



Ornamentation

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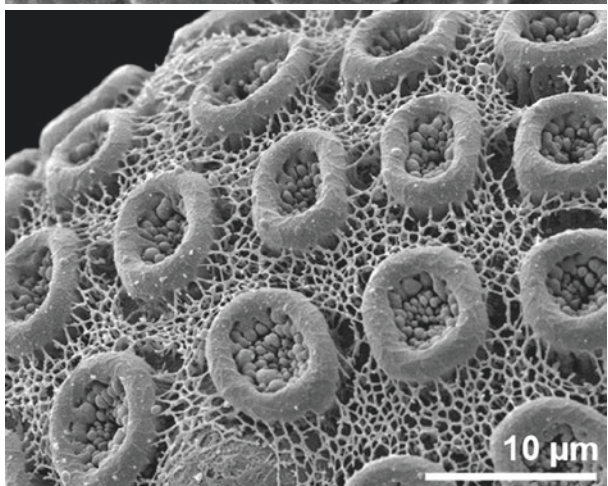
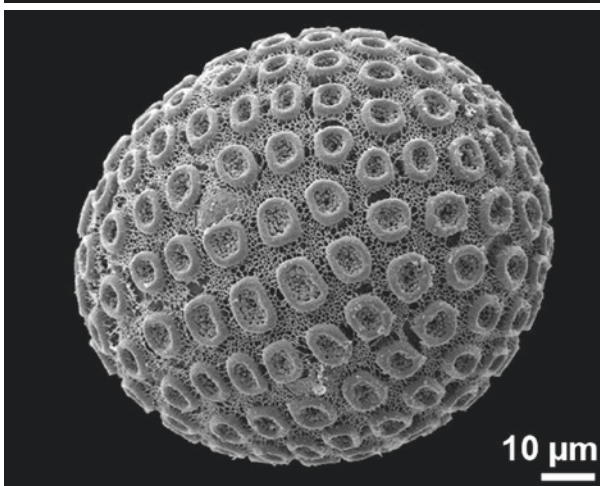
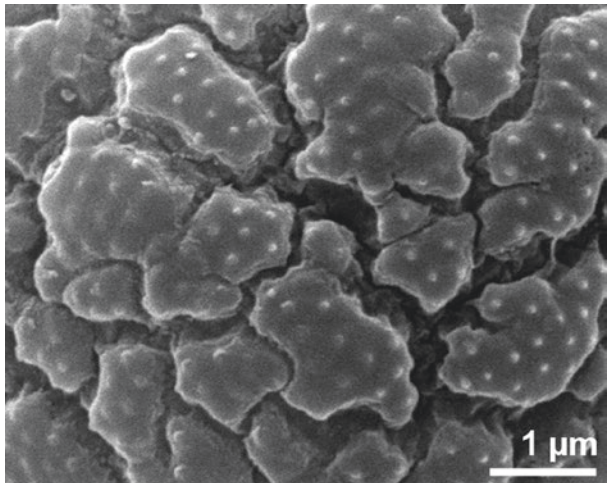
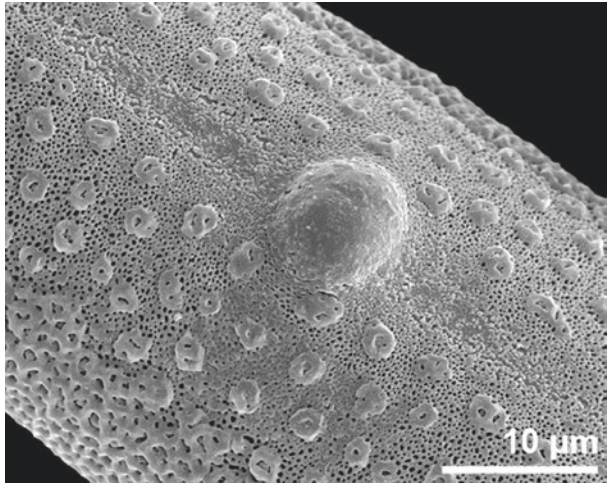
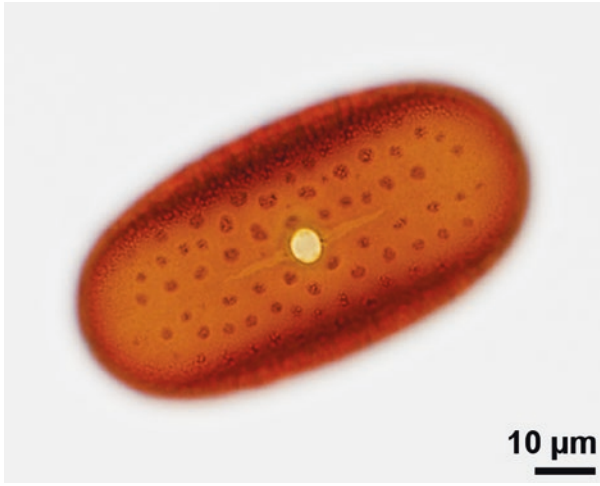
striae/striate – 361

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■ ■ *Justicia carnea*, Acanthaceae

■ ■ *Peperomia polybotrya*, Piperaceae

■ ■ *Megaskepasma erythrochlamys*, Acanthaceae
equatorial view

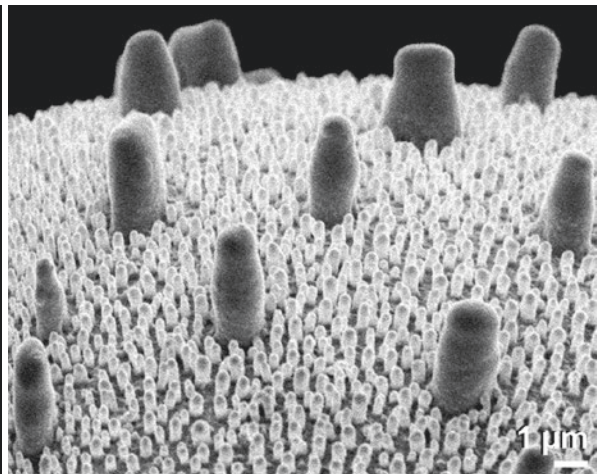
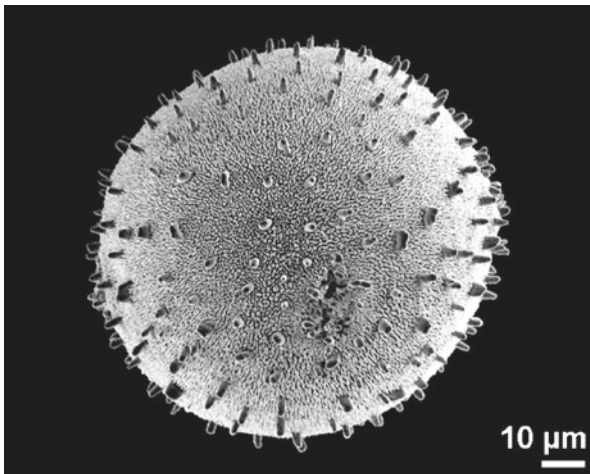
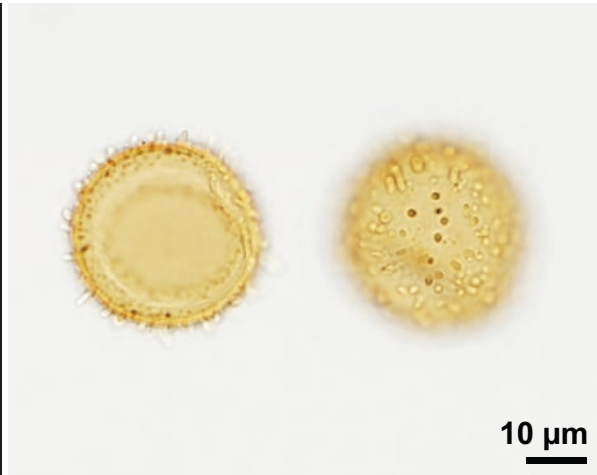
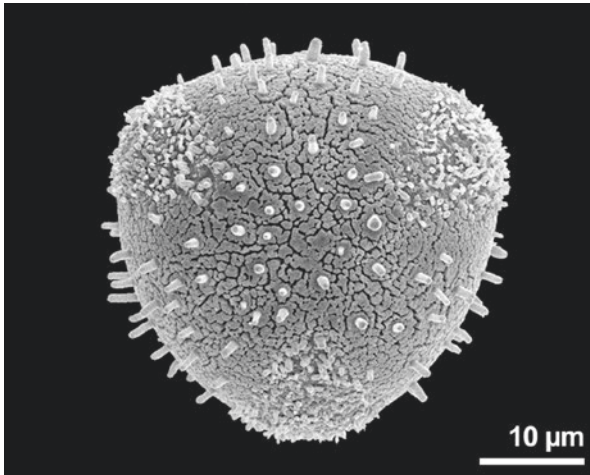
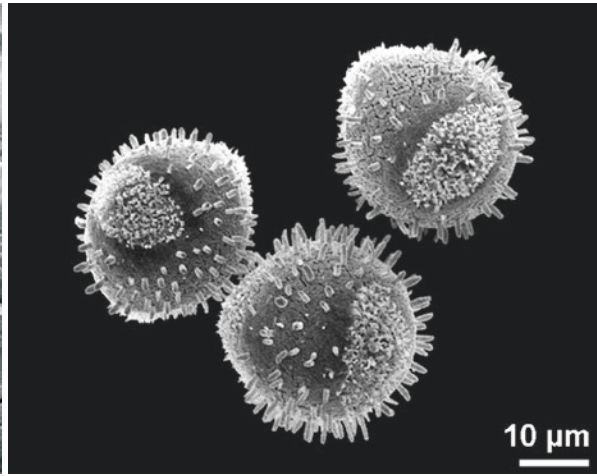
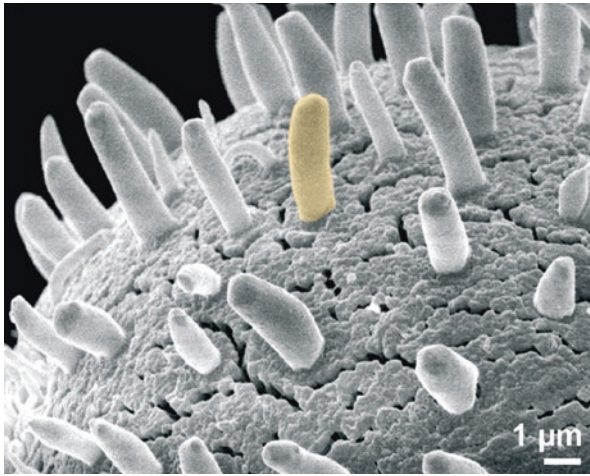
■ ■ *Justicia carnea*, Acanthaceae
aperture area

■ ■ *Peperomia polybotrya*, Piperaceae

■ ■ *Megaskepasma erythrochlamys*, Acanthaceae

baculum/baculate

rod-like, free standing element (never pointed)



■ ■ *Viscum album*, Santalaceae
■ ■ baculum colored

■ ■ *Viscum album*, Santalaceae
■ ■ polar view

■ ■ *Erythrochiton brasiliensis*, Rutaceae
■ ■ equatorial view

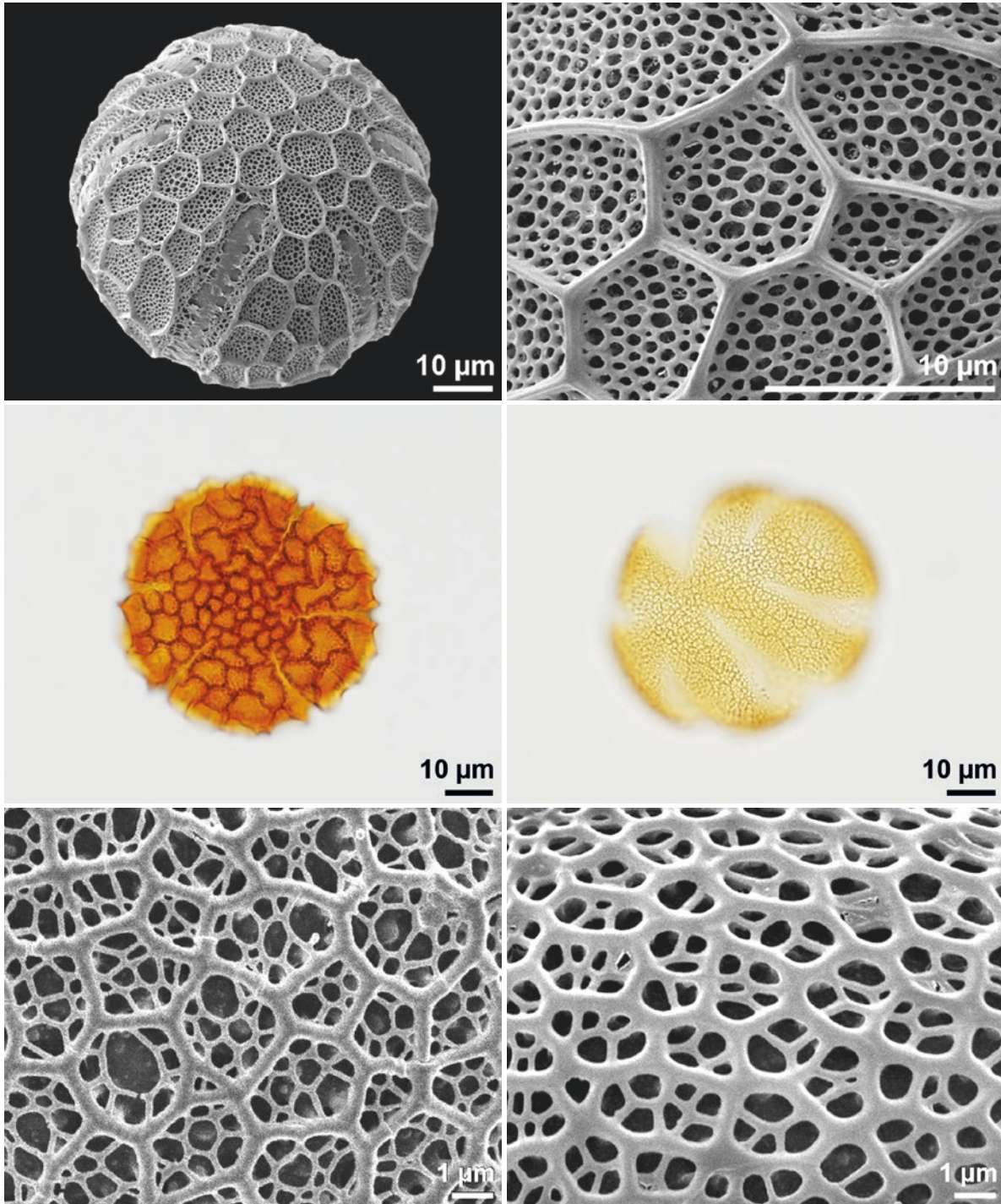
■ ■ *Viscum album*, Santalaceae

■ ■ *Nymphaea alba*, Nymphaeaceae

■ ■ *Erythrochiton brasiliensis*, Rutaceae
■ ■ bacula, microbacula

bireticulate

reticulate ornamentation, where the lumina of the coarse-meshed reticulum are filled by a fine-meshed reticulum



■ ■ ■ *Ocimum basilicum*, Lamiaceae
oblique polar view

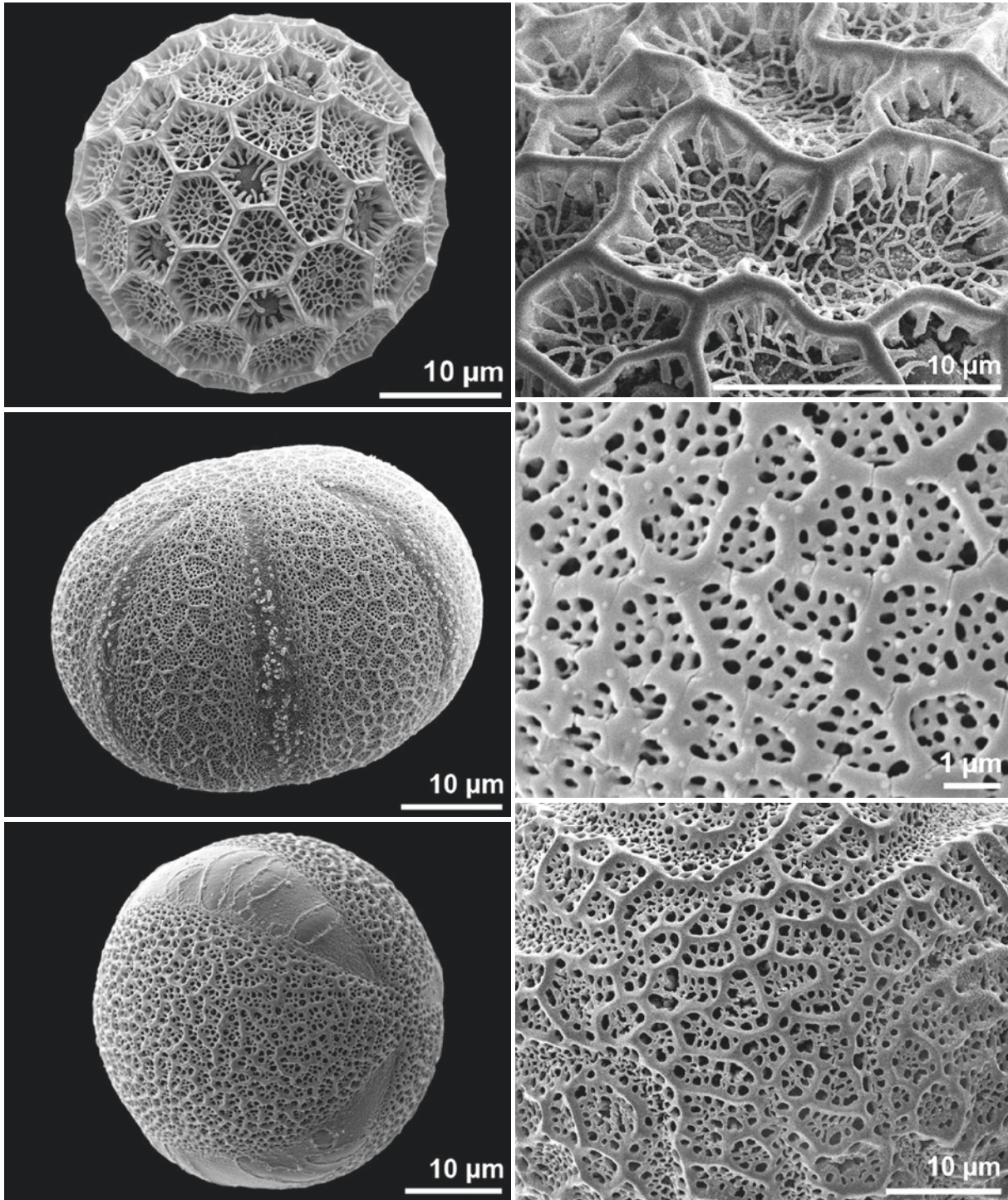
■ ■ ■ *Ocimum basilicum*, Lamiaceae
polar view

■ ■ ■ *Salvia argentea*, Lamiaceae

■ ■ ■ *Ocimum basilicum*, Lamiaceae

■ ■ ■ *Salvia hians*, Lamiaceae
oblique polar view

■ ■ ■ *Salvia glutinosa*, Lamiaceae



■ *Phlox drummondii*, Polemoniaceae
 ■ pantoporate

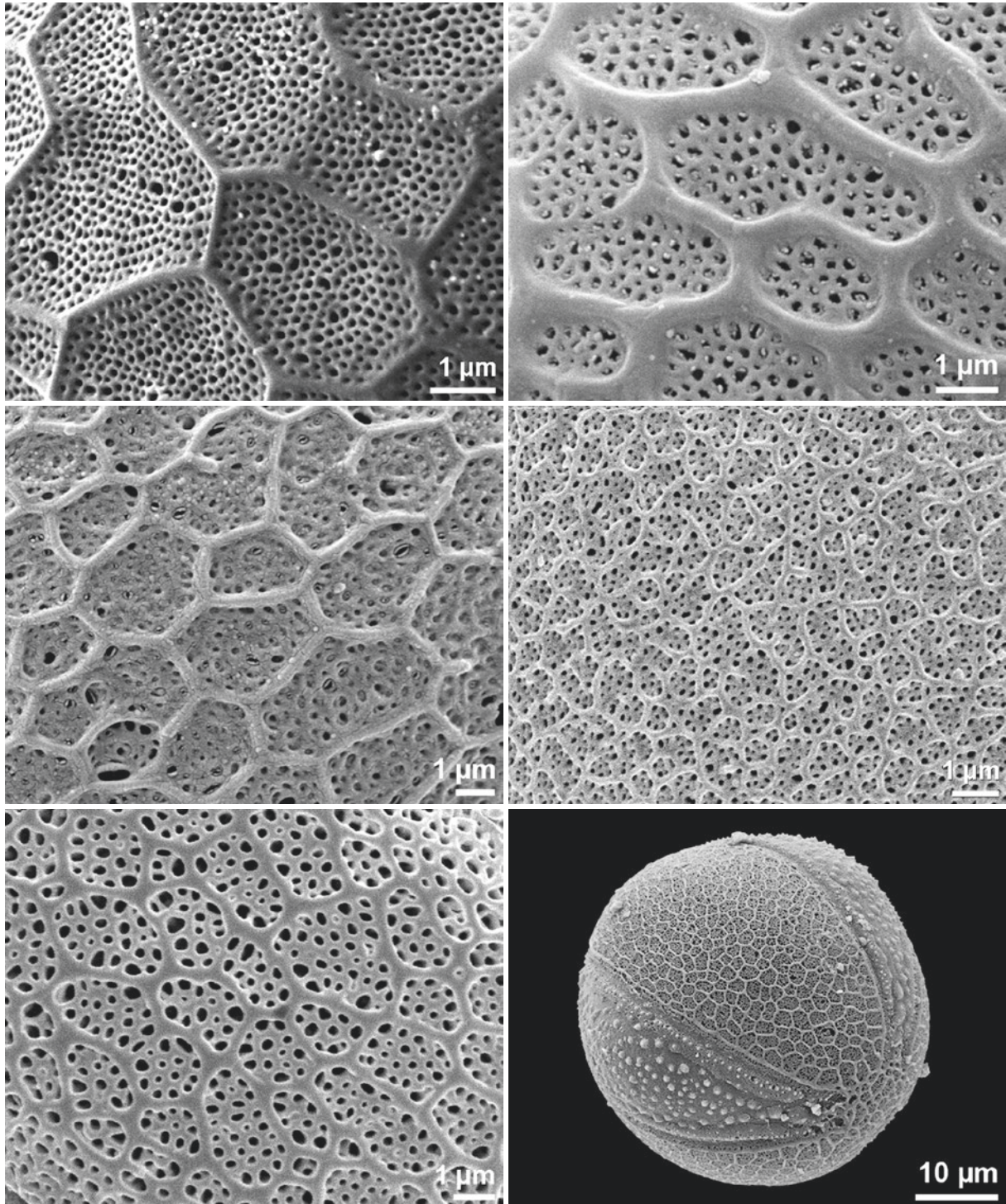
■ *Agastache mexicana*, Lamiaceae
 ■ oblique equatorial view

■ *Vitex trifolia*, Lamiaceae
 ■ oblique view

■ *Phlox paniculata*, Polemoniaceae
 ■ bireticulate

■ *Agastache mexicana*, Lamiaceae
 ■ bireticulate

■ *Pachystachys lutea*, Acanthaceae
 ■ polar area

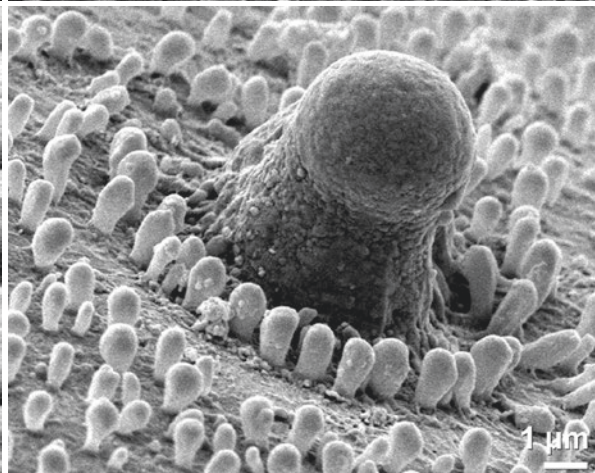
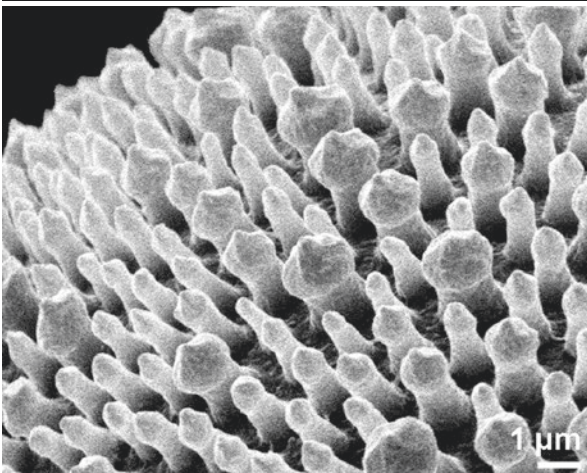
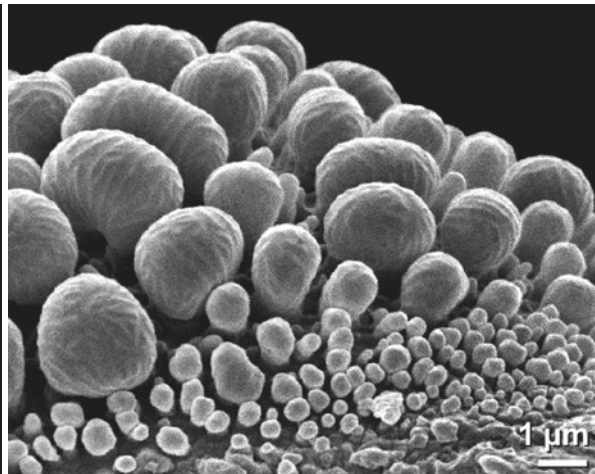
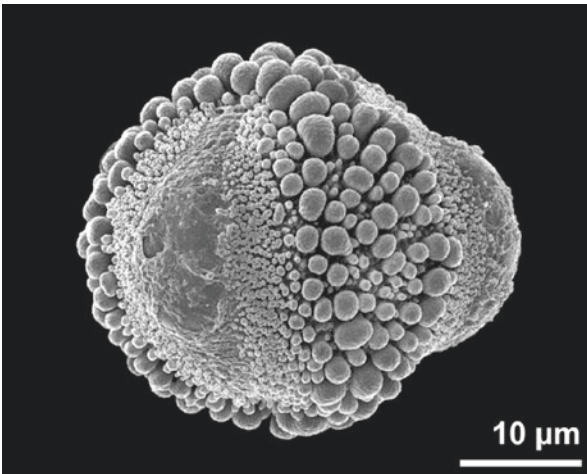
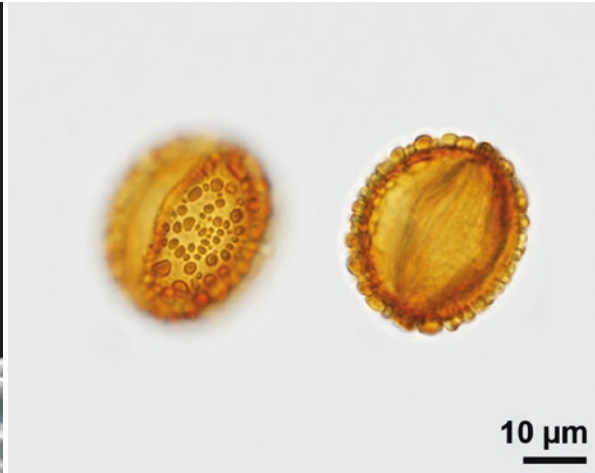
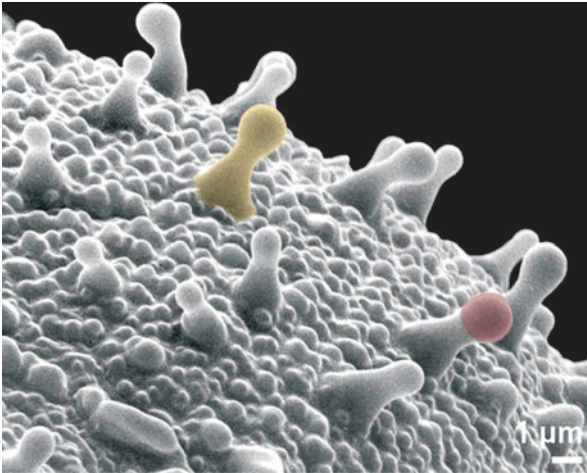


- ■ ■ *Plectranthus ornatus*, Lamiaceae
- ■ ■ *Sparmannia africana*, Malvaceae
- ■ ■ *Prunella grandiflora*, Lamiaceae

- ■ ■ *Hyptis suaveolens*, Lamiaceae
- ■ ■ *Melittis melissophyllum*, Lamiaceae
- ■ ■ *Andrographis paniculata*, Acanthaceae
oblique view

clava/clavate, caput

clava: club-shaped element
caput: distal part of clava



■ *Iris planifolia*, Iridaceae
■ clava (yellow), caput (red)

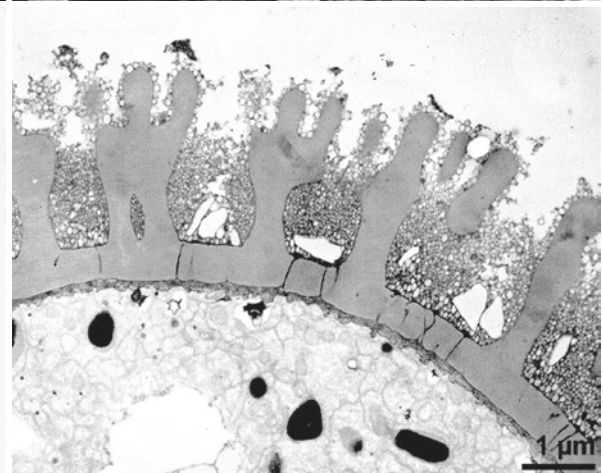
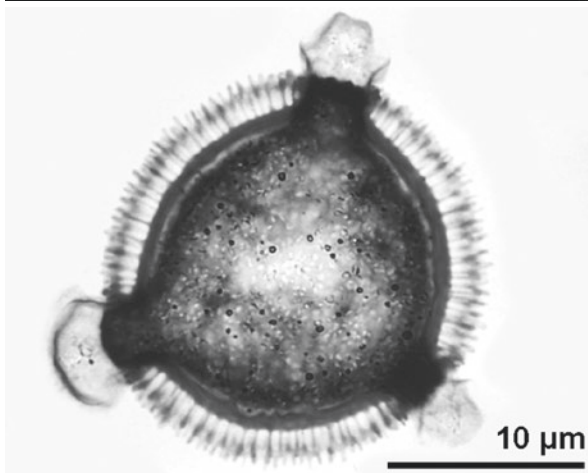
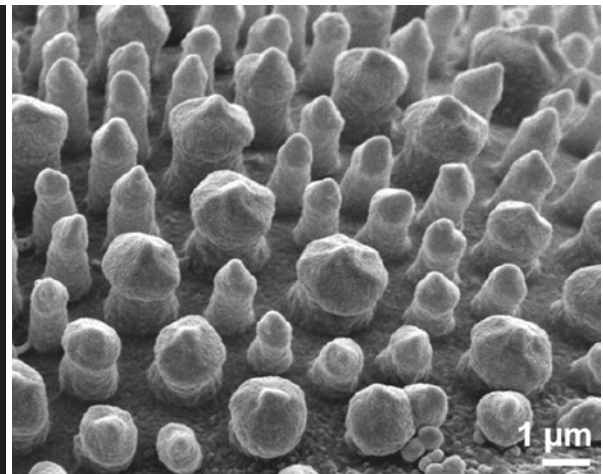
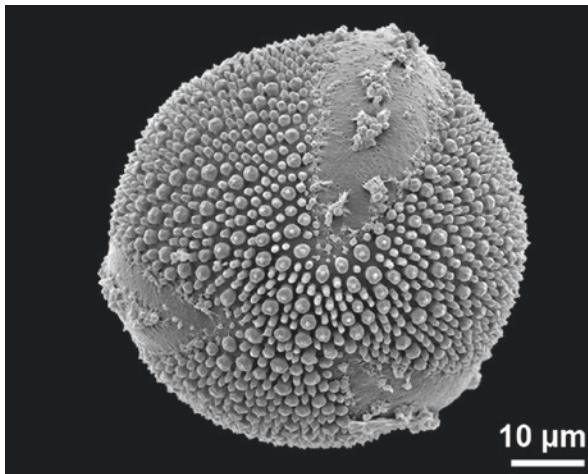
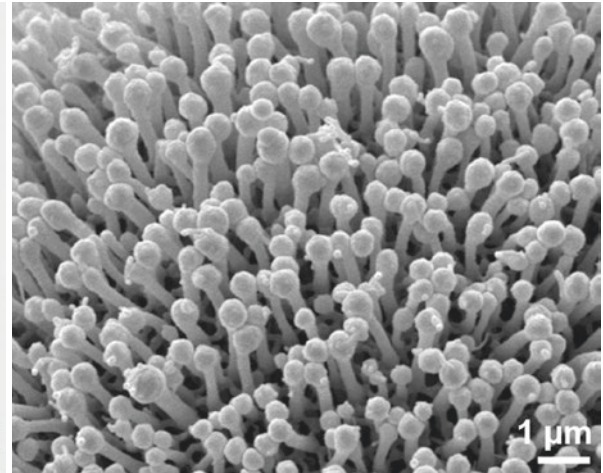
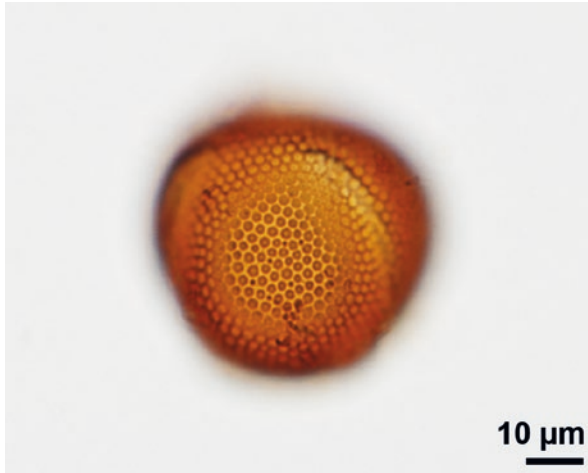
■ *Illex aquifolium*, Aquifoliaceae
■ equatorial view

