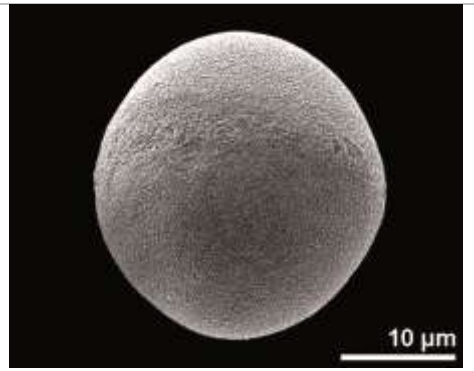
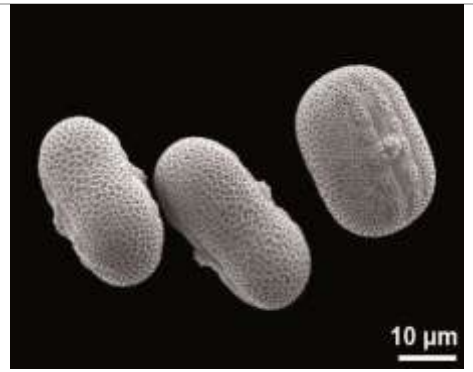
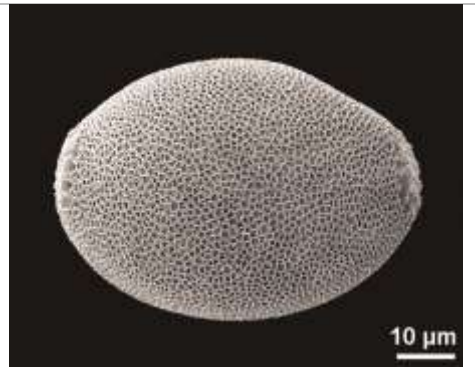
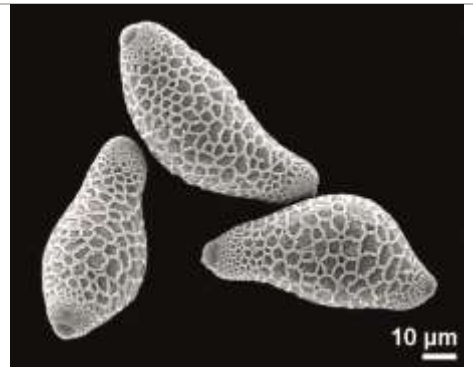
bridge	exine connection between the margins of a colpus in the equatorial region *Comment:* The term is often used in a more general context, e.g., for exine connections within tetrads.	 *Elaeagnus angustifolia*	 *Typha latifolia* (tetrad)
calymmate	feature describing a dispersal unit of two or more monads enclosed by a continuous ektexine	 *Chlorospatha kolbii (tetrads)*	 *Chlorospatha dodsonii* (tetrad)
clava (pl. clavae)	club-shaped element, higher than 1 µm	 *Iris alata*	

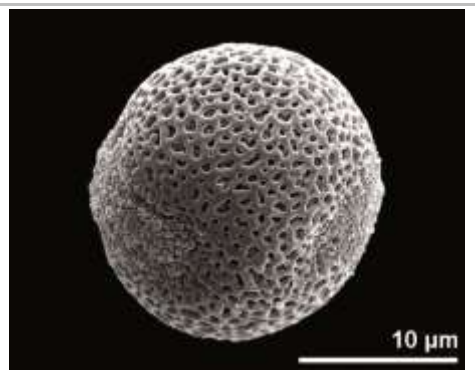
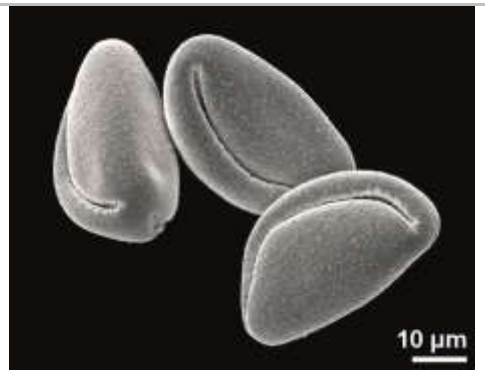
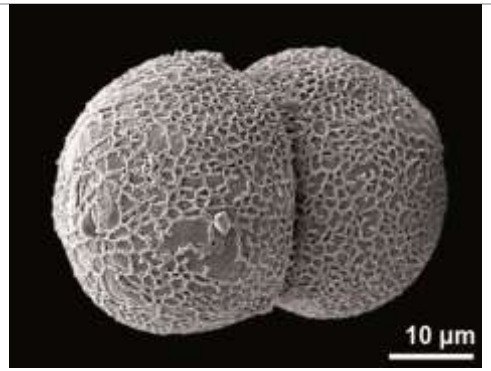
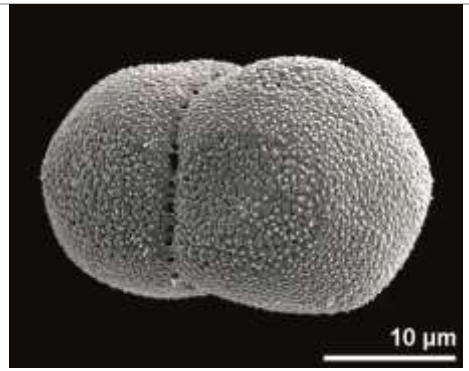
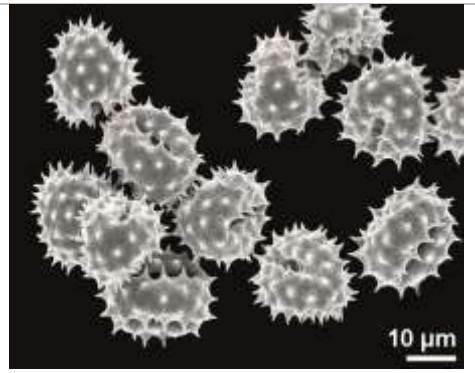
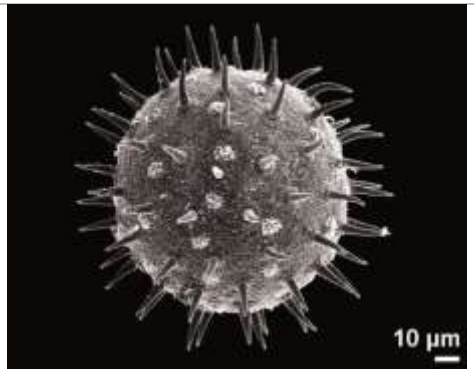
clavate	pollen wall with clavae	 *Ilex aquifolium*	 *Linum flavum*
clypeate	pollen wall, in which the exine is subdivided into shields	 *Corydalis lutea*	 *Catalpa bignonioides* (tetrads, dry pollen)
colpate	pollen grain with colpi	 *Lamium maculatum*	 *Talinum paniculatum* (dry pollen)

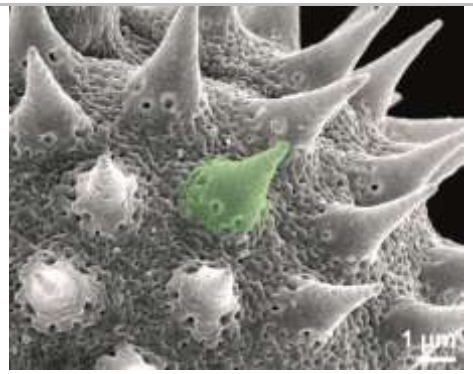
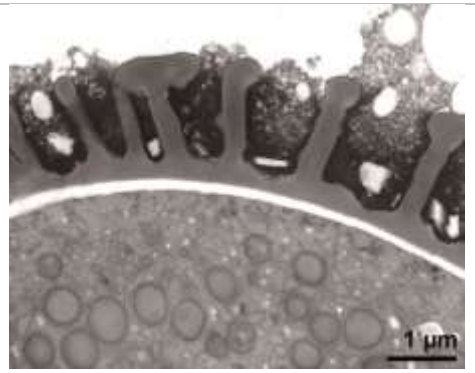
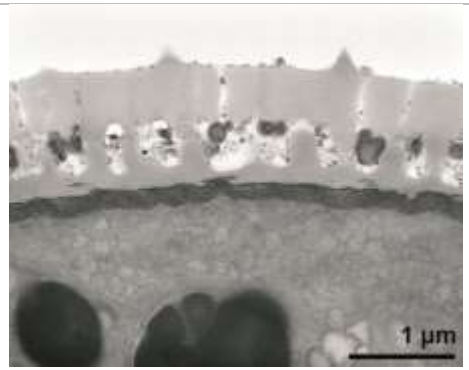
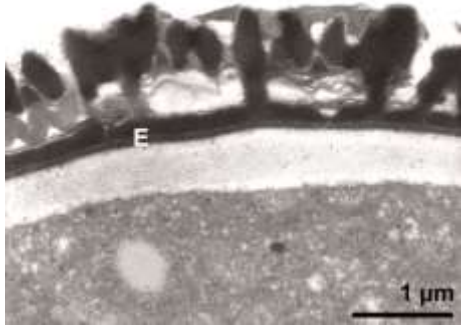
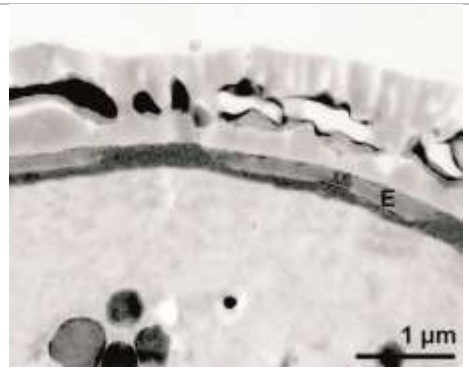
colporate	pollen grain with colpori	 *Polygala chamaebuxus*	 *Cistus creticus*
colporoidate	pollen grain with compound apertures composed of a colpus (ektoaperture) with an indistinct endoaperture *Comment:* Is a rare character, e.g., for deciduous *Quercus* pollen.	 *Eucommia* sp. (fossil)	
colporus (pl. colpori)	compound aperture composed of a colpus (ektoaperture) combined with an endoaperture (porus) of variable size and shape	 *Lathyrus vernus*	

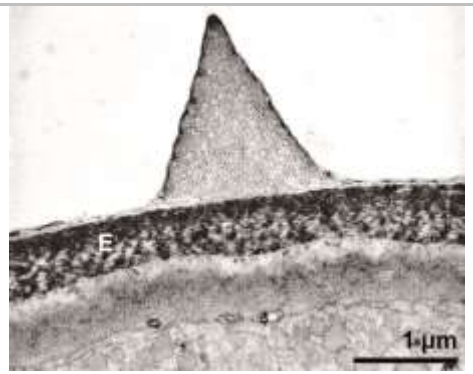
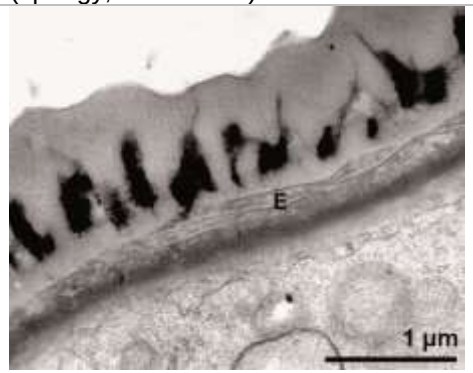
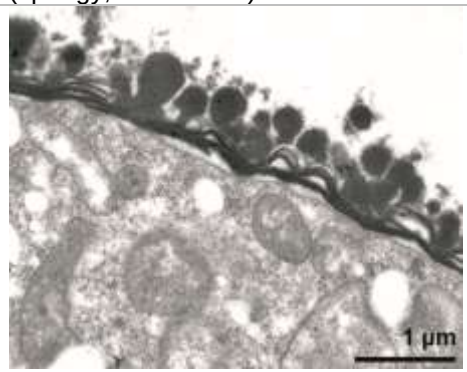
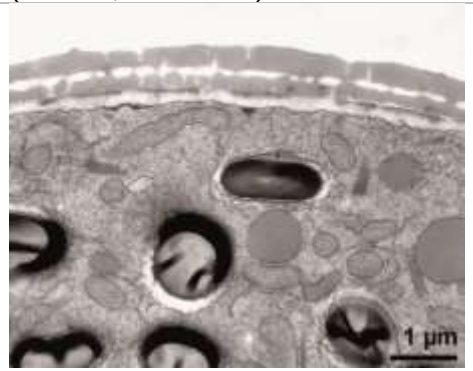
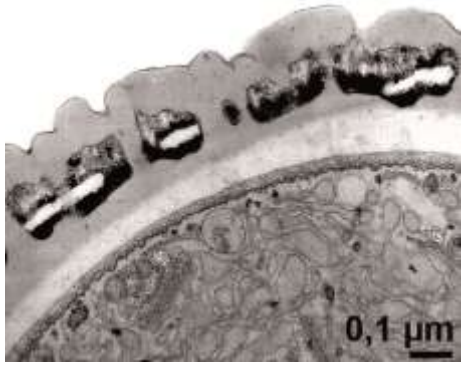
colpus (pl. colpi)	elongated aperture (length/width ratio > 2) situated at the equatorial region or regularly distributed over the pollen grain	 *Cruciata laevipes*	
columella (pl. columellae)	rod-like structure element, supporting a tectum	 *Microrrhinum minus*	
columellate	infratectum with columellae	 *Mentha aquatica*	 *Microrrhinum minus*

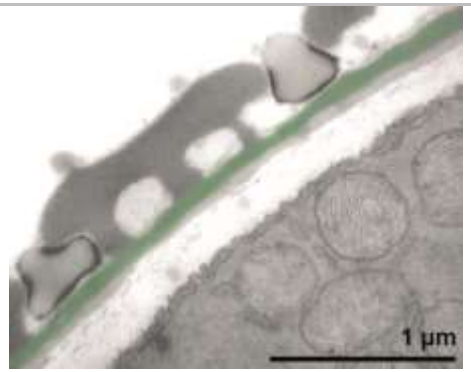
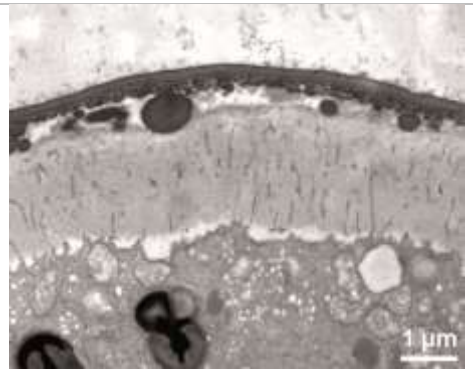
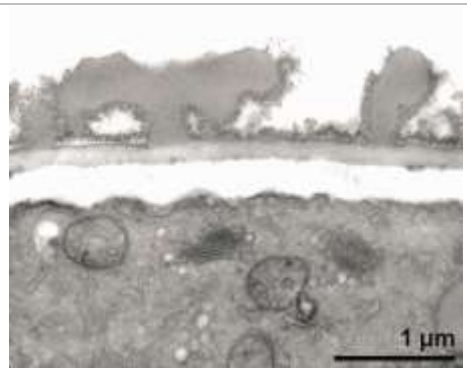
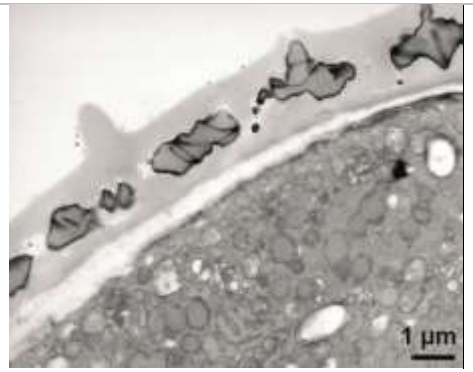
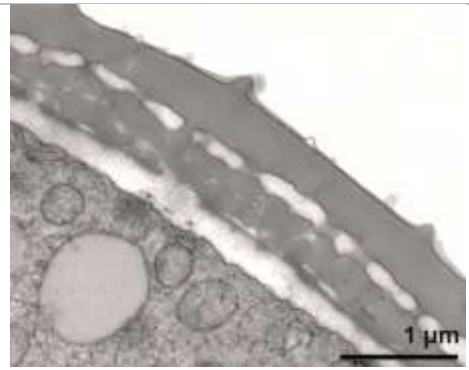
costa (pl. costae), **costate**	thickening of the nexine/endexine bordering an endoaperture	 *Nyssa* sp. (fossil)		
croton pattern	special type of reticulum cristatum formed by regularly arranged sculpture elements on muri	 *Croton triqueter*	 *Jatropha podagrica*	
cup-shaped	characteristic shape of pollen grains caused by infoldings as a consequence of harmomegathy	 *Heliconia* sp. (dry pollen)	 *Tsuga canadensis* (dry pollen)	

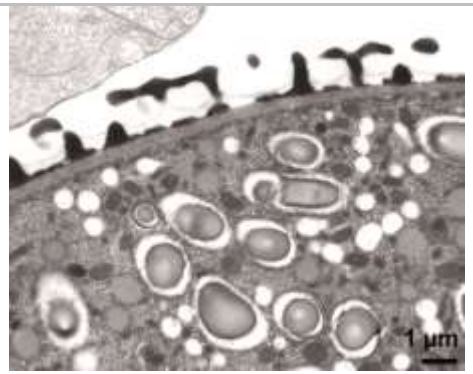
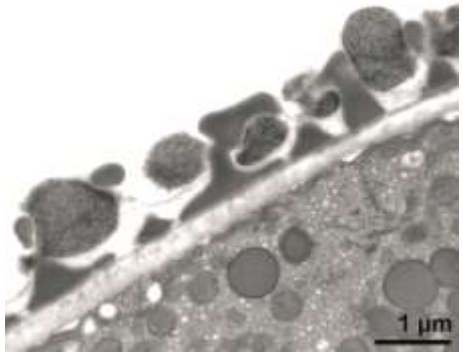
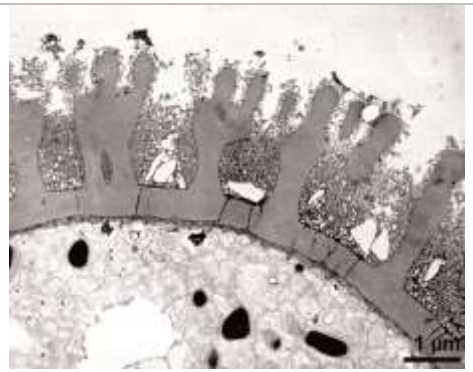
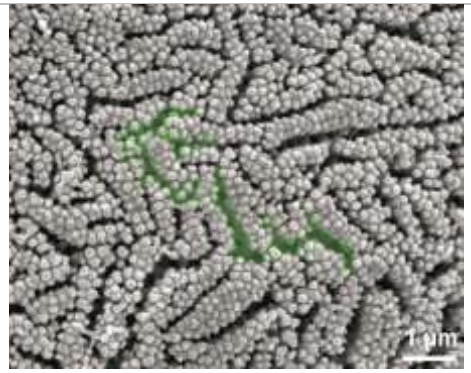
di-	prefix meaning 2 (dicolpate, dicolporate, diporate, disulcate)		
dicolpate	pollen grain with 2 colpi	 *Chimonanthus praecox* (polar view)	 *Pedicularis elongata* (polar view)
dicolporate	pollen grain with 2 colpori	 *Justicia xylosteoides*	 *Justicia procumbens*
diporate	pollen grain with 2 pori	 *Colchicum autumnale*	 *Quesnelia augusto-coburgii*
dispersal unit	unit in which pollen is shed (monad, dyad, tetrad, polyad, massula, pollinium, pollinarium)		

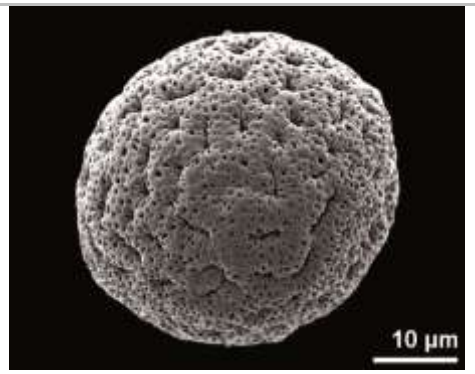
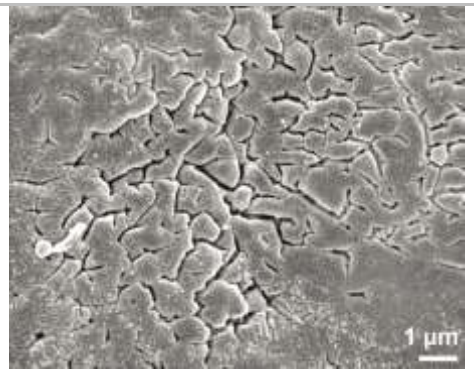
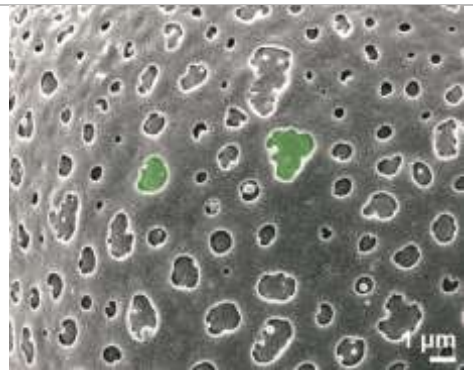
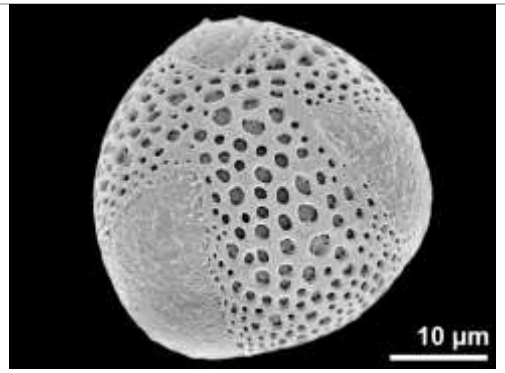
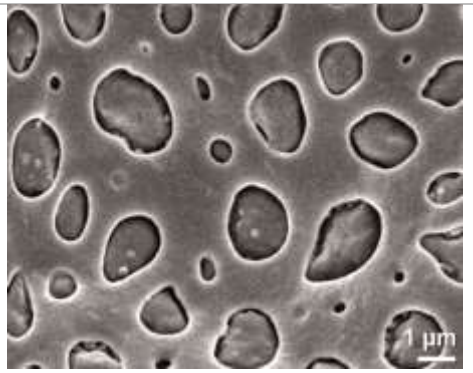
disulcate	pollen grain with 2 sulci	 *Tofieldia calyculata*	 *Uvularia grandiflora* (dry pollen)
dyad	dispersal unit of 2 pollen grains	 *Scheuchzeria palustris*	 *Zeylanidium subulatum*
echinate	pollen wall with echini	 *Bellis perennis* (dry pollen)	 *Hibiscus trionum*

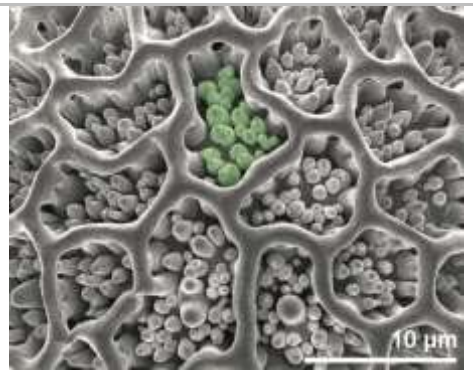
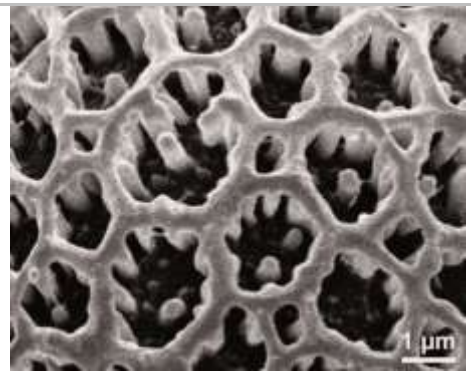
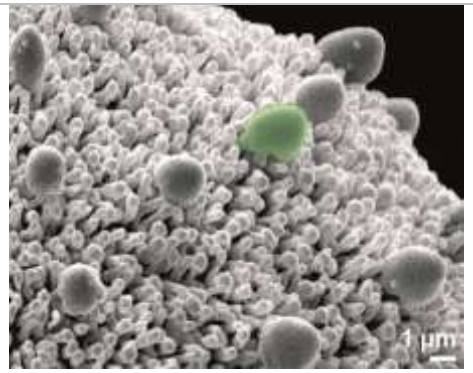
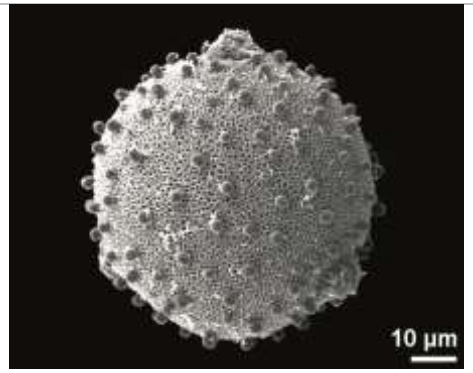
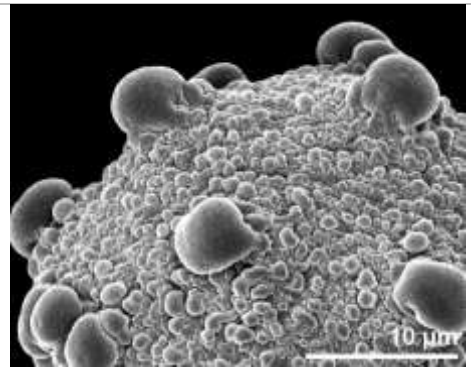
echinus (pl. echini)	pointed ornamentation element longer and/or wider than 1 µm	 *Galinsoga ciliata*
endexine	distinct exine layer between ektexine and intine; endexine can be compact, spongy or lamellar as well as continuous, discontinuous, absent or in aperture only	
endexine absent		 *Brassica napus*  *Chenopodium album*
endexine compact		 *Odontites luteus* (compact, continuous)  *Ranunculus trichophyllos* (compact, discontinuous)

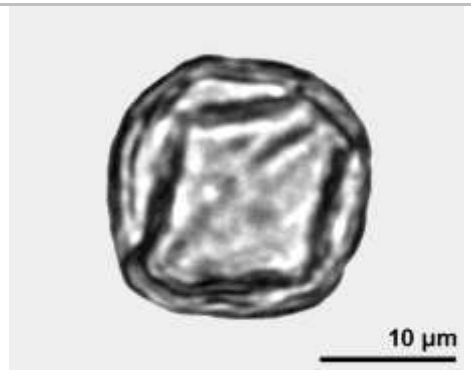
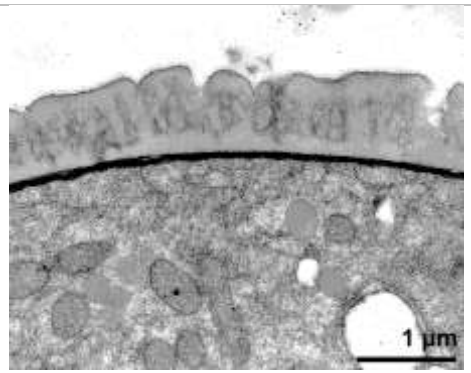
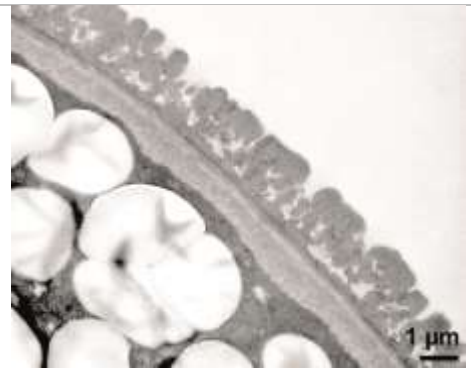
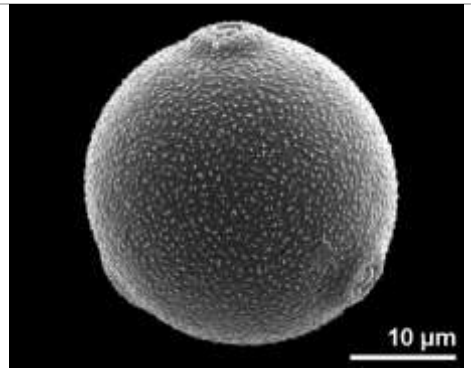
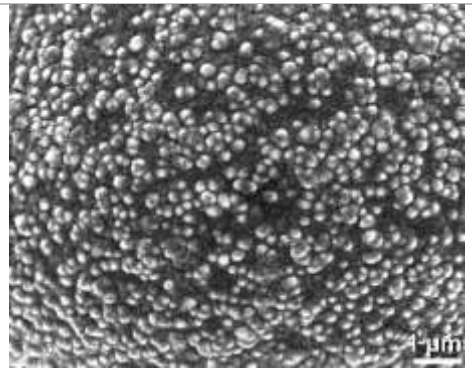
endexine spongy		 *Pistia stratiotes* (spongy, continuous)	 *Spathiphyllum blandum* (spongy, continuous)
endexine lamellar		 *Thalictrum flavum* (lamellar, continuous)	 *Orobanche hederae* (spongy, continuous)
eutectate	pollen grain with a continuous tectum	 *Plantago maritima*	 *Apium nodiflorum*

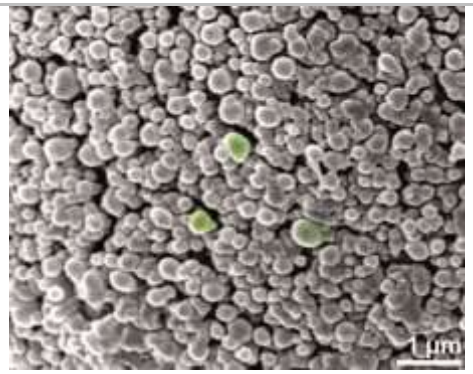
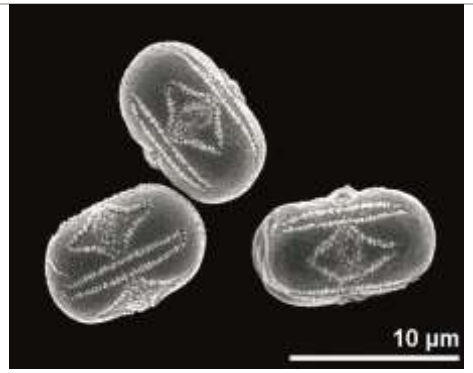
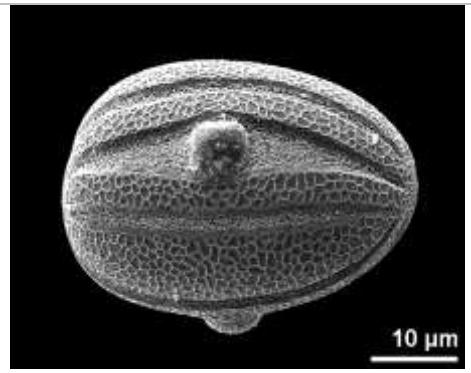
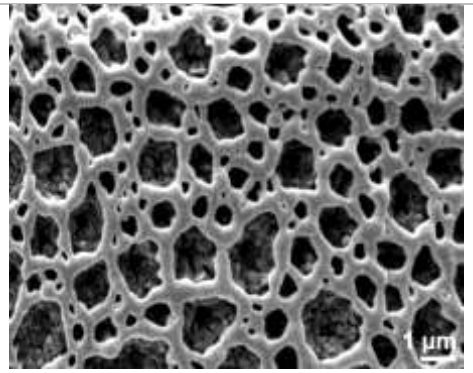
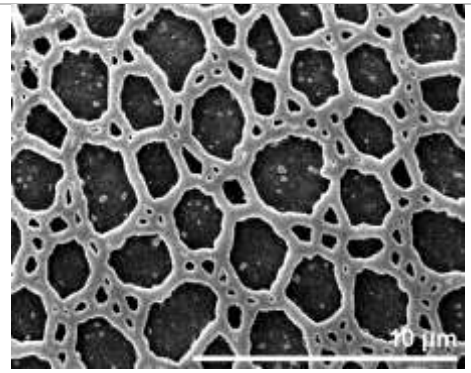
foot layer	inner layer of the ektexine; foot layer can be continuous, discontinuous, perforated or absent	 *Microrrhinum minus*	
foot layer absent		 *Pachypodium succulentum*	 *Fraxinus excelsior*
foot layer continuous		 *Cereus* sp.	 *Plantago maritima*

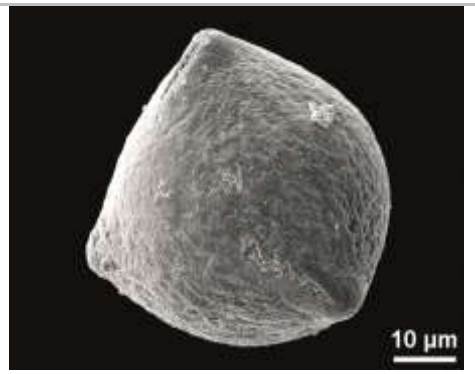
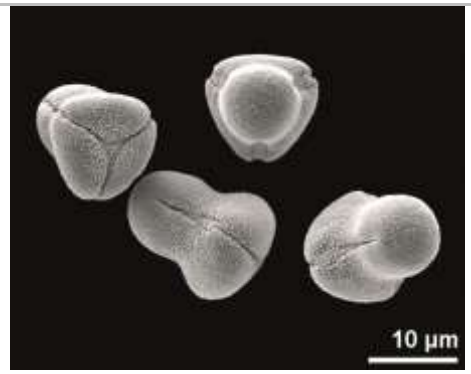
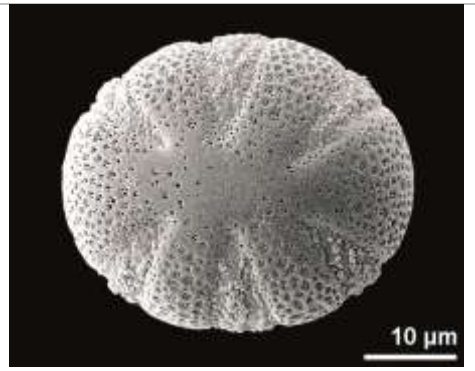
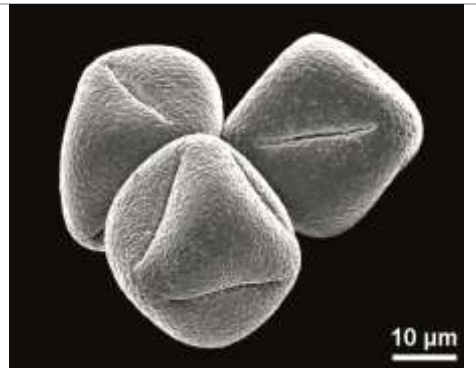
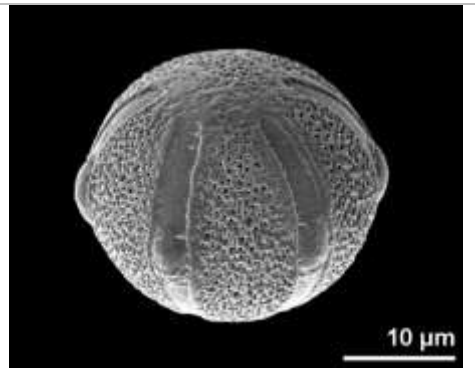
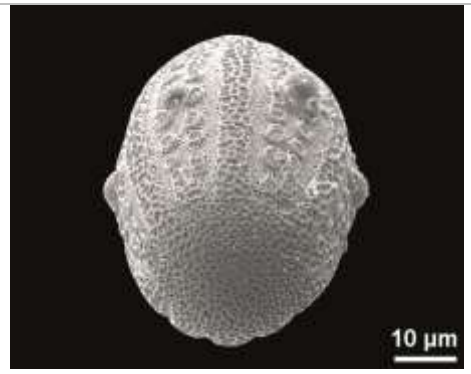
foot layer discontinuous		 *Acinos alpinus*	 *Clinopodium vulgare*
foot layer perforated		 *Geranium robertianum*	
fossula (pl. fossulae)	irregularly shaped groove in the surface of a pollen wall	 *Mendoncia albida*	

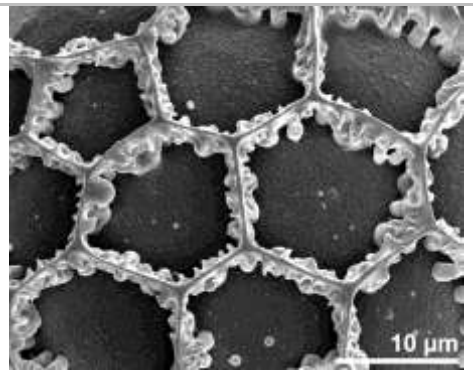
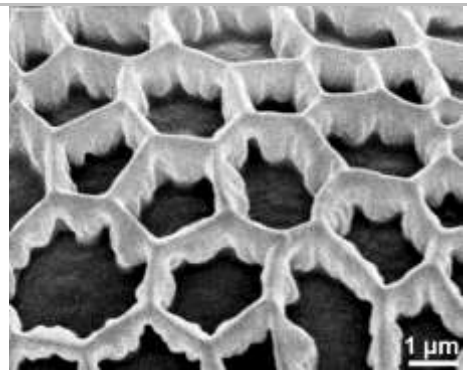
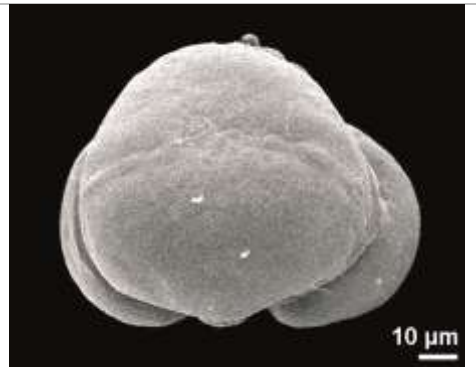
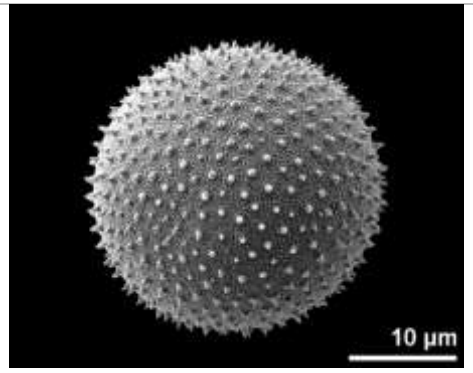
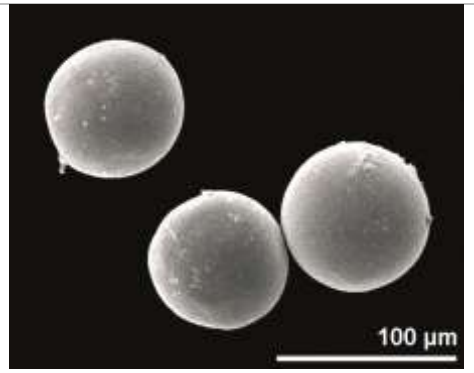
fossulate	pollen wall with fossulae	 *Aristolochia manshuriensis*	 *Rhododendron hirsutum*
foveola (pl. foveolae)	roundish lumen more than 1 µm in diameter; distance between two adjacent lumina larger than their diameter	 *Streptocalyx poeppigii*	
foveolate	pollen wall with foveolae	 *Averrhoa bilimbi*	 *Canistrum camacaense*

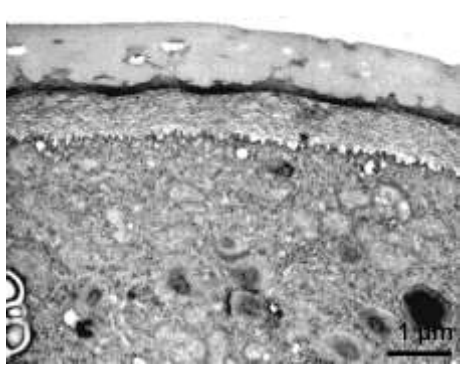
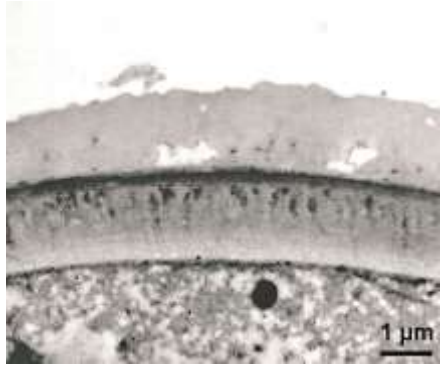
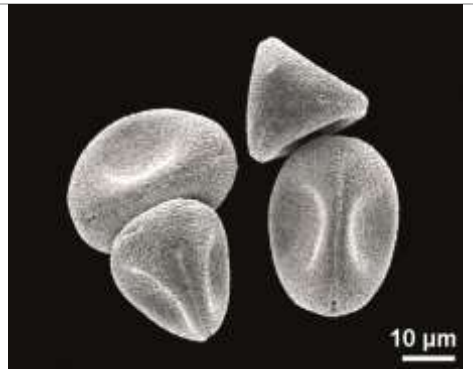
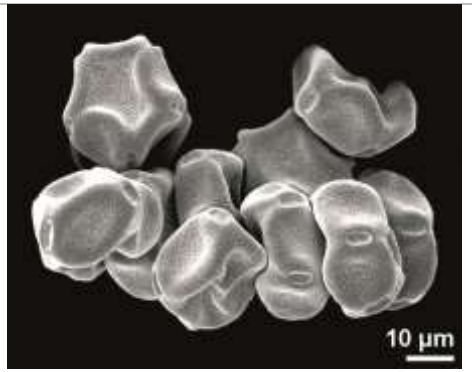
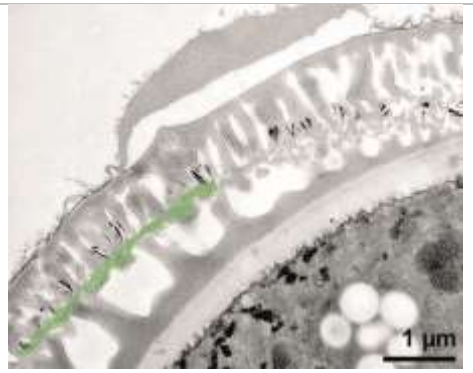
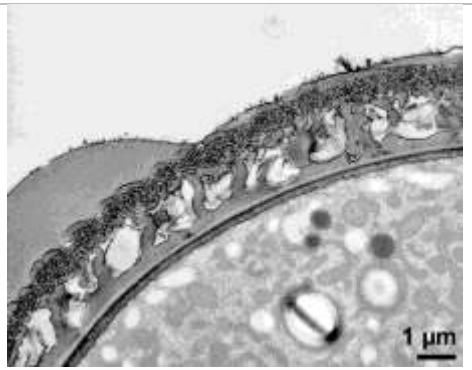
free-standing columellae	columellae in the infratectal layer not covered by a tectum in semitectate pollen grains	 *Dipteracanthus devosianus*	 *Erophila verna*
gemma (pl. gemmae)	globular exine element more than 1 µm in diameter	 *Dionaea muscipula*	
gemmate	pollen wall with gemmae	 *Cephalopentandra ecirrhosa*	 *Stenandrium dulce*

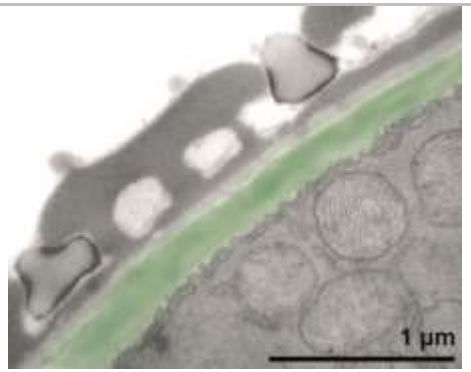
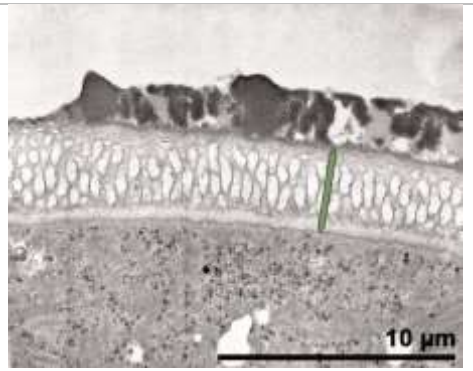
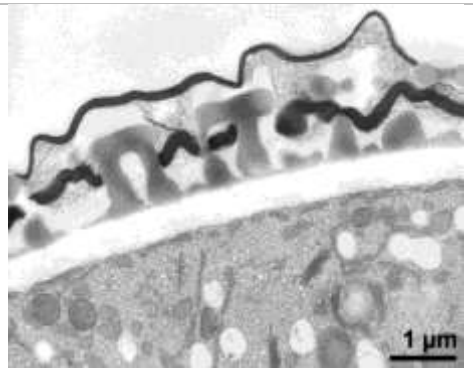
geniculum (pl. genicula)	bulge of a colpus in the equatorial region of a pollen grain	 *Quercus* sp. (fossil)
granular	infratectum composed of granula, clusters of granula or elements of different size and shape (never solid and rod-like) *Comment:* Not to be confused with "granulate", which is a type of ornamentation.	 *Amydrium medium*  *Viola tricolor*
granulate	pollen wall with granula *Comment:* Not to be confused with "granular", which is a feature of the pollen wall structure.	 *Betula humilis*  *Humulus lupulus*