■ *Linum flavum*, Linaceae

■ *Illex* sp., Aquifoliaceae
■ equatorial view

■ *Illex aquifolium*, Aquifoliaceae

■ *Aratitoyopea lopezii*, Xyridaceae
■ clavae of different size



■ ■ ■ *Linum* sp., Linaceae

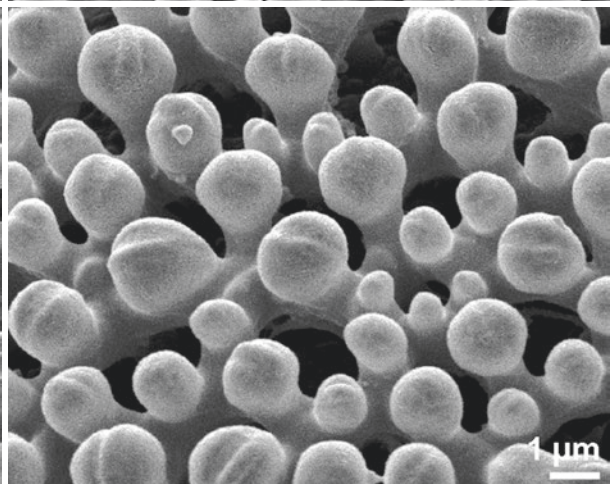
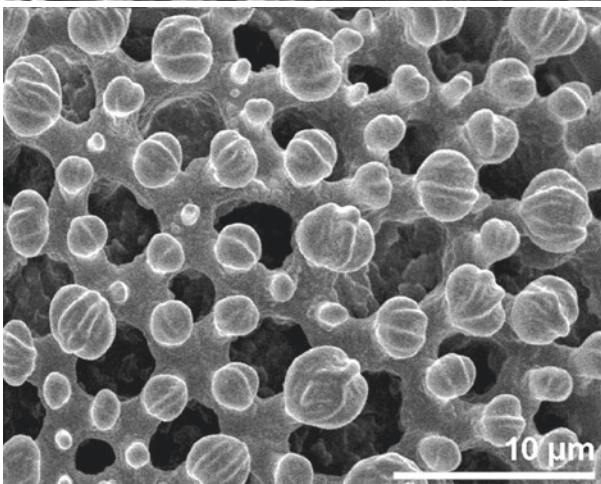
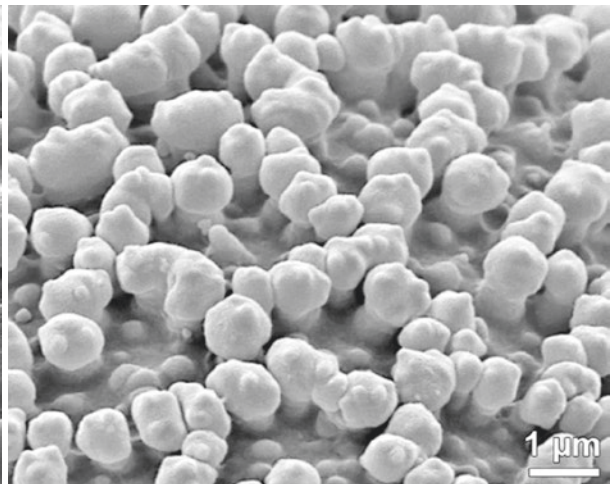
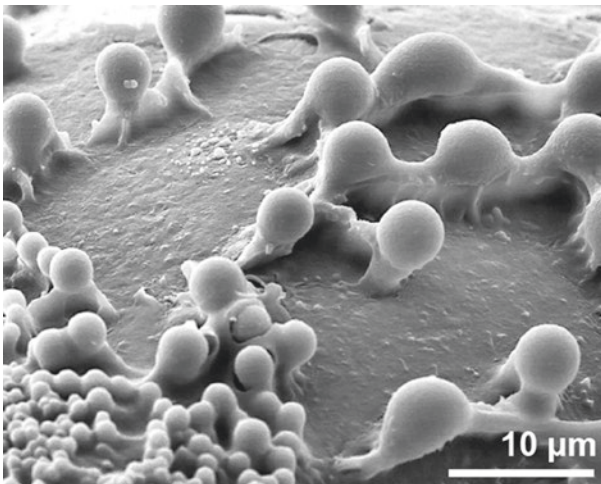
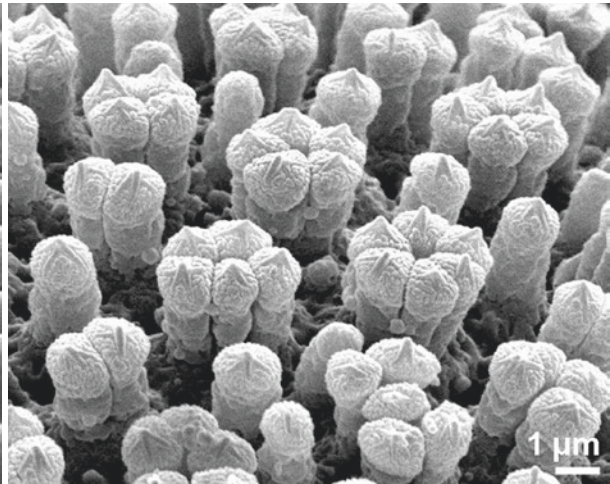
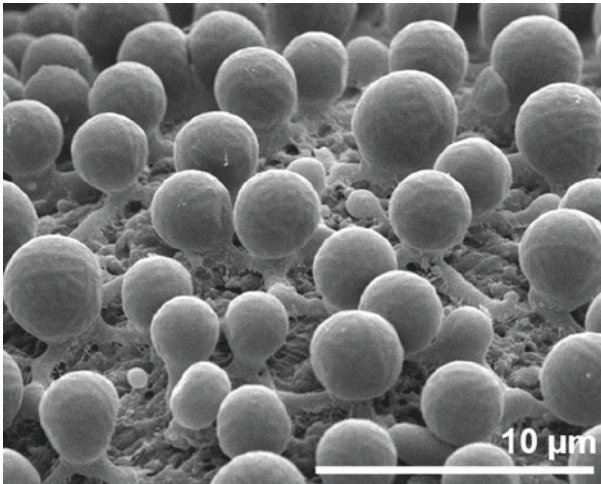
■ ■ ■ *Linum capitatum*, Linaceae
polar view

■ ■ ■ *Geranium robertianum*, Geraniaceae

■ ■ ■ *Hymenocallis tubiflora*, Amaryllidaceae

■ ■ ■ *Linum capitatum*, Linaceae

■ ■ ■ *Geranium robertianum*, Geraniaceae
cross section of pollen wall



■ ■ ■ *Jatropha multifida*, Euphorbiaceae

■ ■ ■ *Hymenocallis littoralis*, Amaryllidaceae

■ ■ ■ *Geranium pratense*, Geraniaceae
reticulum cristatum with clavae

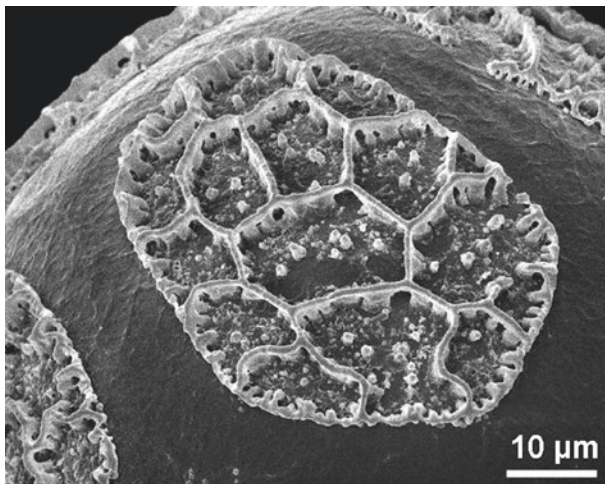
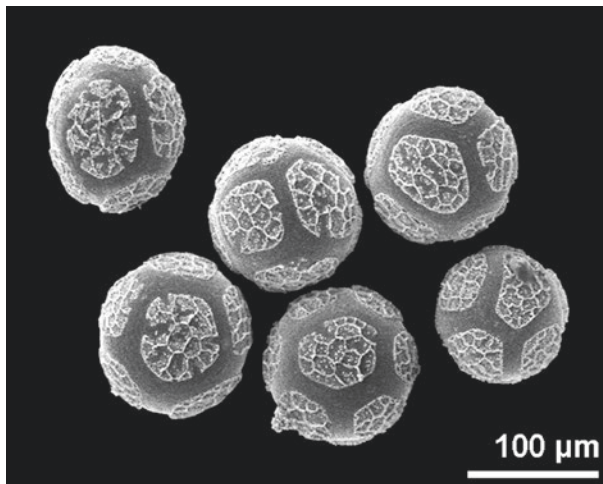
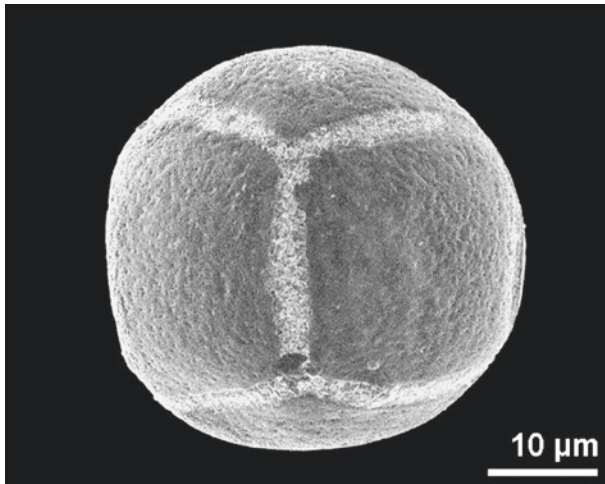
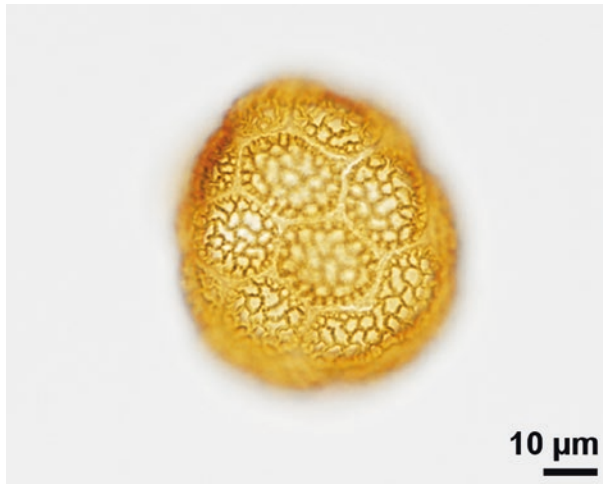
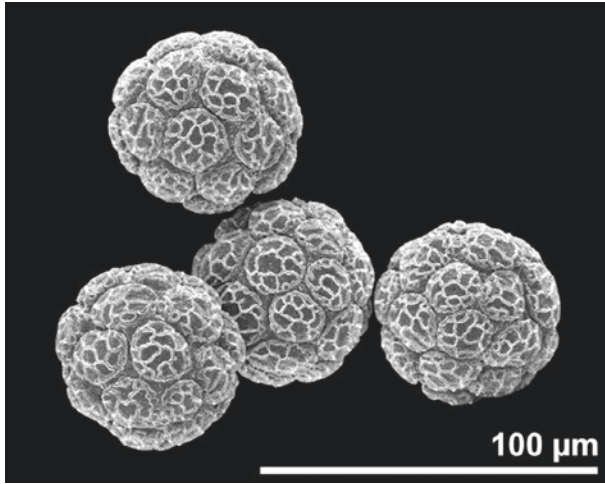
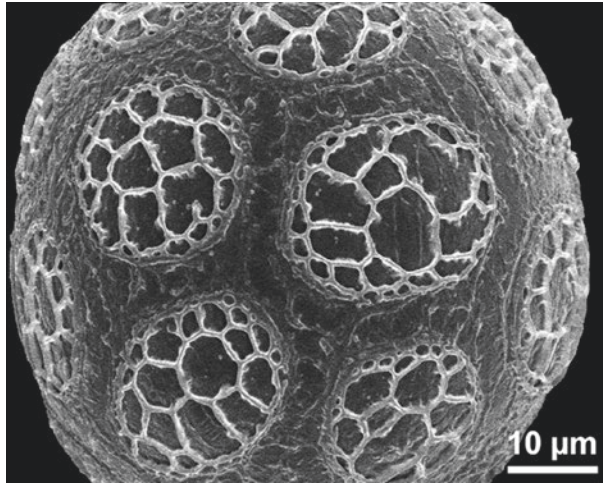
■ ■ ■ *Plumbago auriculata*, Plumbaginaceae

■ ■ ■ *Viburnum lantana*, Adoxaceae

■ ■ ■ *Geranium sibiricum*, Geraniaceae
reticulum cristatum with clavae

clypeate

pollen with exine subdivided into shields



■ ■ ■ *Ibicella lutea*, Martyniaceae
inaperturate

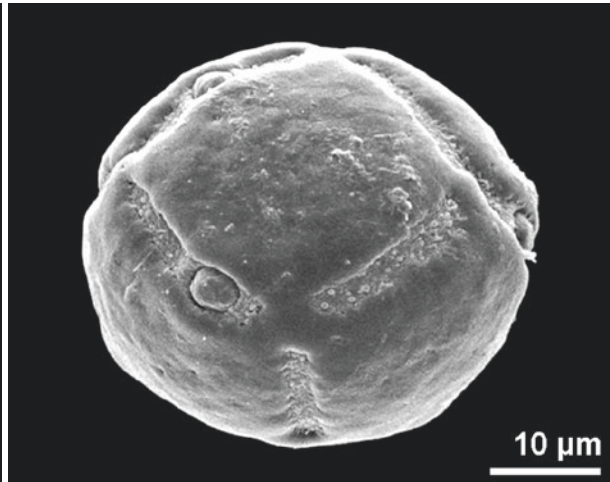
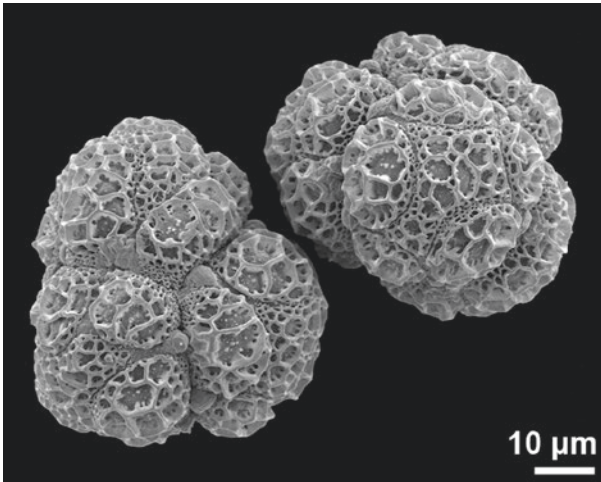
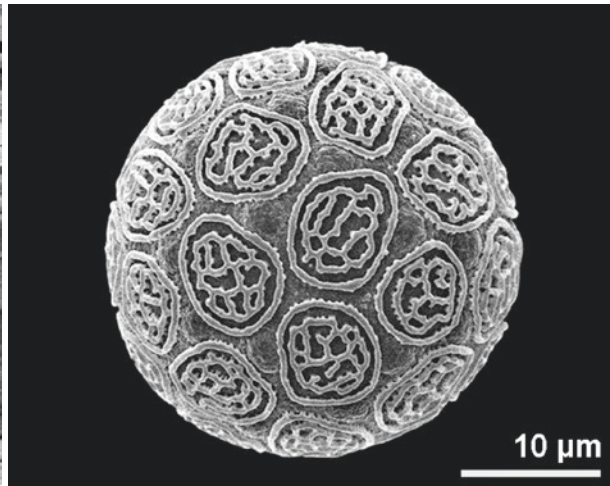
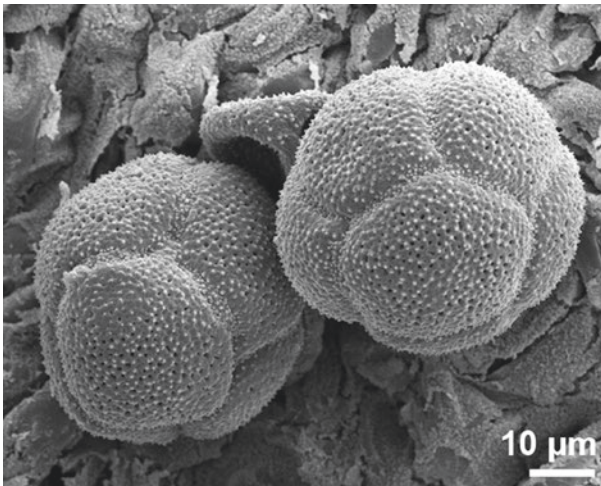
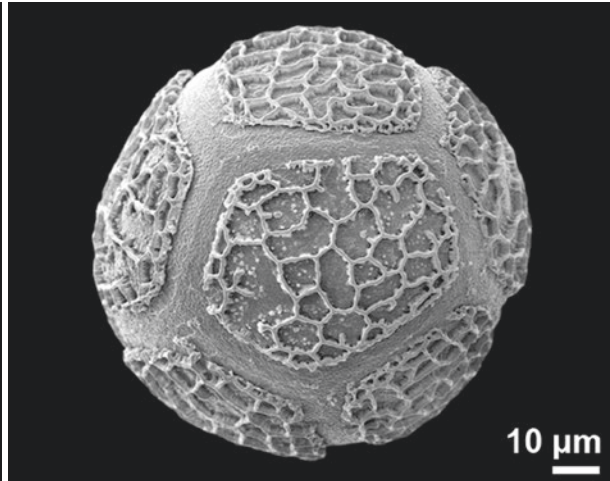
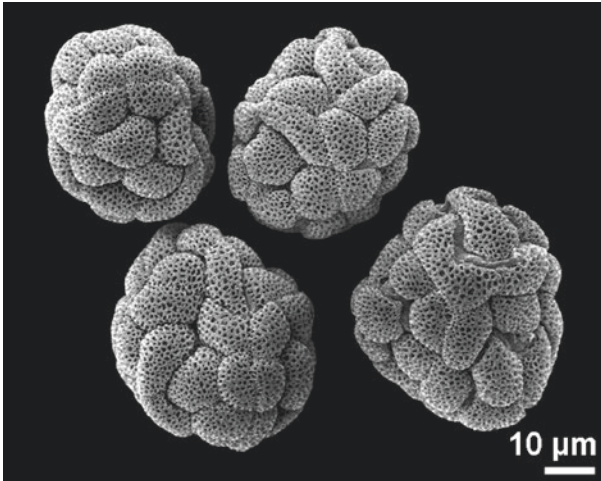
■ ■ ■ *Proboscidea fragrans*, Martyniaceae
inaperturate

■ ■ ■ *Iris bucharica*, Iridaceae
inaperturate

■ ■ ■ *Ibicella lutea*, Martyniaceae
inaperturate, dry pollen

■ ■ ■ *Pseudofumaria lutea*, Papaveraceae
pantocolpate, syncolpate

■ ■ ■ *Iris bucharica*, Iridaceae
inaperturate



■ *Catalpa bignonioides*, Bignoniaceae
tetrads, inaperturate, dry pollen

■ *Lophophora williamsii*, Cactaceae
pantocolpate, dry pollen

■ *Irlbachia pedunculata*, Gentianaceae
tetrads, porate

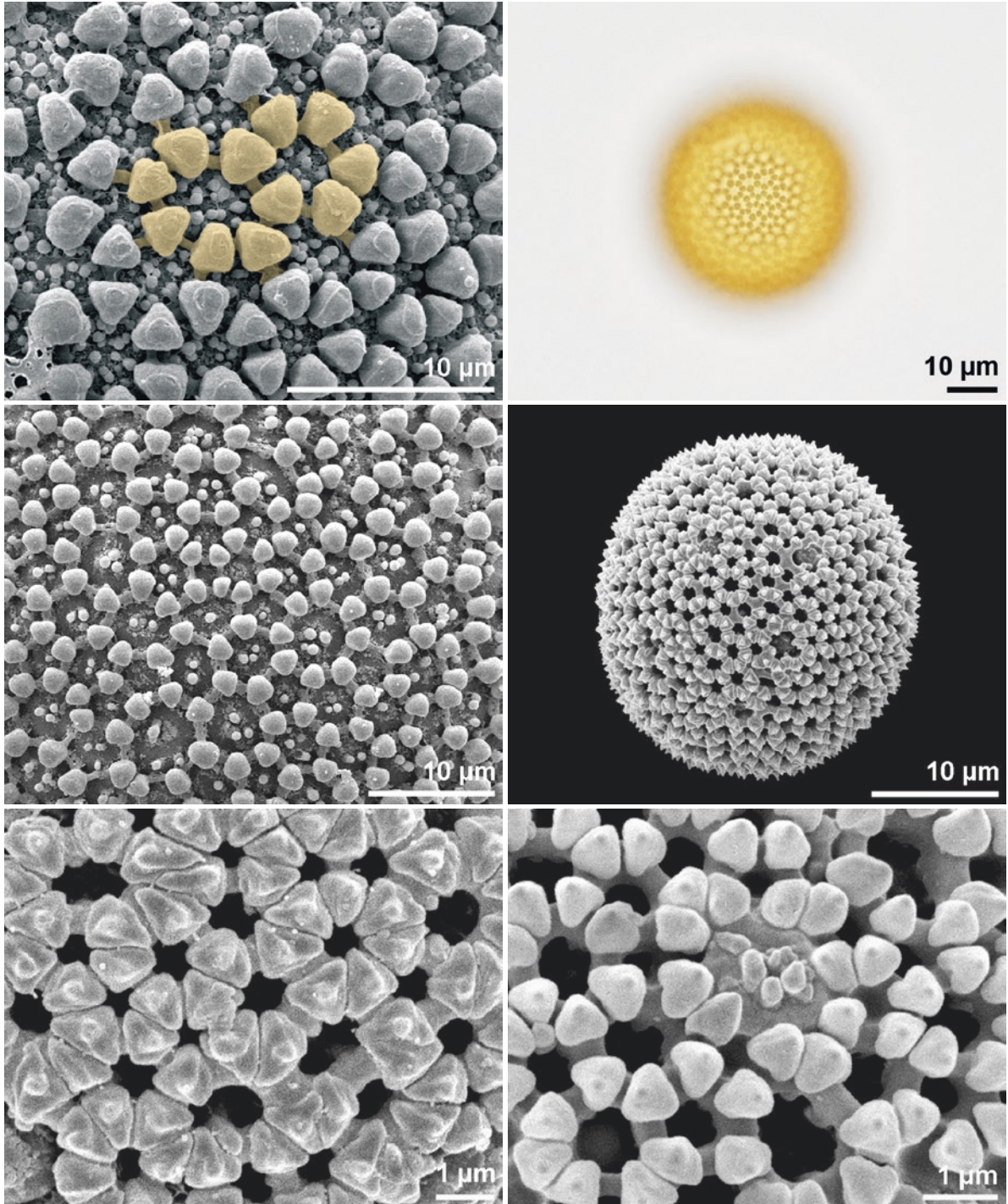
■ *Iris graeberiana*, Iridaceae
inaperturate

■ *Phyllanthus* sp., Euphorbiaceae
pantoporate

■ *Banisteria muricata*, Malpighiaceae
pantocolporate

croton pattern

special type of reticulum cristatum formed by regularly arranged suprasculpture elements on muri



■ ■ *Croton triqueter*, Euphorbiaceae
 pattern colored

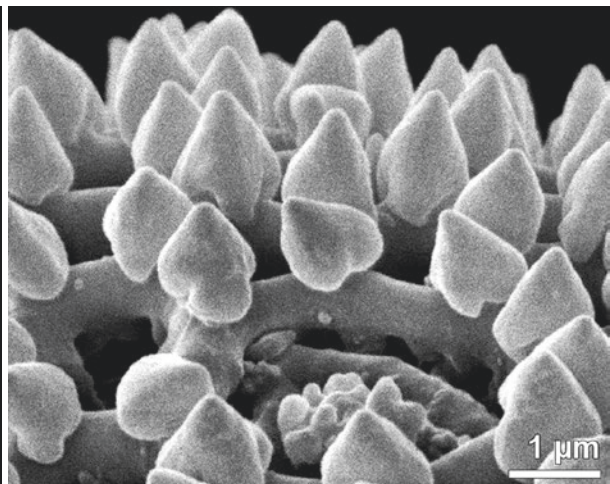
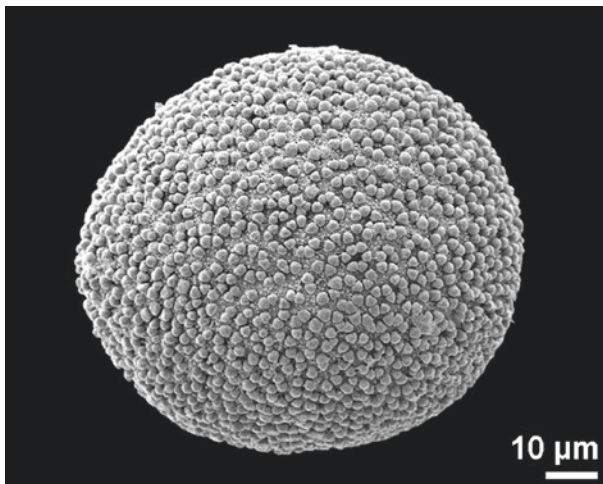
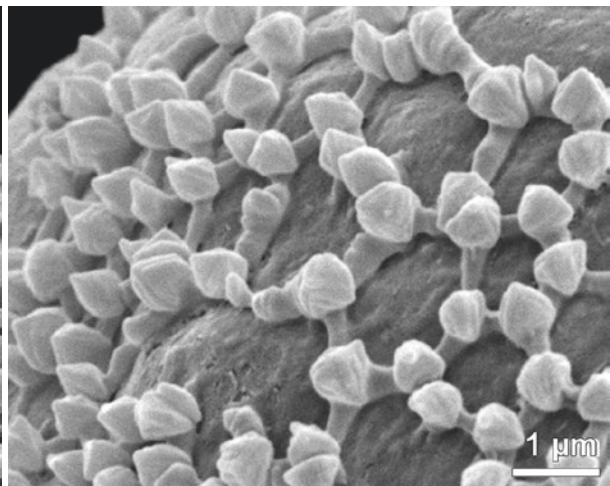
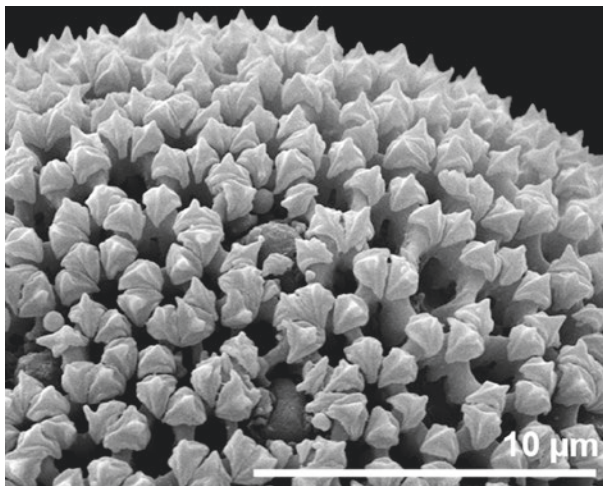
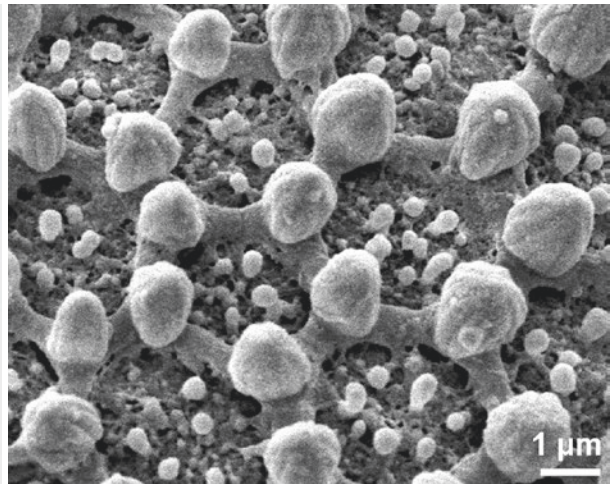
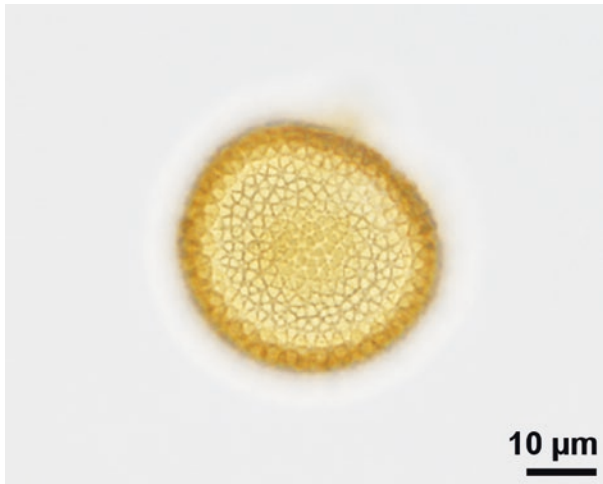
■ ■ *Jatropha podagrica*, Euphorbiaceae

■ ■ *Daphne cneorum*, Thymelaeaceae

■ ■ *Croton triqueter*, Euphorbiaceae

■ ■ *Daphne laureola*, Thymelaeaceae

■ ■ *Thymelaea passerina*, Thymelaeaceae
 surface detail with porus



■ *Garcia nutans*, Euphorbiaceae

■ *Daphne tangutica*, Thymelaeaceae

■ *Croton triqueter*, Euphorbiaceae

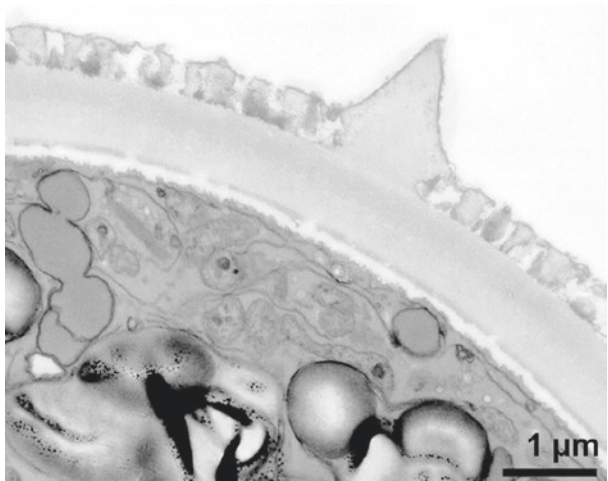
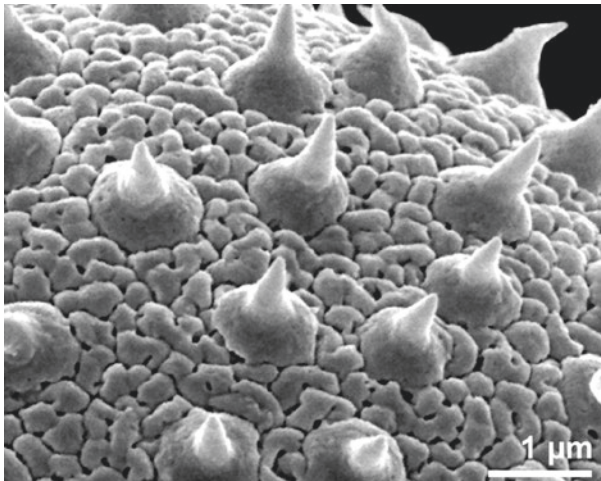
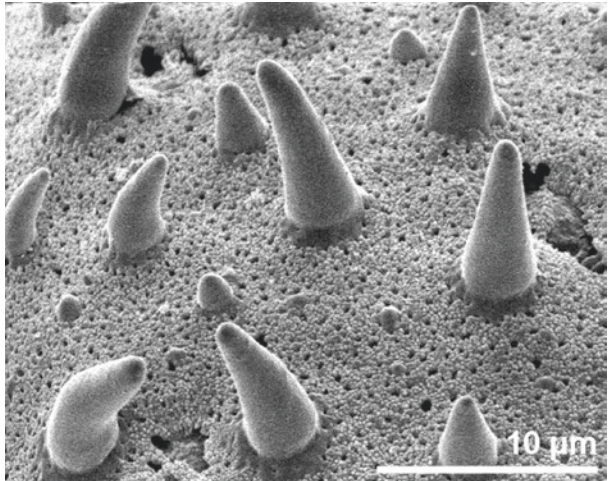
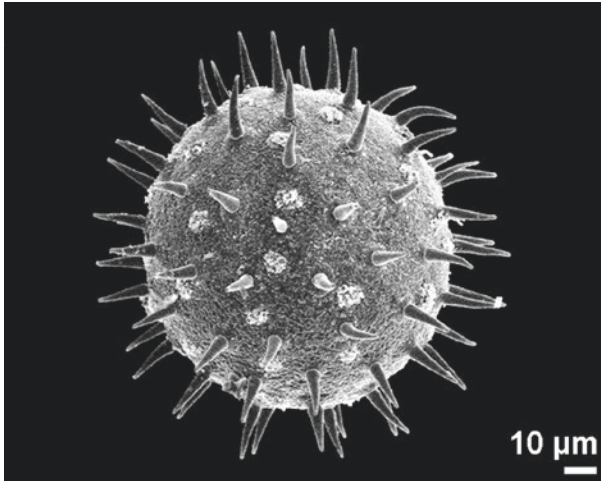
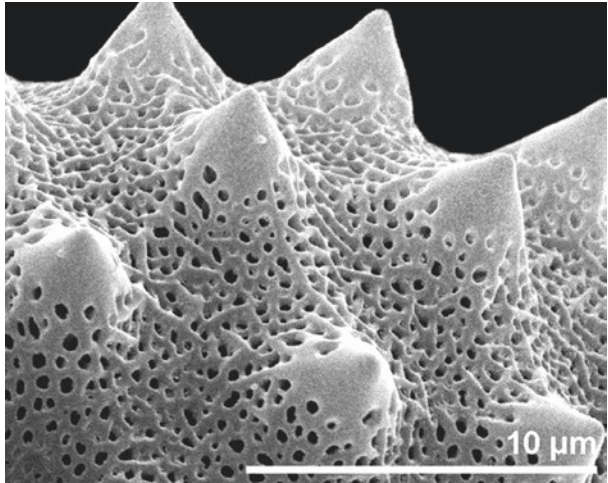
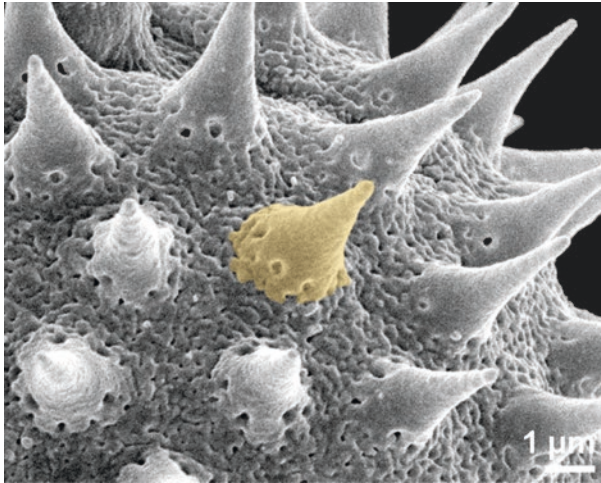
■ *Garcia nutans*, Euphorbiaceae