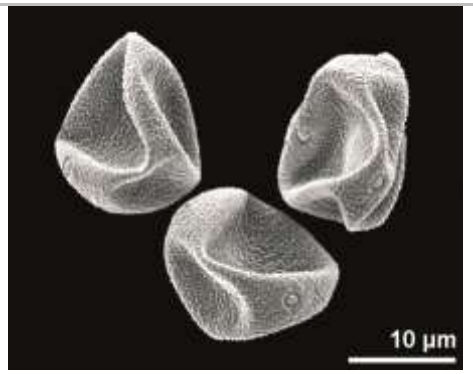
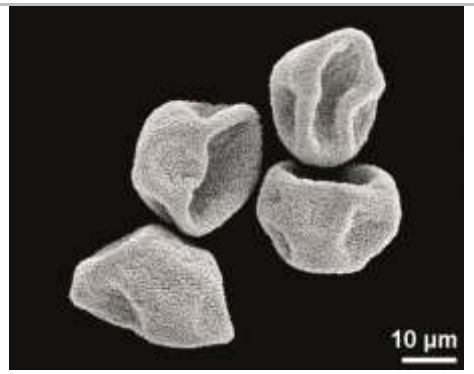
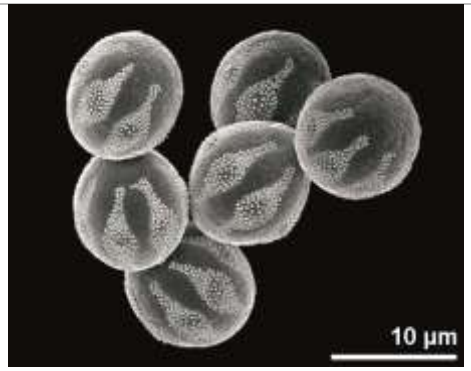
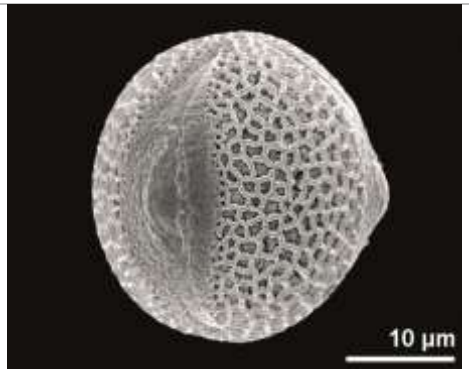
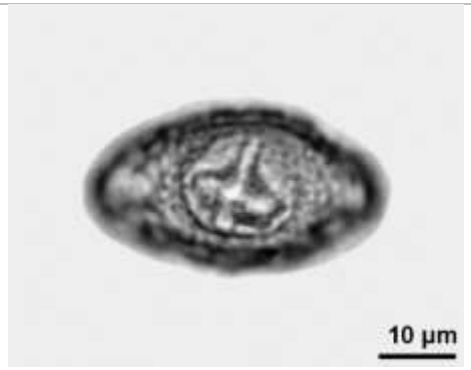
granulum (pl granula)	structure- or sculpture element of different size and shape; smaller than 1 µm	 *Rhaphidophora africana*	
heteroaperturate	pollen grain with two different types of apertures; only one type presumed to function as a germination site *Comment:* Colpori and colpi alternate, the colpi are also called pseudocolpi because they do not function as germination sites.	 *Myosotis ramosissima*	 *Tetramerium nervosum*
heterobrochate	reticulate pollen wall with lumina of different sizes *Comment:* The term should be used when the feature is remarkably expressed.	 *Anthericum ramosum*	 *Fritillaria meleagris*

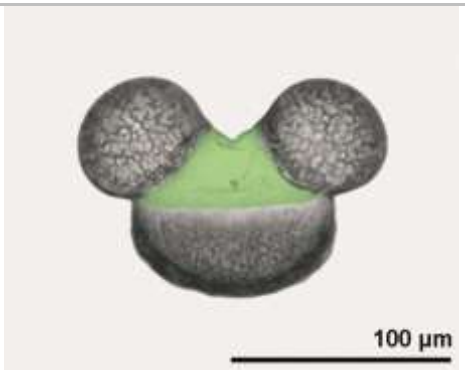
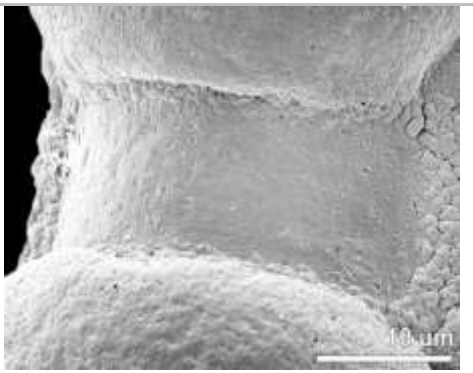
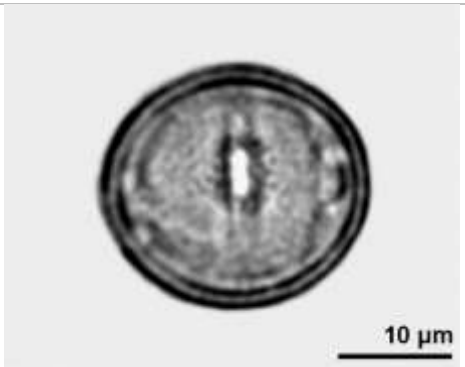
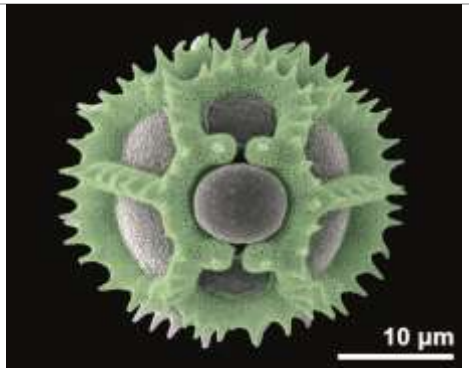
heteropolar	pollen grain with different proximal and distal faces	 *Elaeagnus angustifolia*	 *Onosma visianii*
hexa-	prefix meaning 6		
hexacolpate	a pollen grain with 6 colpi	 *Salvia austriaca*	 *Sideritis syriacus* (dry pollen)
hexacolporate	a pollen grain with 6 colpori	 *Pinguicula ehlersiae*	 *Justicia menesii*

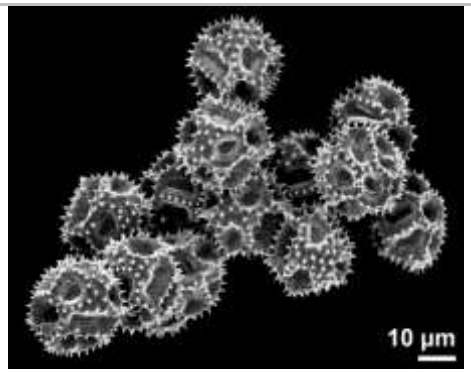
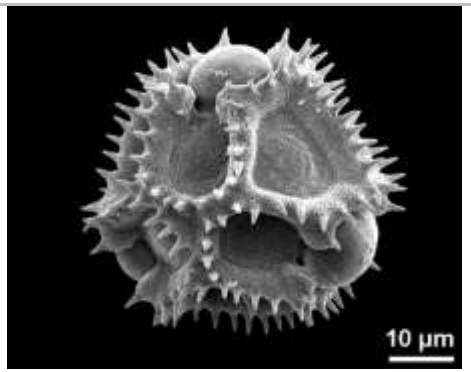
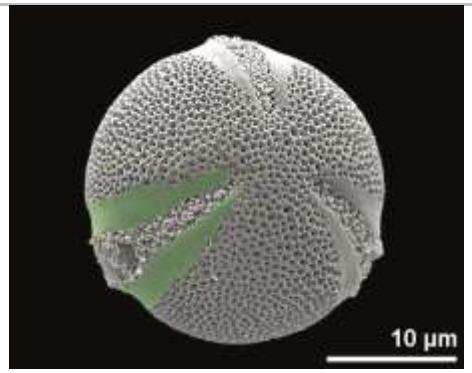
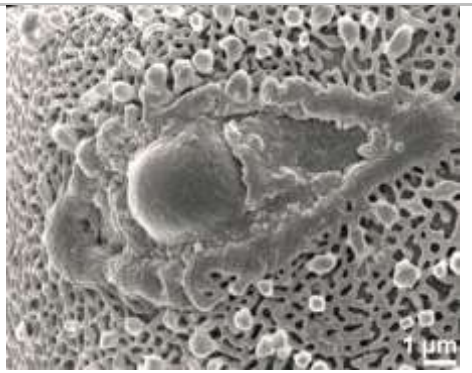
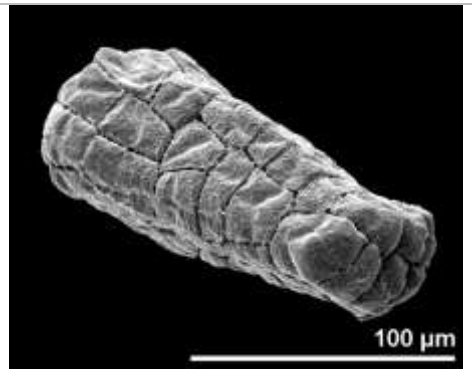
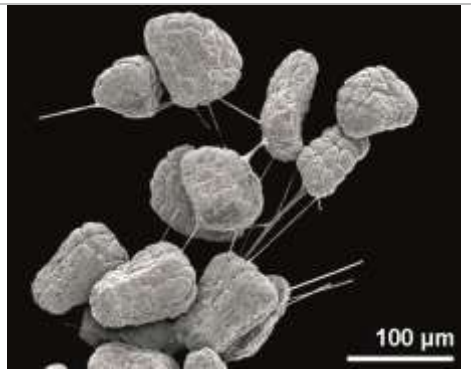
homobrochate	reticulate pollen wall with lumina of uniform size *Comment:* The term should be used when the feature is remarkably expressed.	 *Ruellia graecizans*	 *Abeliophyllum distichum*
impression mark	a linear or Y-shaped mark on the proximal polar area of a pollen grain retained from the tetrad stage	 *Larix* sp. (fossil, polar proximal view)	 *Abies cephalonica* (polar proximal view)
inaperturate	pollen grain without distinct apertures	 *Phoebe sheareri*	 *Hedychium gardnerianum*
infoldings	a consequence of harmomegathy in dry pollen (e.g. aperture sunken, interapertural area sunken, irregularly infolded)		
infratectum	layer between tectum and foot layer or endexine (if foot layer is missing); infratectum can be alveolate, columellate, granular or absent; *see:* alveolate, columellate, granular		

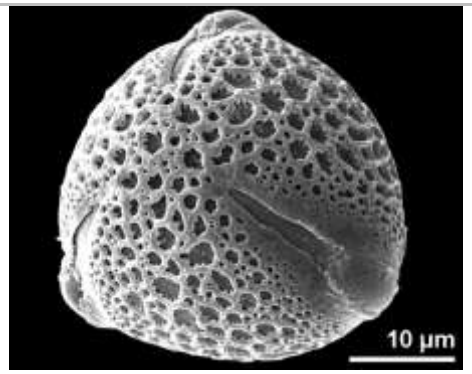
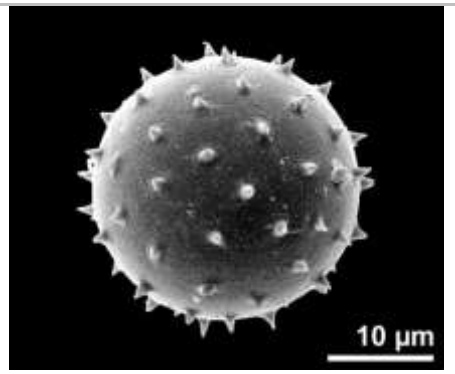
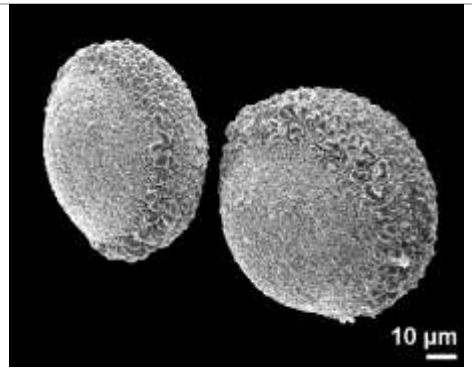
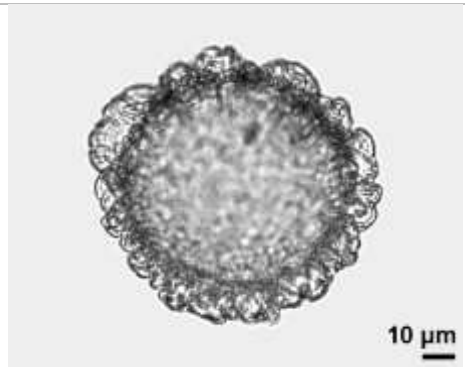
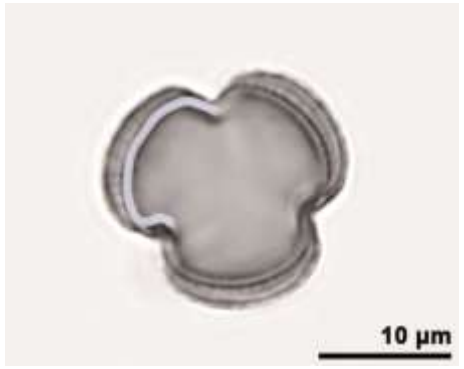
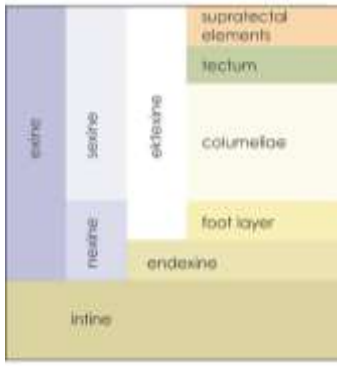
infratectum absent		 *Mahonia aquifolium*	 *Dieffenbachia humilis*
interapertural area	region between apertures		
interapertural area sunken	infoldings of dry pollen as a consequence of harmomegathy	 *Odontites luteus*	 *Alnus glutinosa*
internal tectum	layer between foot layer and tectum, separated from them by columellae	 *Centaurea cyanus*	 *Agrimonia eupatoria*

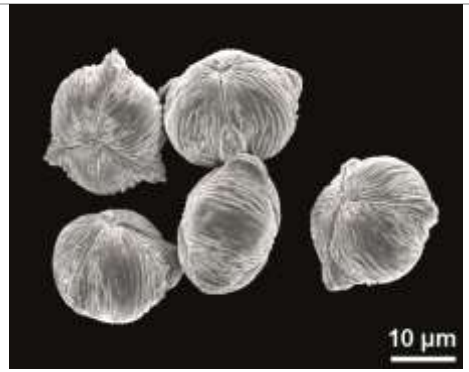
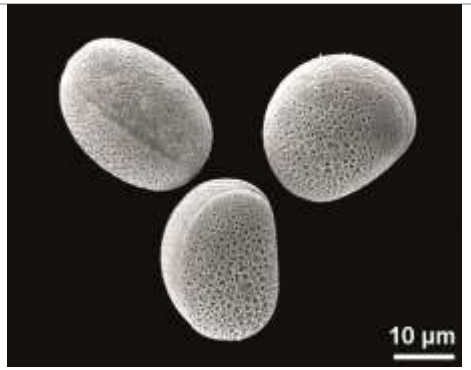
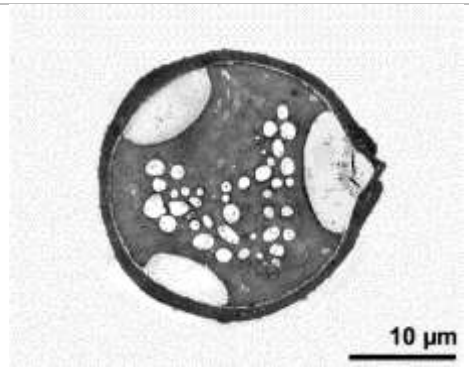
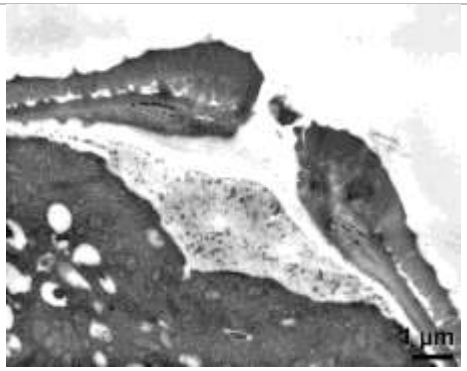
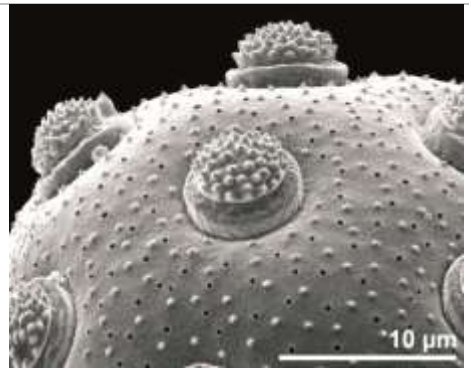
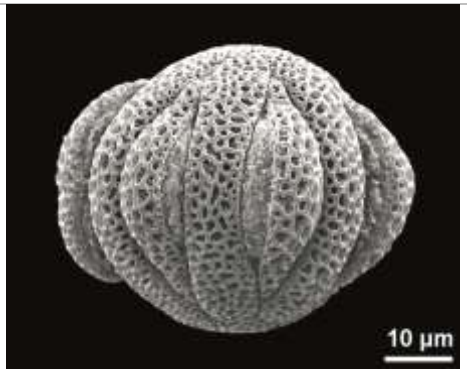
intine	part of the pollen wall next to the cytoplasm, mainly consisting of polysaccharides; intine can be mono- or bilayered	 *Microrrhinum minus*
intine bilayered	ektintine with channels, endintine homogenous	 *Dieffenbachia humilis*
intine monolayered		 *Acinos alpinus* (electron-lucent layer)

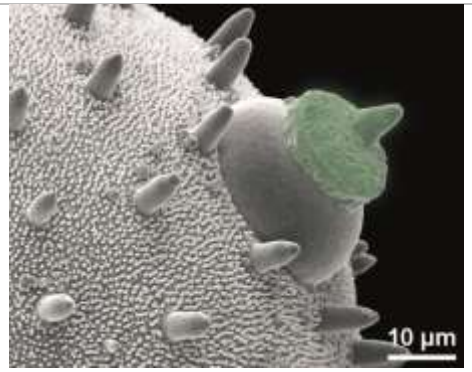
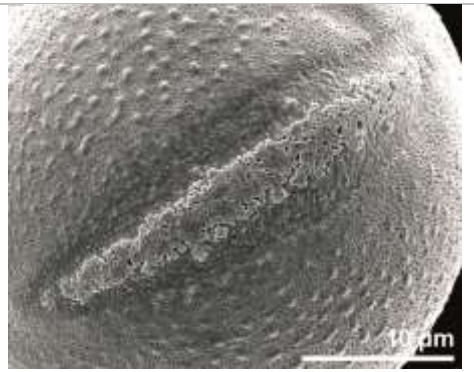
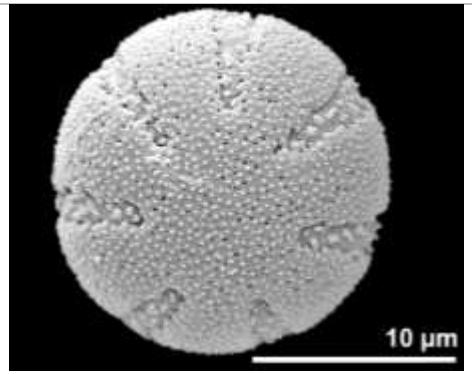
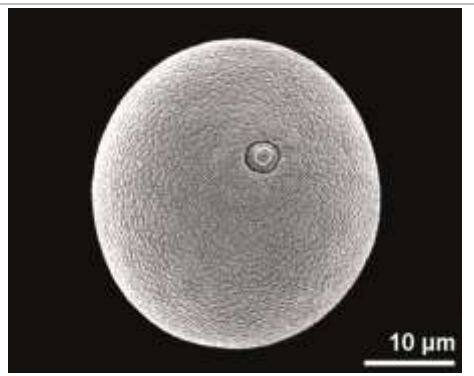
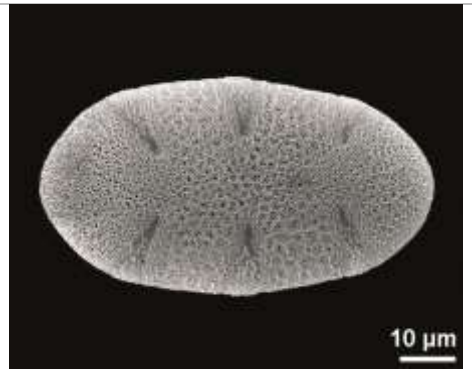
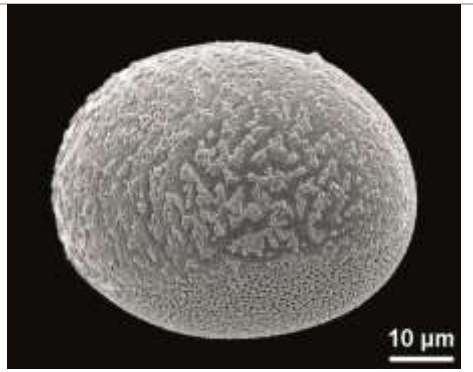
irregularly infolded	infoldings of dry pollen as a consequence of harmomegathy	 *Urtica dioica*	 *Populus alba*
isopolar	pollen grain with identical proximal and distal faces	 *Moltkia petraea*	 *Viburnum tinus*
lalongate	endoaperture elongated equatorially	 *Symplocos* (fossil)	 *Dictamnus albus*

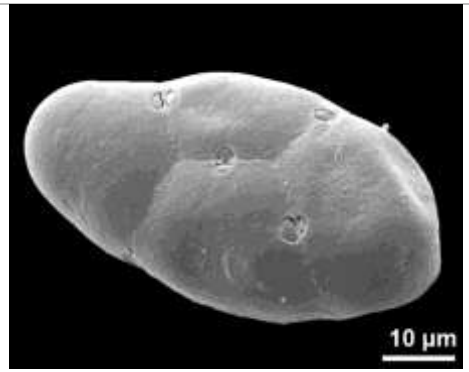
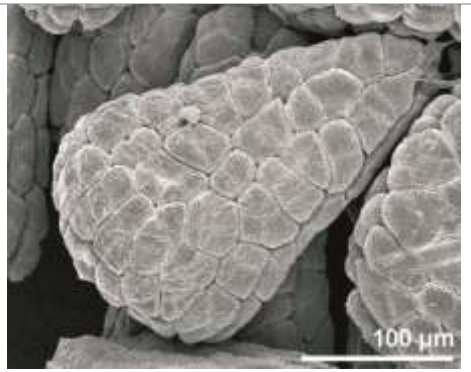
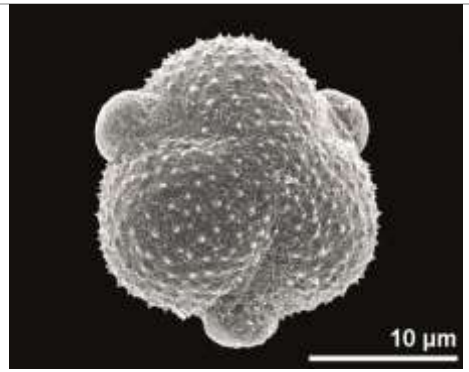
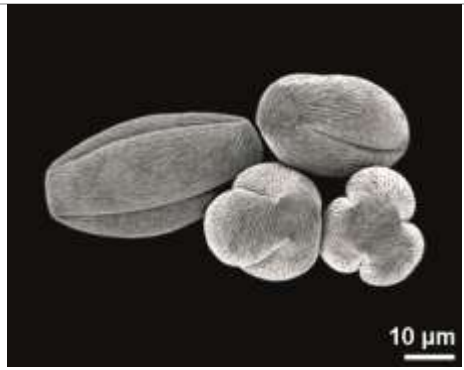
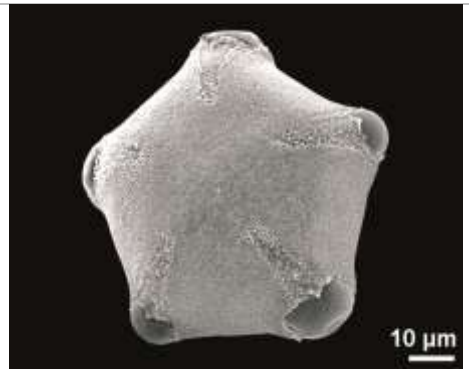
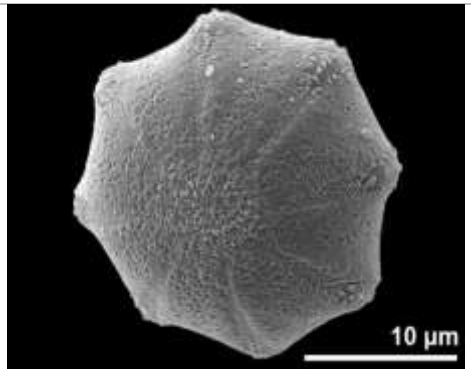
leptoma (pl. leptomata)	thinning of the pollen wall at the distal pole (of a pollen grain) in conifers, presumed to function as germination area	 *Abies* sp. (fossil)	 *Pinus strobus*
lolongate	endoaperture elongated meridionally	 *Rumex* sp. (fossil)	
lophae (sing. lopha)	a network-like pattern of ridges (=lophae) formed by the outer exine surrounding window-like spaces or depressions (=lacunae)	 *Leontodon saxatilis*	

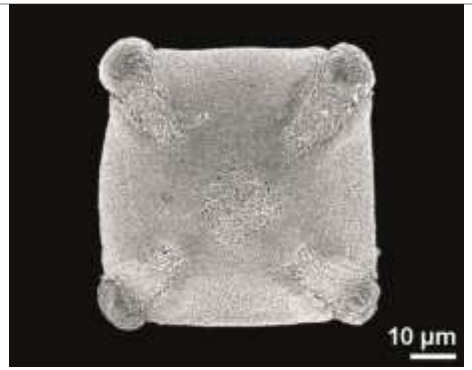
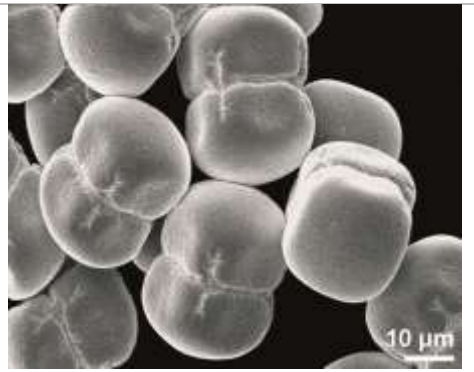
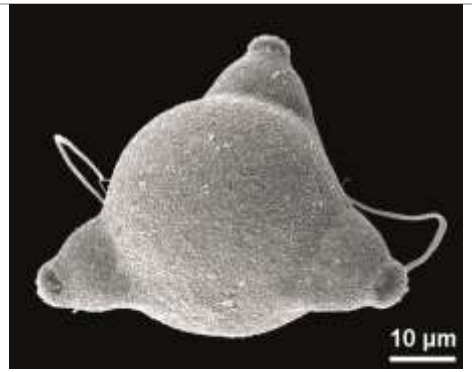
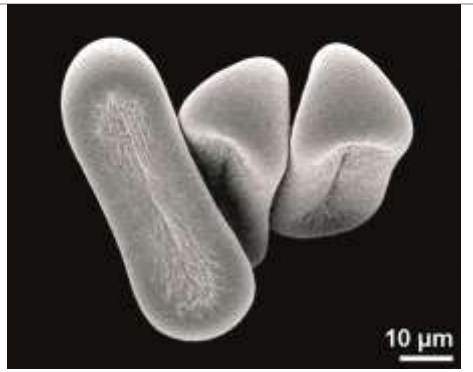
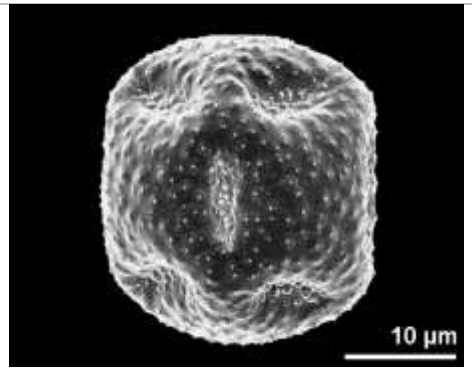
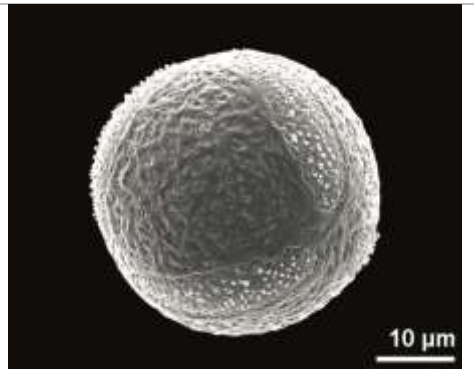
lophate	pollen wall with lophae	 *Hieracium hoppeanum* (dry pollen)	 *Cichorium intybus*
margo (pl. margines)	exine area surrounding an aperture and differentiated in ornamentation	 *Discocleidion rufescens*	 *Fatsia japonica*
massula (pl. massulae)	dispersal unit of more than 4 pollen grains and fewer than the locular content	 *Platanthera bifolia*	 *Nigritella rhellicani*
micro-	prefix meaning small; features smaller as 1 µm: -baculate, -clavate, -echinate, -gemmate, -rugulate, -reticulate, -verrucate		

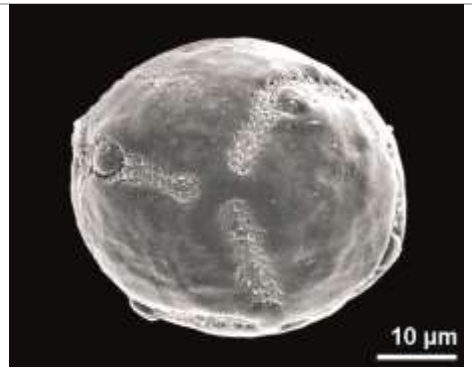
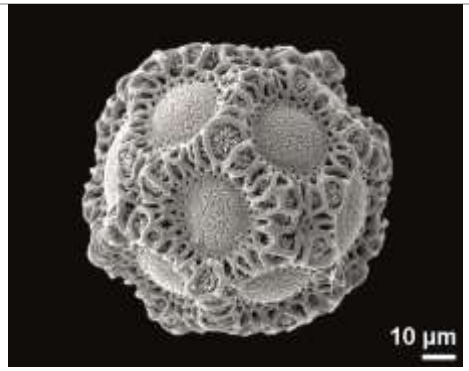
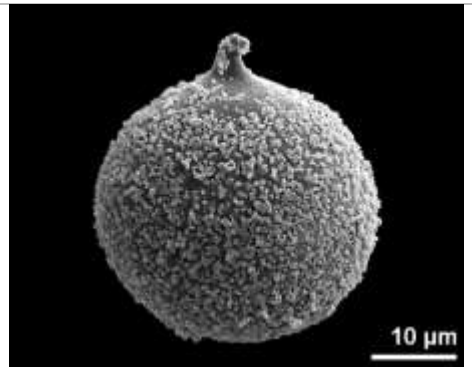
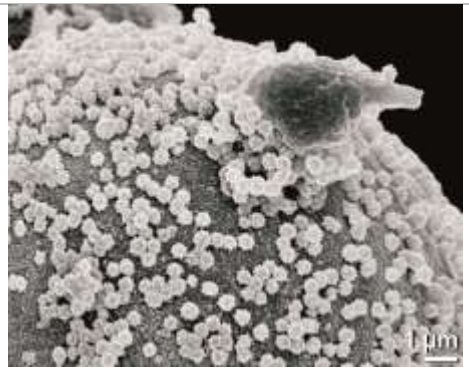
monad	dispersal unit consisting of a single pollen grain	 *Hedera helix*	 *Alocasia brisbanensis*
monosaccate	pollen grain with a single saccus	 *Tsuga canadensis*	 *Tsuga canadensis*
nexine	term used for light microscopy, describing the inner, unstructured layer/part of the exine	 *Artemisia* sp.	

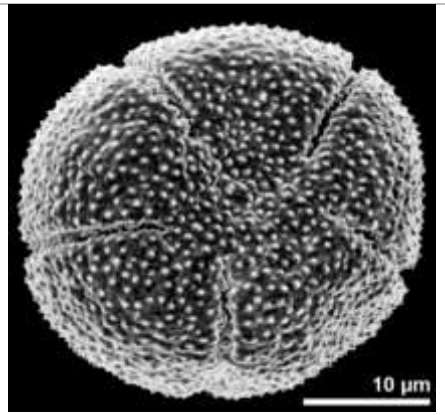
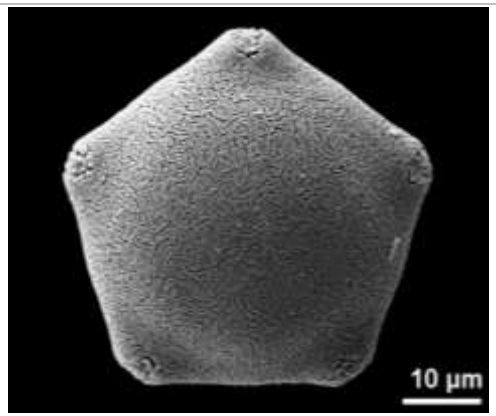
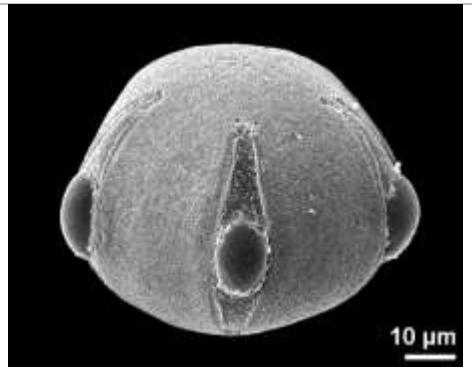
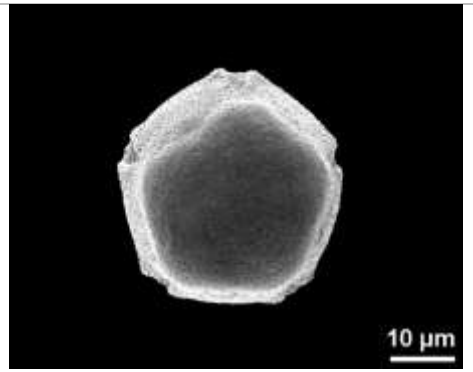
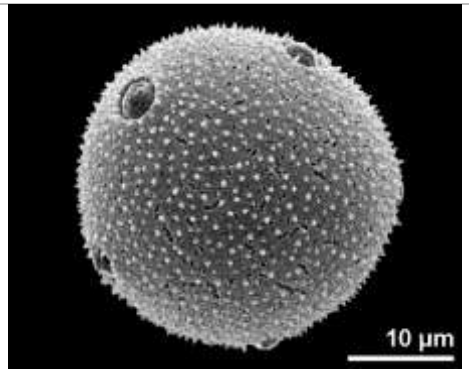
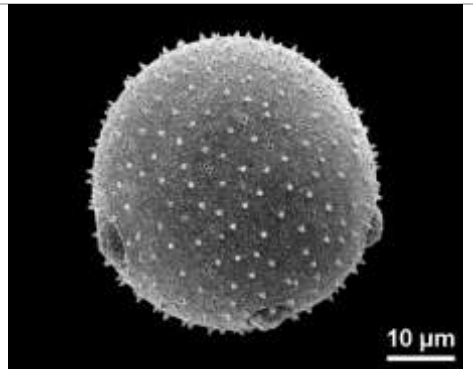
oblate	pollen grain with a polar axis shorter than the equatorial diameter	 *Cuphea purpurea*	 *Lachenalia aloides*
oncus (pl. onci)	lens-shaped body located in the apertural region	 *Corylus avellana*	 *Betula humilis*
operculate	aperture(s) with operculum (opercula)	 *Agrostemma githago*	 *Passiflora suberosa*

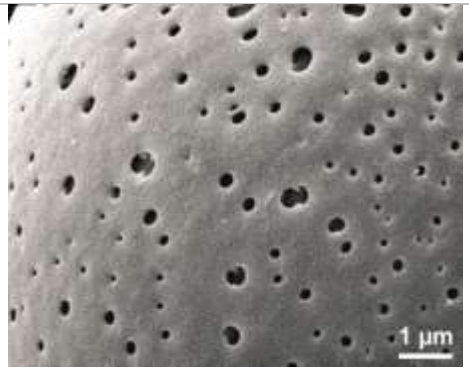
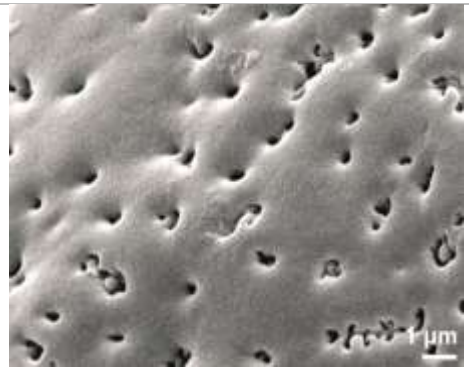
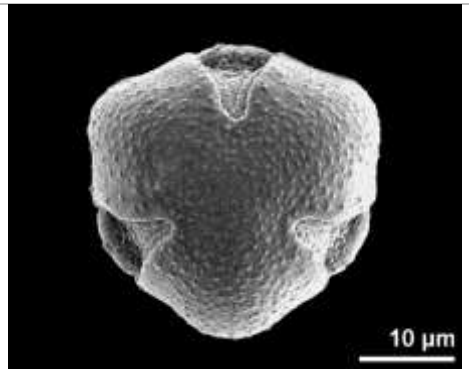
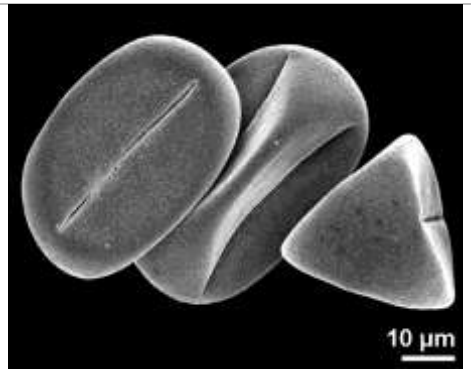
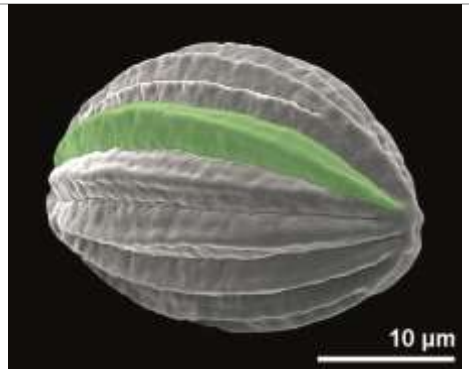
operculum (pl. opercula)	coherent exine structure covering an aperture	 *Cucurbita pepo*	 *Teucrium pyrenaicum*
ornamentation	general term, applied in palynology to surface features		
outline	general term used to describe the contour of pollen grains in polar and/or equatorial view (circular, elliptic, triangular, quadrangular, polygonal, irregular, lobate)		
outline circular **(polar view)**		 *Galium verum*	 *Phleum pratense*
outline elliptic **(polar view)**		 *Salvia coccinea*	 *Gagea villosa*

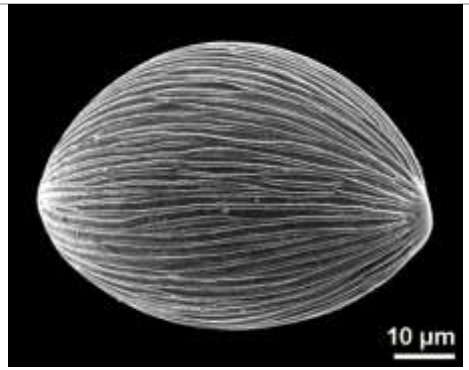
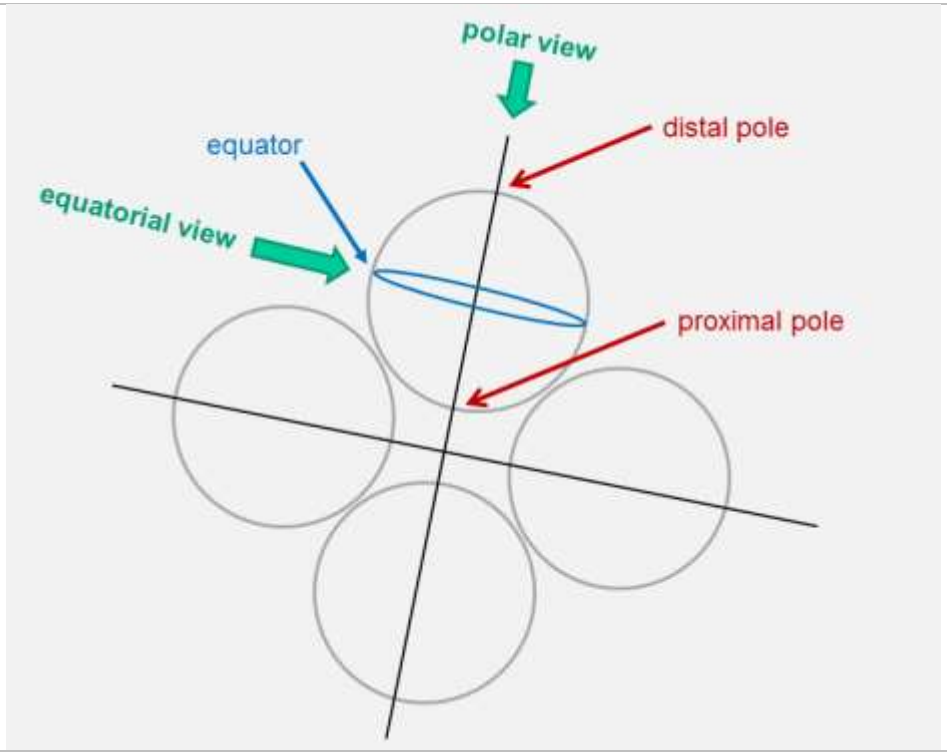
outline irregular		
	Periploca gracilis (tetrad)	*Anteriorchis coriophora*
outline lobate (polar view)		
	Artemisia pontica	*Acer pseudoplatanus* (dry pollen)
outline polygonal (polar view)		
	Viola arvensis	*Sarracenia alata*

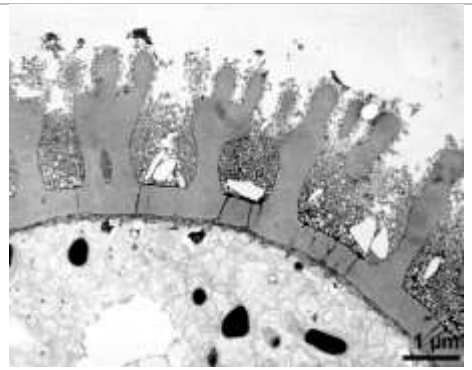
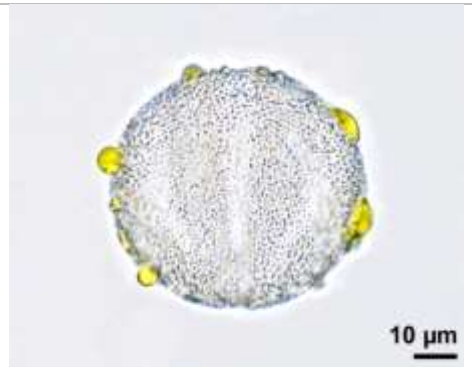
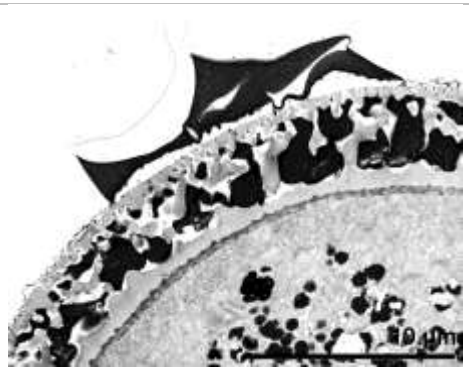
outline quadrangular (polar view)	 *Viola tricolor*	 *Anchusa officinalis* (dry pollen)
outline triangular (polar view)	 *Circaea lutetiana*	 *Orlaya grandiflora* (dry pollen)
panto-	prefix meaning globally distributed	
pantoaperturate	pollen grain with apertures distributed more or less regularly over the whole surface	
pantocolpate	pollen grain with colpi distributed more or less regularly over the whole surface	 *Ranunculus lanuginosus* (dry pollen)
		 *Corydalis cava*