■ *Callitriche stagnalis*, Plantaginaceae

■ *Thymelaea passerina*, Thymelaeaceae

echinus/echinate

pointed ornamentation element



■ ■ ■ *Galinsoga ciliata*, Asteraceae
echinus colored

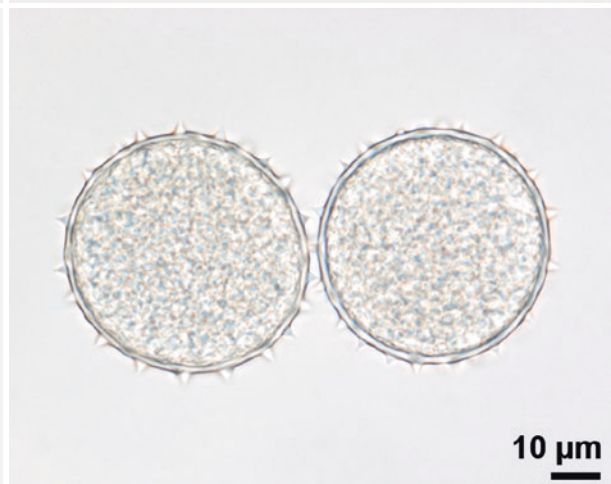
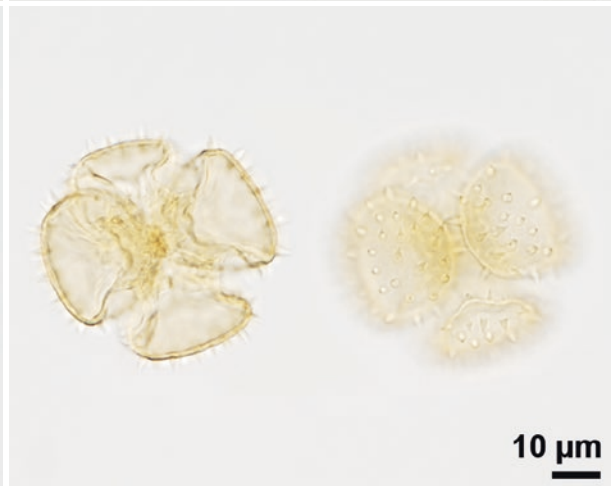
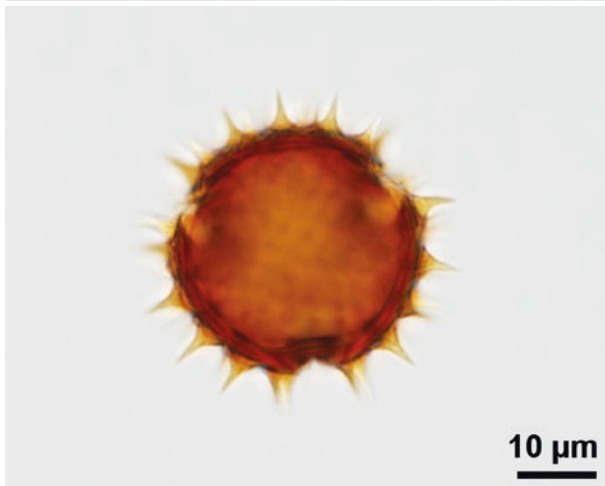
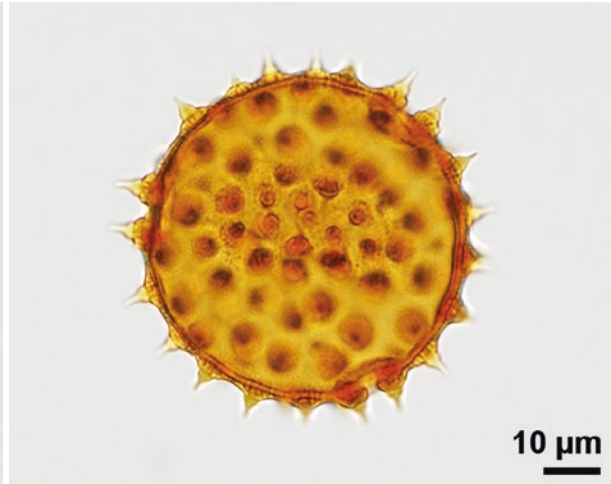
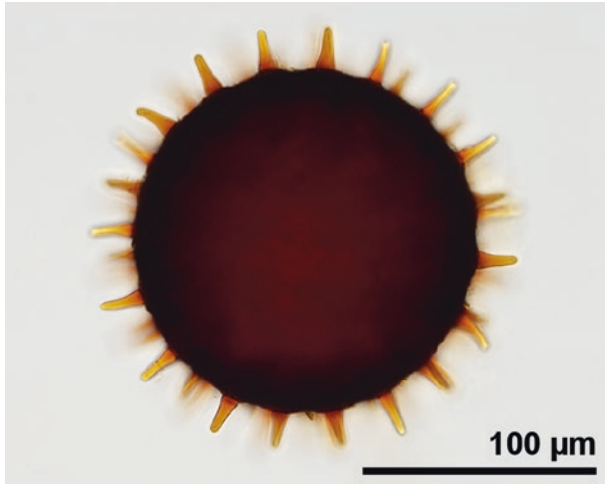
■ ■ ■ *Hibiscus trionum*, Malvaceae
pantoporate

■ ■ ■ *Pinellia ternata*, Araceae

■ ■ ■ *Carduus acanthoides*, Asteraceae

■ ■ ■ *Lavatera thuringiaca*, Malvaceae
pantoporate

■ ■ ■ *Pinellia ternata*, Araceae
cross section of pollen wall



■ ■ *Pavonia multiflora*, Malvaceae

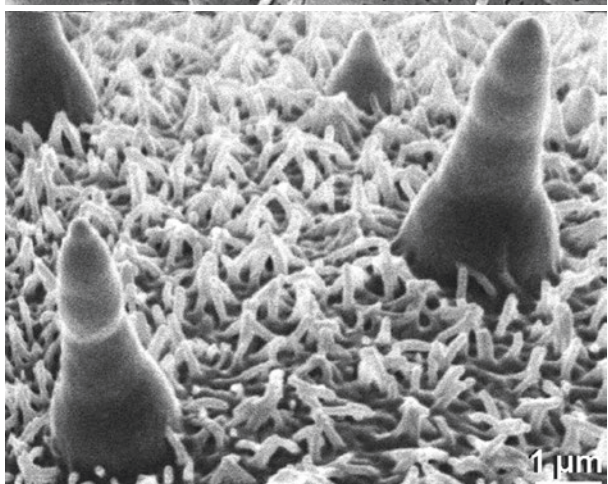
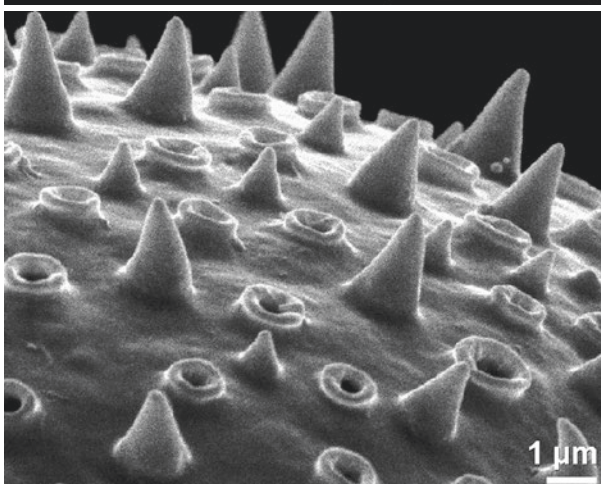
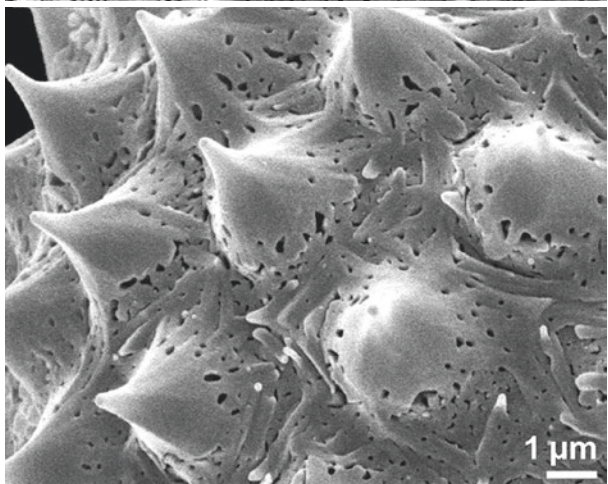
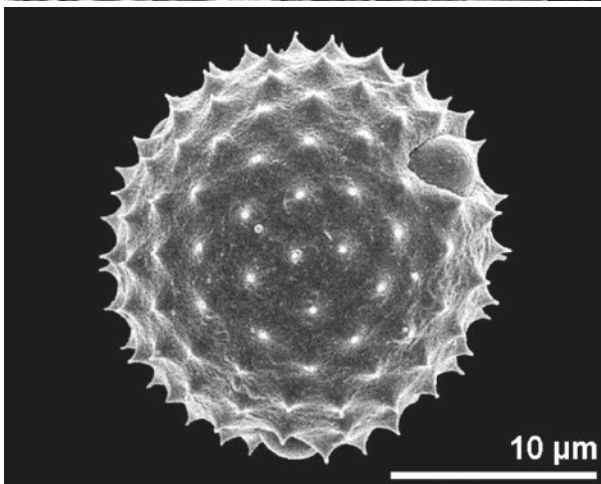
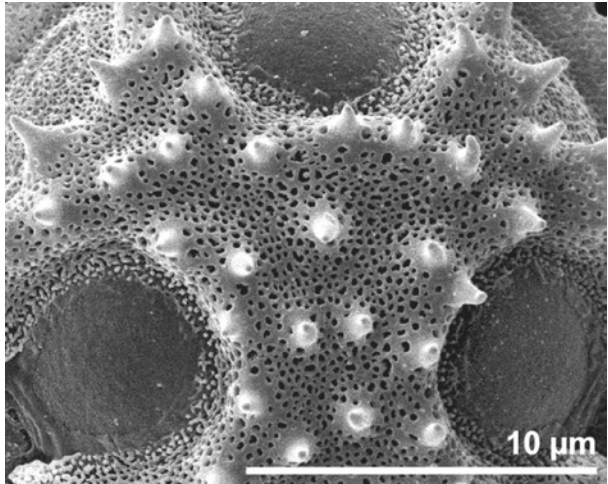
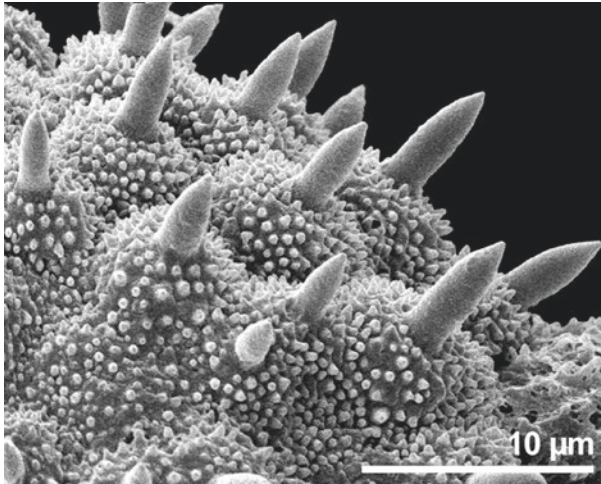
■ ■ *Abutilon megapotamicum*, Malvaceae

■ ■ *Calendula officinalis*, Asteraceae
polar view

■ ■ *Drosera scorpioides*, Droseraceae
tetrads

■ ■ *Nuphar lutea*, Nymphaeaceae
sulcate, distal polar view

■ ■ *Alocasia acuminata*, Araceae
hydrated



■ ■ *Patrinia gibbosa*, Caprifoliaceae

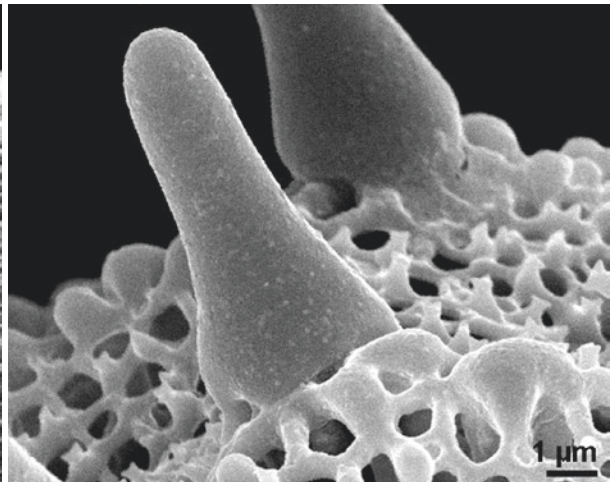
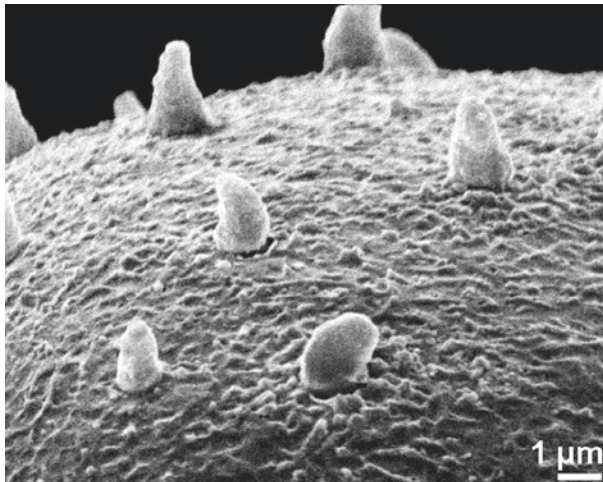
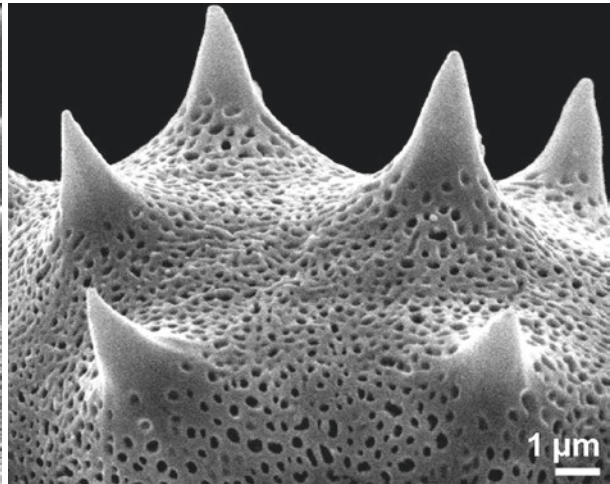
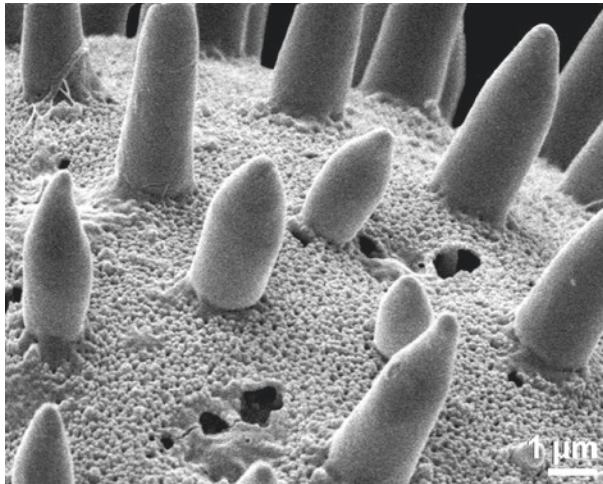
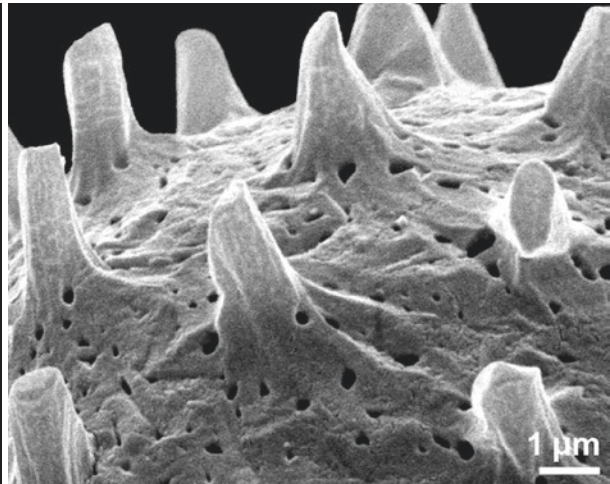
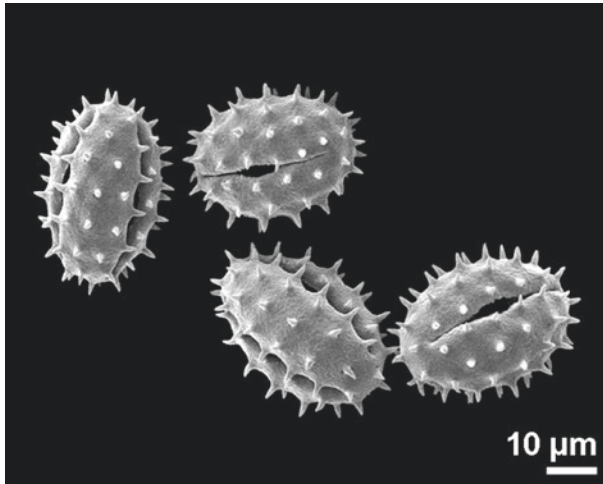
■ ■ *Ambrosia artemisiifolia*, Asteraceae
oblique polar view

■ ■ *Portulaca grandiflora*, Portulacaceae

■ ■ *Hieracium hoppeanum*, Asteraceae
polar area

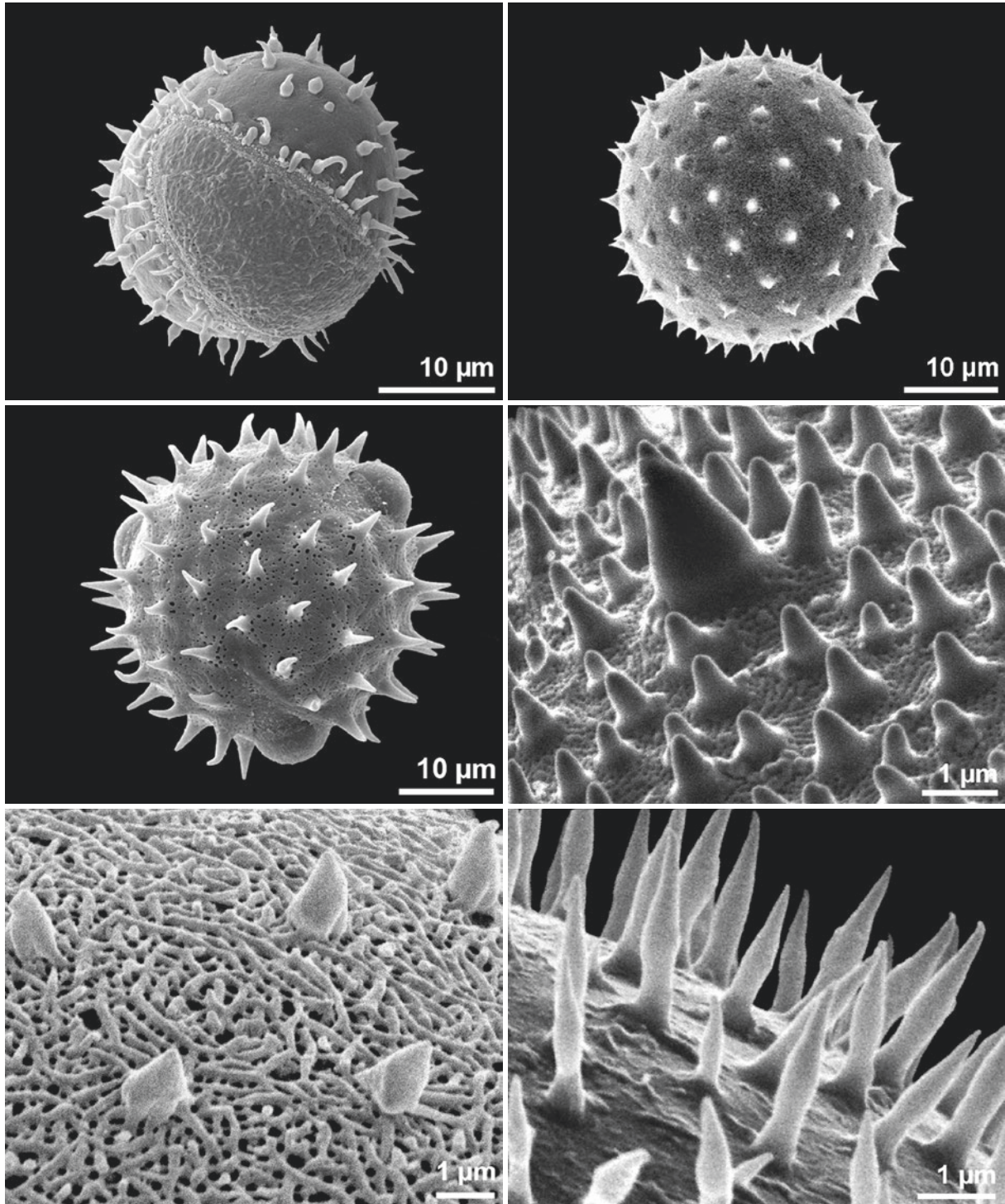
■ ■ *Aster amellus*, Asteraceae

■ ■ *Nuphar lutea*, Nymphaeaceae



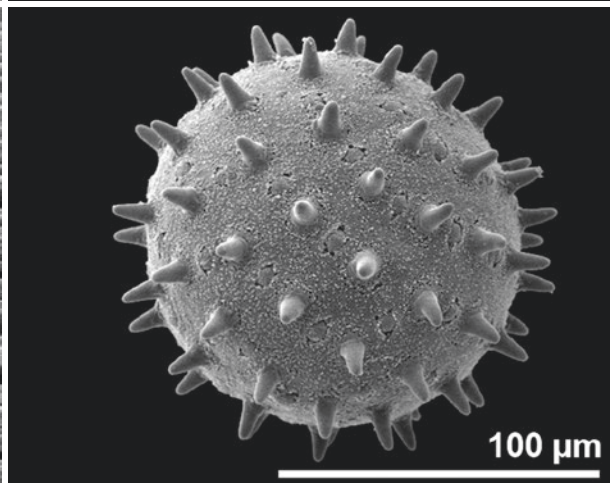
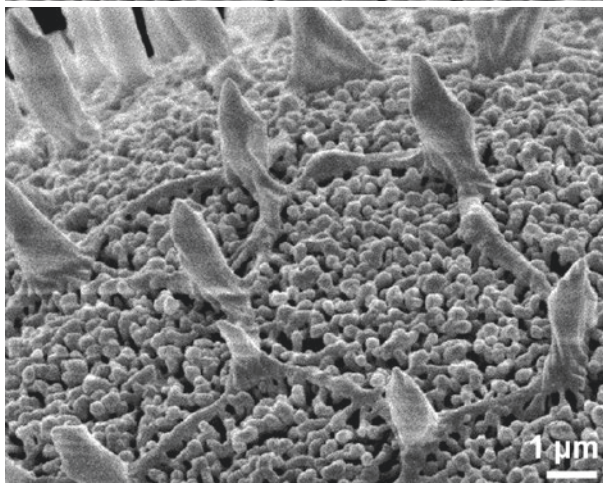
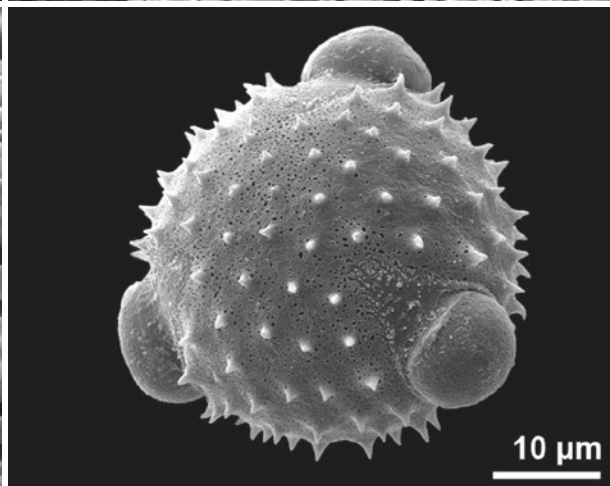
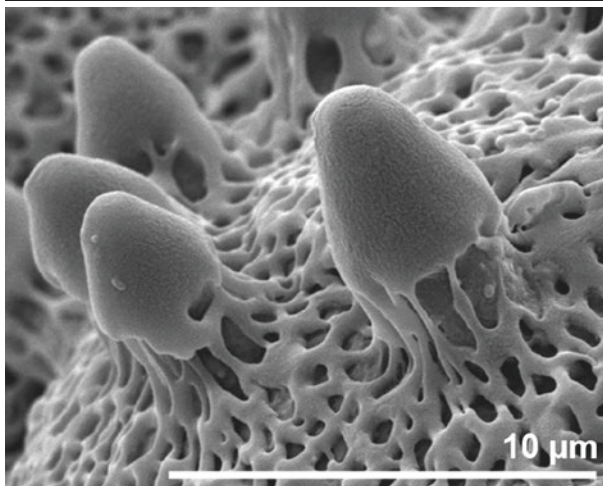
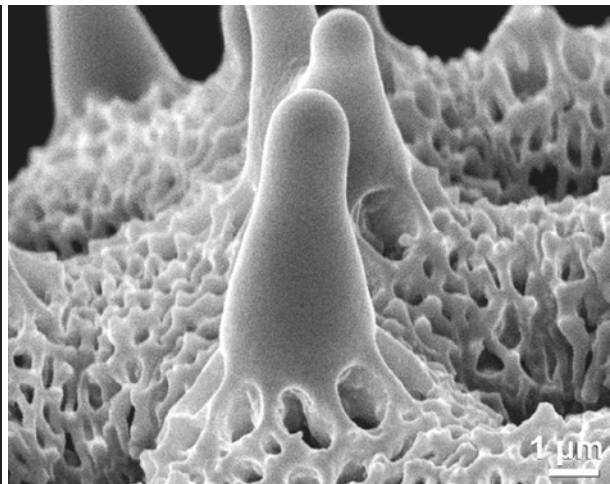
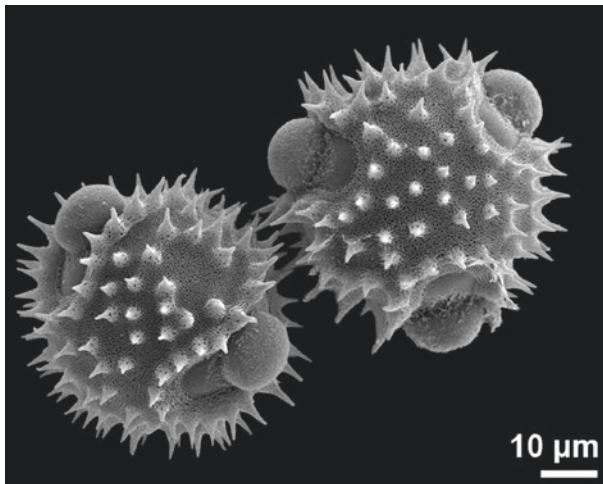
- ■ ■ *Petasites albus*, Asteraceae
dry pollen
- ■ ■ *Malva neglecta*, Malvaceae
- ■ ■ *Lonicera fragrantissima*, Caprifoliaceae

- ■ ■ *Antennaria dioica*, Asteraceae
- ■ ■ *Tanacetum corymbosum*, Asteraceae
- ■ ■ *Ipomoea purpurea*, Convolvulaceae



Arenga pinnata, Arecaceae
 sulcate, distal polar view
 Helianthus annuus, Asteraceae
 tricolporate, polar view
 Campanula alpina, Campanulaceae

Zomicarpa riedeliana, Araceae
 inaperturate
 Knautia drymeia, Caprifoliaceae
 Ulearum sagittatum, Araceae



■ ■ *Scorzonera austriaca*, Asteraceae
tricolporate

■ ■ *Tetrapollinia caeruleascens*, Gentianacea

■ ■ *Stratiotes aloides*, Hydrocharitaceae

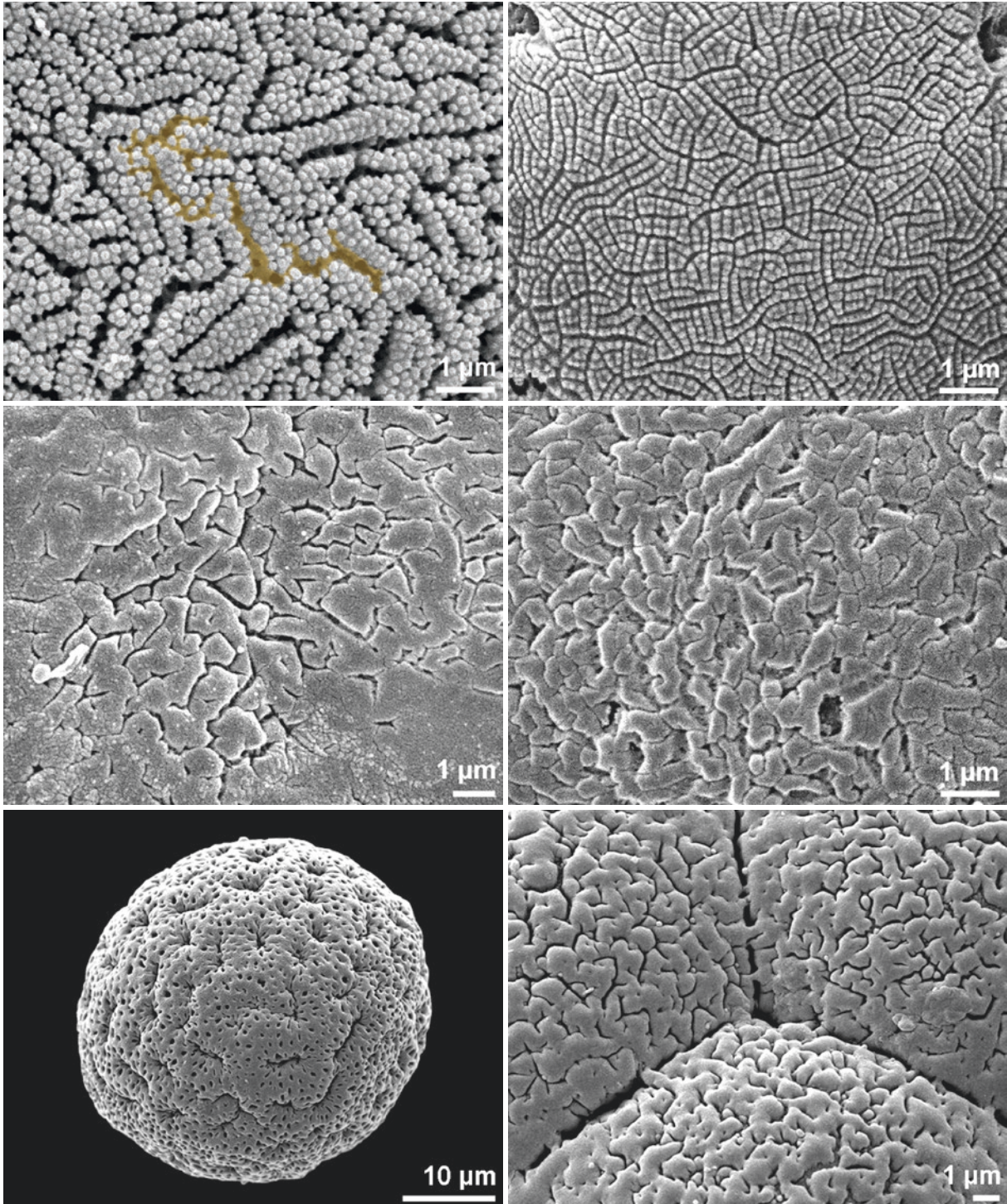
■ ■ *Ipomoea batatas*, Convolvulaceae

■ ■ *Gynura scandens*, Asteraceae
tricolporate, oblique polar view

■ ■ *Hibiscus schizopetalus*, Malvaceae
pantoporate

fossula/fossulate

irregular shaped groove



■ ■ ■ *Mendoncia albida*, Acanthaceae
fossulae colored

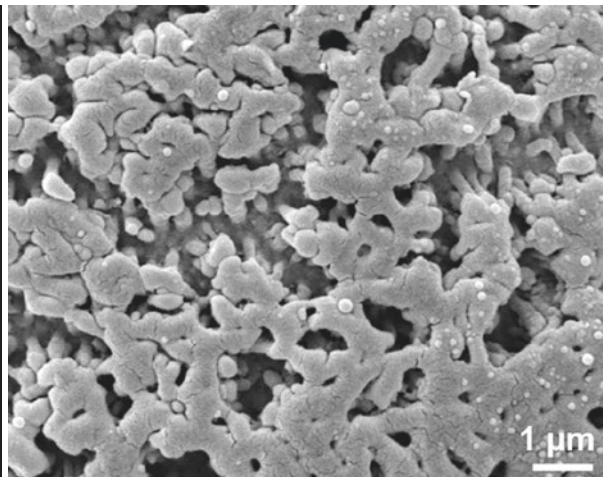
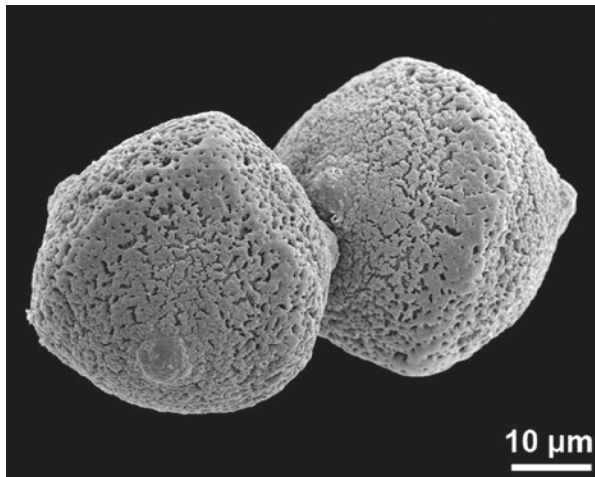
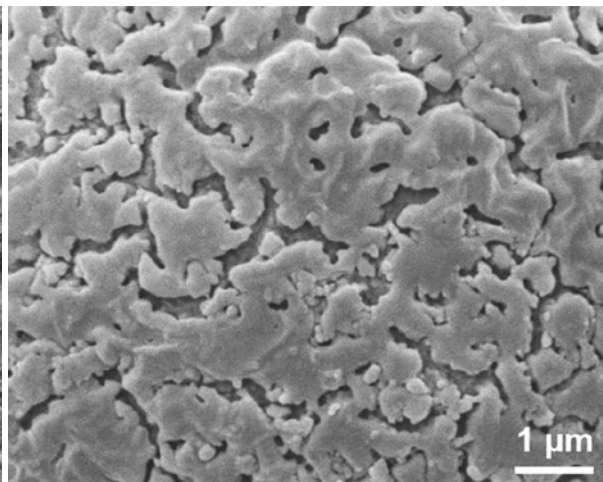
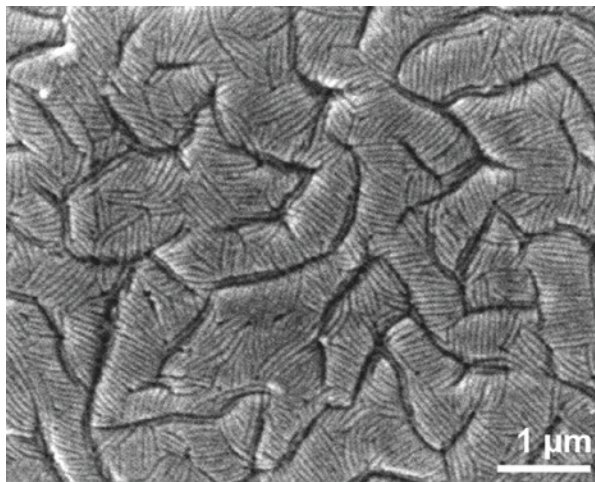
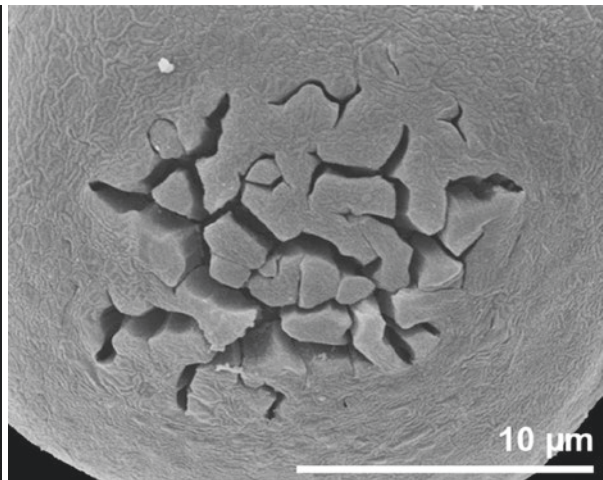
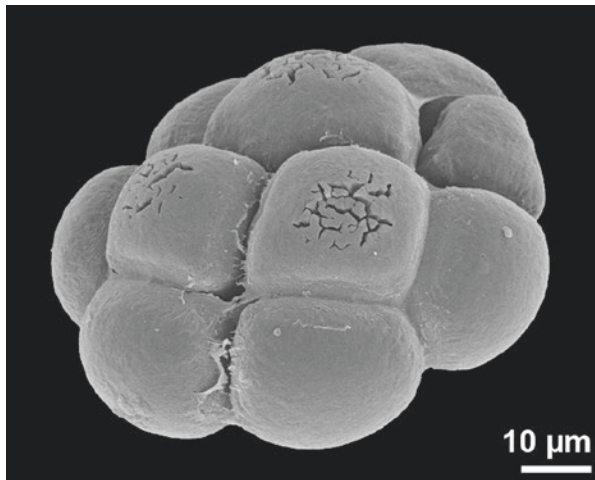
■ ■ ■ *Rhododendron hirsutum*, Ericaceae

■ ■ ■ *Aristolochia manshuriensis*, Aristolochiaceae
fossulate, perforate, inaperturate