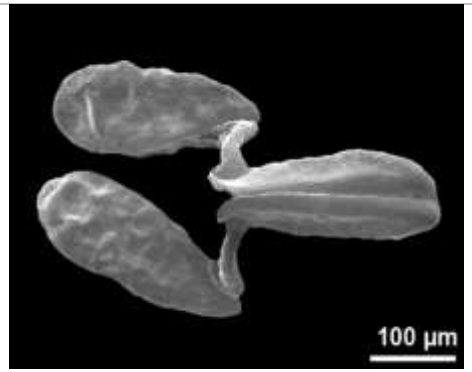
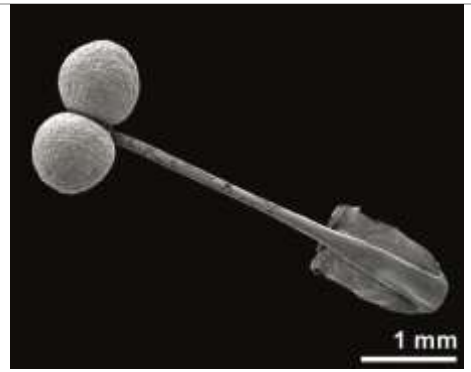
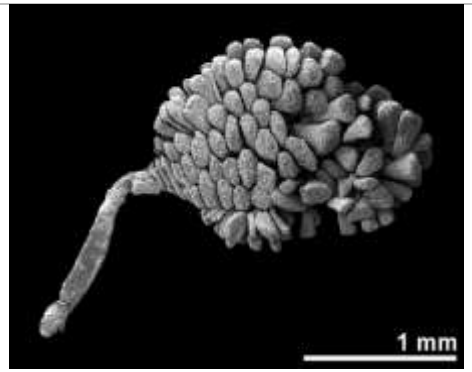
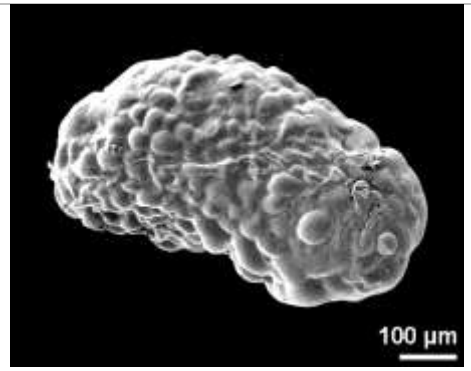
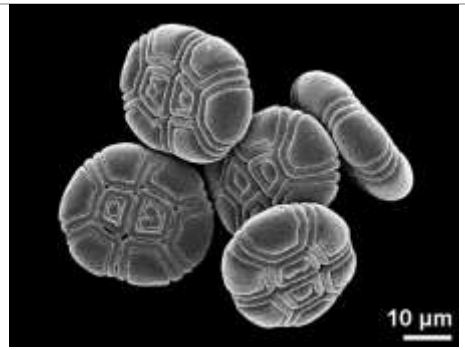
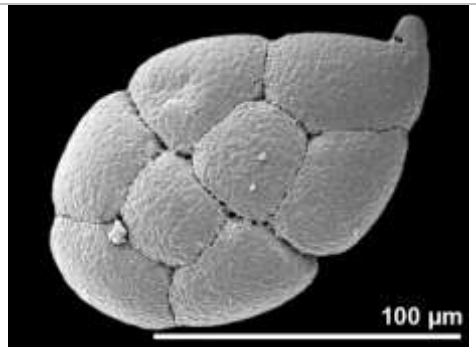
pantocolporate		 *Banisteria argentea*	
pantoporate	pollen grain with pori distributed more or less regularly over the whole surface	 *Costus barbatus*	 *Opuntia phaeacantha*
papilla (pl. papillae)	small protuberance typical for Taxodioideae-pollen (Cupressaceae)	 *Cryptomeiria japonica*	 *Metasequoia glyptostroboides*
penta-	prefix meaning 5		

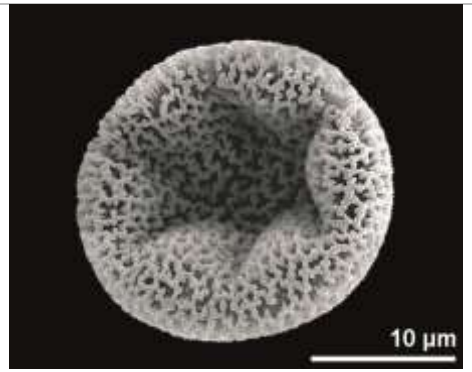
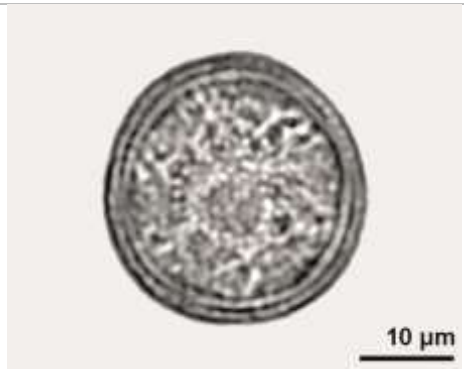
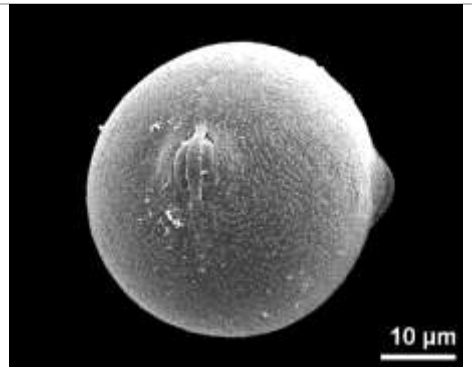
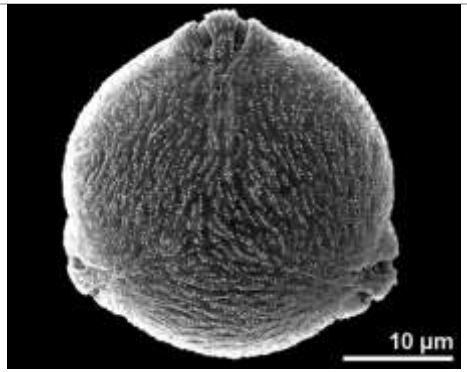
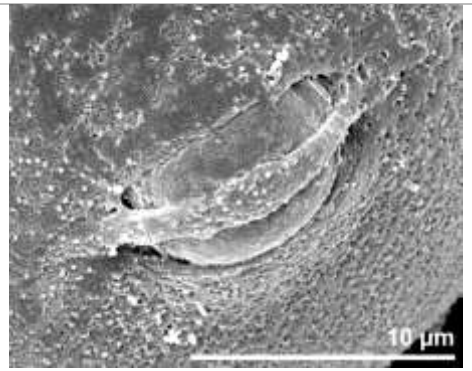
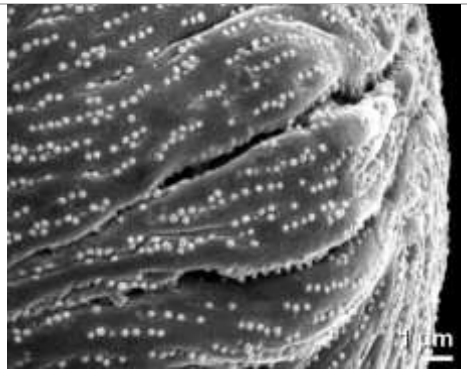
pentacolpate	a pollen grain with 5 colpi	 *Eschscholzia californica*	 *Mendoncia albida*
pentacolporate	a pollen grain with 5 colpori	 *Viola arvensis*	 *Pulmonaria mollissima*
pentaporate	a pollen grain with 5 pori	 *Legousia speculum-veneris*	 *Campanula rapunculoides*

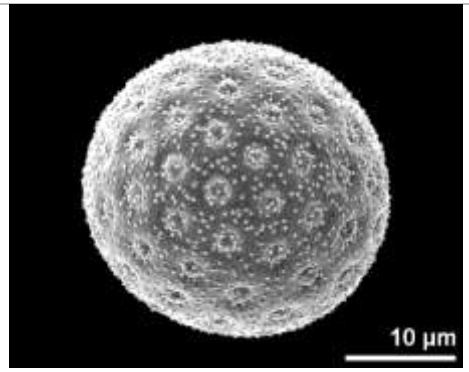
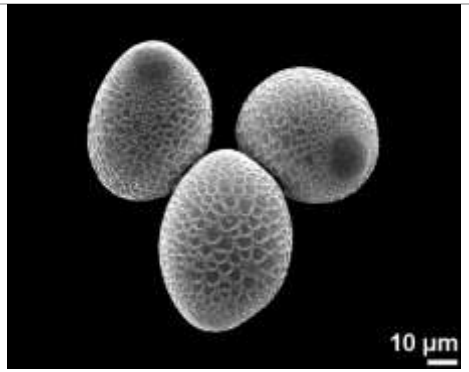
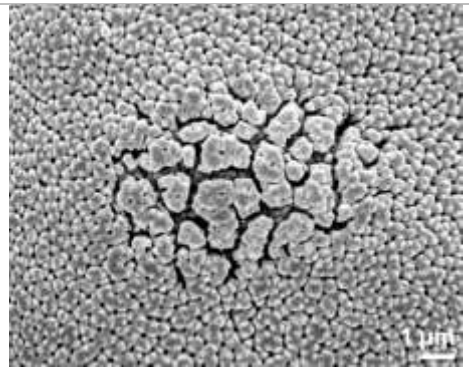
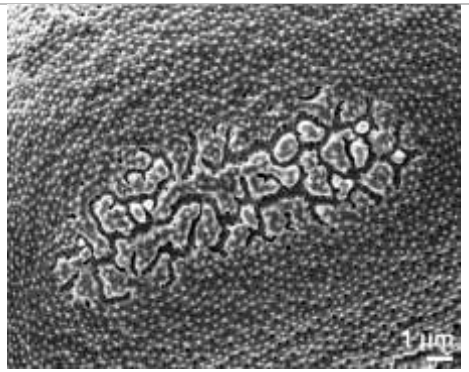
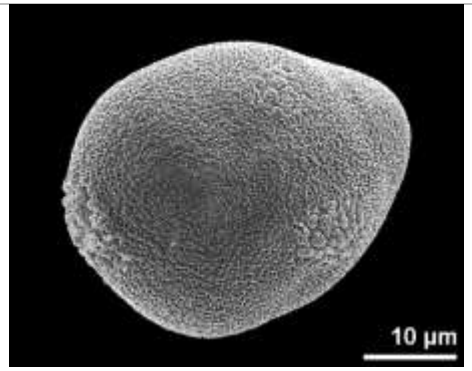
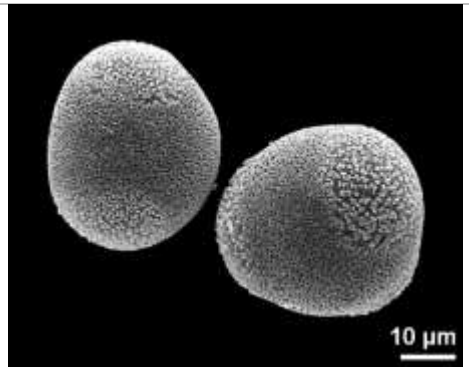
perforate	pollen wall with holes less than 1µm in diameter	 *Pulmonaria officinalis*	 *Gonatopus angustus*
planaperturate	pollen grain with an angular outline, where the apertures are situated in the middle of the sides	 *Centaurea cyanus*	 *Persicaria bistorta* (dry pollen)
plica (pl. plicae)	cirumferential, parallel ridge-like fold	 *Ephedra distachya*	

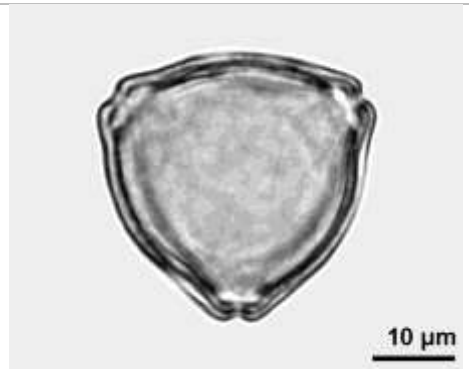
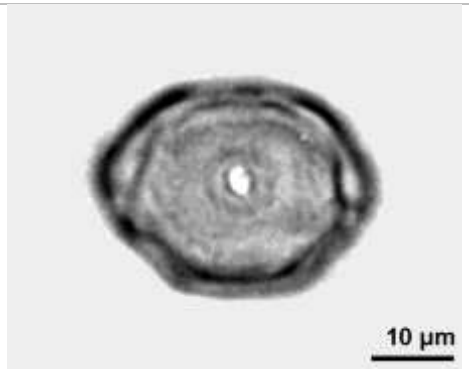
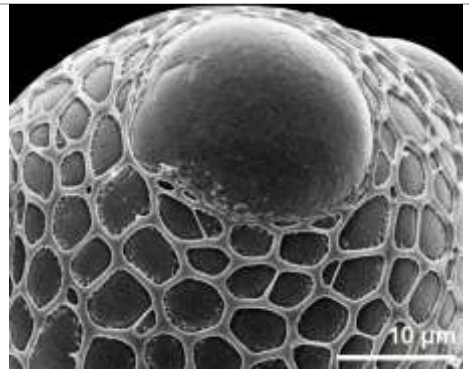
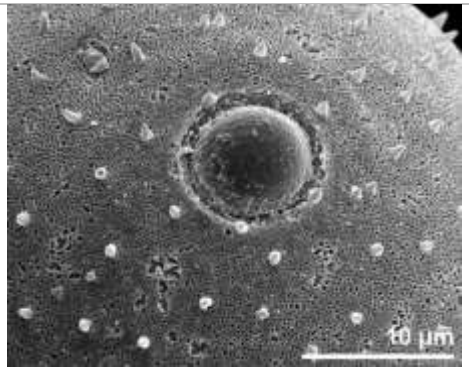
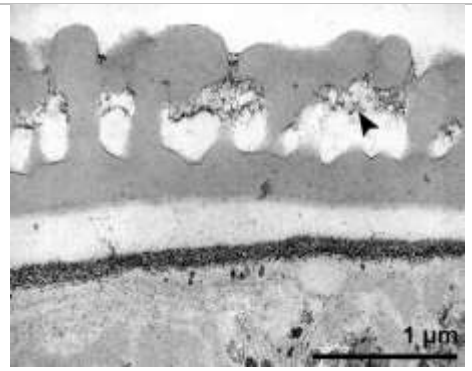
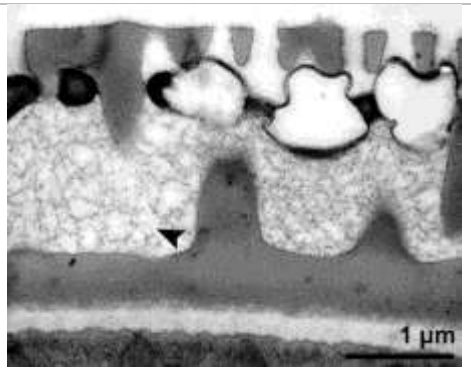
plicate	pollen wall with plicae	 *Pseudodracontium siamense*  *Hemigraphis primulaefolia*
pluricolumellate	reticulate pollen wall with more than one row of columellae beneath a murus	
polar view	view of a pollen grain in which the polar axis is directed towards the observer	
polarity	orientation of a pollen grain determined in tetrad stage	

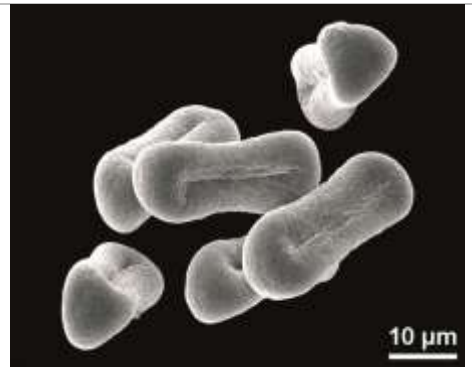
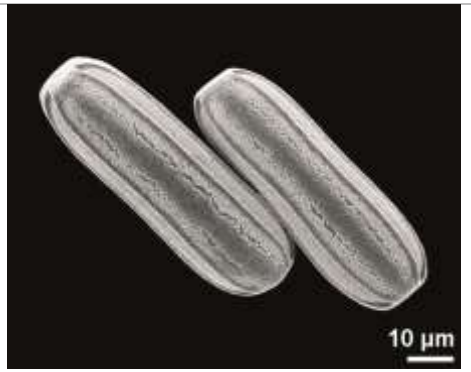
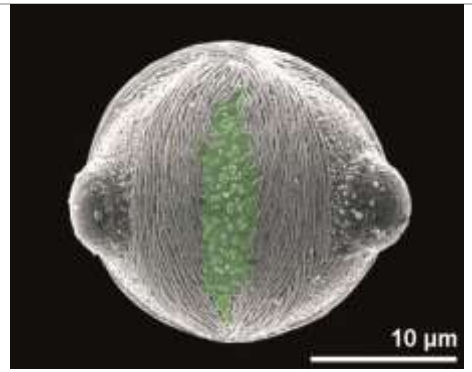
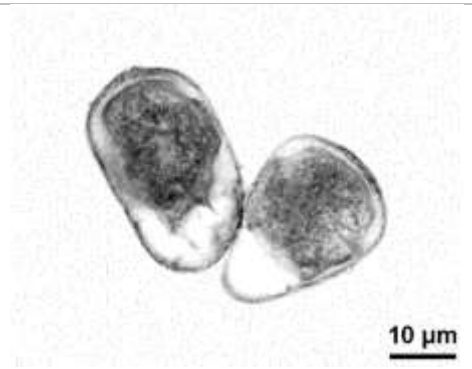
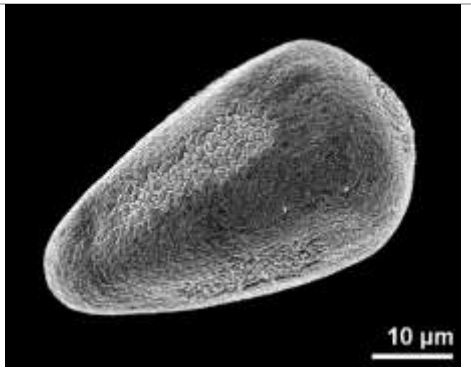
pollen class	artificial grouping of pollen grains that share a single distinctive character; classes include the terms: clypeate, colpate, colporate, dyad, inaperturate, lophate, plicate, polyad, porate, saccate, spiraperturate, sulcate, synaperturate, tetrad, ulcerate	
pollen coating vesicles	pollen coating consisting of polysaccharidic vesicles, e. g. in *Geranium*	 *Geranium* sp.
pollen coatings	general term applied to organic compounds usually produced by the tapetum, located on the exine and/or in exine cavities	
pollenkitt	pollen coating consisting of sticky substances, mainly lipids	 *Salvia nemorosa*  *Nigella arvensis*

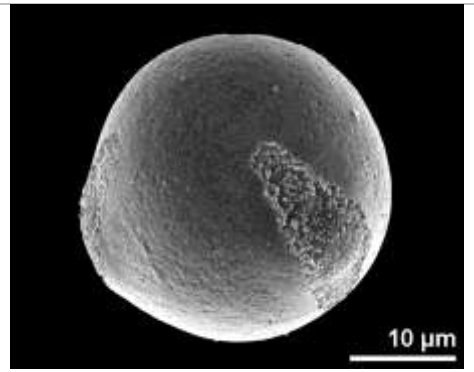
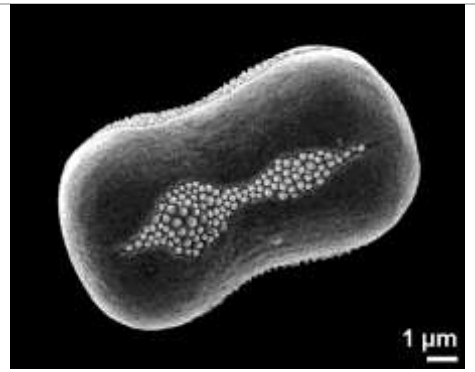
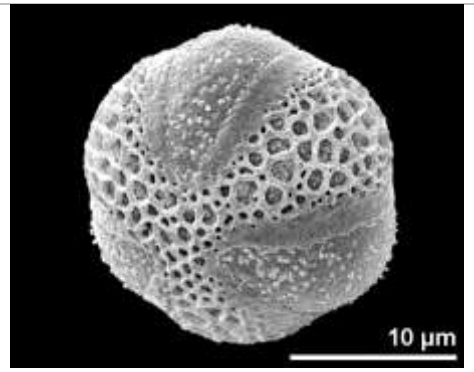
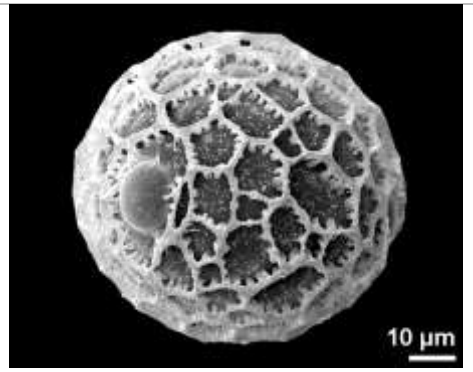
pollinarium (pl. pollinaria)	dispersal unit of pollinium (or pollinia) and a single interconnecting sterile appendage	 *Vincetoxicum hirundinaria*	 *Aerides multiflora*
pollinium (pl. pollinia)	dispersal unit of a more or less interconnected loculiform pollen mass	 *Anteriorchis coriophora*	 *Stephanotis floribunda*
polyad	dispersal unit of more than 4 united pollen grains	 *Acacia myrtifolia*	 *Calliandra emarginata*

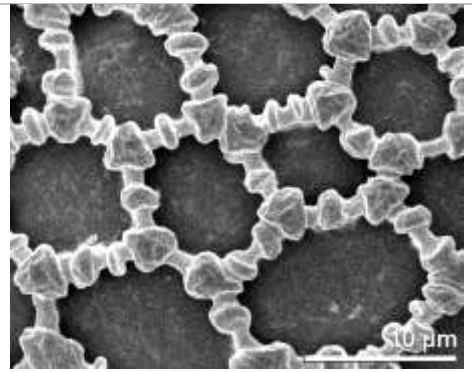
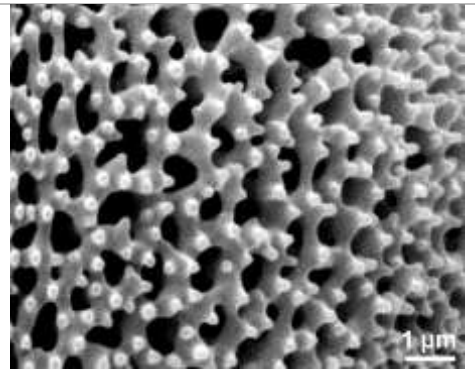
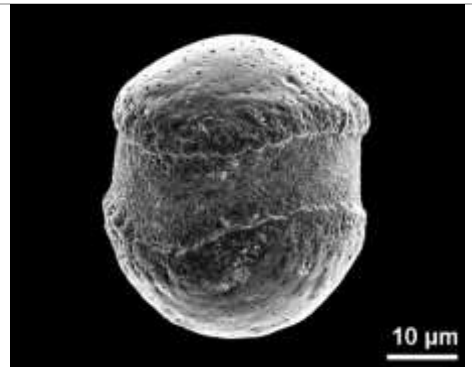
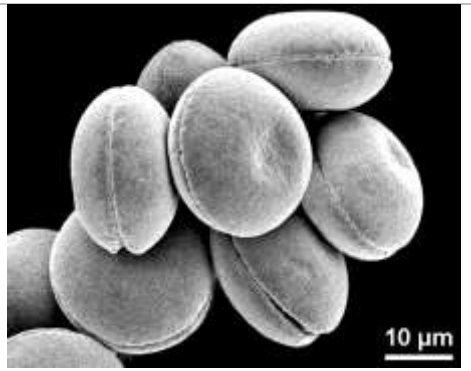
polychotomosulcate	pollen grain with a polychotomosulcus,	 *Hedyosmum goudotianum*	 *Hedyosmum goudotianum*
polychotomosulcus	sulcus with more than 3 arms		
pontoperculate	aperture with a pontoperculum	 *Sanguisorba cretica*	 *Sanguisorba minor*
pontoperculum (pl. pontopercula)	operculum covering a colpus, not completely isolated from the remainder of the exine	 *Sanguisorba cretica*	 *Sanguisorba minor*

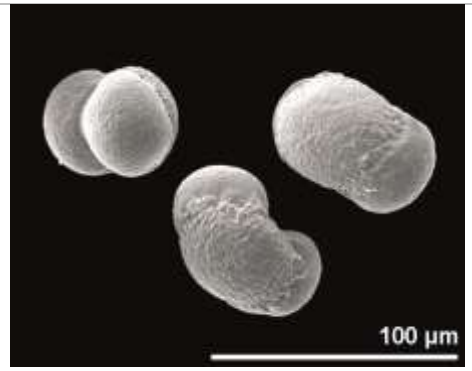
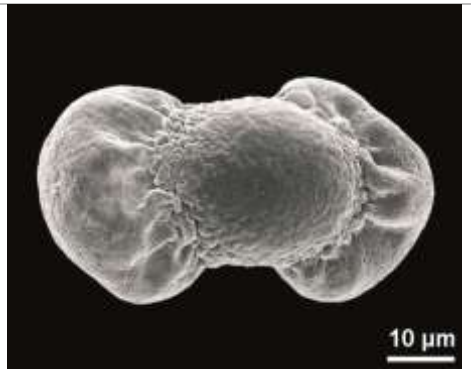
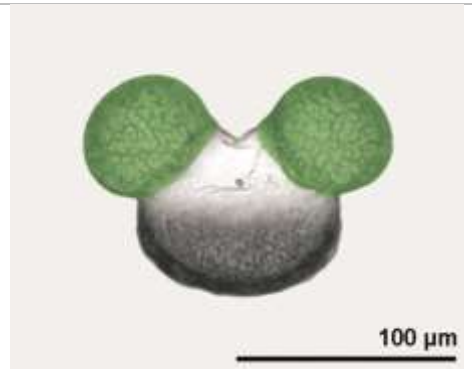
porate	pollen grain with pori	 *Chenopodium glaucum*	 *Aechmea caesia*
poroid	circular or elliptic aperture, with indistinct margin	 *Scirpus sylvaticus*	 *Schoenoplectus lacustris*
poroidate	pollen grain with poroid aperture(s)	 *Carex remota*	 *Cercidiphyllum japonicum*

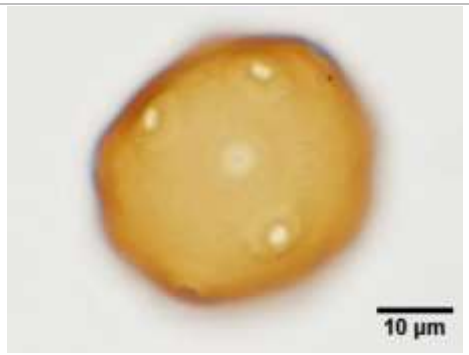
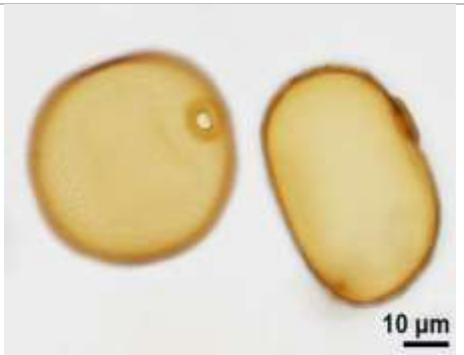
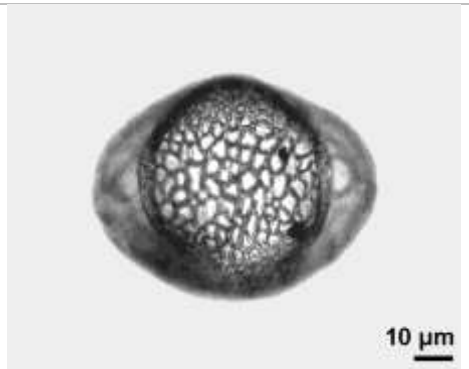
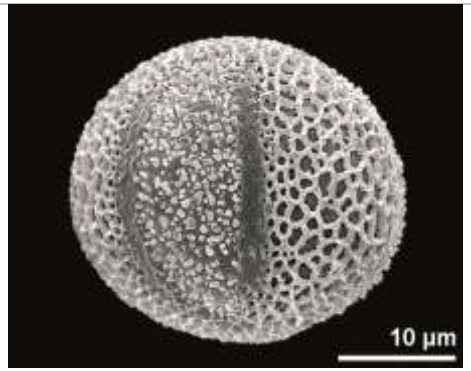
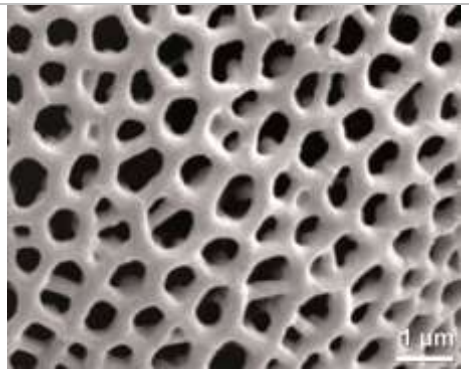
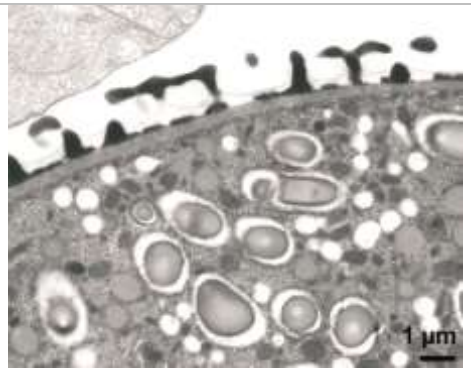
pororate	pollen grain with compound apertures composed of a circular ekto- (porus) and endoaperture	 *Corylus* sp. (fossil, polar view)	 *Corylus* sp. (fossil, equatorial view)
porus (pl. pori)	more or less circular aperture situated at the equator or regularly spread over the pollen grain	 *Aechmea azurea*	 *Campanula rapunculoides*
primexine	polysaccharidic layer formed during early developmental stage wherein the later exine structures are preformed		
primexine matrix	pollen coating consisting of primexine remnants in mature pollen grains	 *Apium nodiflorum*	 *Convolvulus tricolor*

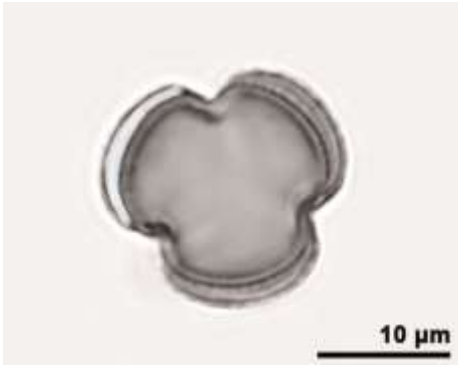
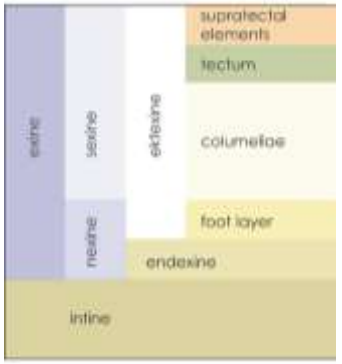
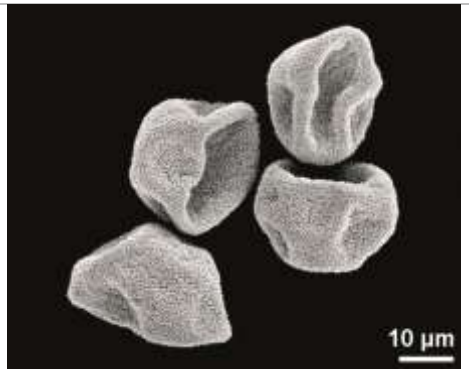
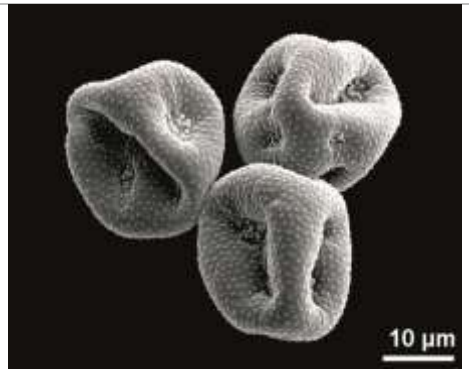
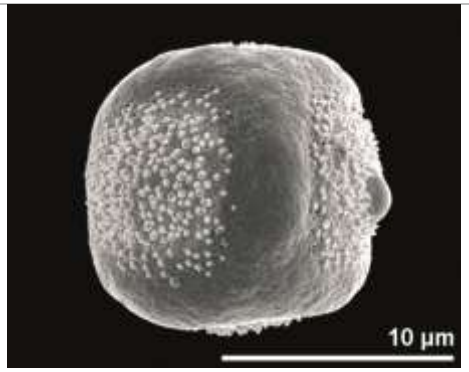
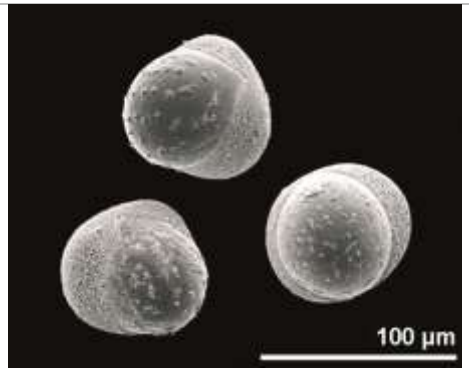
prolate	pollen grain with a polar axis longer than the equatorial diameter	 *Torilis arvensis* (dry pollen)	 *Crossandra flava*
pseudocolpus	colpus in heteroaperturate pollen grains, presumably non-functional	 *Lythrum salicaria*	
pseudomonad	dispersal unit of a permanent tetrad with 3 rudimentary pollen grains	 *Carex* sp.	 *Schoenoplectus lacustris*

psilate	pollen wall with smooth surface	 *Dorycnium germanicum*	 *Lithospermum officinale*
reticulate	pollen wall with reticulum	 *Salix daphnoides*	 *Razisea citrina*
reticulum (pl. reticula)	network like pattern formed by exine elements (muri), where the lumina are wider than 1 µm	 *Cardamine pratensis*	

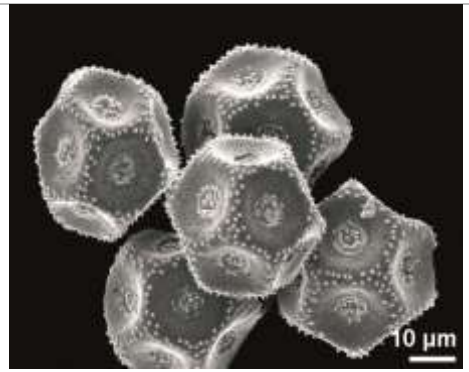
reticulum cristatum	special type of reticulum; muri with prominent sculpture elements	 *Lilium candidum*	 *Mercurialis perennis*
ring-like aperture	circumferential aperture (situated more or less equatorially or, rarely, meridionally)	 *Gonatopus angustus* (equatorial)	 *Pedicularis rostrato-capitata* (meridional)
rugulae (sing. rugula)	elongated exine elements longer than 1 µm; irregularly arranged	 *Securigera varia*	

rugulate	pollen wall with rugulae	 *Nymphoides peltata*	 *Fagus* sp. (fossil)
saccate	pollen grain with one or more air sacs	 *Pinus strobus*	 *Podocarpus sp.*
saccus (pl. sacci)	exinous expansion forming an air sac	 *Abies* sp. (fossil)	

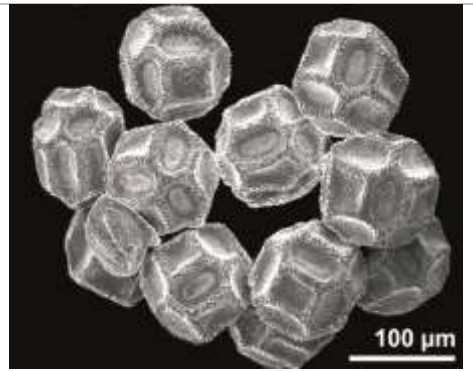
scabrate	a term used for light microscopy only, describing minute sculpture elements of undefined shape and of a size close to the resolution limit of the light microscope	 *Juglans* sp.	 *Secale* sp.
sculpture	elements of ornamentation on the pollen surface		
semitectate	pollen grain with a semitectum (e.g. reticulate ornamentation)	 *Alangium* sp. (fossil)	 *Salix alba*
semitectum	discontinuous tectum, covering less than 50% of pollen grain surface	 *Acinos alpinus*	 *Acinos alpinus*

sexine	term used for light microscopy, describing the structured/sculptured outer layer of the exine	  *Artemisia* sp.
shape	a result of of the lengh of the polar axis in ratio to the equatorial diameter, e.g. irregular, oblate, prolate, spheroidal	
shape irregular		 *Populus alba* (dry pollen)  *Thalictrum minus* (dry pollen)
shape isodiametric	equal polar and equatorial diameters, shape not spheroidal	 *Herniaria glabra*  *Asphodeline lutea*

shape polygonal

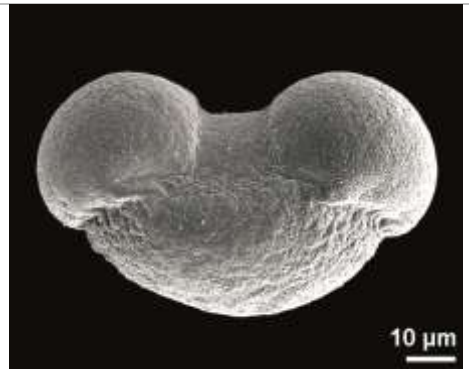


Stellaria holostea (dry pollen)

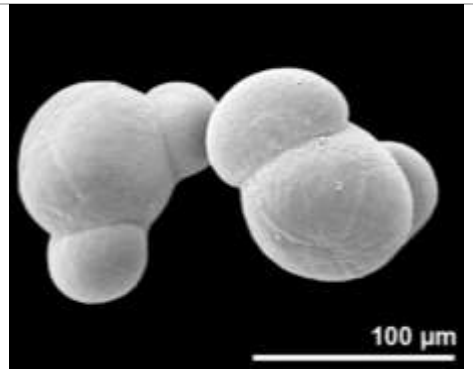


Opuntia basilaris (dry pollen)

shape saccate

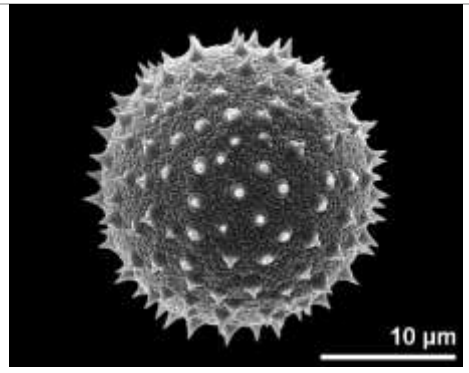


Pinus strobus

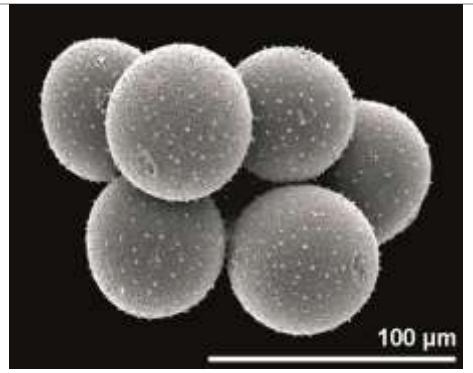


Abies nordmanniana

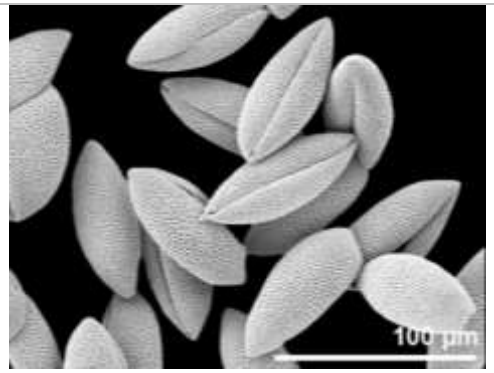
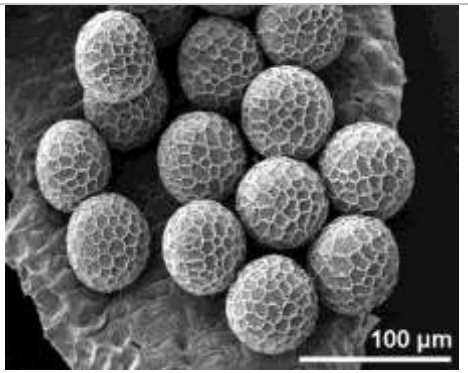
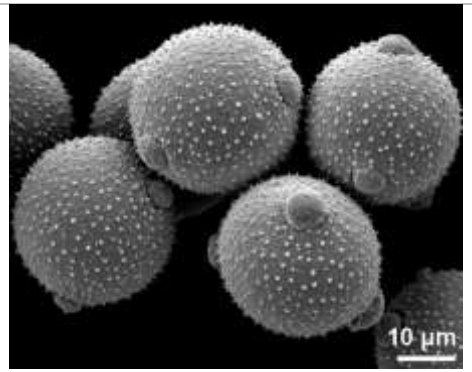
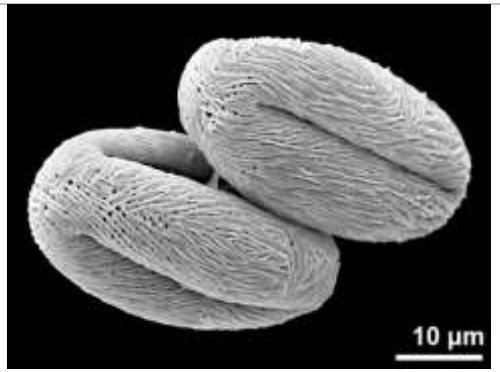
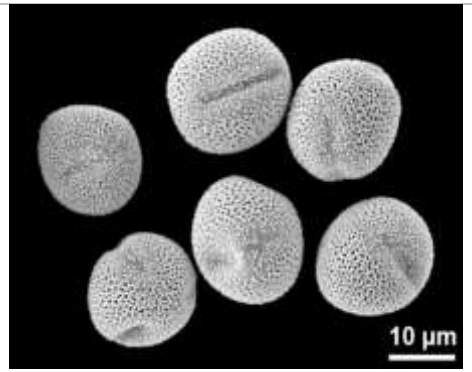
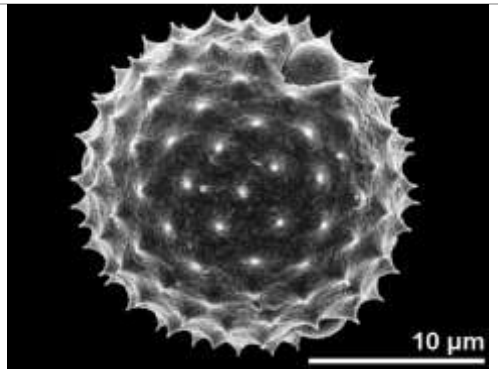
shape spheroidal