■ ■ ■ *Erica herbacea*, Ericaceae

■ ■ ■ *Ledum palustre*, Ericaceae

■ ■ ■ *Moneses uniflora*, Ericaceae
tetrad, y-shaped fissure between the monads



■ *Pithecellobium dulce*, Fabaceae
polyad

■ *Gaultheria myrsinoides*, Ericaceae

■ *Lagerstroemia indica*, Lythraceae
tricolporate

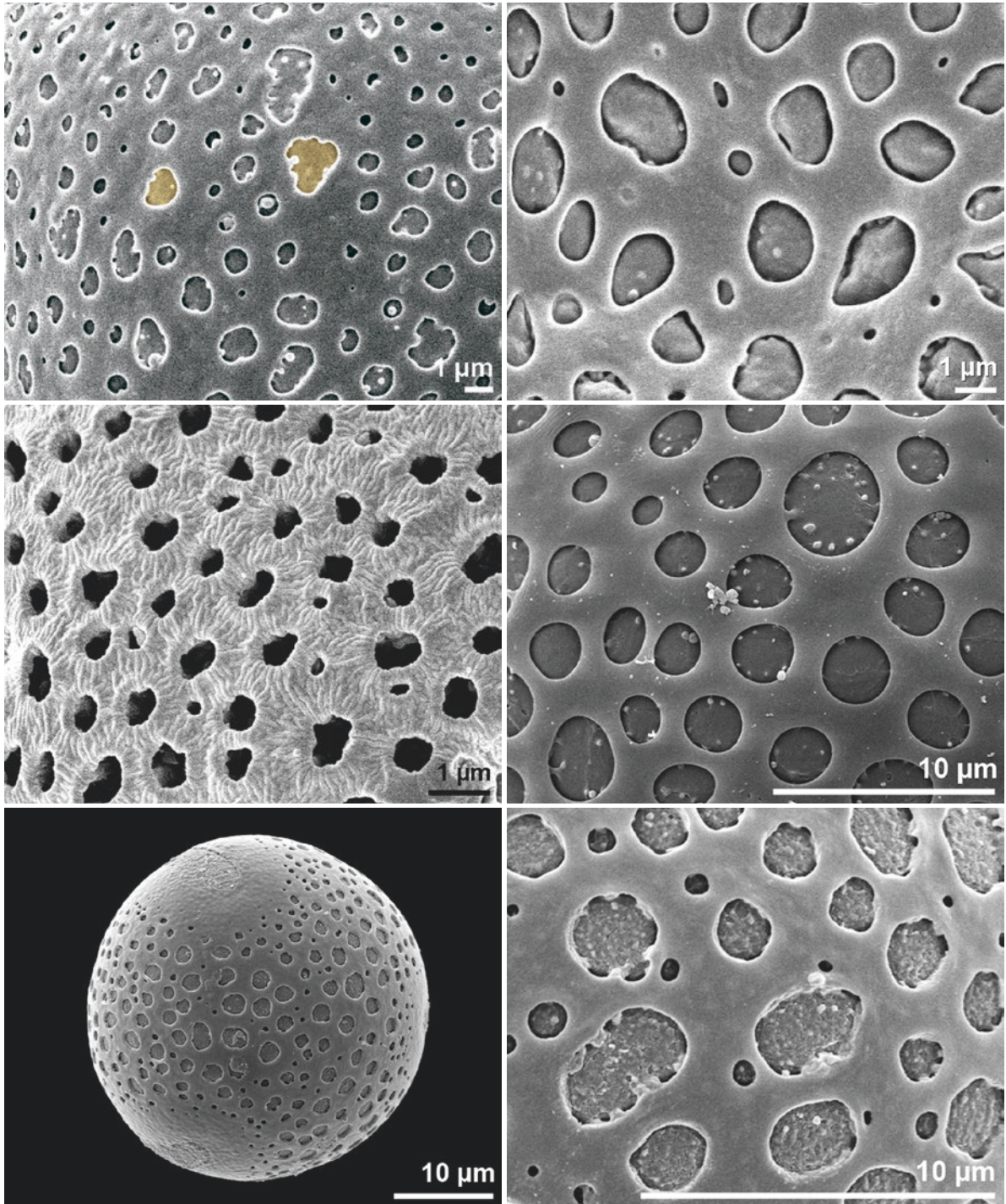
■ *Pithecellobium dulce*, Fabaceae
surface of monad

■ *Besleria hirsuta*, Gesneriaceae

■ *Lagerstroemia indica*, Lythraceae

foveola/foveolate

roundish lumen more than 1 μm in diameter; distance between two adjacent lumina larger than their diameter



■ ■ ■ *Streptocalyx poeppigii*, Bromeliaceae
foveolae colored

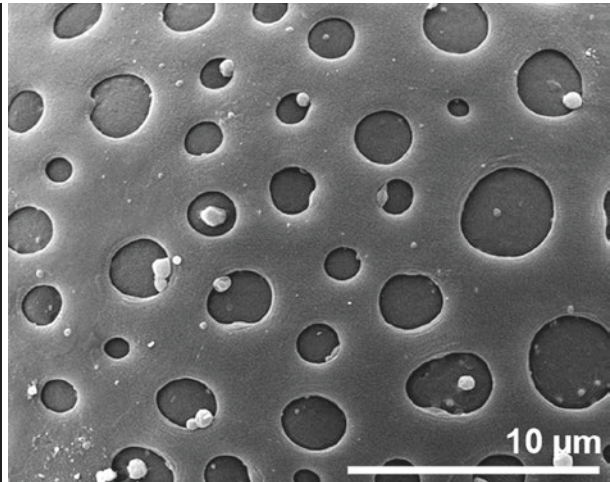
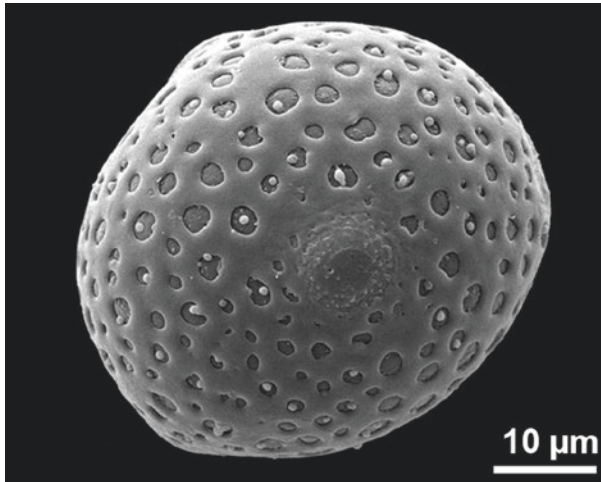
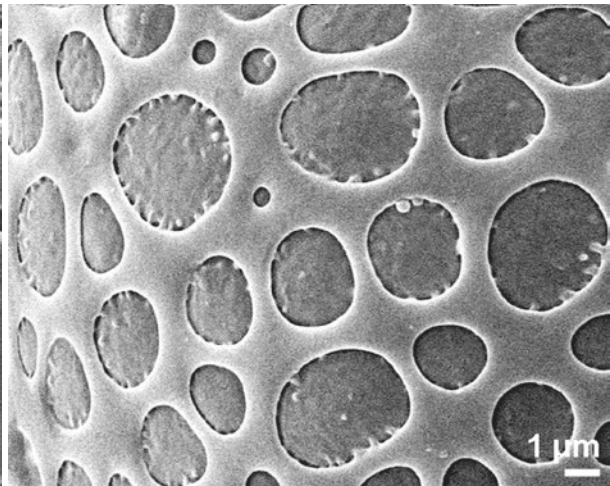
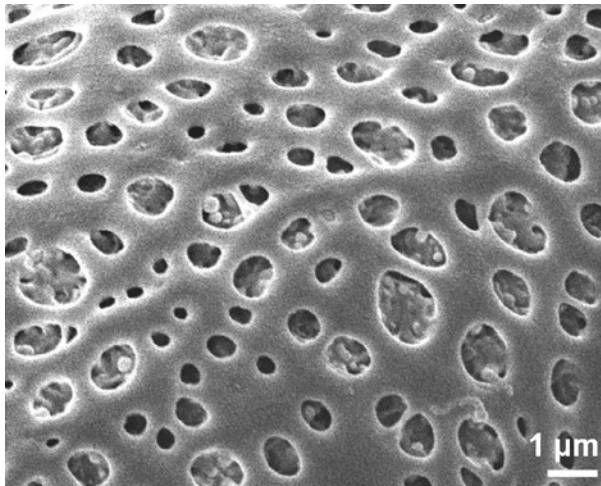
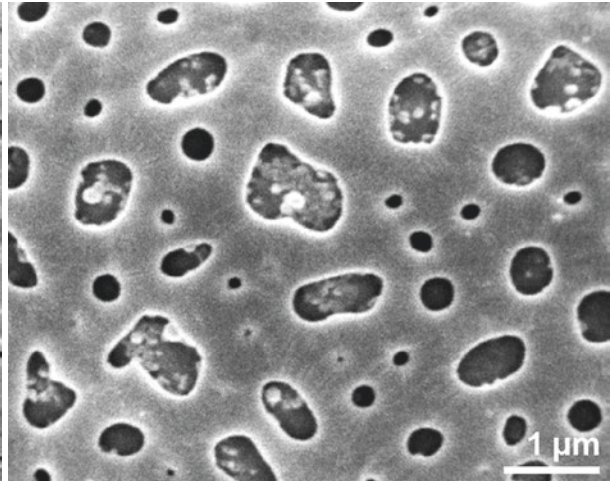
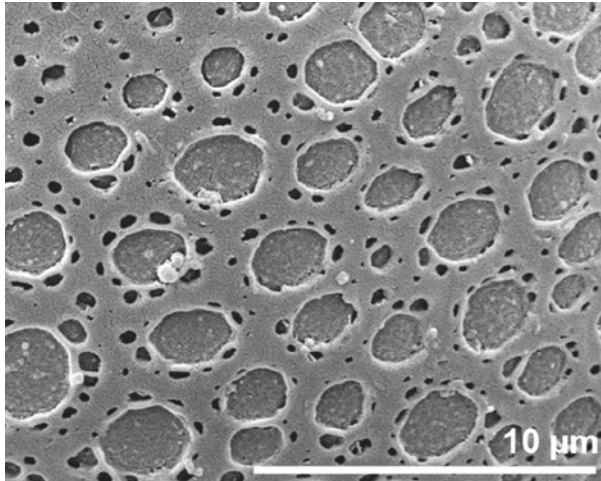
■ ■ ■ *Lavandula angustifolia*, Lamiaceae
foveolate to reticulate

■ ■ ■ *Glossoloma ichthyoderma*, Gesneriaceae
tricolpate, polar view

■ ■ ■ *Canistrum camacaense*, Bromeliaceae
foveolate to reticulate

■ ■ ■ *Aechmea araneosa*, Bromeliaceae

■ ■ ■ *Glossoloma ichthyoderma*, Gesneriaceae



■ ■ ■ *Nemanthus strigillosus*, Gesneriaceae

■ ■ ■ *Maianthemum stellatum*, Asparagaceae

■ ■ ■ *Aechmea ampla*, Bromeliaceae
tetraporate

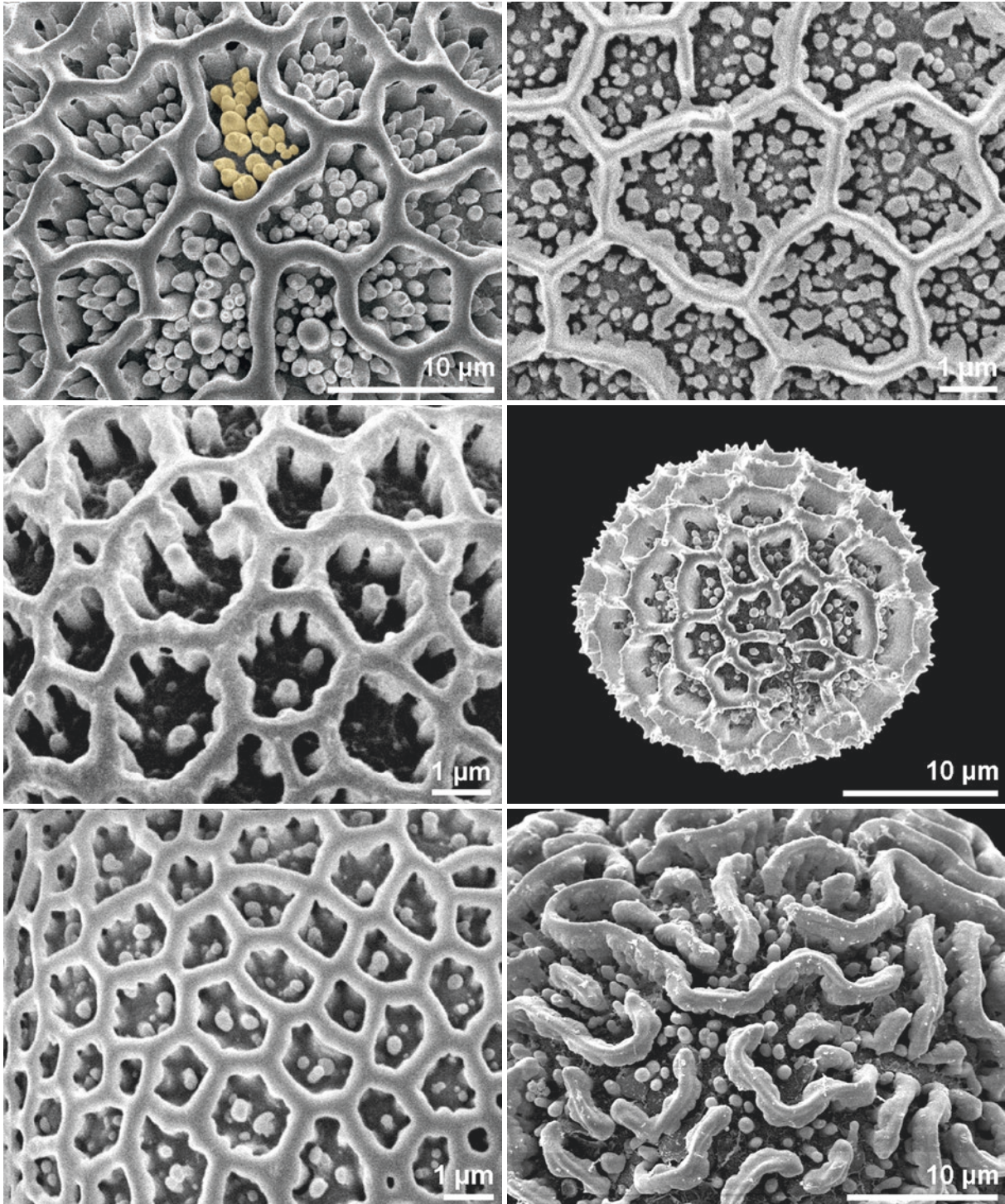
■ ■ ■ *Cyrtosperma beccarianum*, Araceae
foveolate to reticulate

■ ■ ■ *Hohenbergia stellata*, Bromeliaceae
foveolate to reticulate

■ ■ ■ *Aechmea ampla*, Bromeliaceae

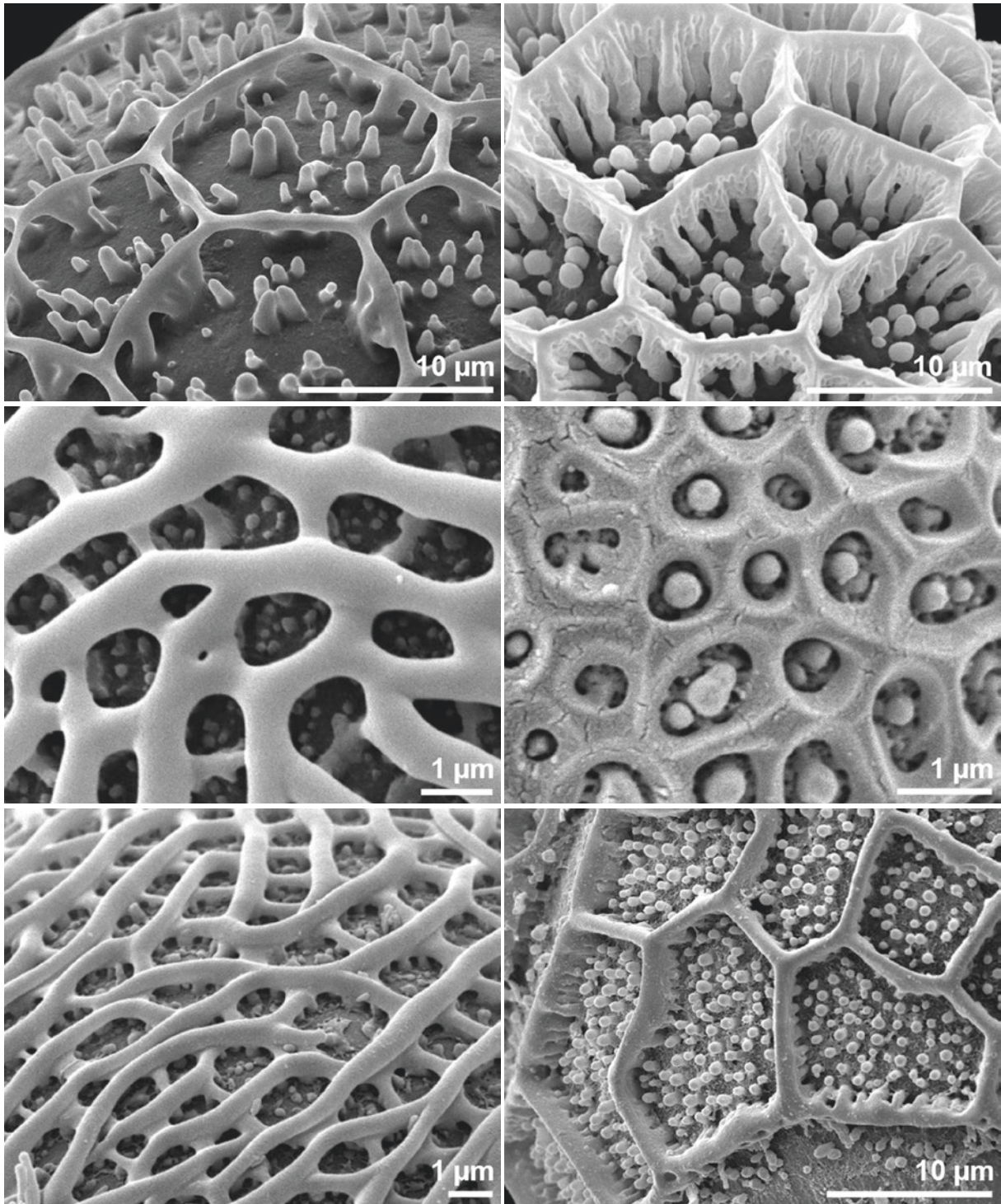
free-standing columellae

columellae not covered by a tectum in semitectate pollen grains



- ■ ■ *Ruellia makoyana*, Acanthaceae
free-standing columellae colored
- ■ ■ *Erophila verna*, Brassicaceae
- ■ ■ *Viburnum opulus*, Adoxaceae

- ■ ■ *Impatiens parviflora*, Balsaminaceae
- ■ ■ *Bougainvillea* sp., Nyctaginaceae
tricolpate, oblique view
- ■ ■ *Thladiantha hookeri*, Cucurbitaceae



■ *Ruellia devosiana*, Acanthaceae

■ *Fouquieria maddougali*, Fouquieriaceae

■ *Schotia brachypetala*, Fabaceae

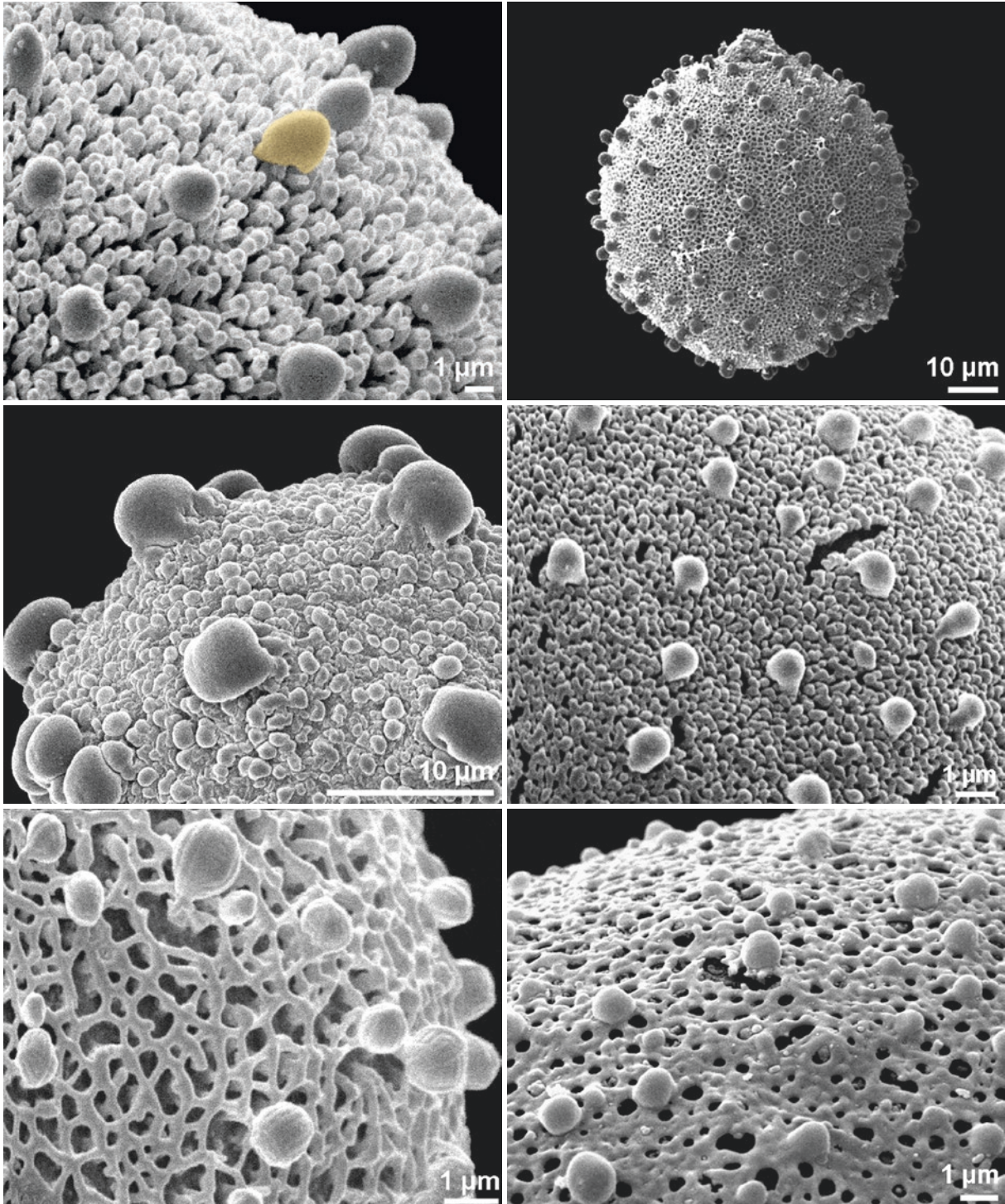
■ *Persicaria chinensis*, Polygonaceae

■ *Ardisia elliptica*, Primulaceae

■ *Passiflora amethystina*, Passifloraceae

gemma/gemmate

globular ornamentation element



■ ■ *Dionaea muscipula*, Droseraceae
gemma colored

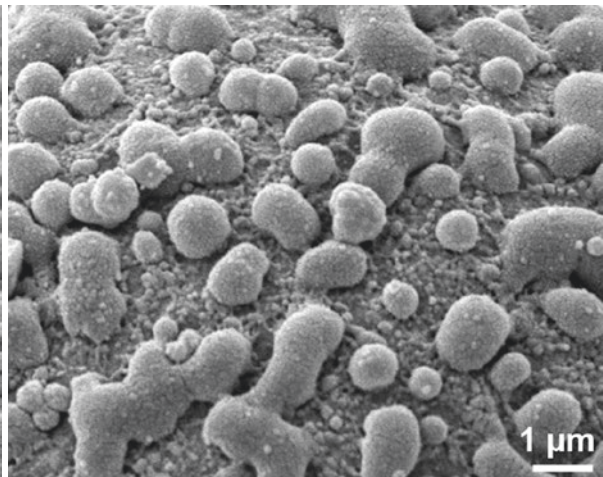
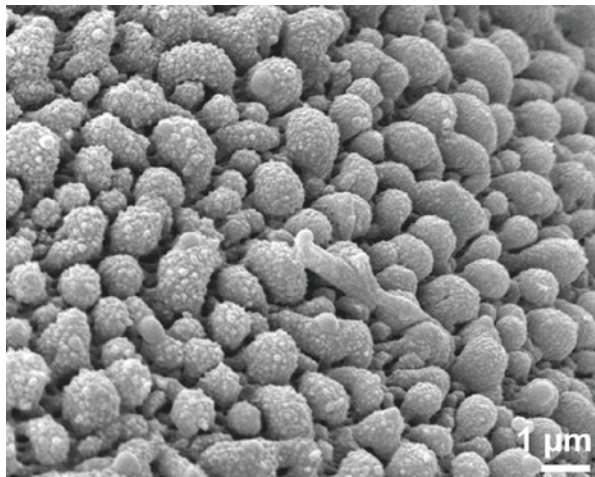
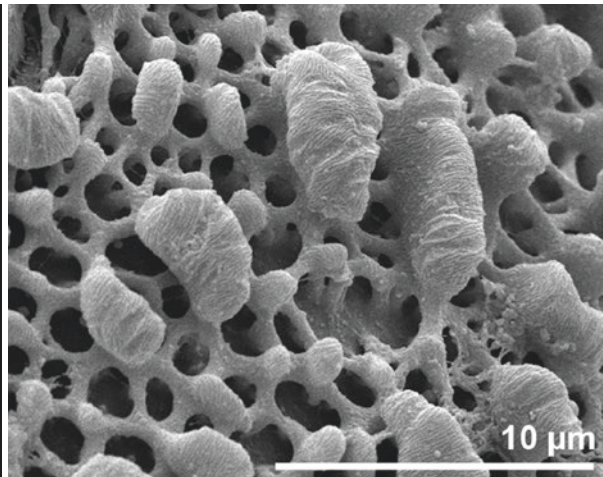
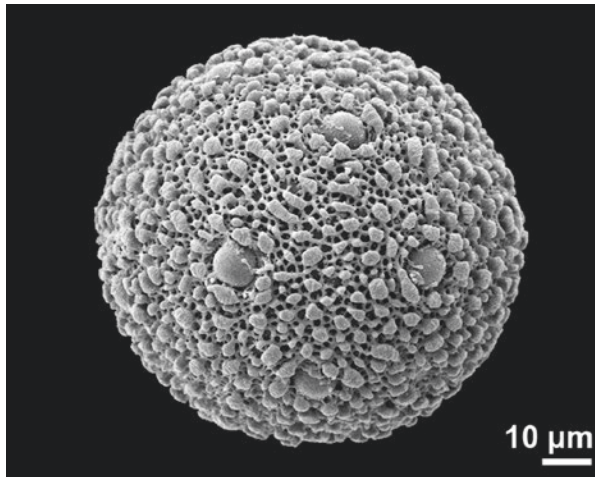
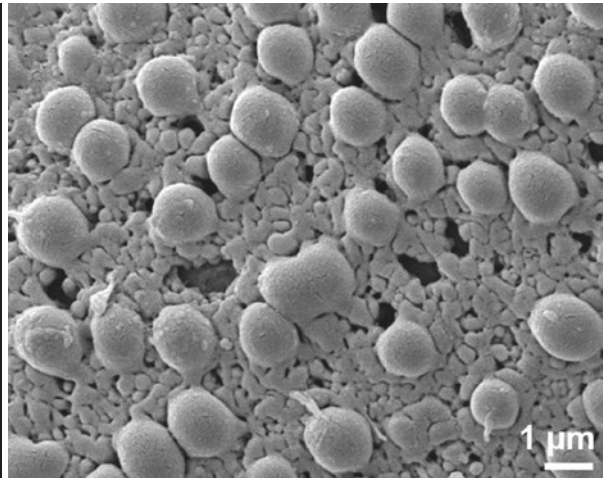
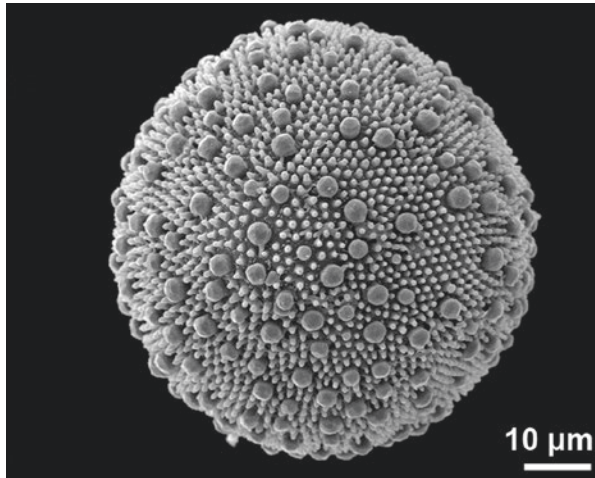
■ ■ *Stenandrium dulce*, Acanthaceae
gemmae of different size

■ ■ *Fatsia japonica*, Araliaceae
gemmate, reticulate

■ ■ *Cephalopentandra ecirrhosa*, Cucurbitaceae
polar view

■ ■ *Asarum europaeum*, Aristolochiaceae
gemmate, microgemmate

■ ■ *Hakea kippistiana*, Proteaceae
gemmate, microreticulate



■ ■ ■ *Turnera ulmifolia*, Passifloraceae
gemmate, clavate

■ ■ ■ *Cantua buxifolia*, Polemoniaceae
gemmate, reticulate

■ ■ ■ *Roridula gorgonias*, Roridulaceae

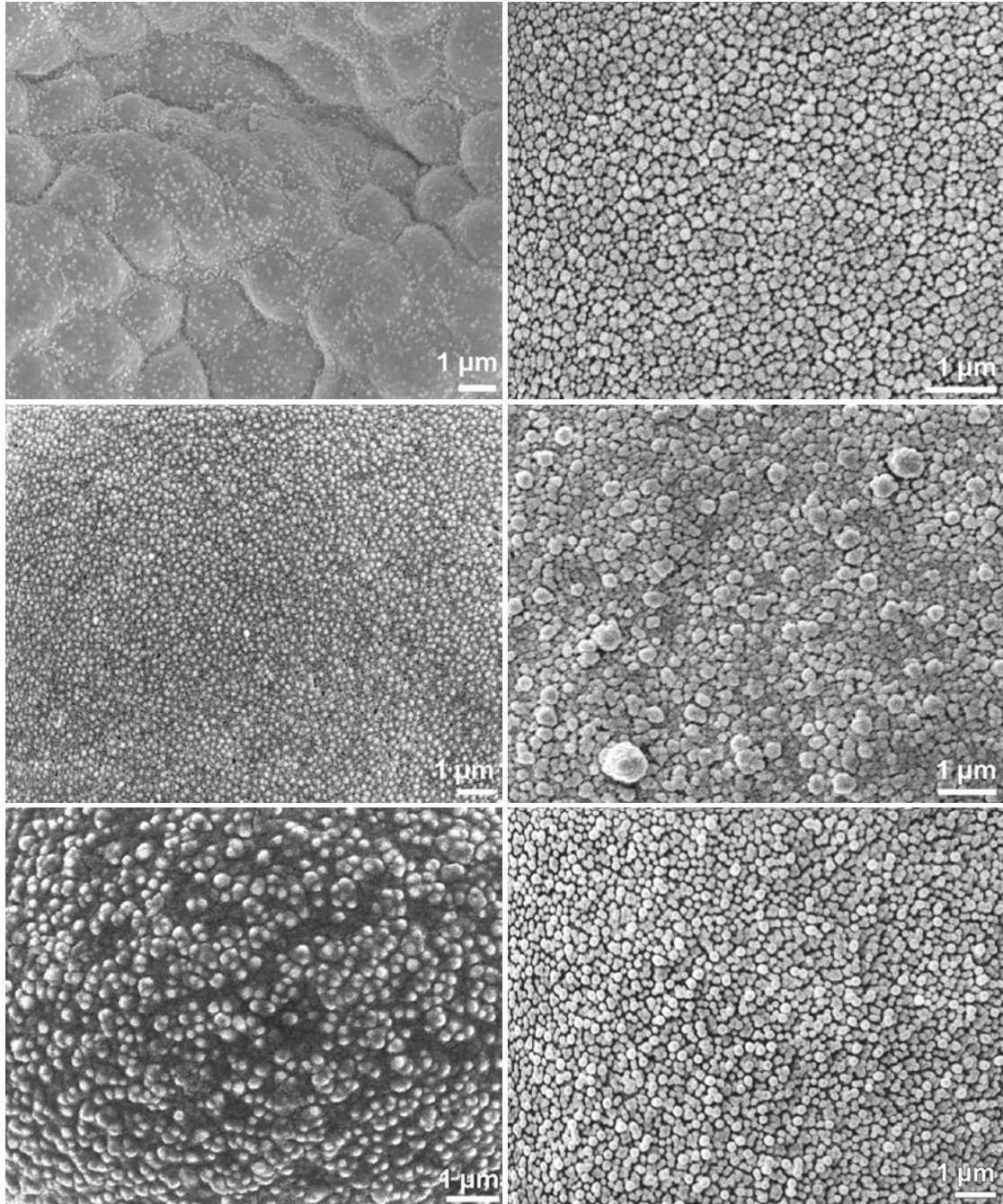
■ ■ ■ *Wachendorfia thyrsiflora*, Haemodoraceae

■ ■ ■ *Cantua buxifolia*, Polemoniaceae
gemmate to rugulate

■ ■ ■ *Calluna vulgaris*, Ericaceae
gemmate to rugulate

granulum/granulate

sculpture element of different/indefinable shape, equal or smaller than 0.1 μm in diameter (hard to outline)

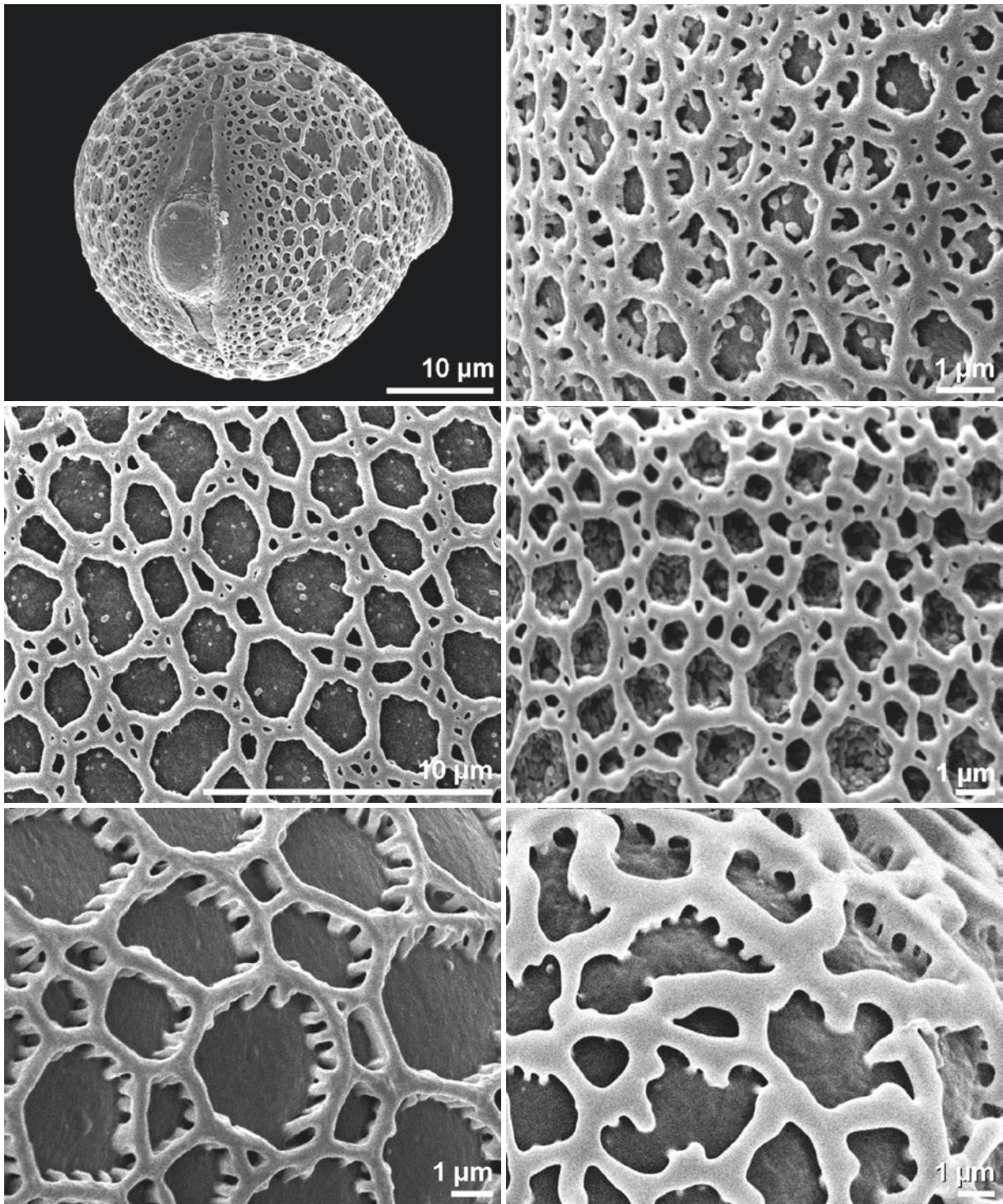


- *Hemiptelia* sp., Ulmaceae
fossil, Miocene, China
- *Luzula campestris*, Juncaceae
- *Humulus lupulus*, Cannabaceae