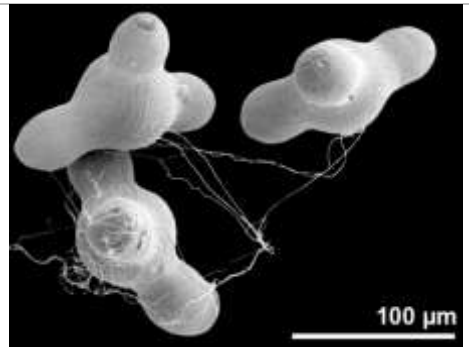
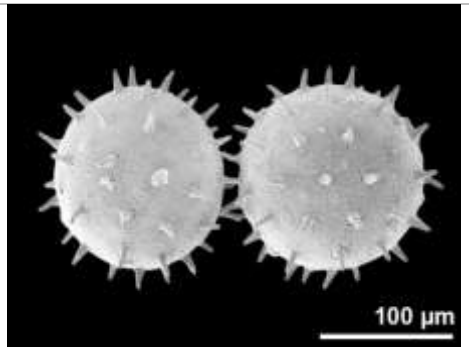
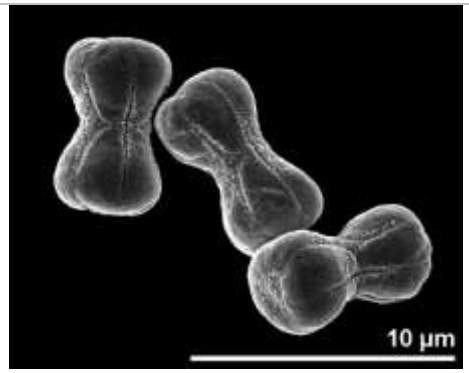
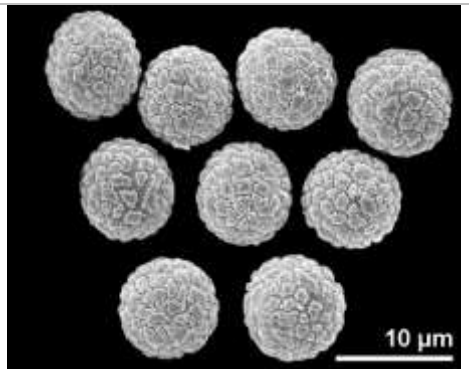
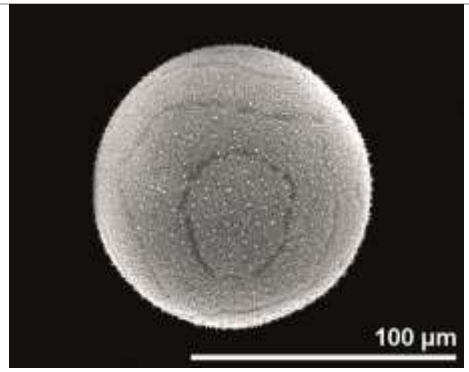
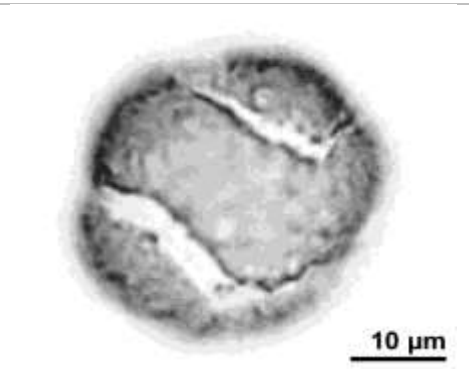


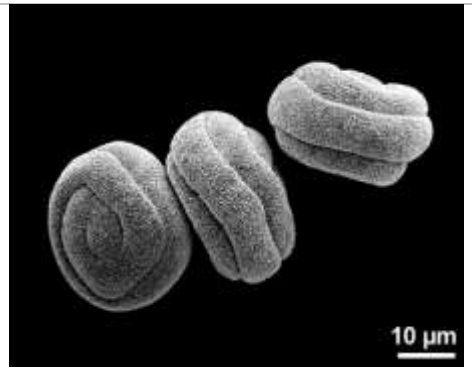
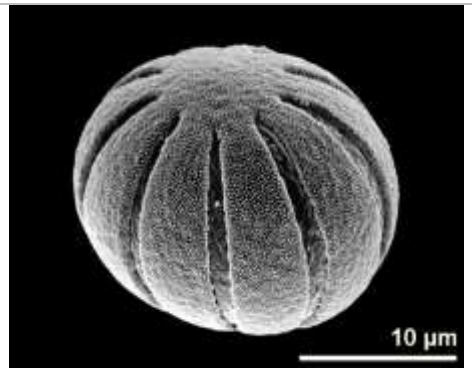
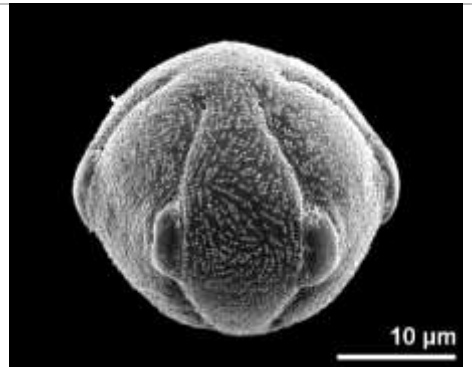
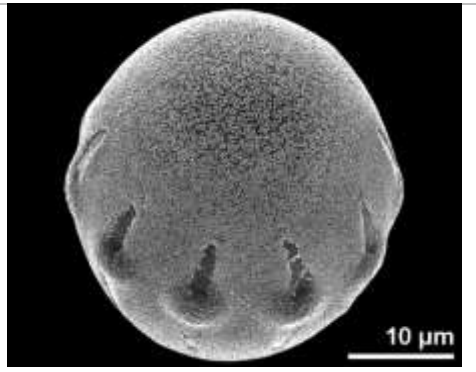
Pinellia ternata

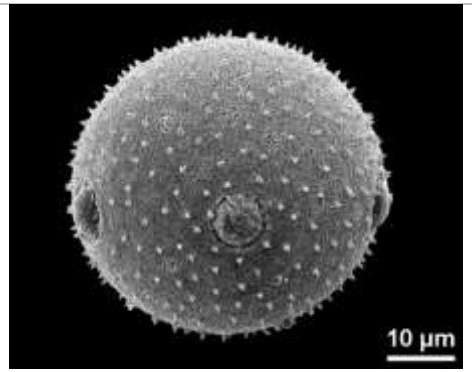
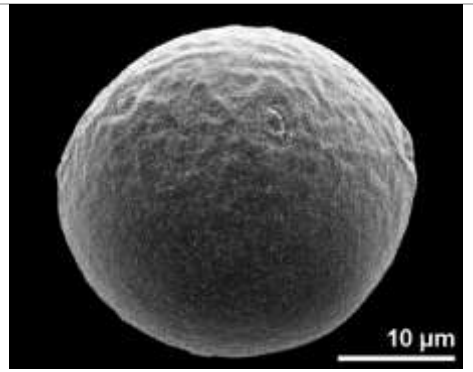
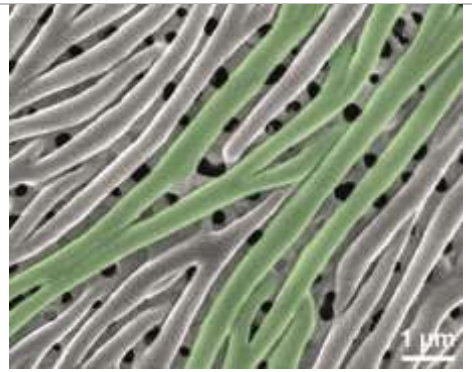
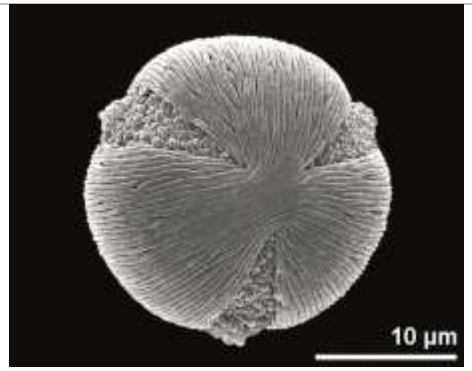
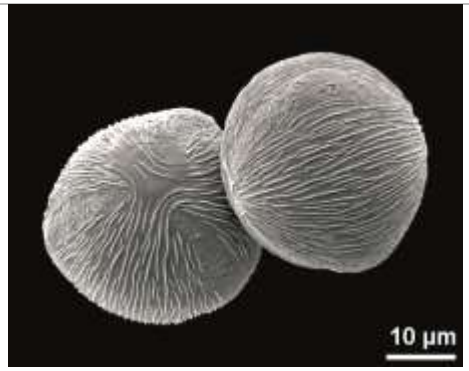


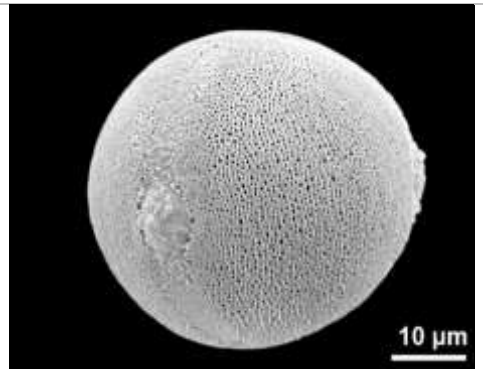
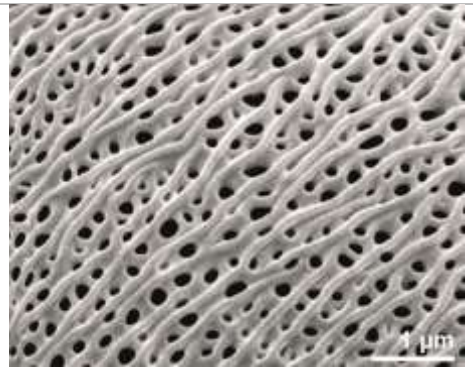
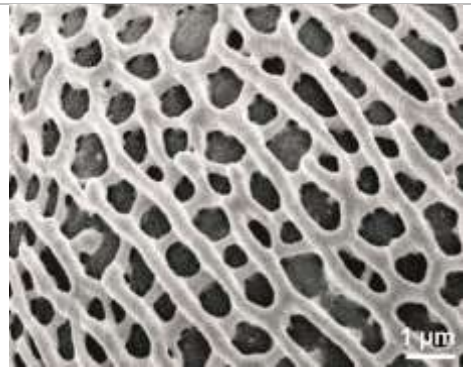
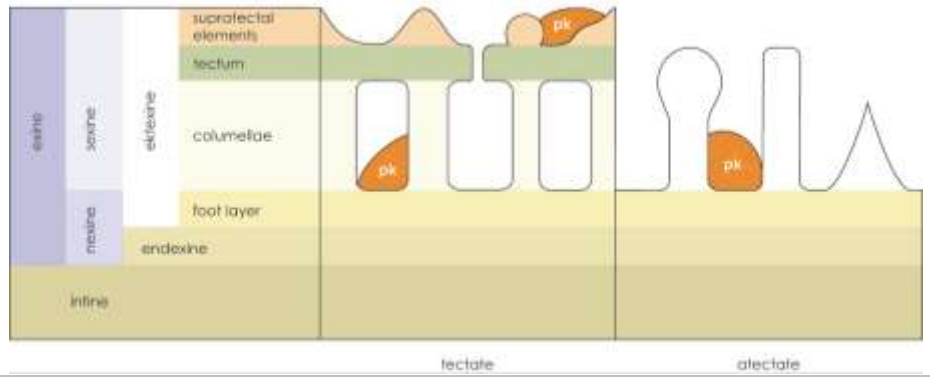
Adansonia gregorii

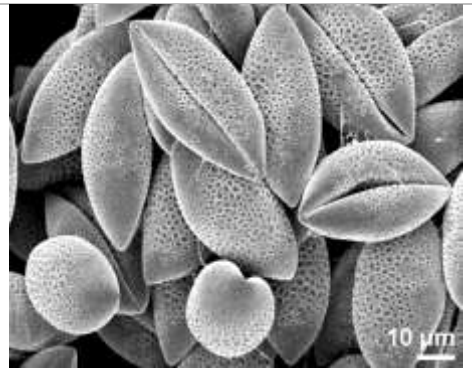
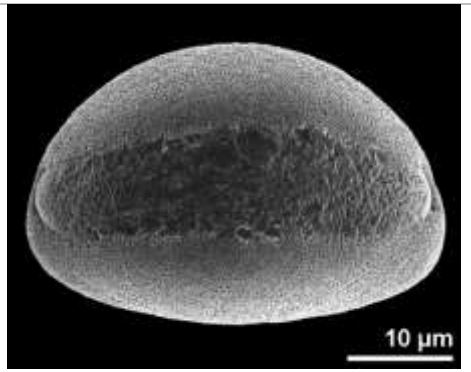
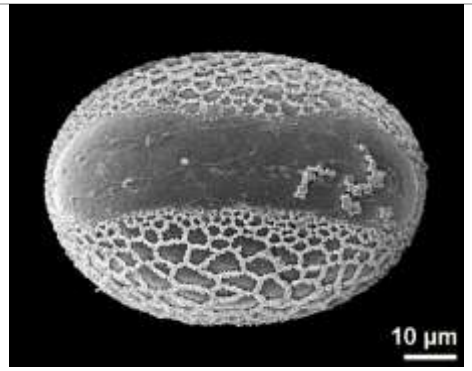
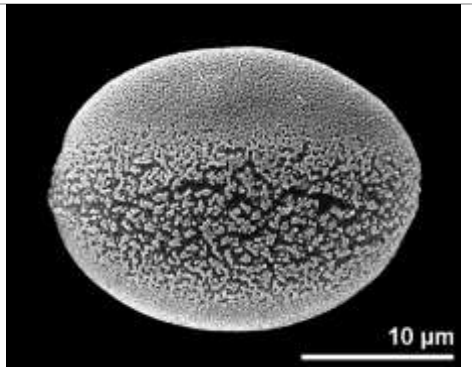
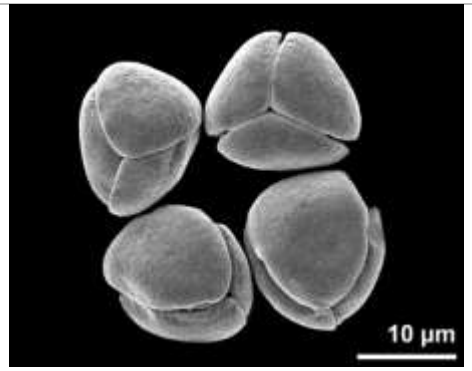
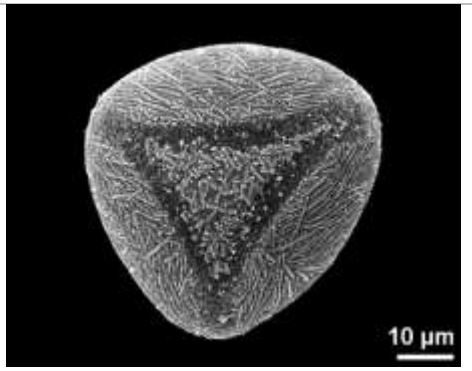
size	categories: very small (<10 µm), small (10-25 µm), medium (26-50 µm), large (51-100 µm), very large (>100 µm)		
size large	51-100 µm	 *Anthericum ramosum*	 *Ruellia brevifolia*
size medium	25–50 µm	 *Campanula foliosa*	 *Centaurium littorale*
size small	10 – 25 µm	 *Ruschia uncinata* (dry pollen)	 *Ambrosia artemisiifolia*

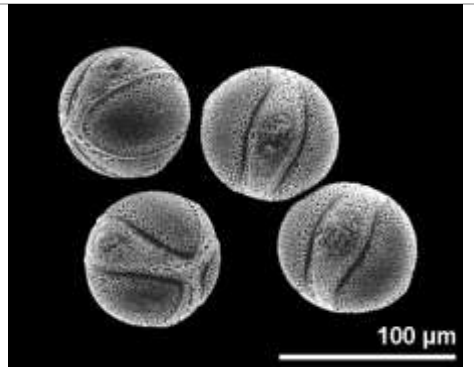
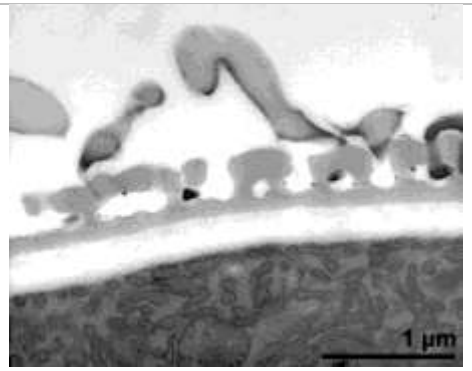
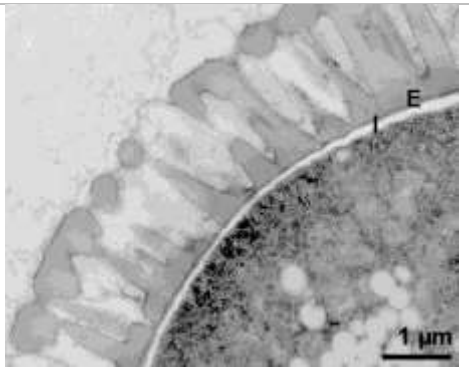
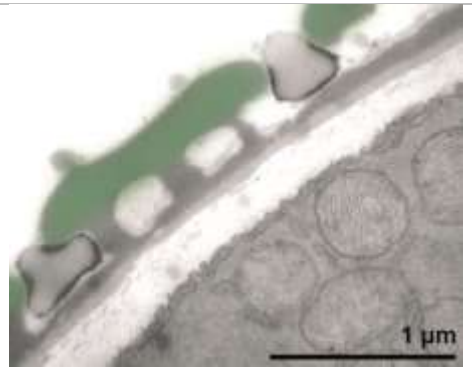
size very large	>100 µm	 *Oenothera fruticosa*	 *Hibiscus syriacus*
size very small	<10 µm	 *Myosotis palustris*	 *Peperomia rubella*
spiral aperture(s)		 *Crocus speciosus*	 *Berberis vulgaris*

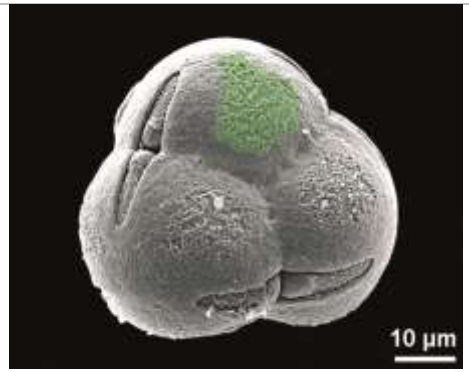
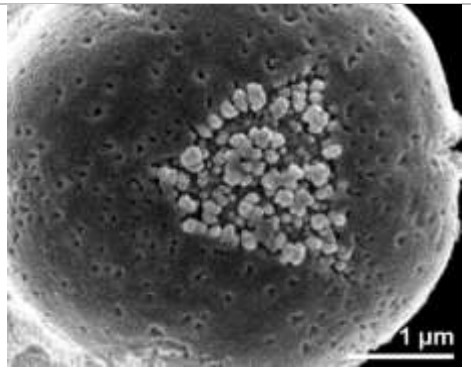
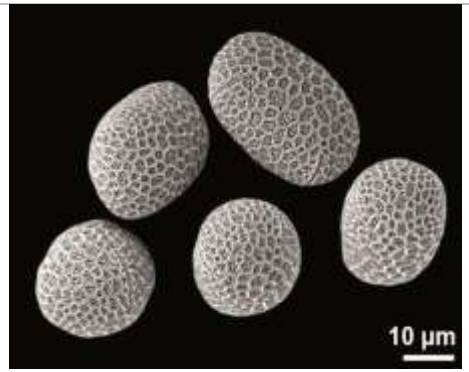
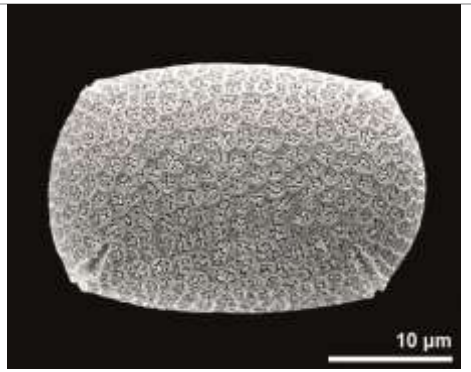
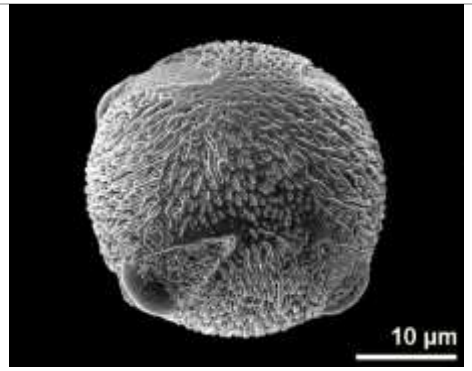
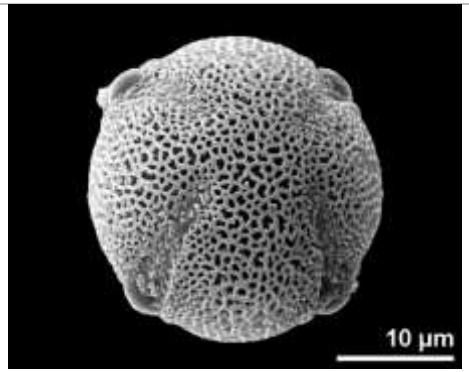
spiraperturate	pollen grain with one or more spiral aperture(s)	 *Mimulus guttatus* (dry pollen)	 *Thunbergia alata*
stephano-	prefix meaning equatorial		
stephanoaperturate	apertures situated at the equator (term usually used for more than 3 apertures)		
stephanocolpate		 *Sherardia arvensis*	 *Galium glaucum*
stephanocolporate		 *Sangiusorba officinalis*	 *Symphytum caucasicum*