- *Clarkia pulchella*, Onagraceae
- *Larix decidua*, Pinaceae
- *Clarkia purpurea*, Onagraceae

heterobrochate

reticulate pollen wall with lumina of different sizes



■ *Hedera helix*, Araliaceae
 ■ equatorial view

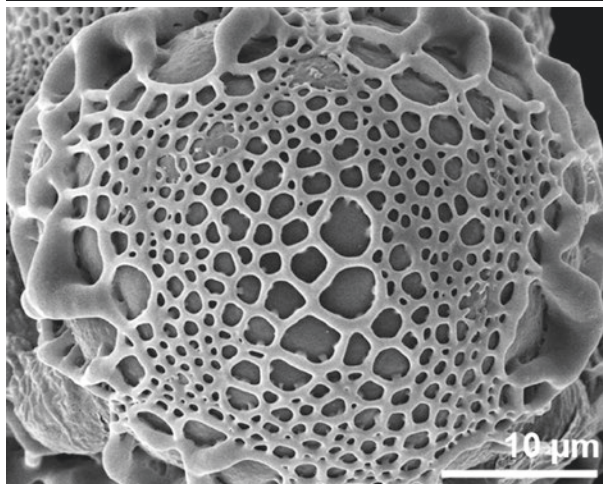
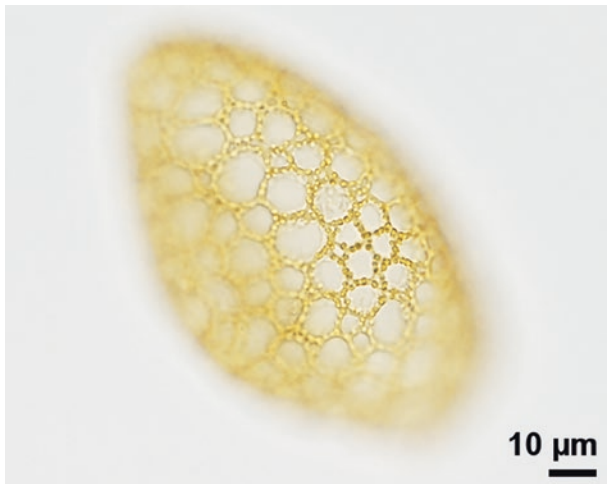
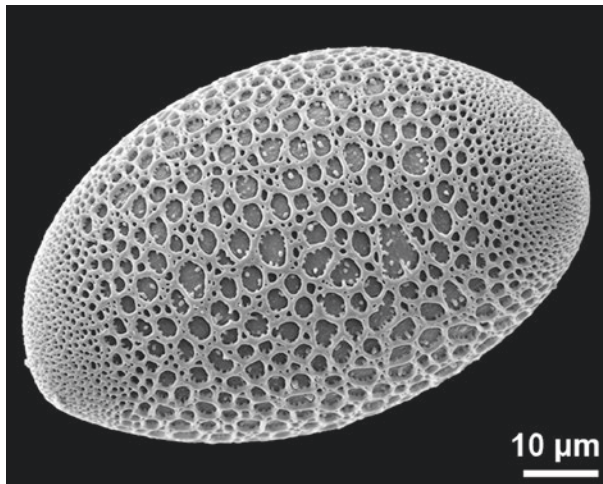
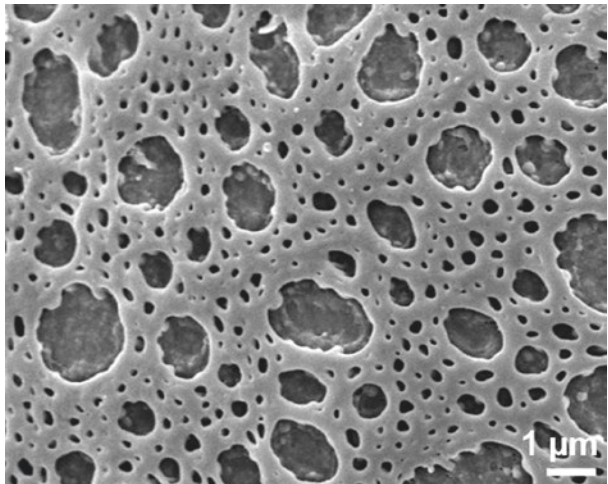
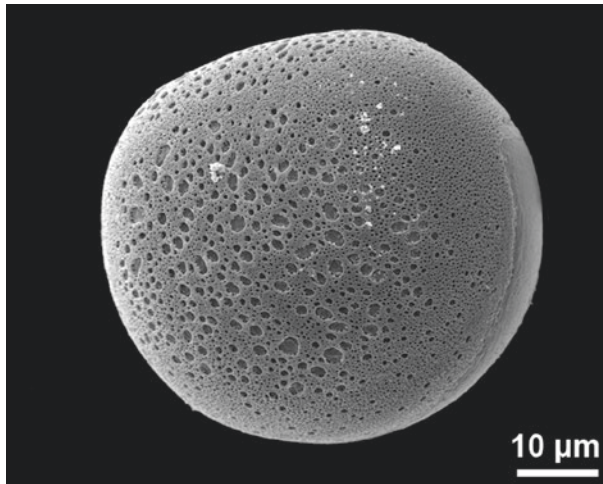
■ *Fritillaria meleagris*, Liliaceae

■ *Billbergia seidelii*, Bromeliaceae

■ *Lachenalia aloides*, Asparagaceae

■ *Anthericum ramosum*, Asparagaceae

■ *Limodorum abortivum*, Orchidaceae



■ ■ *Ornithogalum narbonense*, Asparagaceae
equatorial view

■ ■ *Bomarea hirsuta*, Alstroemeriaceae
proximal polar view

■ ■ *Chelonanthus alatus*, Gentianaceae
polar area

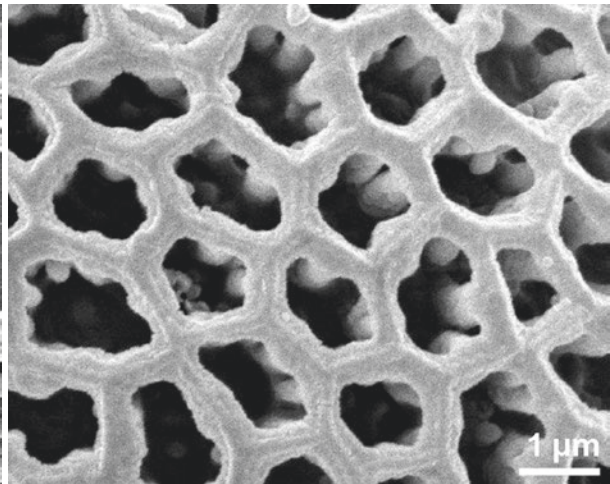
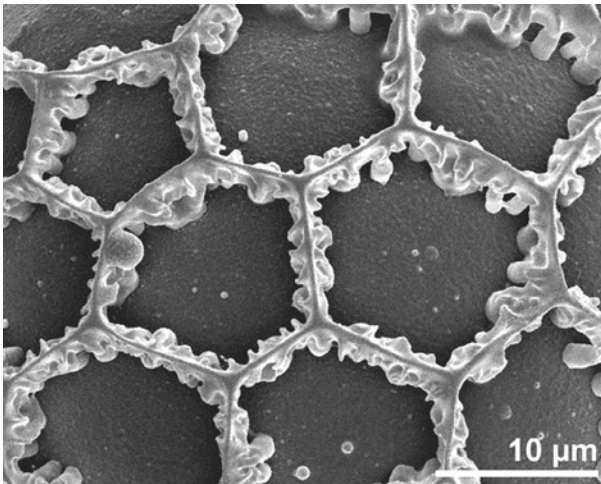
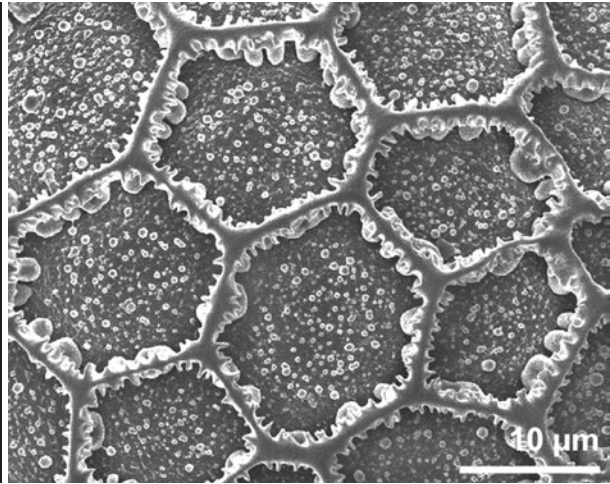
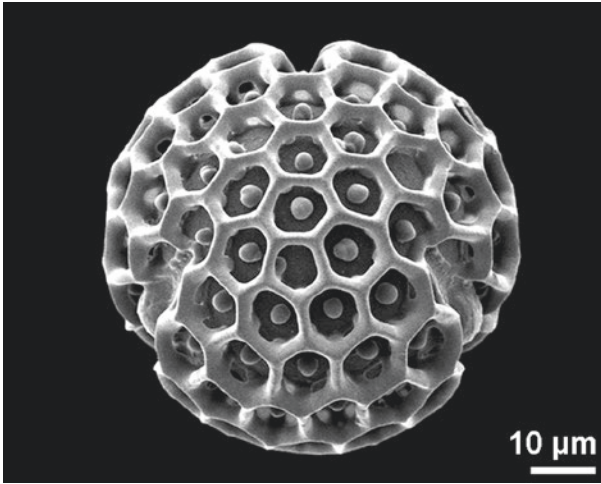
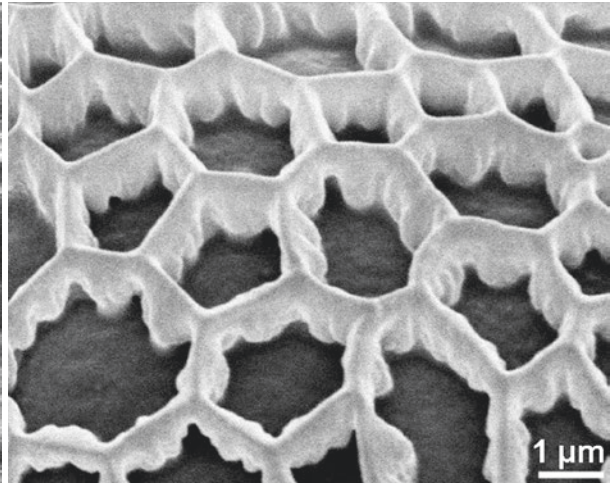
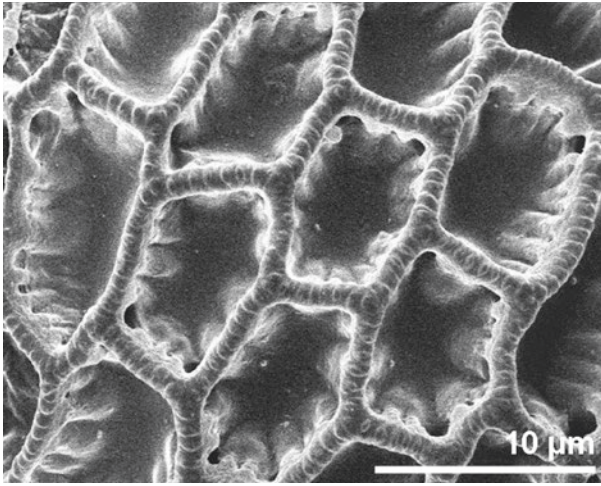
■ ■ *Ornithogalum narbonense*, Asparagaceae

■ ■ *Bessera elegans*, Asparagaceae

■ ■ *Plectranthus esculentus*, Lamiaceae

homobrochate

reticulate pollen wall with lumina of uniform size



■ ■ ■ *Acantholimon glumaceum*, Plumbaginaceae

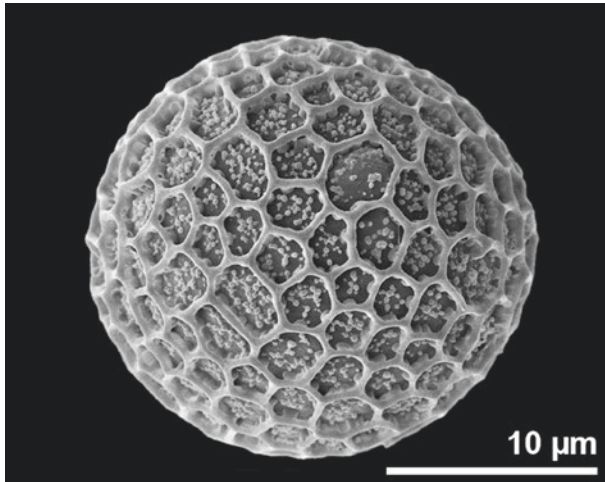
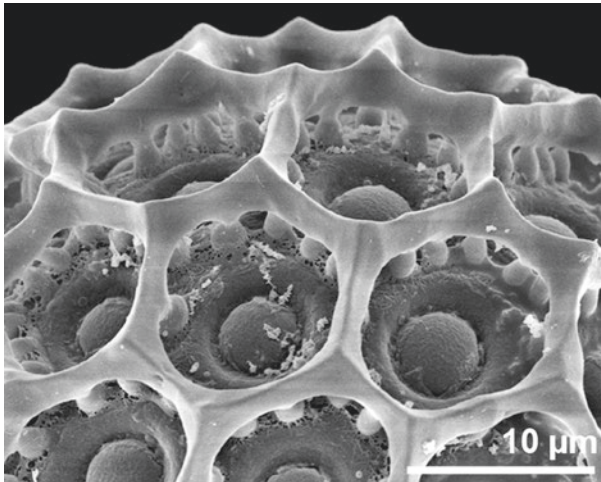
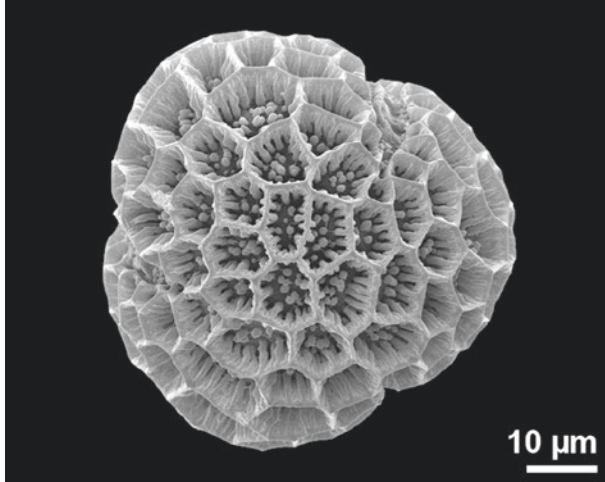
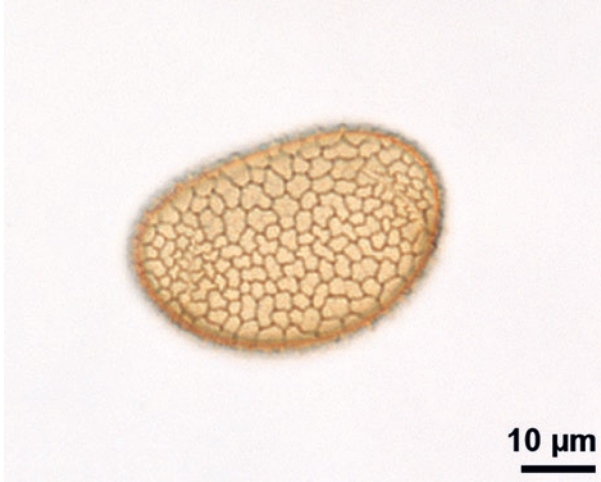
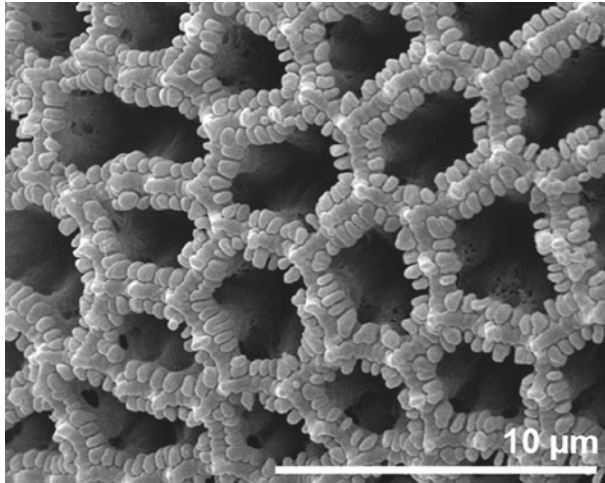
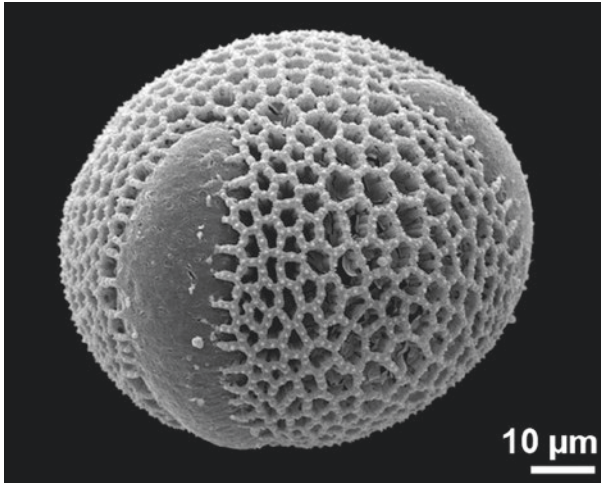
■ ■ ■ *Eranthemum wattii*, Acanthaceae
polar view

■ ■ ■ *Ruellia* sp., Acanthaceae

■ ■ ■ *Abeliophyllum distichum*, Oleaceae

■ ■ ■ *Strobilanthes roseus*, Acanthaceae

■ ■ ■ *Thlaspi montanum*, Brassicaceae



■ ■ ■ *Armeria pinifolia*, Plumbaginaceae
equatorial view

■ ■ ■ *Impatiens parviflora*, Balsaminaceae
oblique equatorial view

■ ■ ■ *Kallstroemia maxima*, Zygophyllaceae

■ ■ ■ *Armeria pinifolia*, Plumbaginaceae

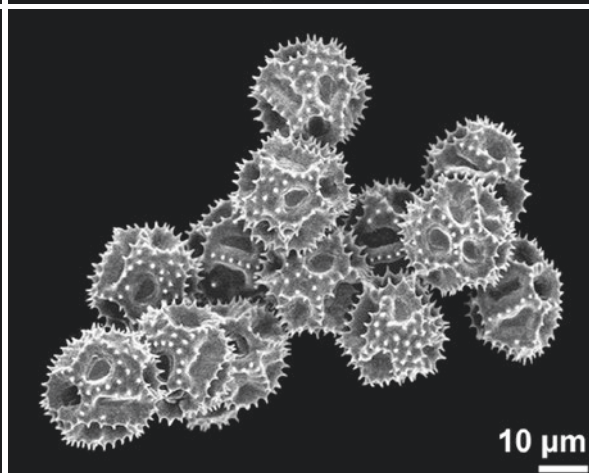
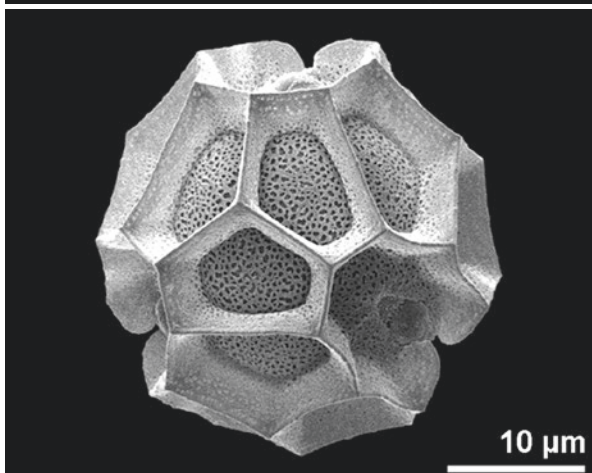
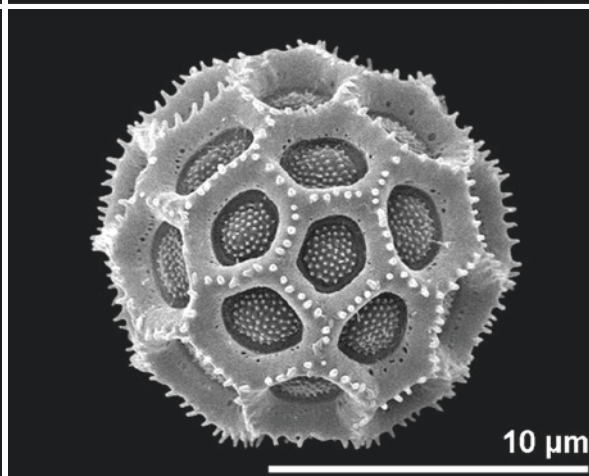
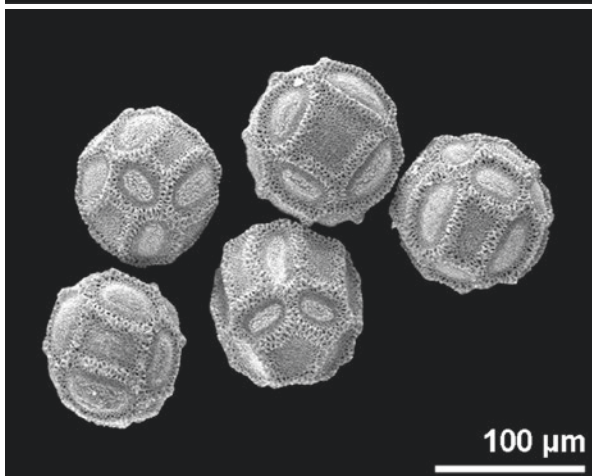
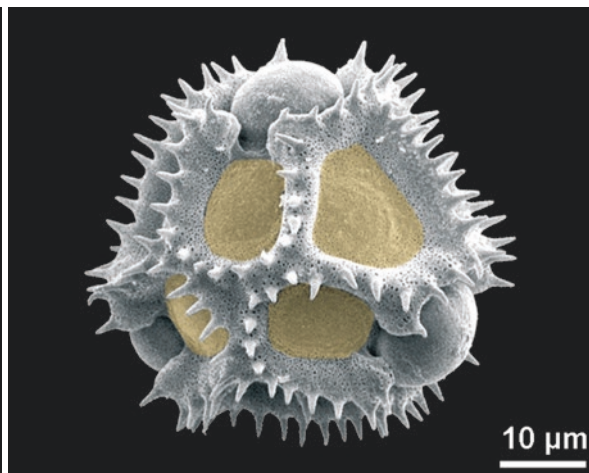
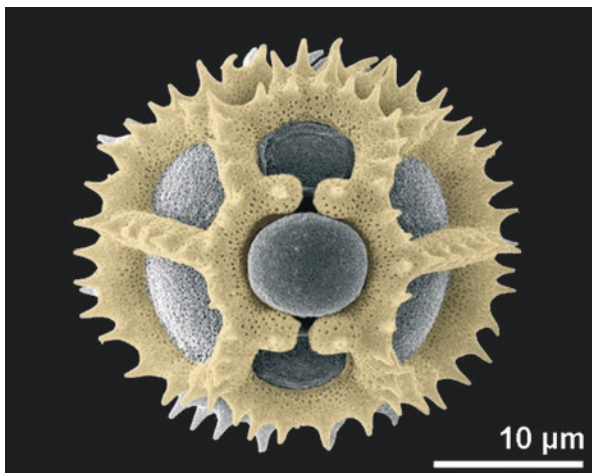
■ ■ ■ *Persicaria chinensis*, Polygonaceae
polar view

■ ■ ■ *Ruellia tuberosa*, Acanthaceae
triplicate, oblique view

lophae/lophate, lacunae

lophae: massive exine ridges

lacunae: depressed areas surrounded by lophae



■ ■ *Leontodon saxatilis*, Asteraceae
 ■ ■ lophae colored, equatorial view

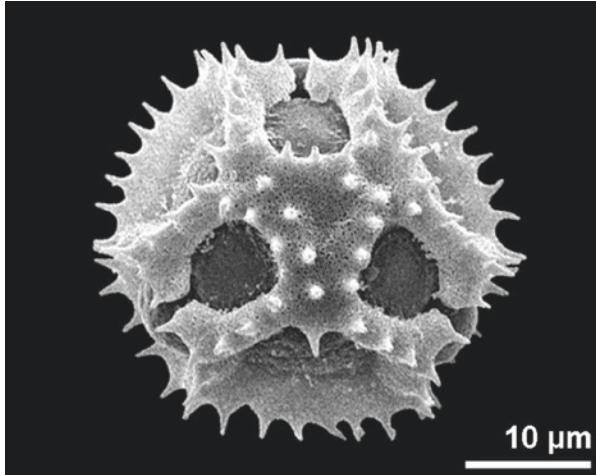
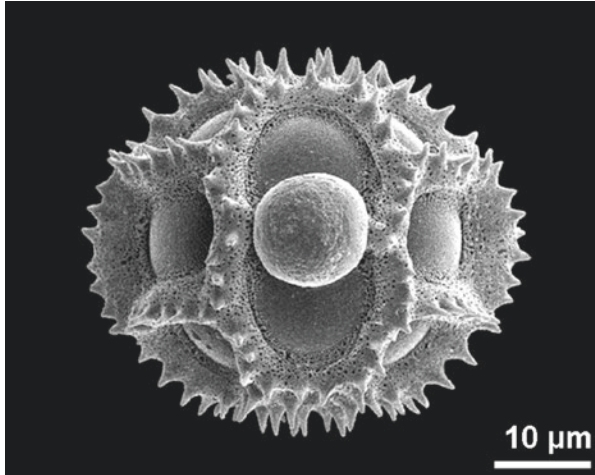
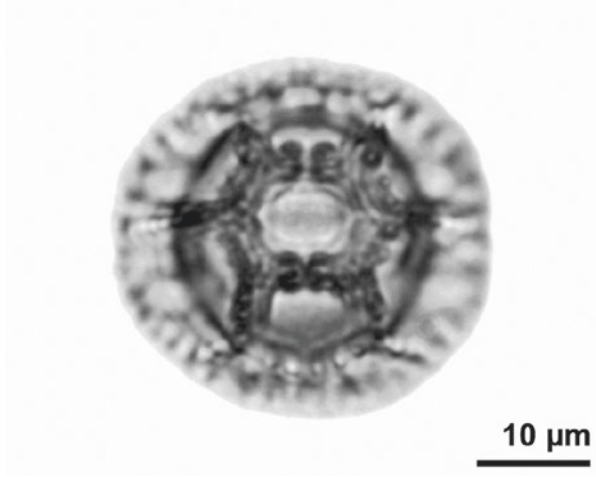
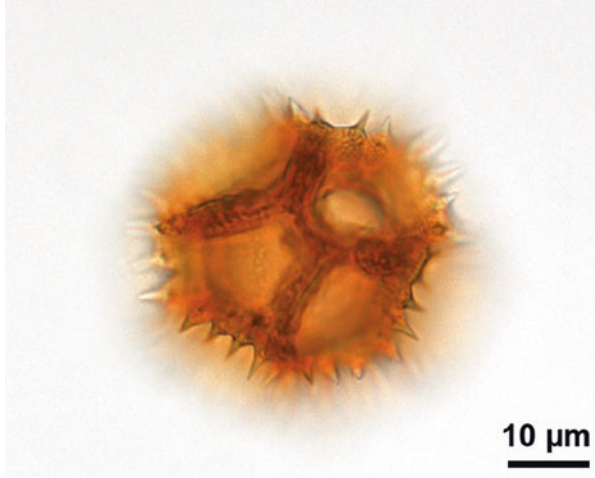
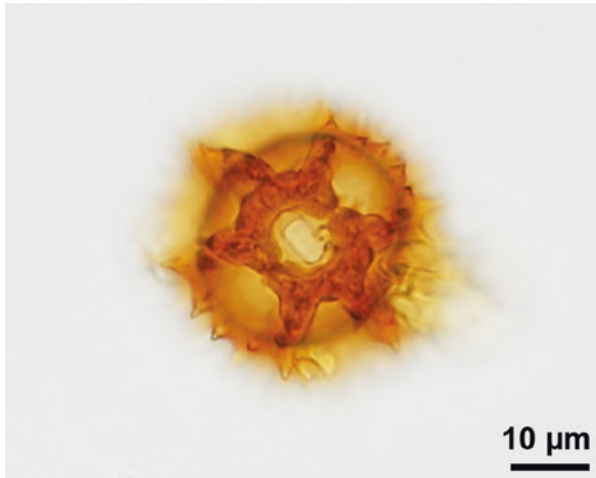
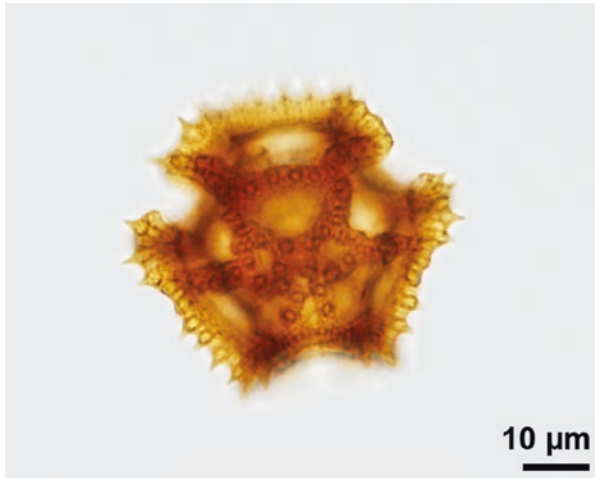
■ ■ *Opuntia basilaris*, Cactaceae

■ ■ *Gazania sp.*, Asteraceae
 ■ ■ tricolporate, polar view

■ ■ *Cichorium intybus*, Asteraceae
 ■ ■ lacunae colored, polar view

■ ■ *Pfaffia tuberosa*, Amaranthaceae

■ ■ *Hieracium hoppeanum*, Asteraceae
 ■ ■ dry pollen



■ *Tragopogon orientalis*, Asteraceae
■ polar view

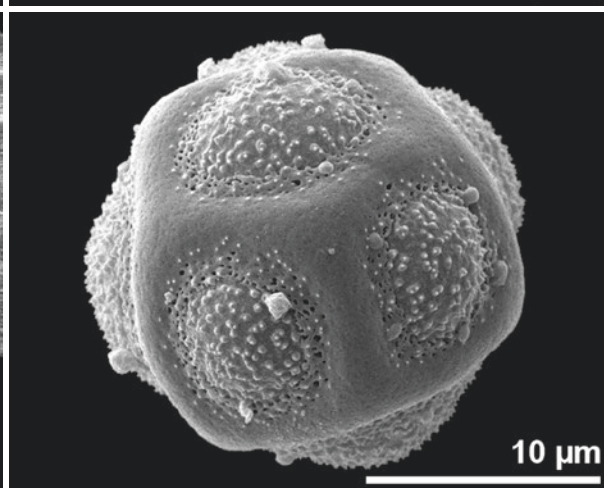
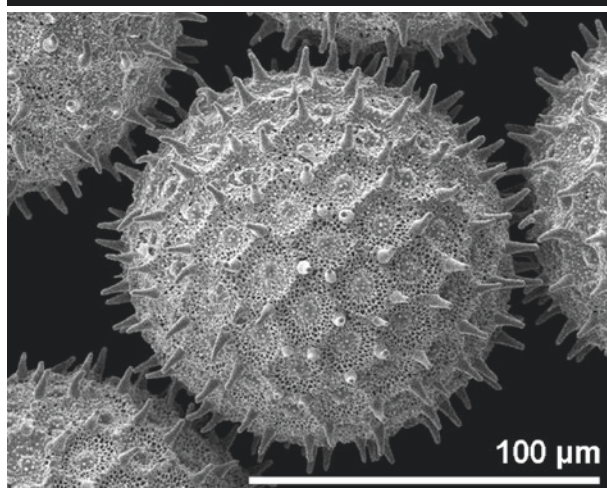
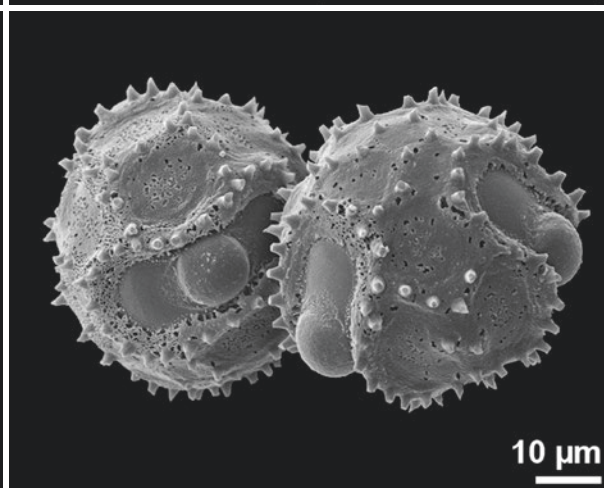
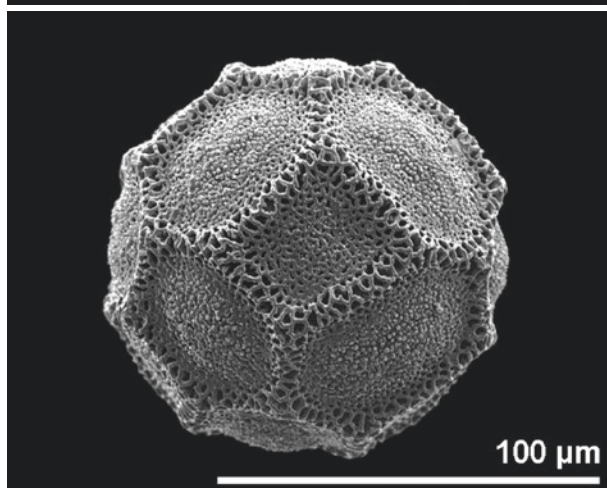
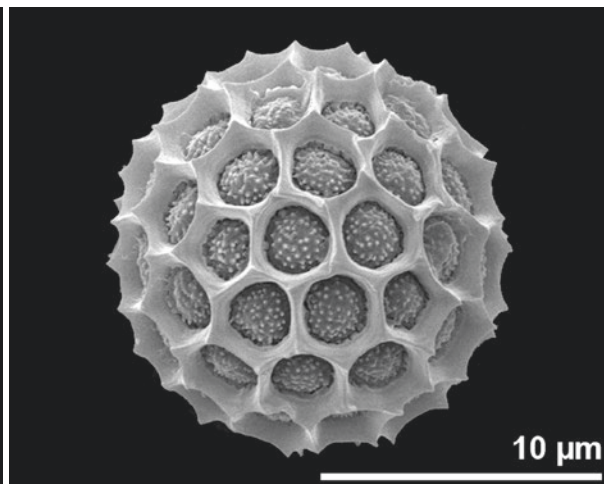
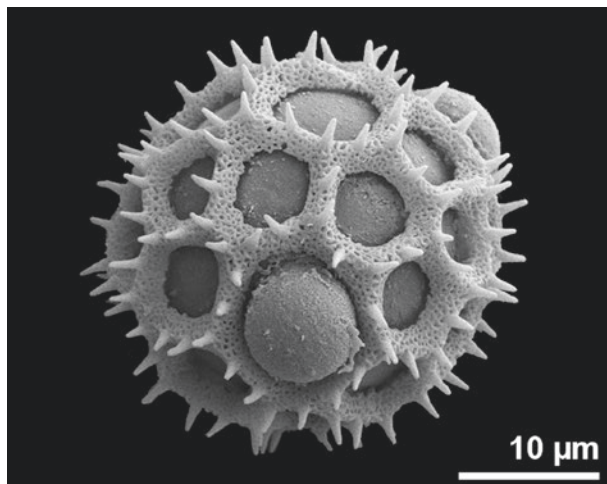
■ *Cichorium intybus*, Asteraceae
■ oblique view

■ *Tragopogon dubius*, Asteraceae
■ equatorial view

■ *Prenanthes purpurea*, Asteraceae
■ equatorial view

■ *Taraxacum* sp., Asteraceae
■ fossil, Quaternary, Austria, equatorial view

■ *Crepis biennis*, Asteraceae
■ polar view



■ *Cyanthillium cinereum*, Asteraceae
 ■ oblique equatorial view

■ *Opuntia polyacantha*, Cactaceae

■ *Ipomoea caerulea*, Convolvulaceae

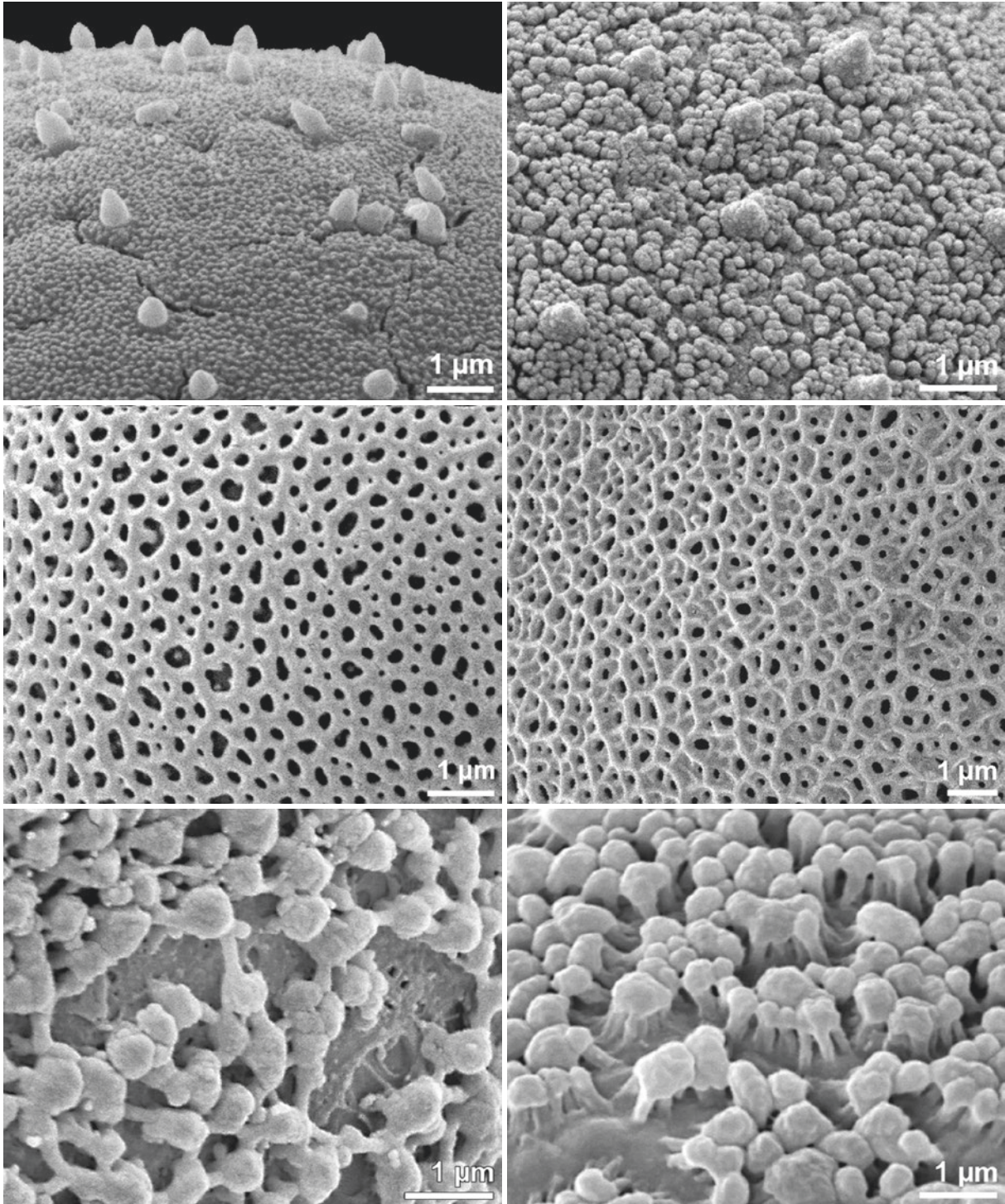
■ *Gomphrena celosioides*, Amaranthaceae

■ *Scorzonera aristata*, Asteraceae

■ *Herniaria alpina*, Caryophyllaceae

micro-

prefix for small; features between 1 and 0.5 μm



■ ■ *Heloniopsis kawanoi*, Melanthiaceae
 ■ ■ microechinate, granulate

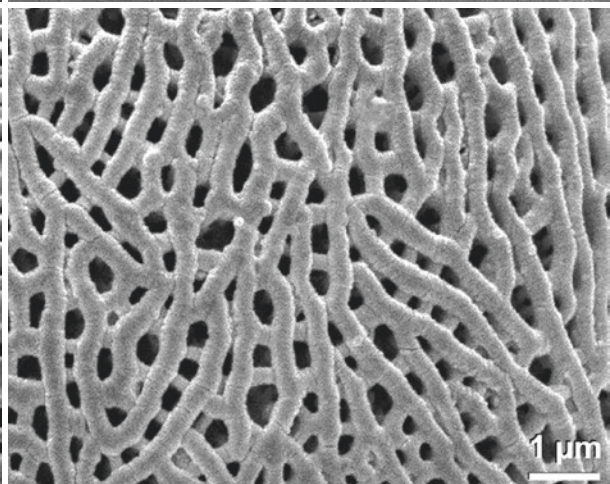
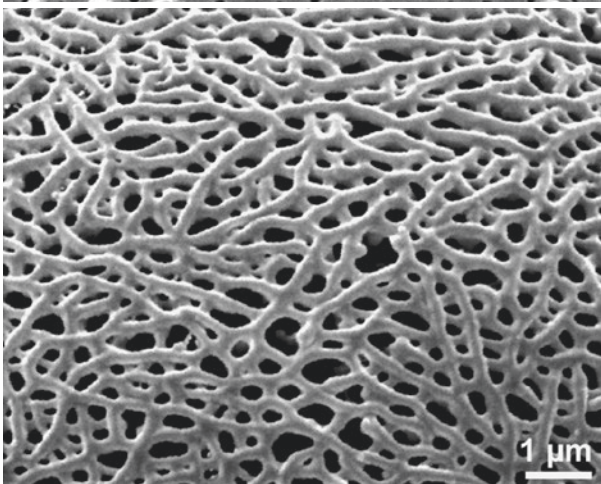
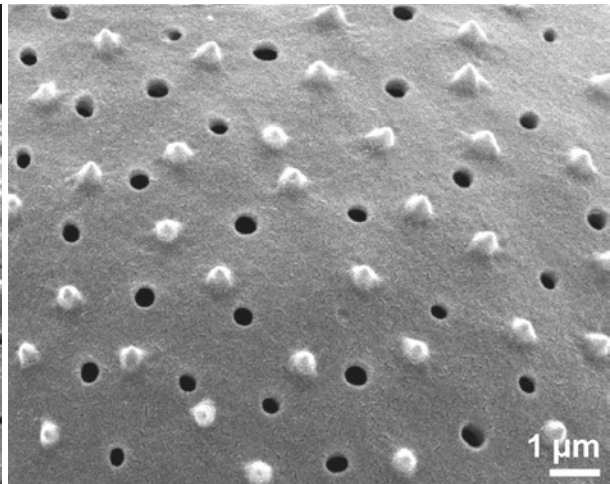
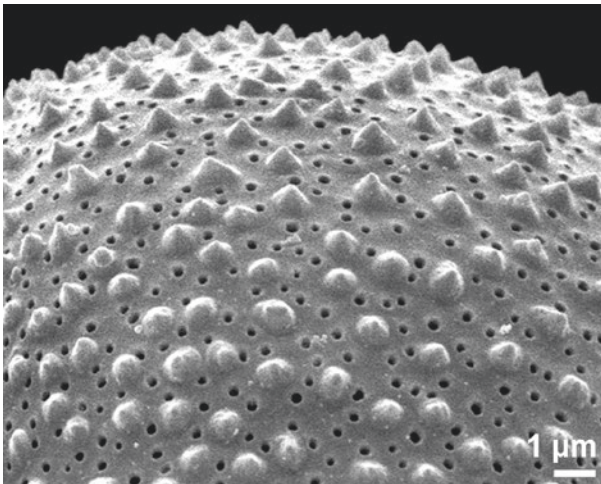
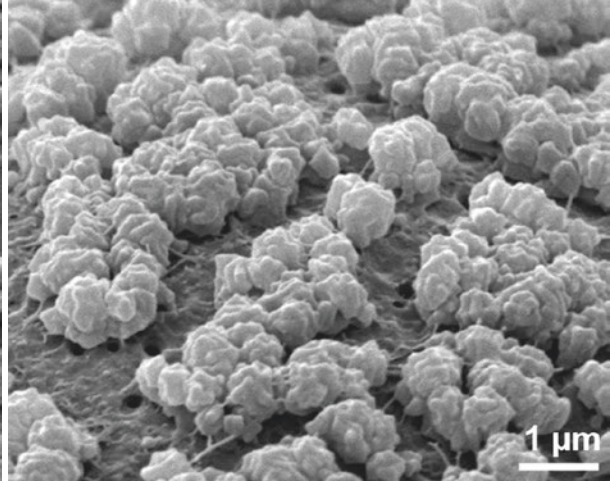
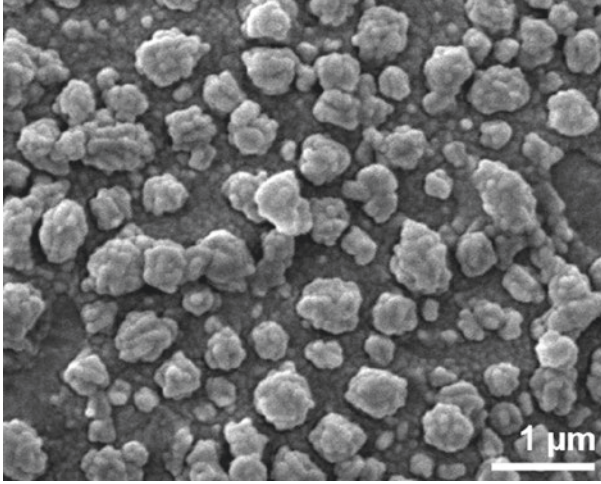
■ ■ *Kickxia spuria*, Plantaginaceae
 ■ ■ micro- to nanoreticulate

■ ■ *Aspidistra elatior*, Asparagaceae
 ■ ■ microgemmate

■ ■ *Trillium grandiflorum*, Melanthiaceae
 ■ ■ microechinate, nanogemmate to granulate

■ ■ *Lamium purpureum*, Lamiaceae
 ■ ■ micro- to nanoreticulate

■ ■ *Callisia fragrans*, Commelinaceae
 ■ ■ microclavate



■ *Orobanche lutea*, Orobanchaceae
 ■ microgemmate, microgemmae composed of conglomerate granula

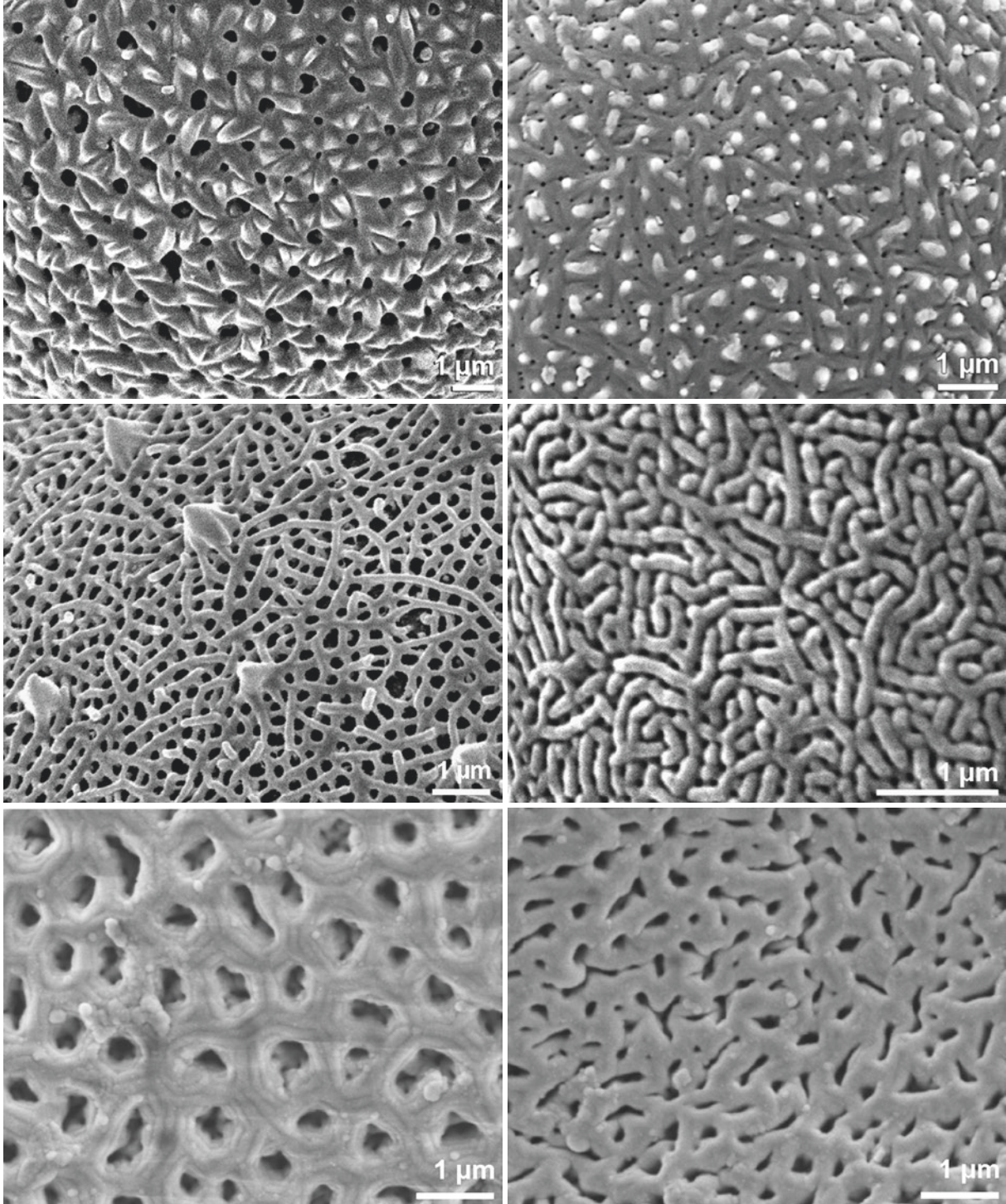
■ *Trillium chloropetalum*, Melanthiaceae
 ■ microgemmate, microgemmae irregularly shaped

■ *Claytonia perfoliata*, Montiaceae
 ■ microechinate, perforate

■ *Petrorhagia prolifera*, Caryophyllaceae
 ■ microechinate, perforate

■ *Veronica prostrata*, Plantaginaceae
 ■ striato-microreticulate

■ *Ptelea trifoliolata*, Rutaceae
 ■ striato-microreticulate



■ *Podophyllum peltatum*, Berberidaceae
 ■ microechinate, perforate; microechini depressed

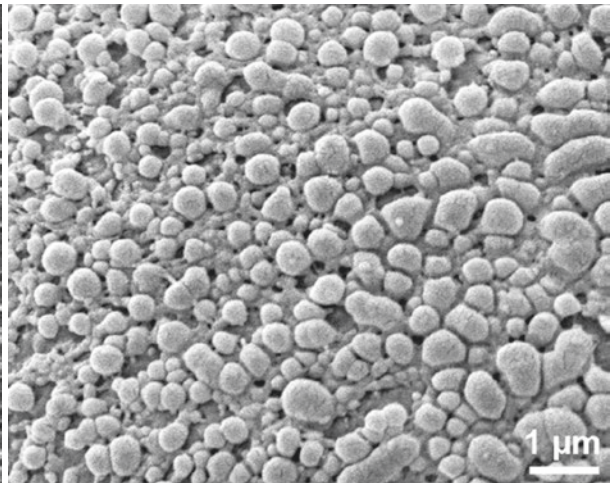
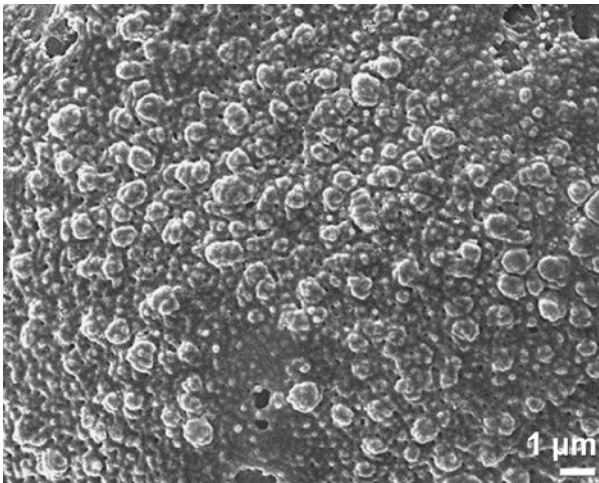
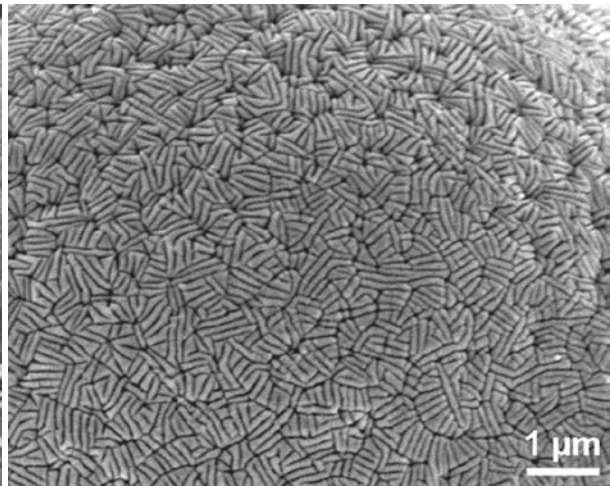
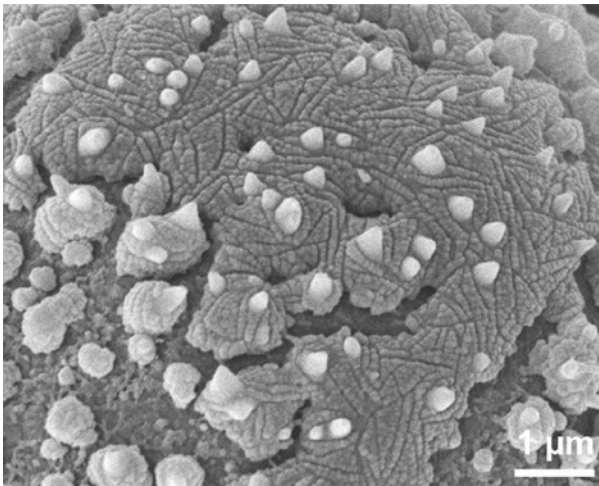
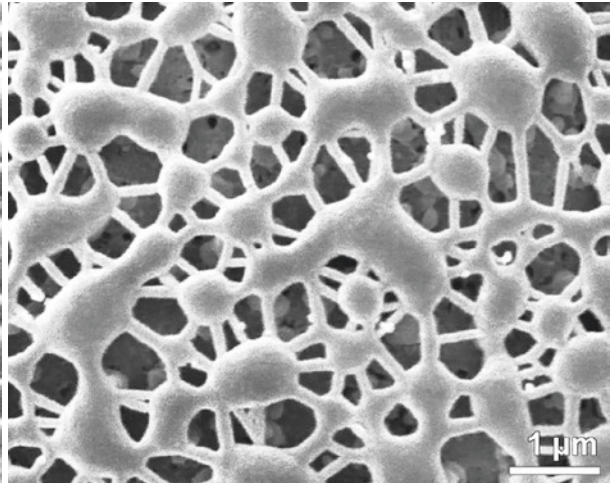
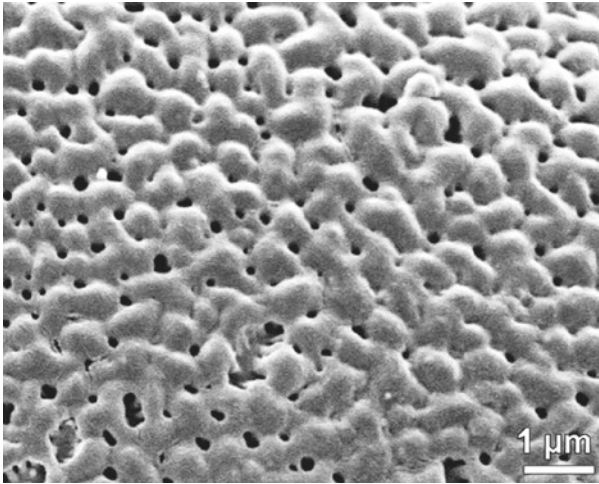
■ *Campanula persicifolia*, Campanulaceae
 ■ microechinate, striato-microreticulate

■ *Tilia* sp., Malvaceae
 ■ fossil, Miocene, China, microreticulate

■ *Solanum torvum*, Solanaceae
 ■ microrugulate, microechinate, perforate

■ *Melampyrum pratense*, Orobanchaceae
 ■ microrugulate

■ *Tilia* sp., Malvaceae
 ■ fossil, Miocene, China, microreticulate



■ ■ *Tradescantia spathacea*, Commelinaceae
microverrucate, perforate

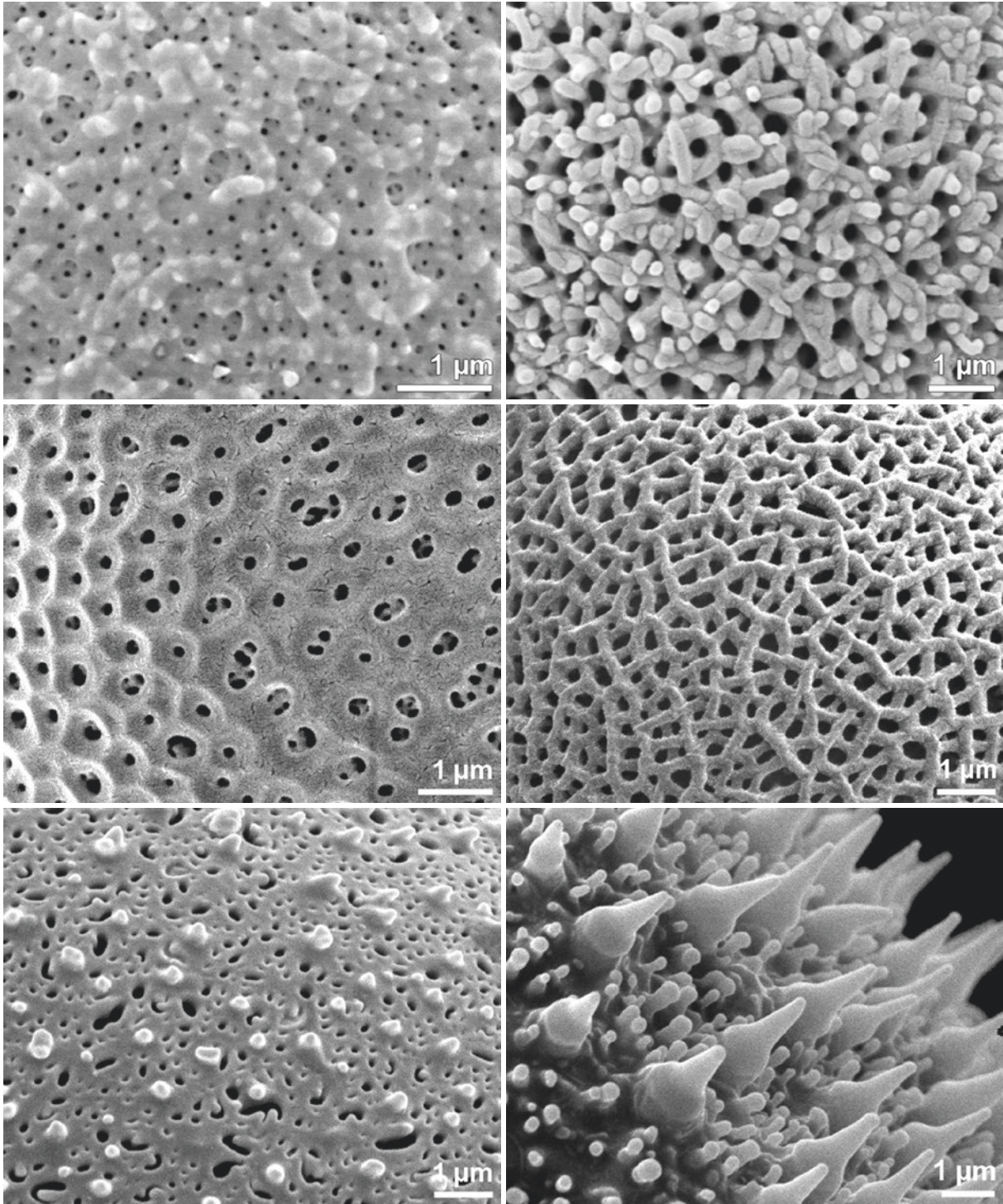
■ ■ *Aspidistra locii*, Asparagaceae
microverrucate to verrucate, microreticulate

■ ■ *Smilax spinosa*, Smilacaceae
microechinate, rugulate to microrugulate; (micro)rugulae segmented

■ ■ *Clethra arborea*, Clethraceae
microrugulate

■ ■ *Quercus robur*, Fagaceae
microgemmate to granulate

■ ■ *Erica pageana*, Ericaceae
micro- to nanogemmate



■ ■ ■ *Elaeagnus rhamnoides*, Elaeagnaceae
 microrugulate, nanoechinata, perforate

■ ■ ■ *Cytisus nigricans*, Fabaceae
 microreticulate, perforate

■ ■ ■ *Anemone pratensis*, Ranunculaceae
 microechinate, perforate

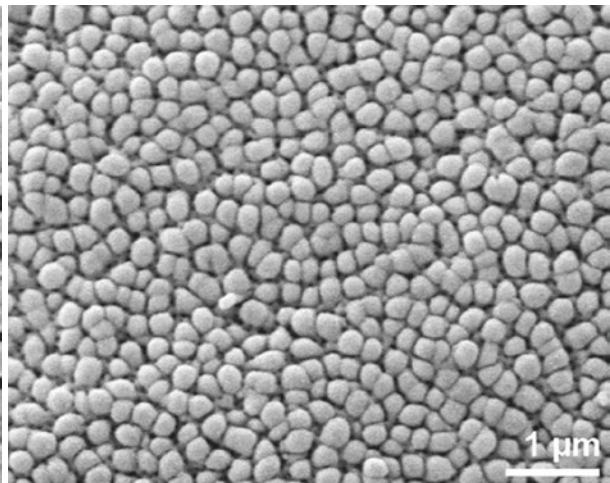
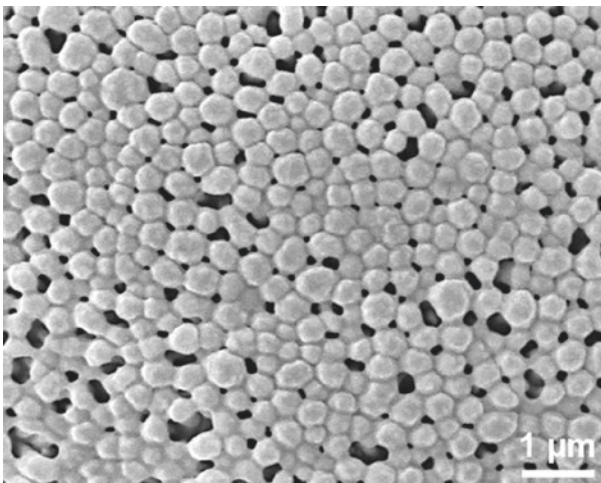
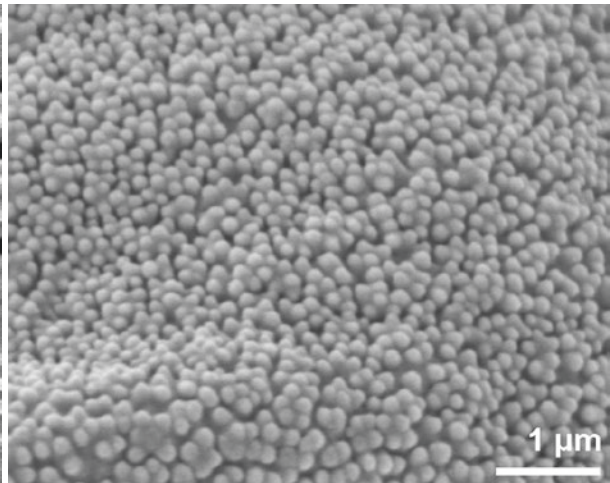
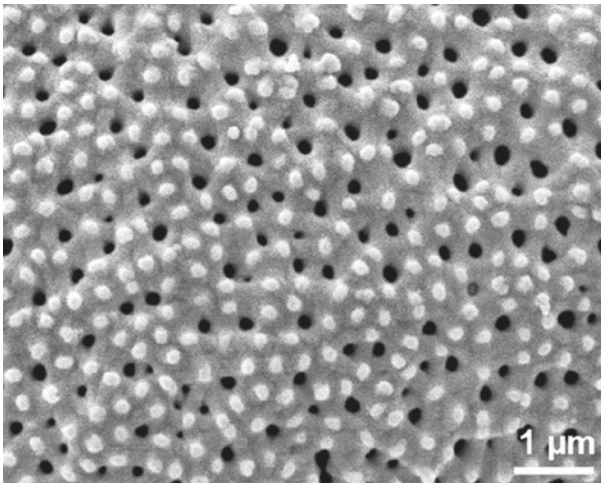
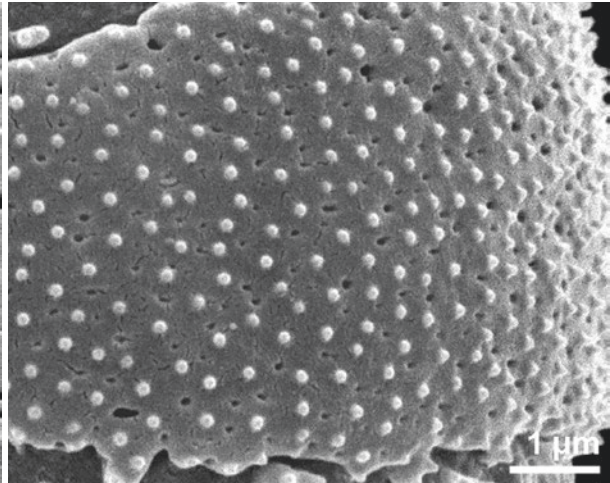
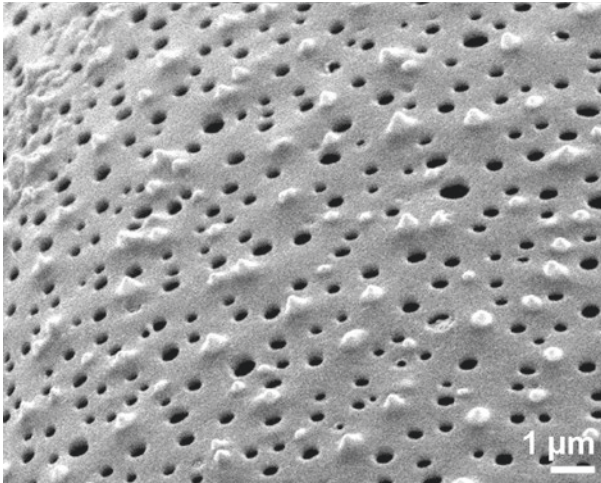
■ ■ ■ *Polyscias filicifolia*, Araliaceae
 microreticulate, microrugulate

■ ■ ■ *Reseda luteola*, Resedaceae
 microreticulate

■ ■ ■ *Drosera kansaiensis*, Droseraceae
 echinate, microclavate

nano-

prefix for very small, features between 0.5 and 0.1 μm



■ *Babiana ecklonii*, Iridaceae
■ nanoechinate

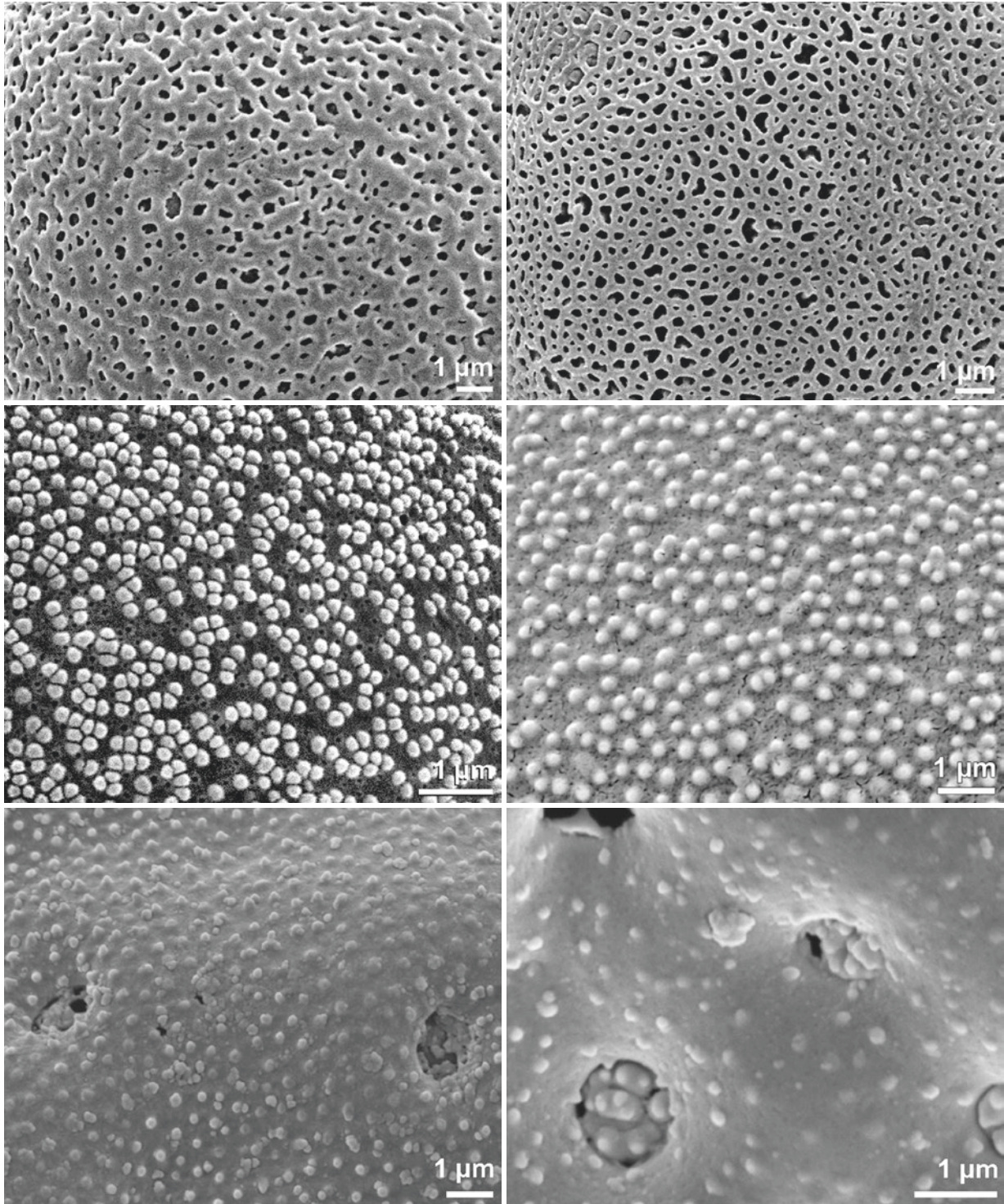
■ *Galium lucidum*, Rubiaceae
■ nanoechinate