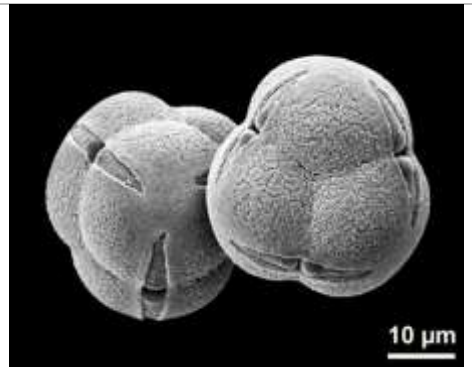
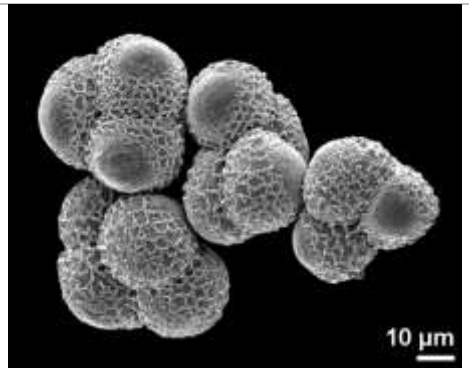
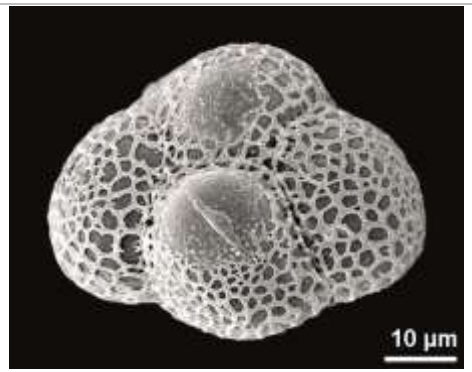
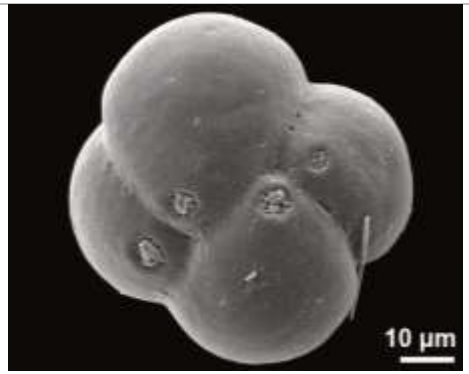
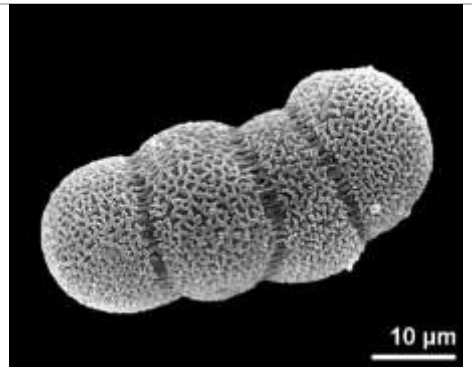
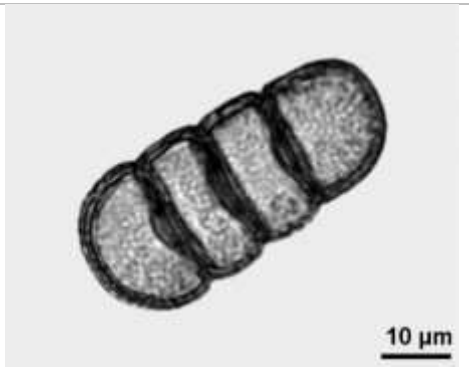
stephanoporate		 *Campanula rapunculoides*	 *Ulmus minor*
striae (sing. stria)	elongated exine elements separated by grooves predominantly parallel arranged	 *Acer pseudoplatanus*	
striate	pollen wall with striae	 *Neoalsomitra sarcophylla*	 *Geum reptans*

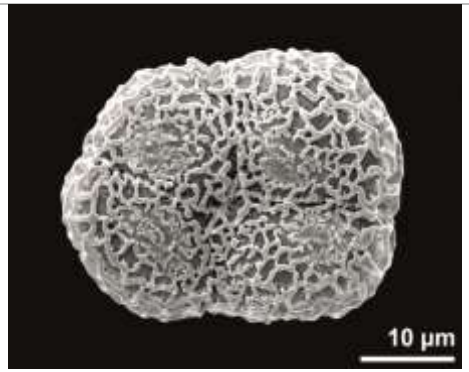
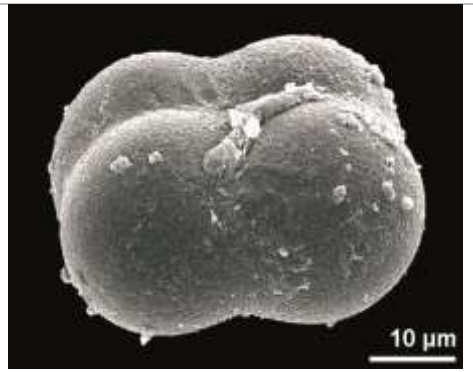
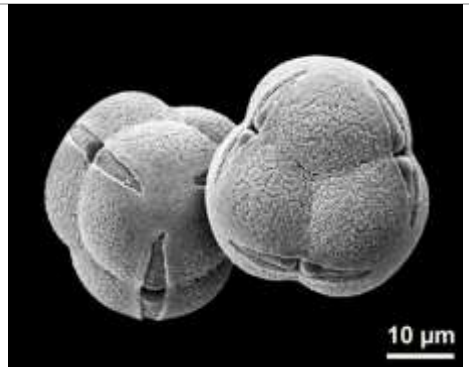
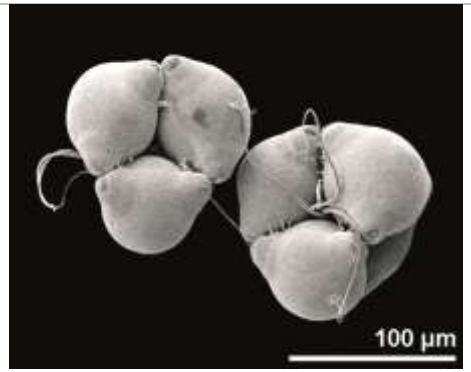
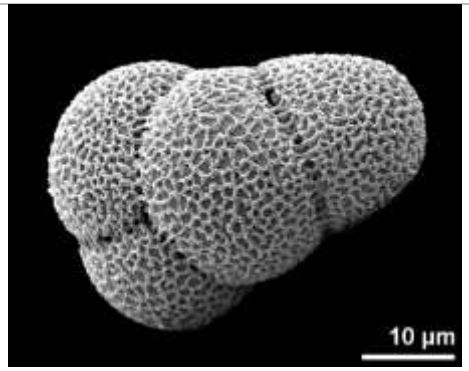
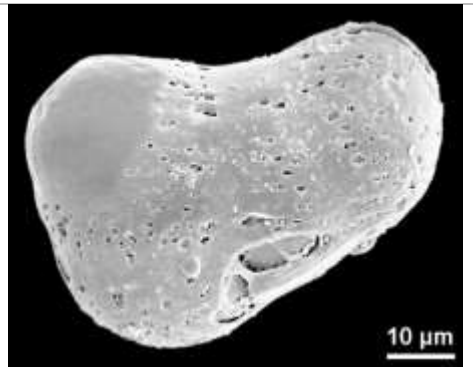
striato-microreticulate	ornamentation intermediate between striate and microreticulate (lumina width < 1 µm)	 *Helianthemum vulgare*	 *Veronica cinerea*
striato-reticulate	ornamentation intermediate between striate and reticulate	 *Pelargonium ferulaceum*	 *Solandra longiflora*
structure	internal construction of a pollen wall		

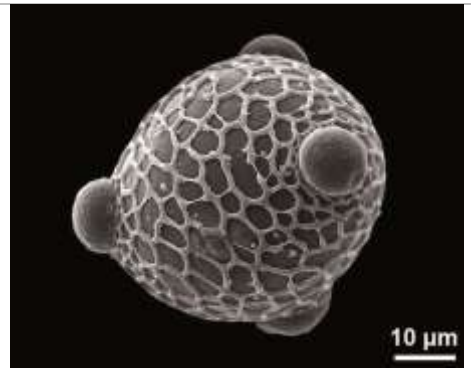
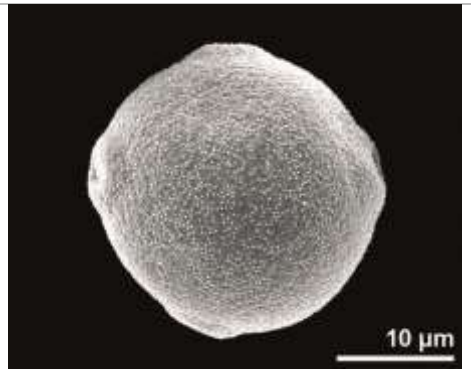
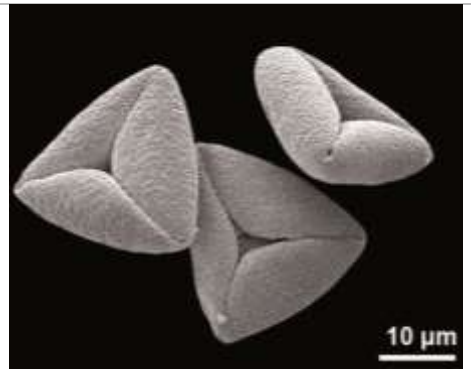
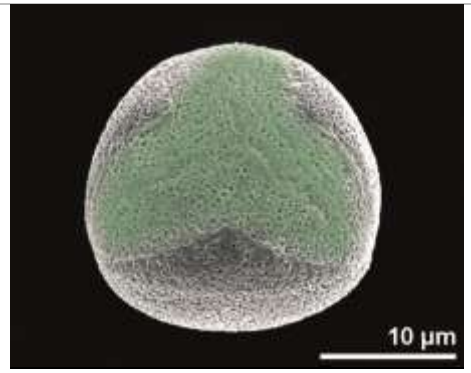
sulcate	pollen grain with a sulcus	 *Doryanthes palmeri* (dry pollen)	 *Allium oleraceum*
sulcus (pl. sulci)	elongated aperture situated distally	 *Lilium martagon*	 *Galanthus nivalis*
synaperturate	pollen grain with anastomosing apertures		
syncolpate	pollen grain with anastomosing colpi	 *Pedicularis verticillata*	 *Nymphoides peltata*

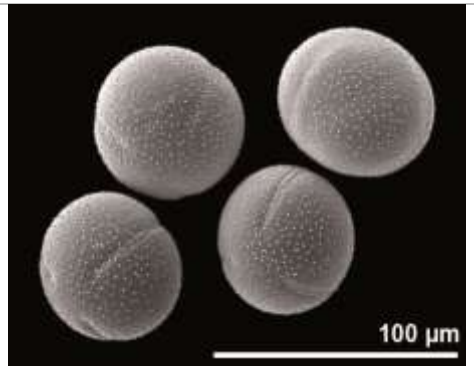
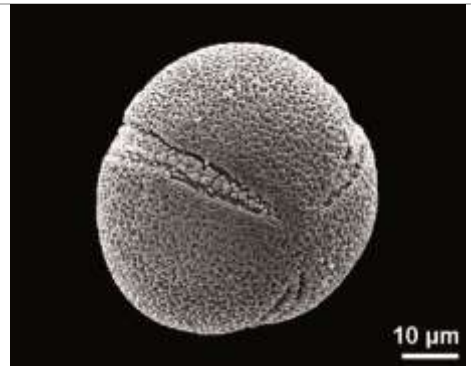
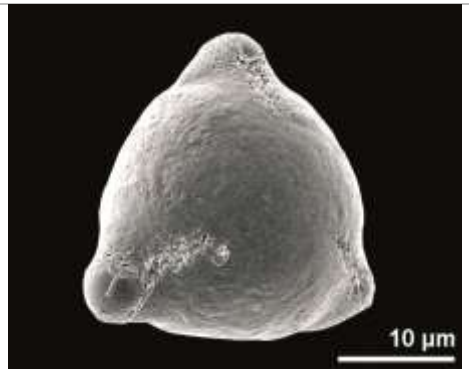
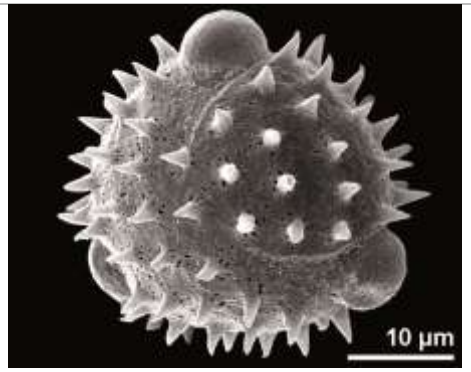
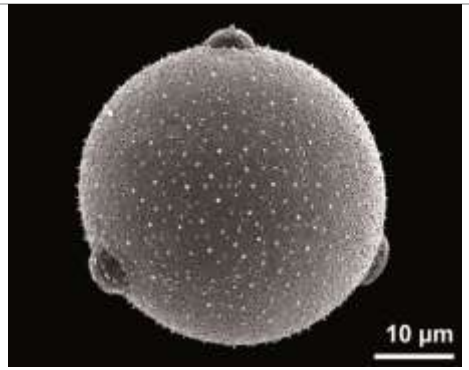
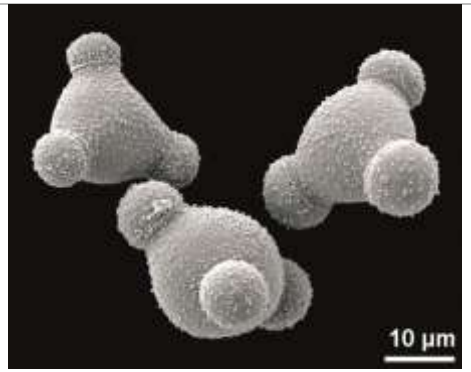
syncolporate	pollen grain with anastomosing colpori	 *Cuphea purpurea*	 *Cassia pulcherrima*
tectate	pollen grain with a tectum	 *Allium ursinum*	 *Alliaria petiolata*
tectum (pl. tecta)	outer ektexine layer *see:* eutectate, semitectate, atectate	 *Microrrhinum minus*	

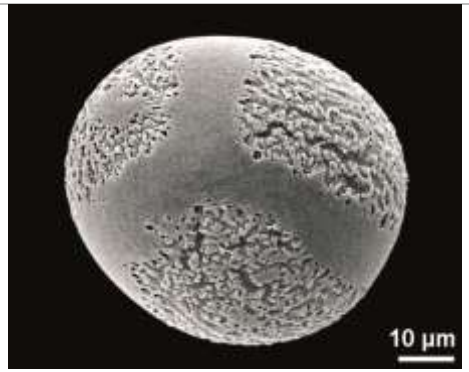
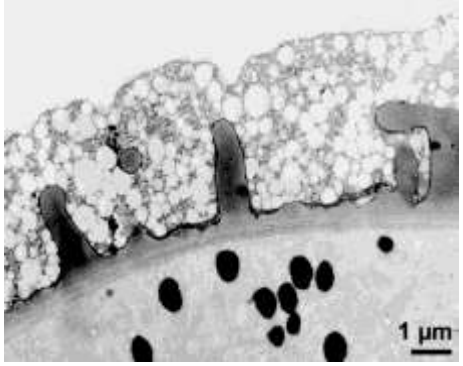
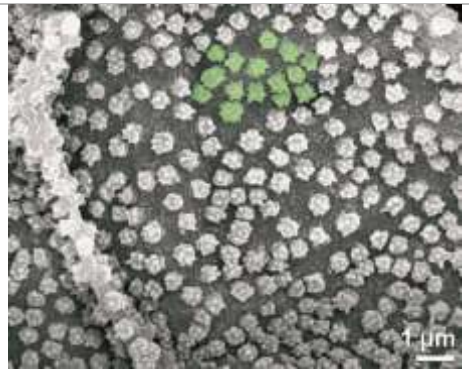
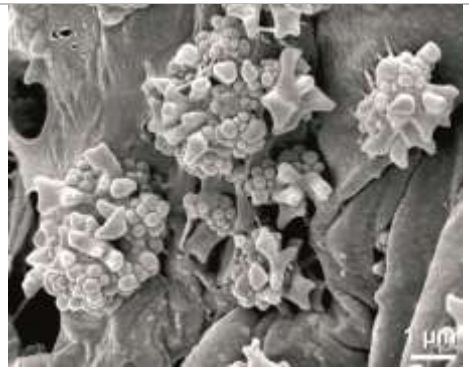
tenuitas (pl. tenuitates)	general term for a thinning of the pollen wall	 *Agapetes variegata*	 *Myosotis palustris*
tetra-	prefix meaning 4		
tetracolpate	a pollen grain with 4 colpi	 *Impatiens balfourii*	 *Impatiens glandulifera*
tetracolporate	a pollen grain with 4 colpori	 *Nicotiana tabacum*	 *Poncirus trifoliata*

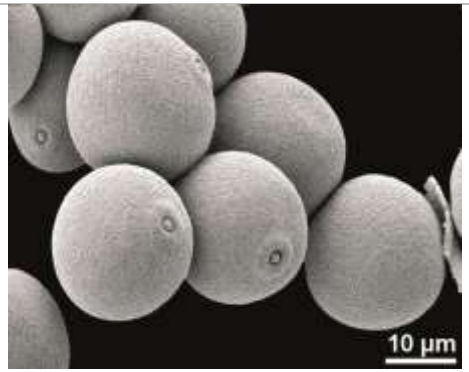
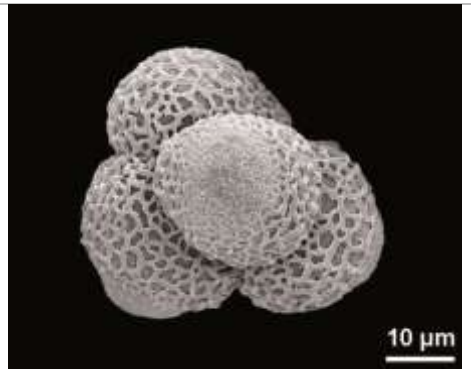
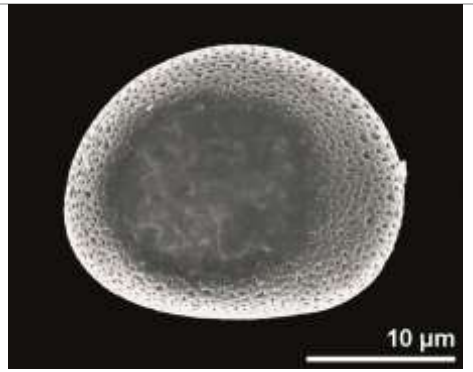
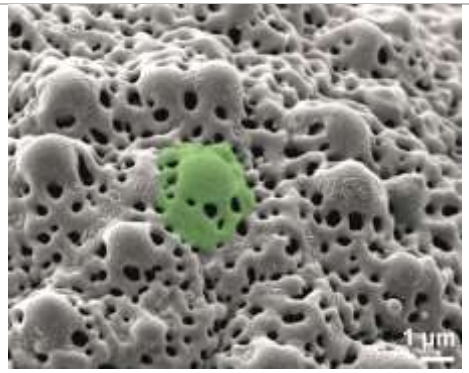
tetrad	dispersal unit of 4 pollen grains	 *Erica herbacea*	 *Epipactis helleborine*
tetrad decussate	dispersal unit of 4 pollen grains arranged in two planes, with arbitrary angles	 *Neottia nidus-avis*	 *Androlepis skinneri*
tetrad linear	special case of tetrad planar	 *Typha latifolia*	 *Typha latifolia*
tetrad planar	dispersal unit of 4 pollen grains arranged in one plane (linear, T-shaped, tetragonal)		

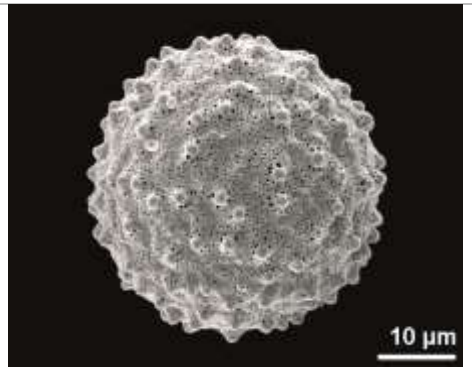
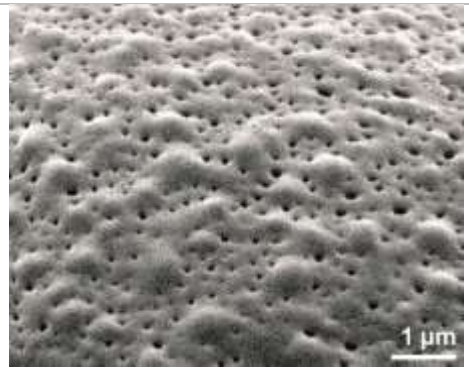
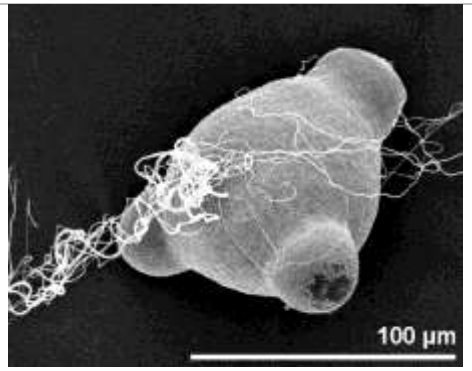
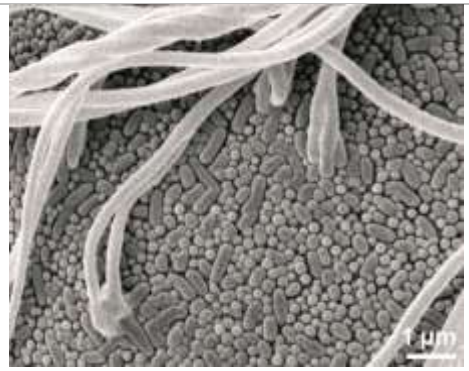
tetrad tetragonal	special case of tetrad planar	 *Listera ovata*	 *Chlorospatha dodsonii*
tetrad tetrahedral	dispersal unit of 4 pollen grains in which the centers of the grains define a tetrahedron	 *Erica herbacea*	 *Epilobium parviflorum*
tetrad T-shaped	special case of tetrad planar	 *Typha latifolia*	 *Chlorospatha kolbii*

tetraporate	a pollen grain with 4 pori	 *Aechmea tomentosa*	 *Myriophyllum spicatum*
trichotomosulcate	pollen grain with a trichotomosulcus	 *Dianella tasmanica*	 *Dianella caerulea* (dry pollen)
trichotomosulcus	3-radiate sulcus	 *Dianella tasmanica*	
tri-	prefix meaning 3		

tricolpate	pollen grain with 3 colpi	 *Pilocereus strausii*	 *Nelumbo nucifera*
tricolporate	pollen grain with 3 colpori	 *Verbena officinalis*	 *Antennaria dioica*
triporate	pollen grain with 3 pori	 *Campanula saxatilis*	 *Hakea kippistiana*

trisulcate	pollen grain with 3 sulci (very rare feature)	 *Tulipa kaufmanniana* (equatorial view)	
tryphine	pollen coating consisting mainly of lipids mixed with membrane remnants	 Sinapis alba	
Ubisch body	sporopolleninous elements produced by the tapetum	 *Trisetum flavescens* (locule wall)	 *Stellaria graminea* (locule wall)

ulcerate	pollen grain with an ulcus	 *Poa annua*	 *Epipactis atrorubens* (tetrad)
ulcus (pl. ulci)	more or less circular aperture situated distally	 *Cephalanthera longifolia*	 *Cyrtosperma beccarianum*
verruca (pl. verrucae)	wart-like element more than 1µm, broader than high	 *Aristolochia salvadorensis*	

verrucate	pollen wall with verrucae	 *Aristolochia tricaudata*	 *Teucrium chamaedrys*
viscin thread	acetolysis resistant thread arising from the exine	 *Oenothera biennis*	 *Godetia purpurea*

© PalDat, 2015