■ *Scirpoides holoschoenus*, Cyperaceae
■ nanoechinate to nanogemmate

■ Poaceae
■ fossil, Miocene, China, nanoechinate

■ *Callisia fragrans*, Commelinaceae
■ nano- to microgemmate

■ *Oenothera fruticosa*, Onagraceae
■ nanogemmate



■ ■ *Dianella tasmanica*, Xanthorrhoeaceae
nanoreticulate

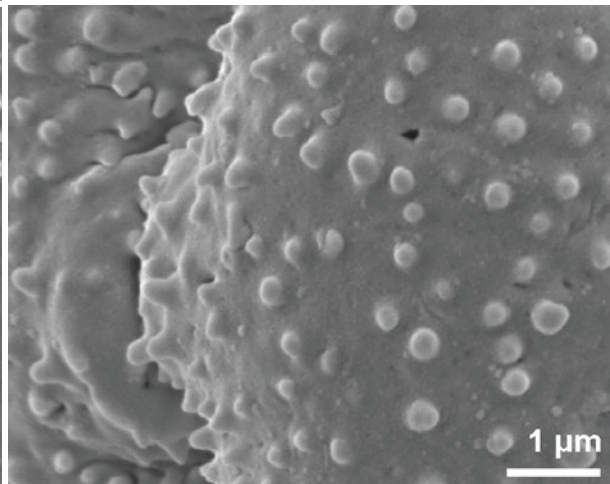
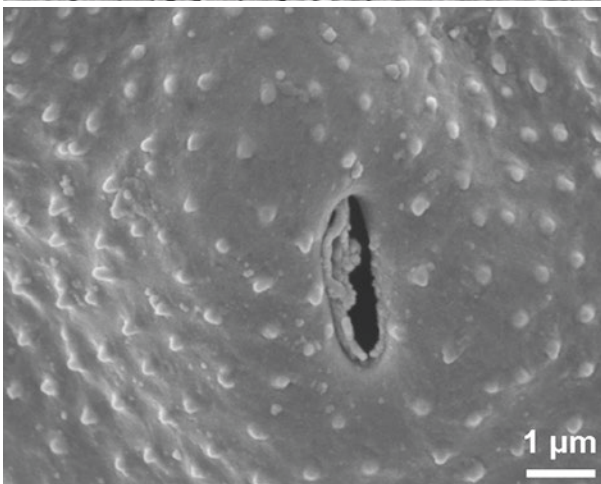
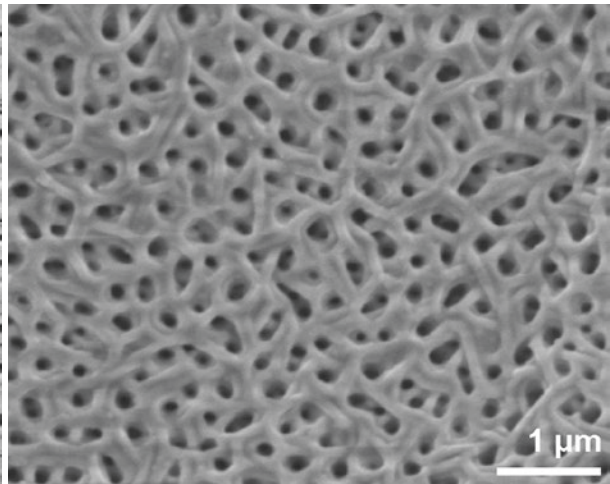
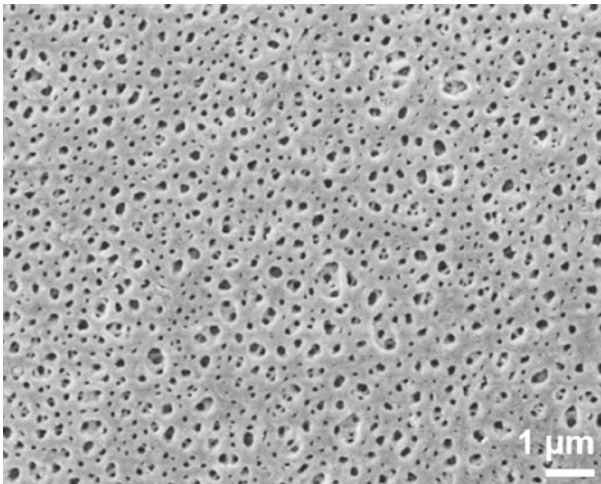
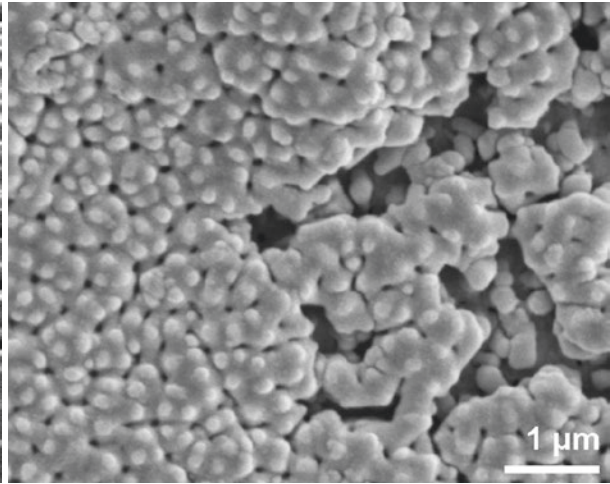
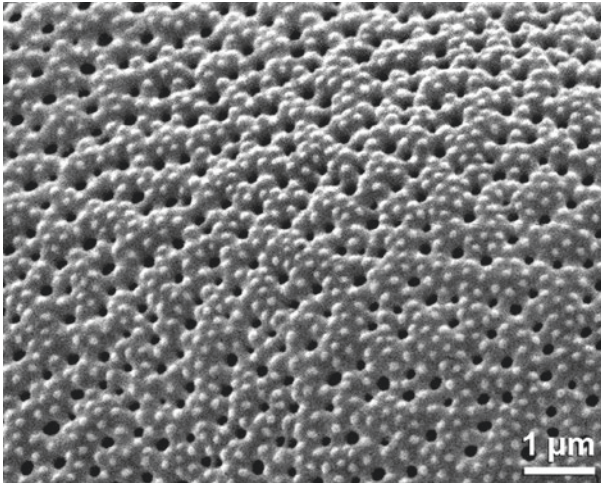
■ ■ *Symphytum caucasicum*, Boraginaceae
nanogemmate

■ ■ *Juglans* sp. Juglandaceae
fossil, Miocene, China, nanoechinate

■ ■ *Veronica longifolia*, Plantaginaceae
nanoreticulate

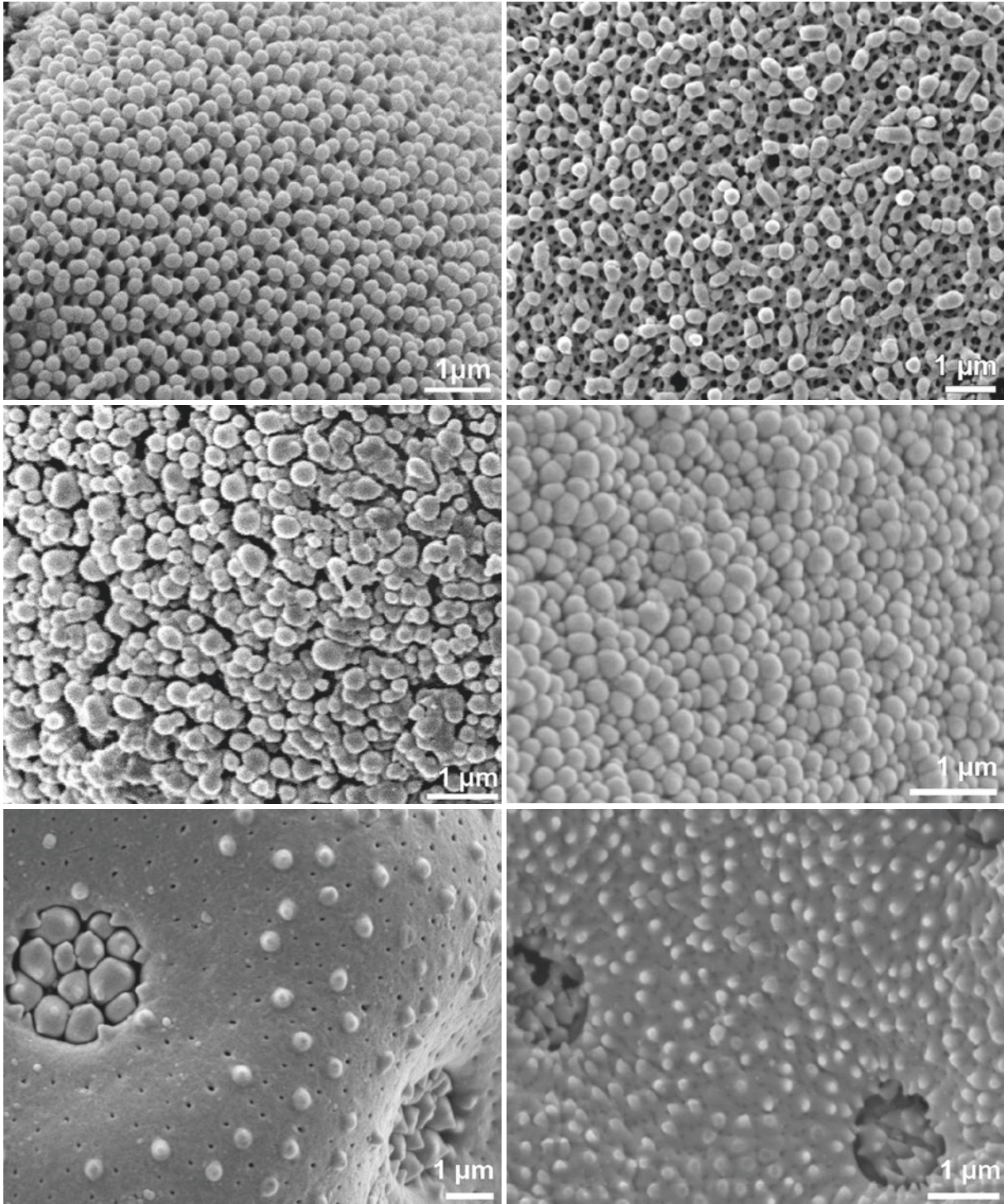
■ ■ *Hordeum bulbosum*, Poaceae
nanogemmate to nanoverrucate

■ ■ *Amaranthaceae*
fossil, Miocene, China, nanoechinate



- ■ *Carex filiformis*, Cyperaceae
nanogemmate to nanoverrucate
- ■ *Viola calcarata*, Violaceae
nanoreticulate
- ■ *Pterocarya* sp., Juglandaceae
fossil, Miocene, China, nanoechinate

- ■ Cyperaceae
fossil, Miocene, China, nanoverrucate
- ■ *Tilia* sp., Malvaceae
fossil, Miocene, China, nanoreticulate
- ■ Rosaceae
fossil, Miocene, China, nano- to microechinate



■ ■ ■ *Borago pygmaea*, Boraginaceae
nanogemmate

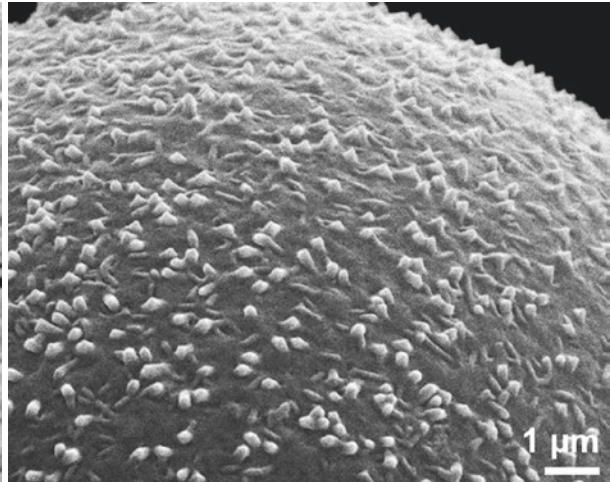
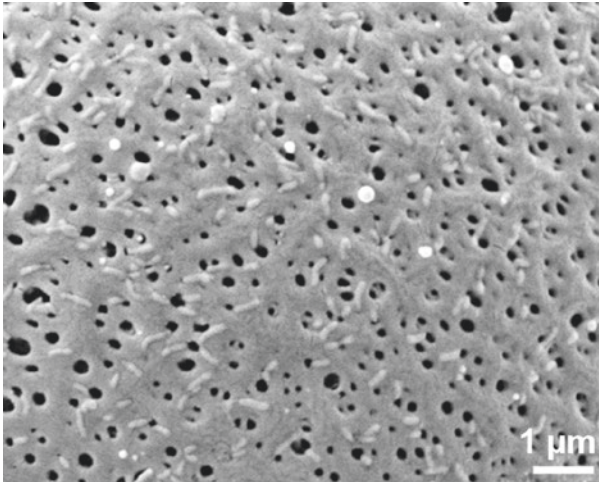
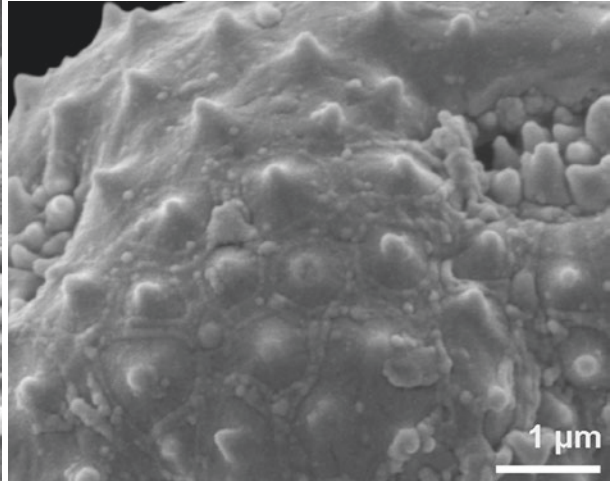
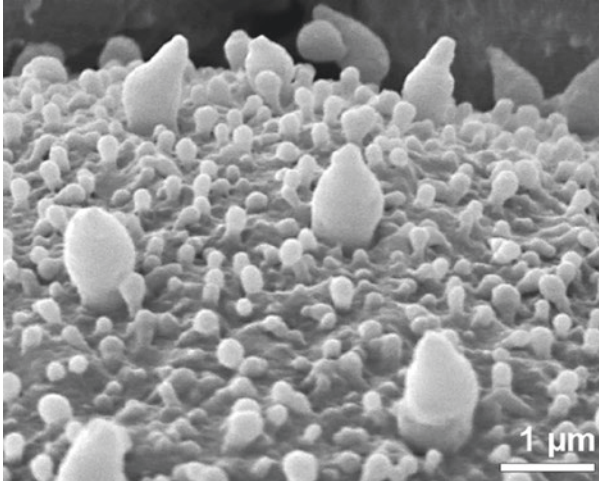
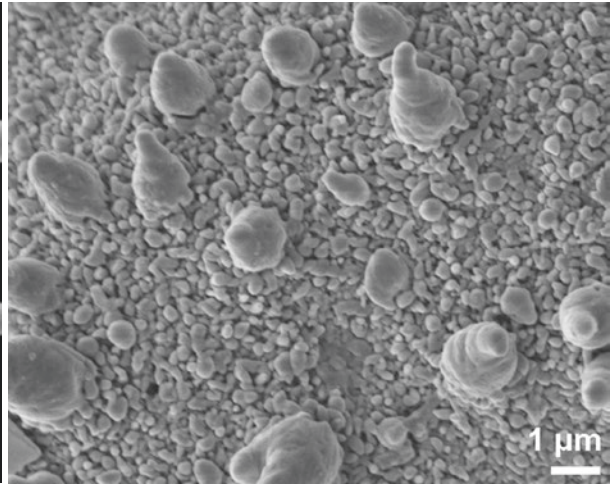
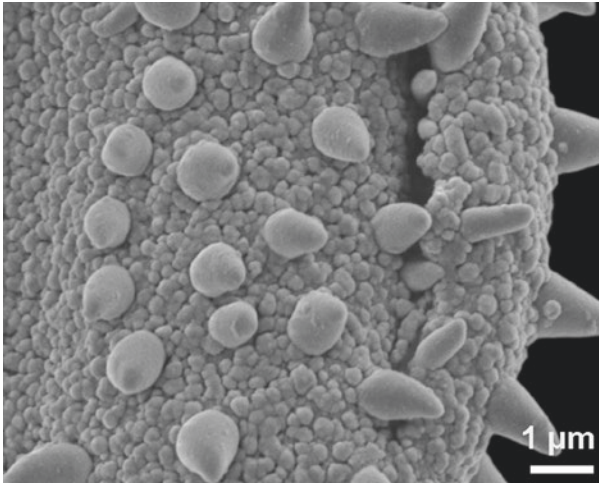
■ ■ ■ *Rhaphidophora africana*, Araceae
nanogemmate to nanoverrucate

■ ■ ■ Caryophyllaceae
fossil, Miocene, China, nanoechinata

■ ■ ■ *Epilobium palustre*, Onagraceae
nanogemmate to microrugulate

■ ■ ■ *Trapa* sp., Trapaceae
fossil, Miocene, China, nanogemmate

■ ■ ■ Amaranthaceae
fossil, Miocene, China, nanoechinata



■ ■ *Arceuthobium* sp., Santalaceae
fossil, Miocene, China, nanoverrucate, echinate

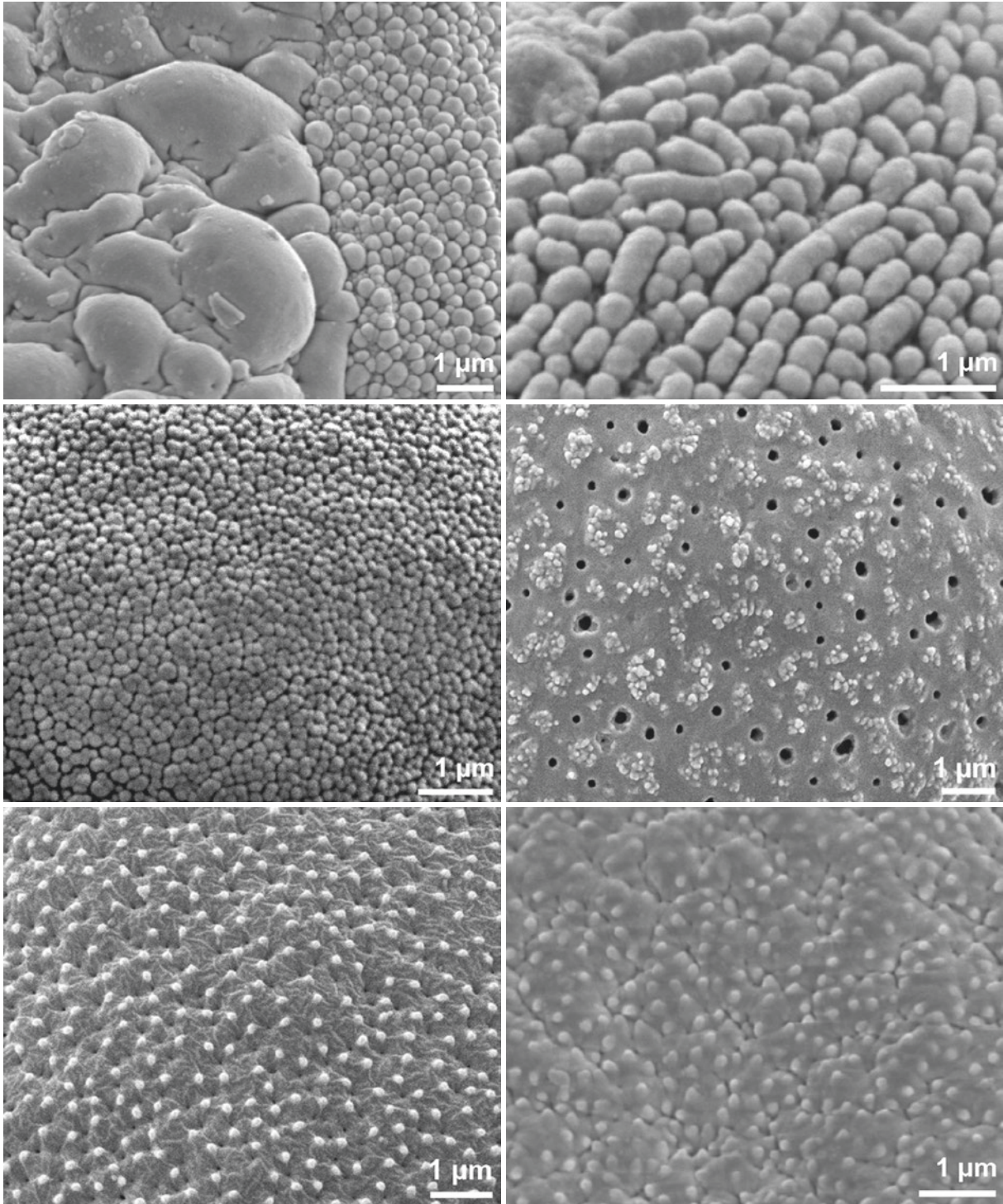
■ ■ Caprifoliaceae
fossil, Miocene, China, granulate, nanoverrucate, echinate

■ ■ *Drosera binata*, Droseraceae
nanoclavate, echinate

■ ■ *Alisma* sp., Alismataceae
fossil, Miocene, China, nanoechinata

■ ■ *Heliochebe raoulii*, Plantaginaceae
nanorugulate

■ ■ *Maclura pomifera*, Moraceae
nanoechinata

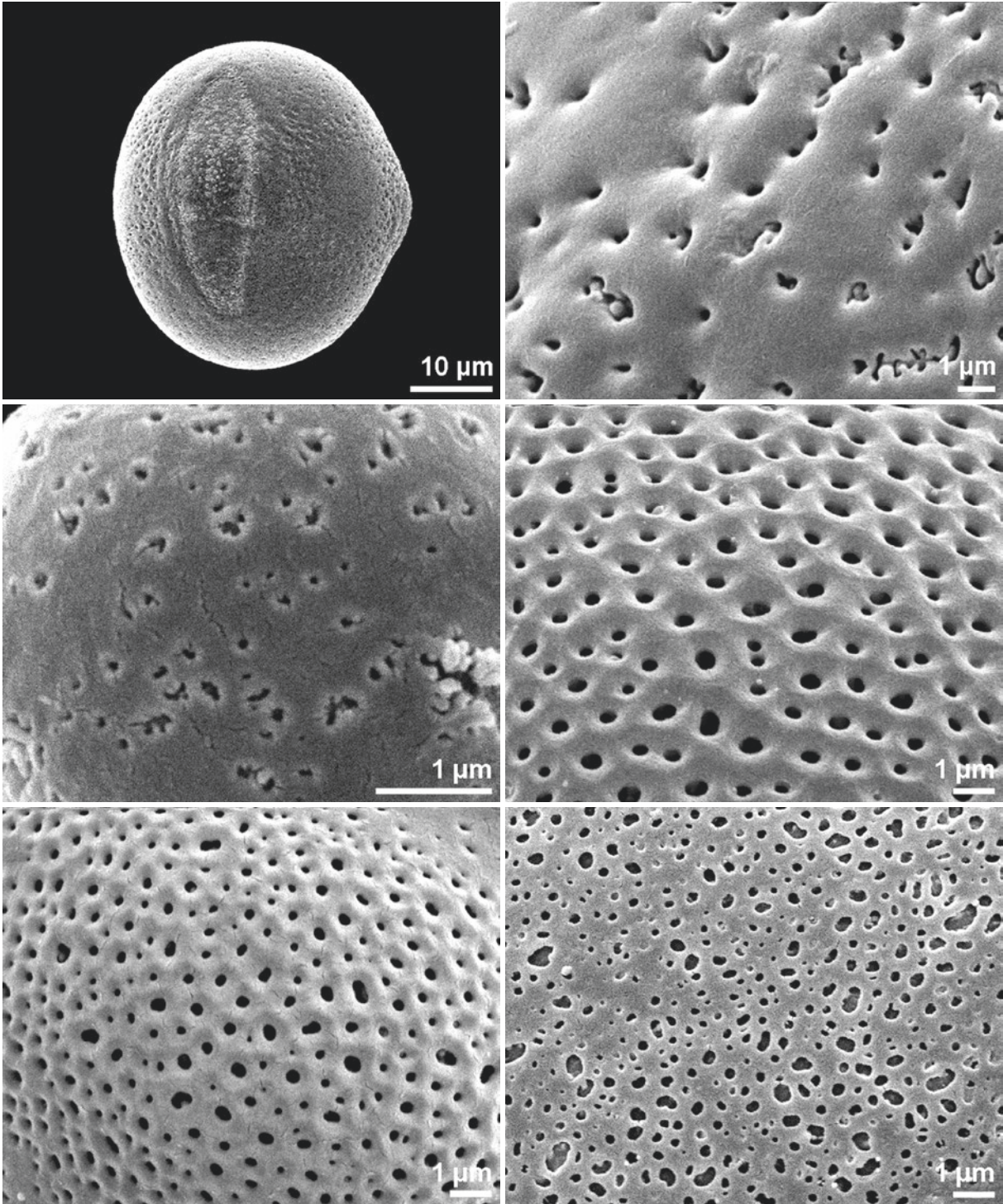


- *Trapa* sp., Trapaceae
fossil, Miocene, China, nanogemmate, fossulate, verrucate
- *Pedicularis verticillata*, Orobanchaceae
nanogemmate
- *Haloragis erecta*, Haloragaceae
nanoechinata, nanorugulate

- Onagraceae
fossil, Miocene, China, nanogemmate, microrugulate
- *Tetragonia tetragonioides*, Aizoaceae
granulate, nanoverrucate, perforate
- Haloragaceae
fossil, Miocene, China, nanoechinata

perforate

pollen wall with holes less than 1 μm in diameter



■ ■ *Colutea arborescens*, Fabaceae
 ■ ■ equatorial view

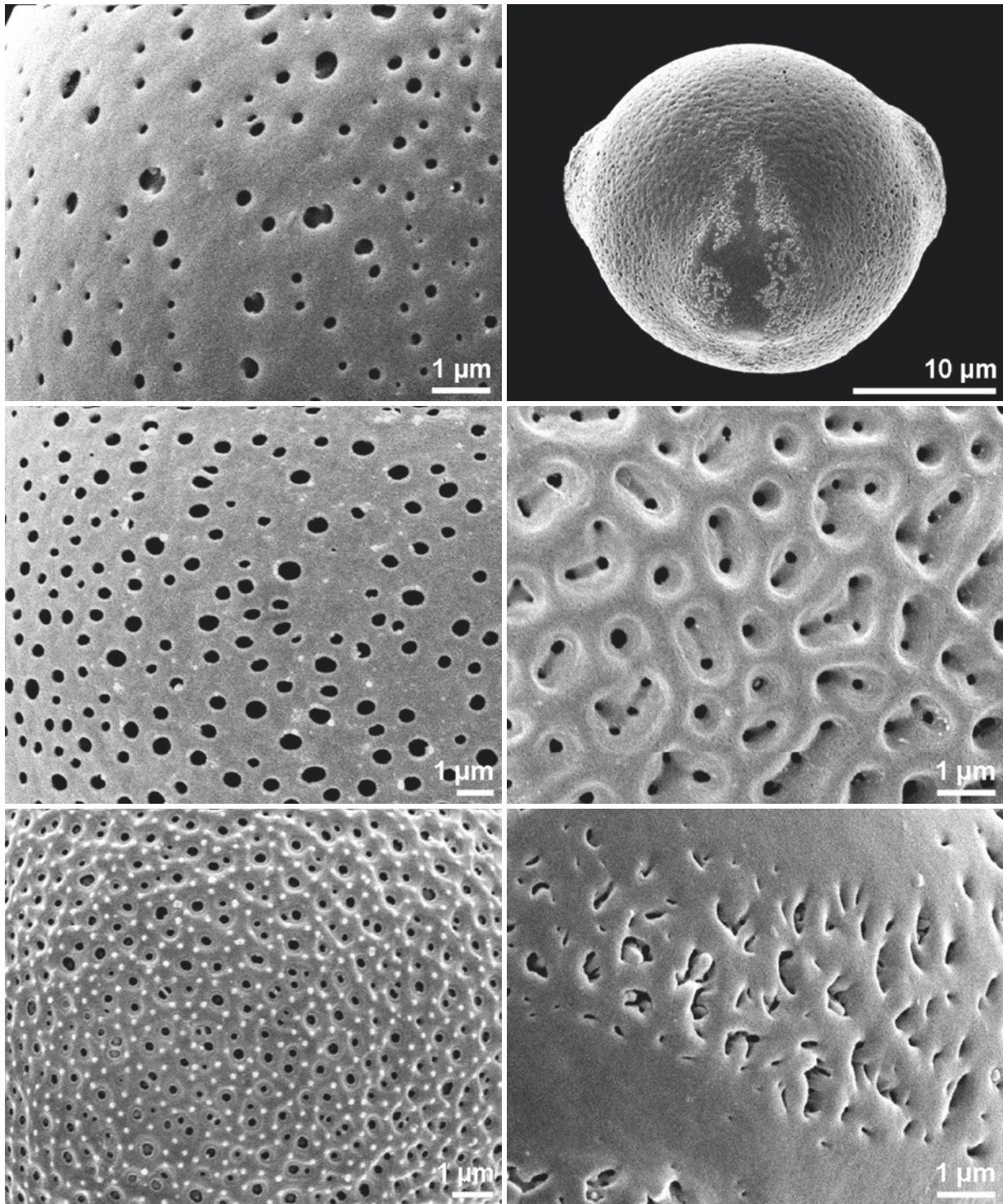
■ ■ *Myosotis arvensis*, Boraginaceae

■ ■ *Lysimachia nemorum*, Primulaceae

■ ■ *Gonatopus angustus*, Araceae

■ ■ *Euphorbia palustris*, Euphorbiaceae

■ ■ *Cucumis sativus*, Cucurbitaceae



■ ■ *Pulmonaria officinalis*, Boraginaceae

■ ■ *Napoleonaea imperialis*, Lecythidaceae

■ ■ *Rumex acetosa*, Polygonaceae
perforate, granulate

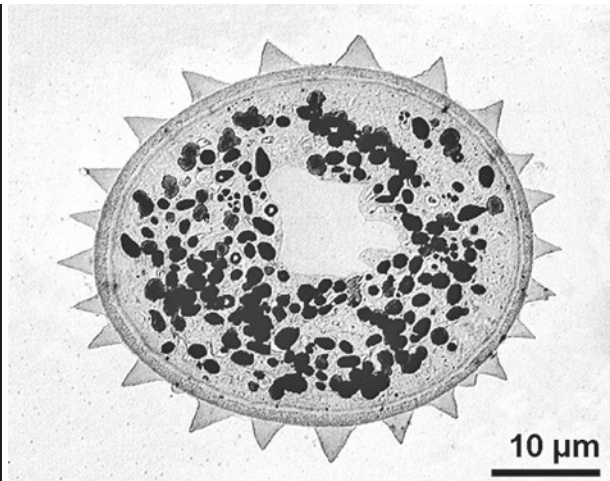
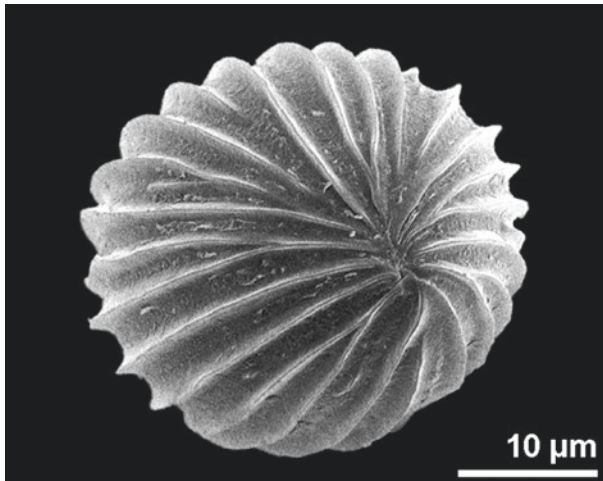
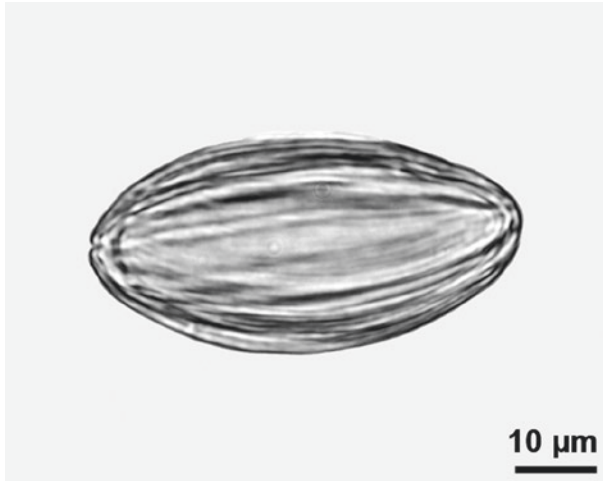
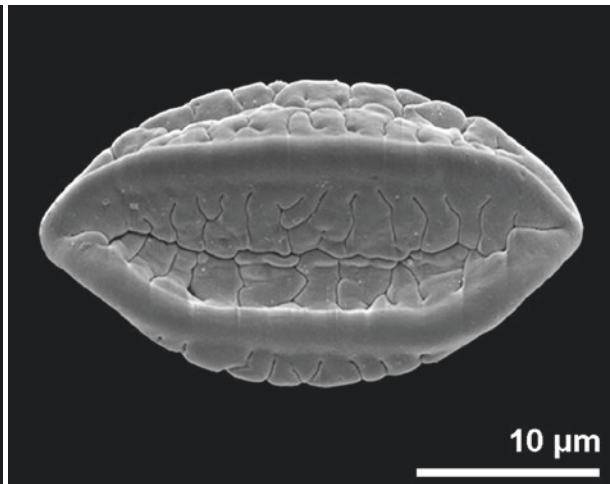
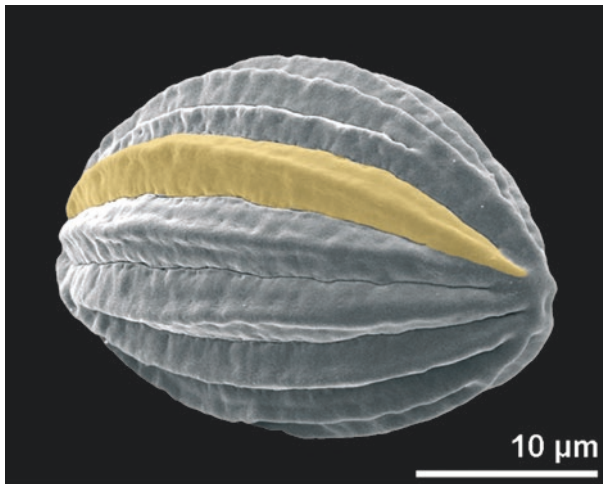
■ ■ *Hippocrepis emerus*, Fabaceae
equatorial view

■ ■ *Euphorbia helioscopia*, Euphorbiaceae

■ ■ *Trifolium montanum*, Fabaceae

plicae/plicate

coarse parallel ridges



■ *Ephedra distachya*, Ephedraceae
■ plica colored

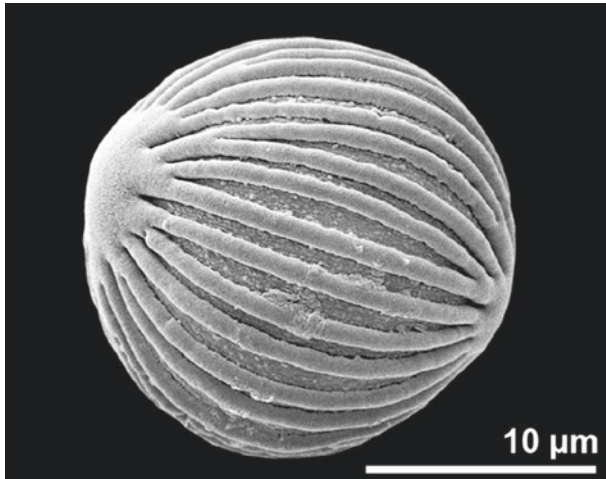
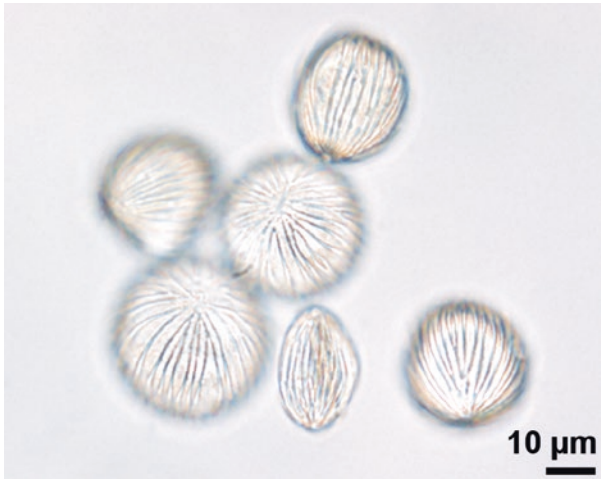
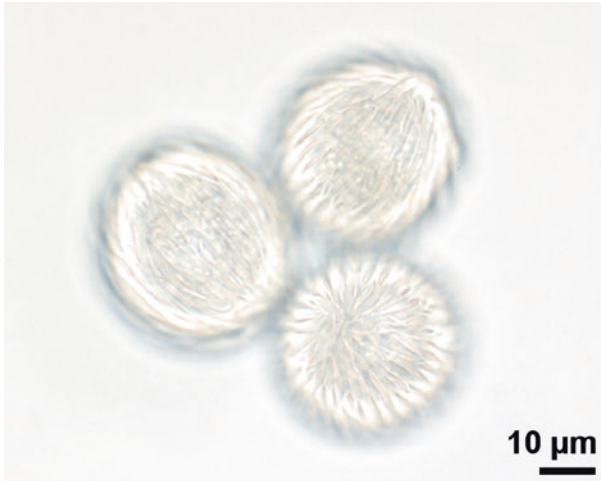
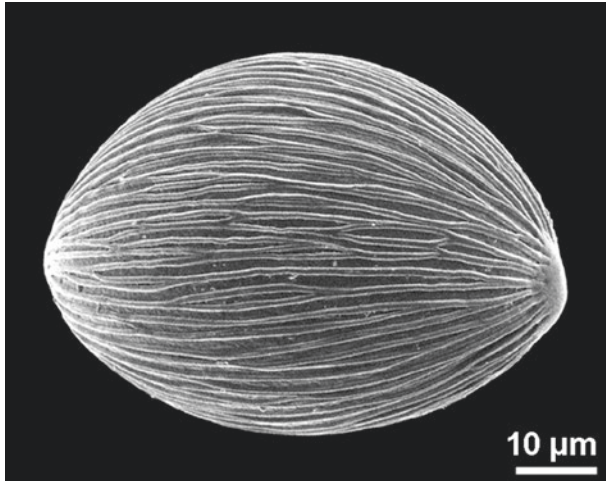
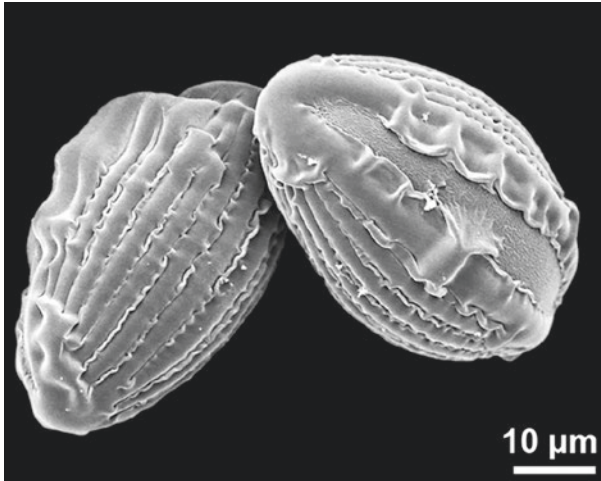
■ *Ephedra* sp., Ephedraceae
■ fossil, Miocene, Austria

■ *Pistia stratiotes*, Araceae
■ equatorial view

■ *Ephedra* sp., Ephedraceae
■ fossil, Miocene, China, equatorial view

■ *Hemigraphis primulaefolia*, Acanthaceae
■ polar (left) and equatorial view (right)

■ *Pistia stratiotes*, Araceae
■ cross section of pollen



■ ■ *Welwitschia mirabilis*, Welwitschiaceae

■ ■ *Amorphophallus serrulatus*, Araceae
hydrated

■ ■ *Spathiphyllum minor*, Araceae
hydrated

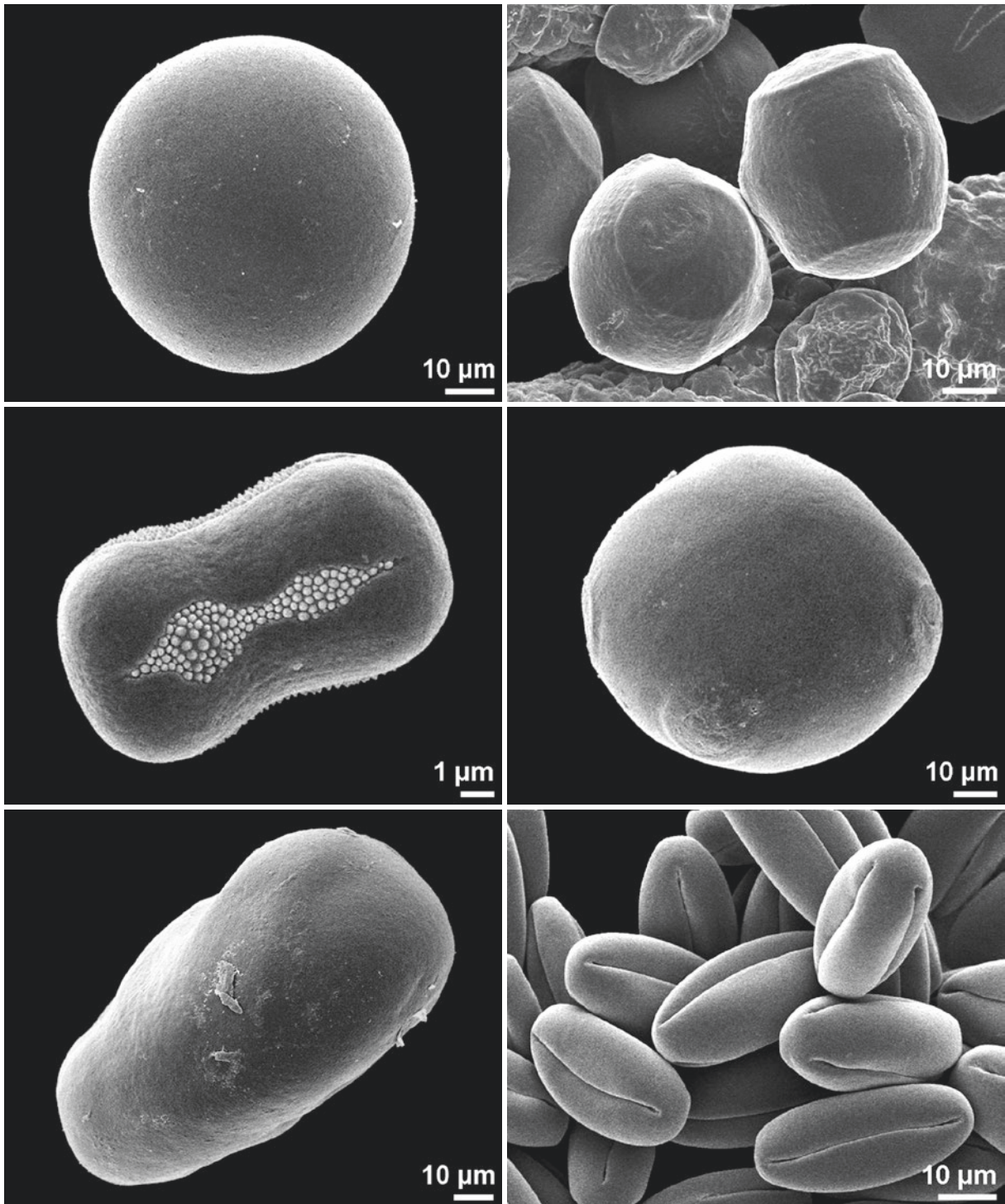
■ ■ *Amorphophallus lacourii*, Araceae

■ ■ *Brillantaisia owariensis*, Acanthaceae
oblique equatorial view

■ ■ *Spathiphyllum cannifolium*, Araceae

psilate

pollen wall with smooth surface



■ ■ *Hedychium gardnerianum*, Zingiberaceae

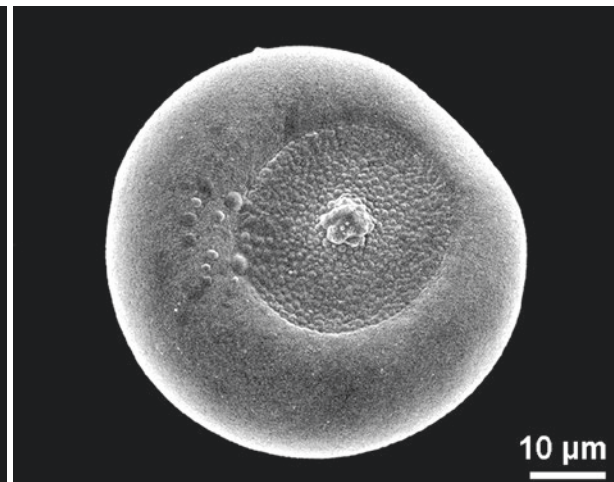
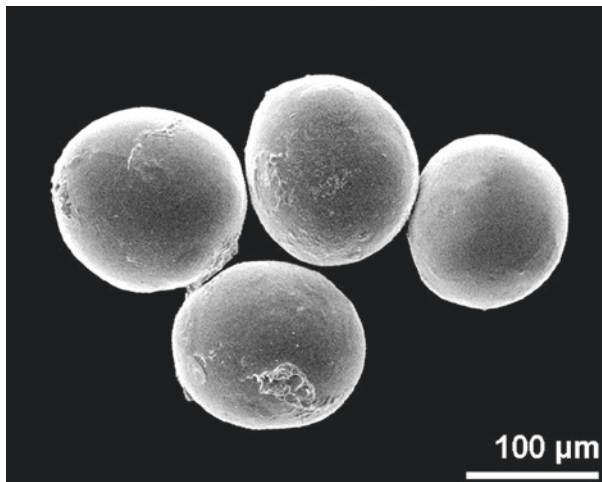
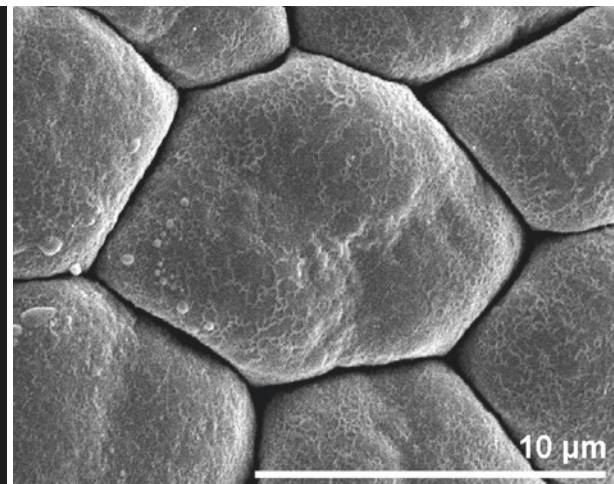
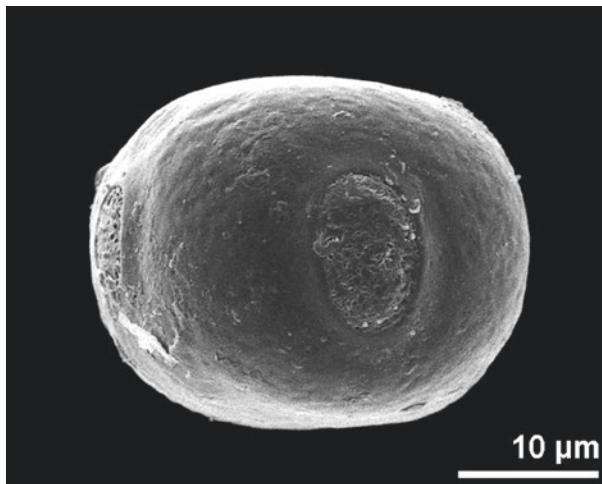
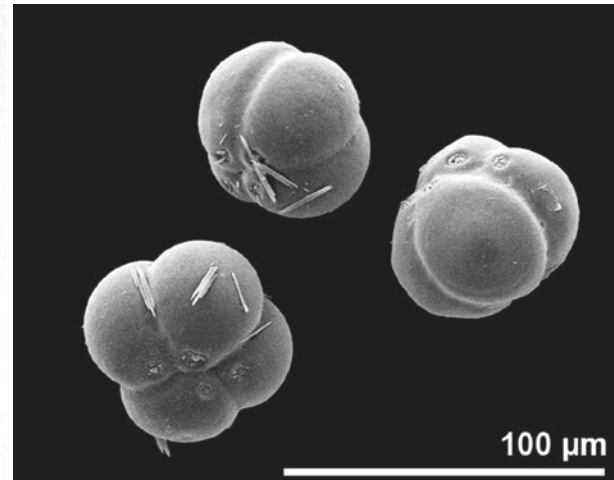
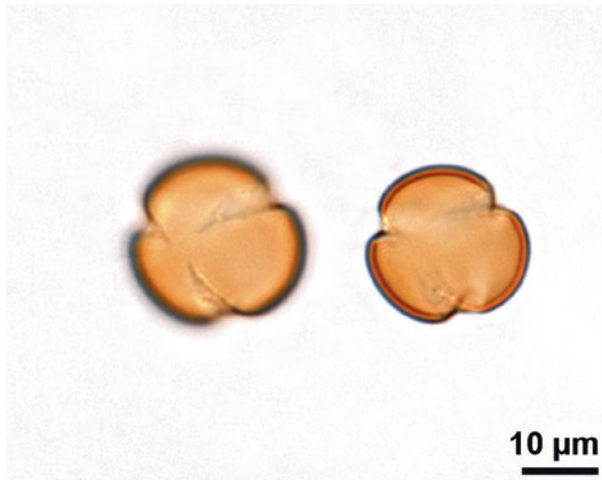
■ ■ *Lithospermum officinale*, Boraginaceae
equatorial view

■ ■ *Orchidantha maxillarioides*, Lowiaceae

■ ■ *Anthyllis vulneraria*, Fabaceae

■ ■ *Vinca minor*, Apocynaceae
oblique polar view

■ ■ *Sempervivum globiferum*, Crassulaceae
dry pollen

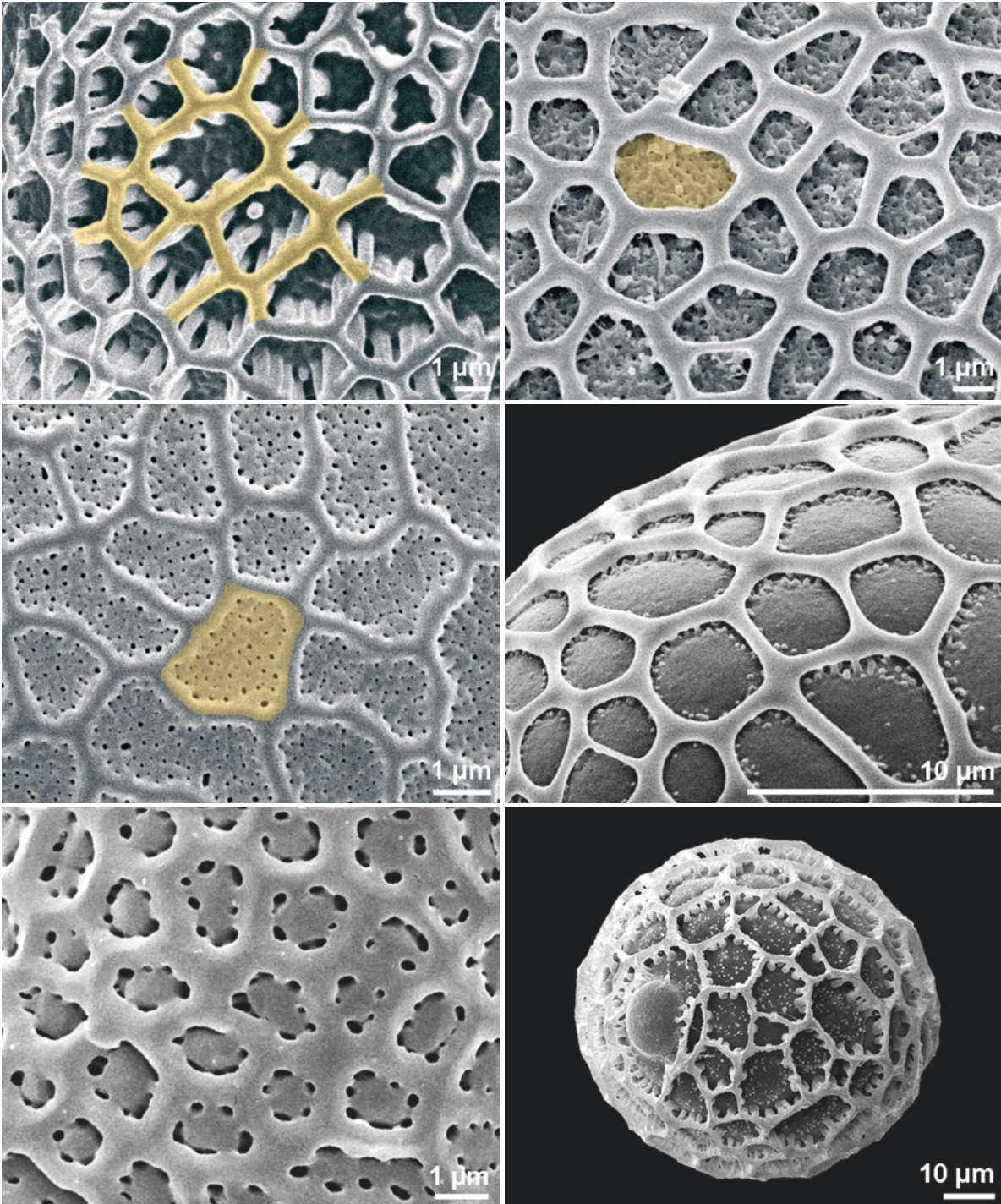


- ■ ■ ■ *Lamium album*, Lamiaceae
- ■ ■ ■ *Trigonía nivea*, Trigoníaceae
equatorial view
- ■ ■ ■ *Cheilocostus speciosus*, Costaceae

- ■ ■ ■ *Androlepis skinneri*, Bromeliaceae
tetrads
- ■ ■ ■ *Maxillaria densa*, Orchidaceae
tetrad, part of pollinium
- ■ ■ ■ *Whitfieldia lateritia*, Acanthaceae
equatorial view

reticulum/reticulate

reticulum: network like pattern consisting of muri and lumina



■ ■ *Cardamine pratensis*, Brassicaceae
■ ■ muri (meshes in a reticulum) colored

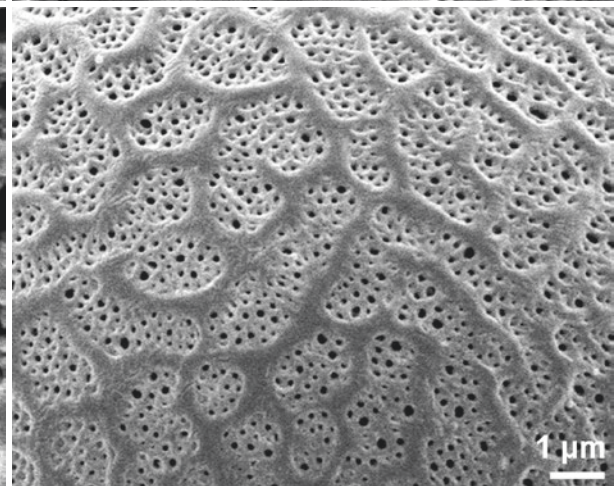
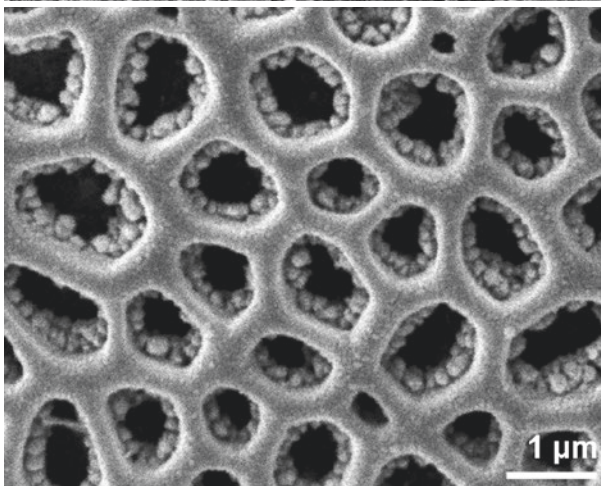
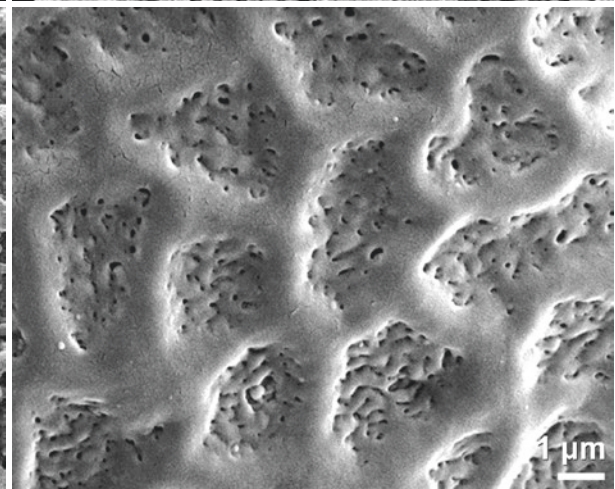
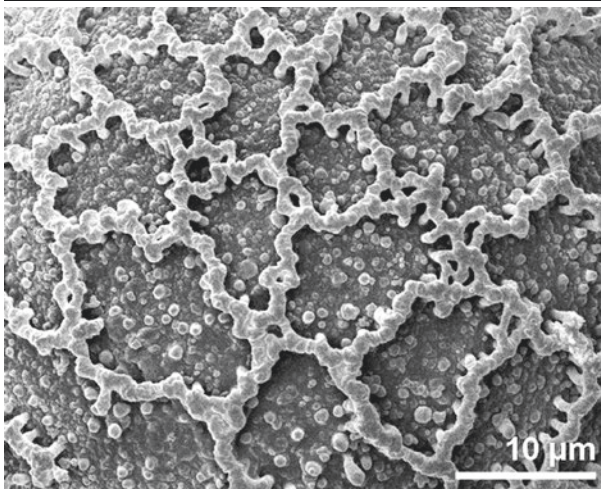
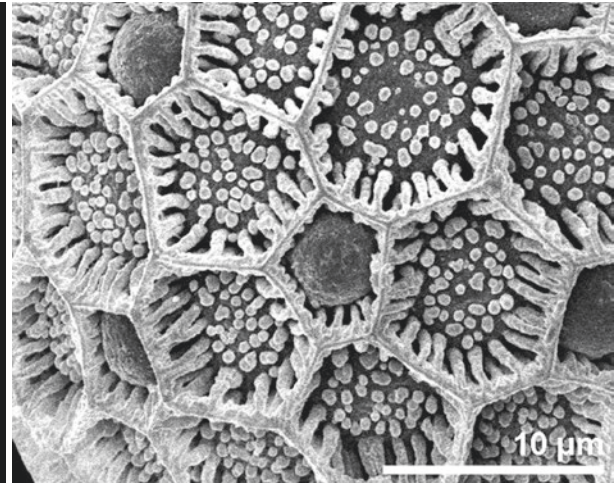
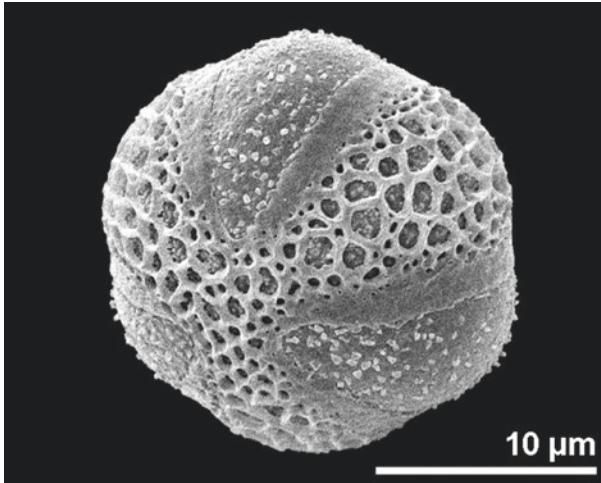
■ ■ *Physostegia virginiana*, Lamiaceae
■ ■ brochus (one lumen and adjoining half of muri) colored

■ ■ *Beloperone guttata*, Acanthaceae
■ ■ reticulate, perforate

■ ■ *Luffa cylindrica*, Cucurbitaceae
■ ■ lumen (space enclosed by muri) colored

■ ■ *Aechmea azurea*, Bromeliaceae
■ ■

■ ■ *Razisea citrina*, Acanthaceae
■ ■ equatorial view



■ *Salix daphnoides*, Salicaceae
 ■ polar view

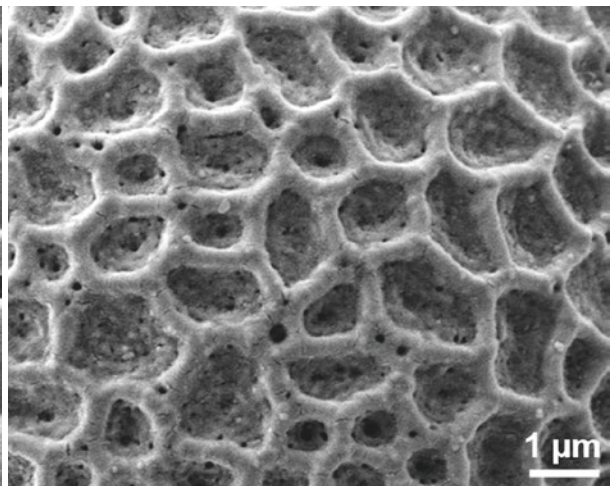
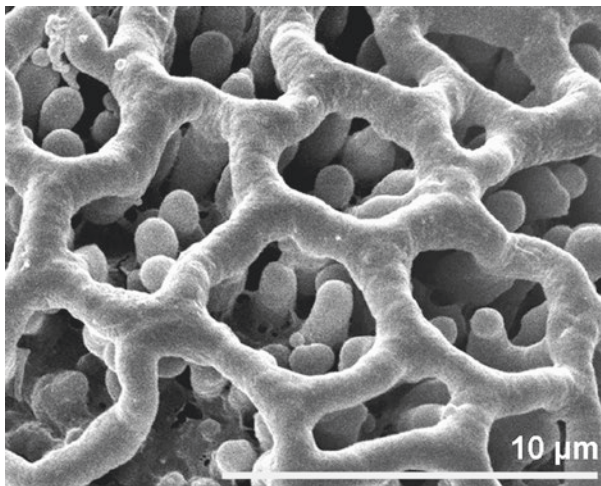
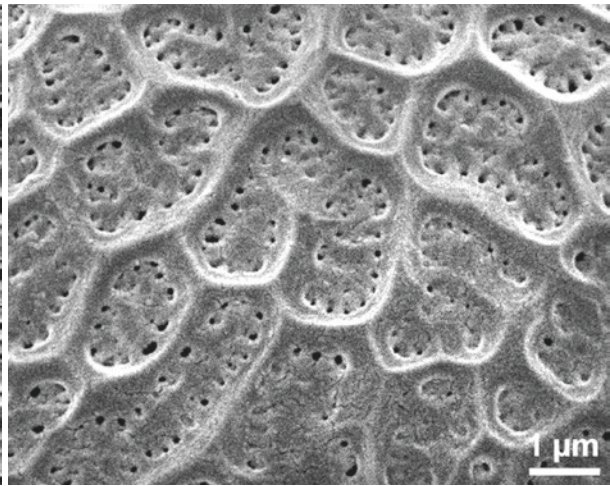
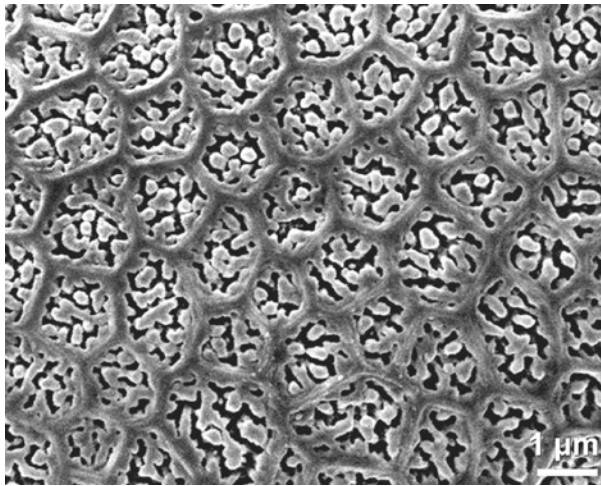
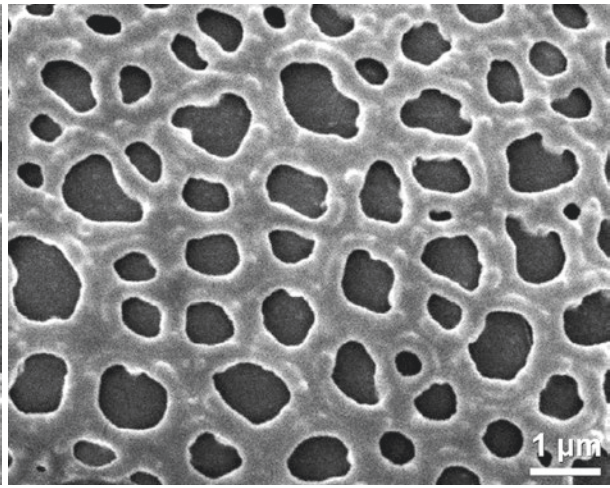
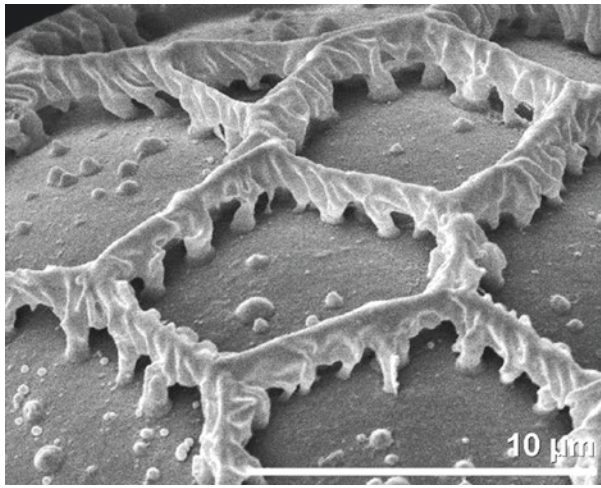
■ *Paradisea liliastrum*, Asparagaceae
 ■ free standing columellae

■ *Ecballium elaterium*, Cucurbitaceae

■ *Persicaria mitis*, Polygonaceae
 ■ pantoporate, free standing columellae

■ *Trifolium rubens*, Fabaceae
 ■ reticulate, perforate

■ *Ajuga genevensis*, Lamiaceae
 ■ reticulate, perforate



■ ■ ■ *Ruellia brevifolia*, Acanthaceae

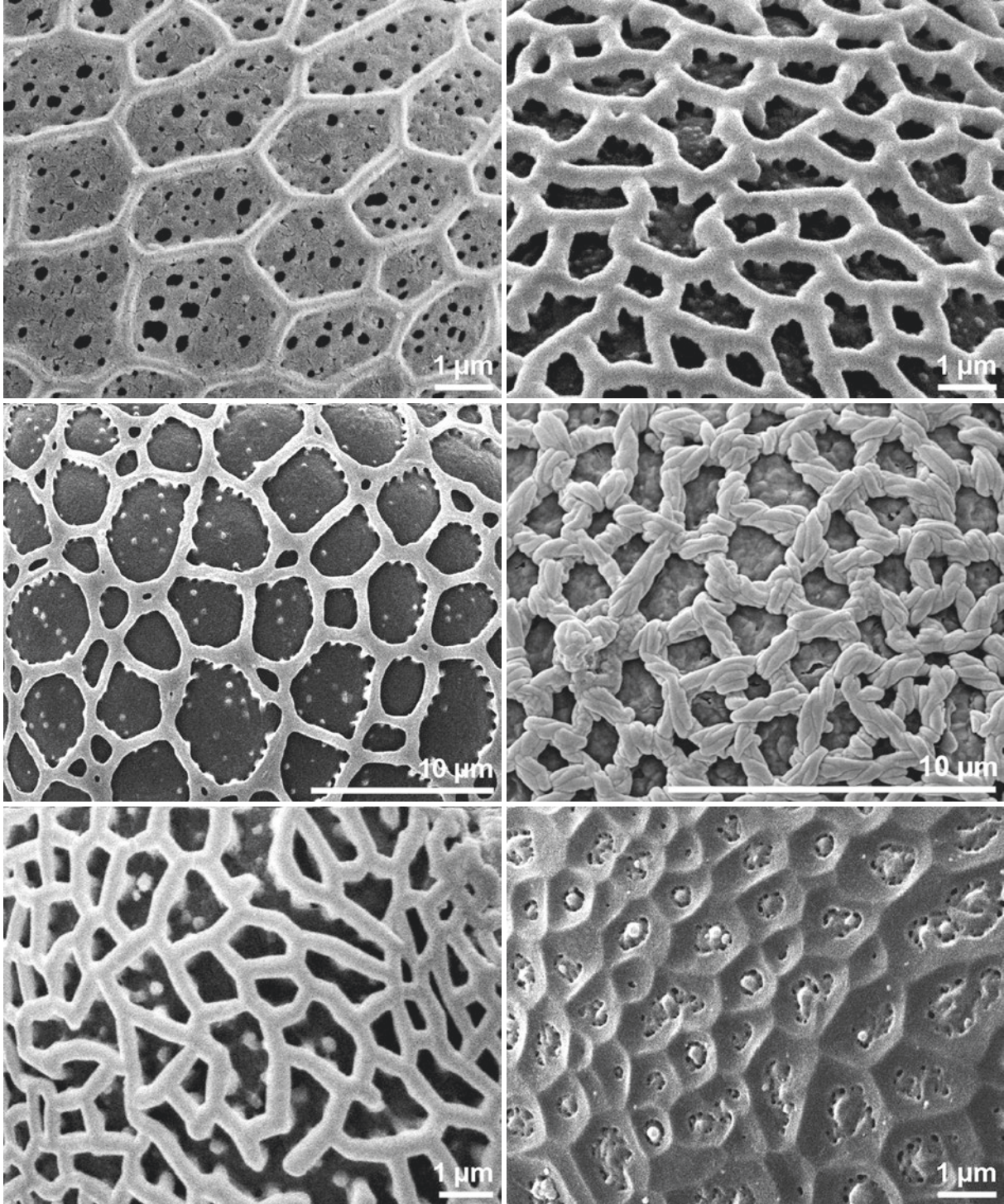
■ ■ ■ *Impatiens glandulifera*, Balsaminaceae

■ ■ ■ *Opuntia paraguayensis*, Cactaceae
free standing columellae

■ ■ ■ *Buxus sempervirens*, Buxaceae

■ ■ ■ *Lupinus polyphyllus*, Fabaceae
reticulate, perforate

■ ■ ■ *Theobroma cacao*, Malvaceae
reticulate, perforate



■ *Tropaeolum majus*, Tropaeolaceae
 ■ reticulate, perforate

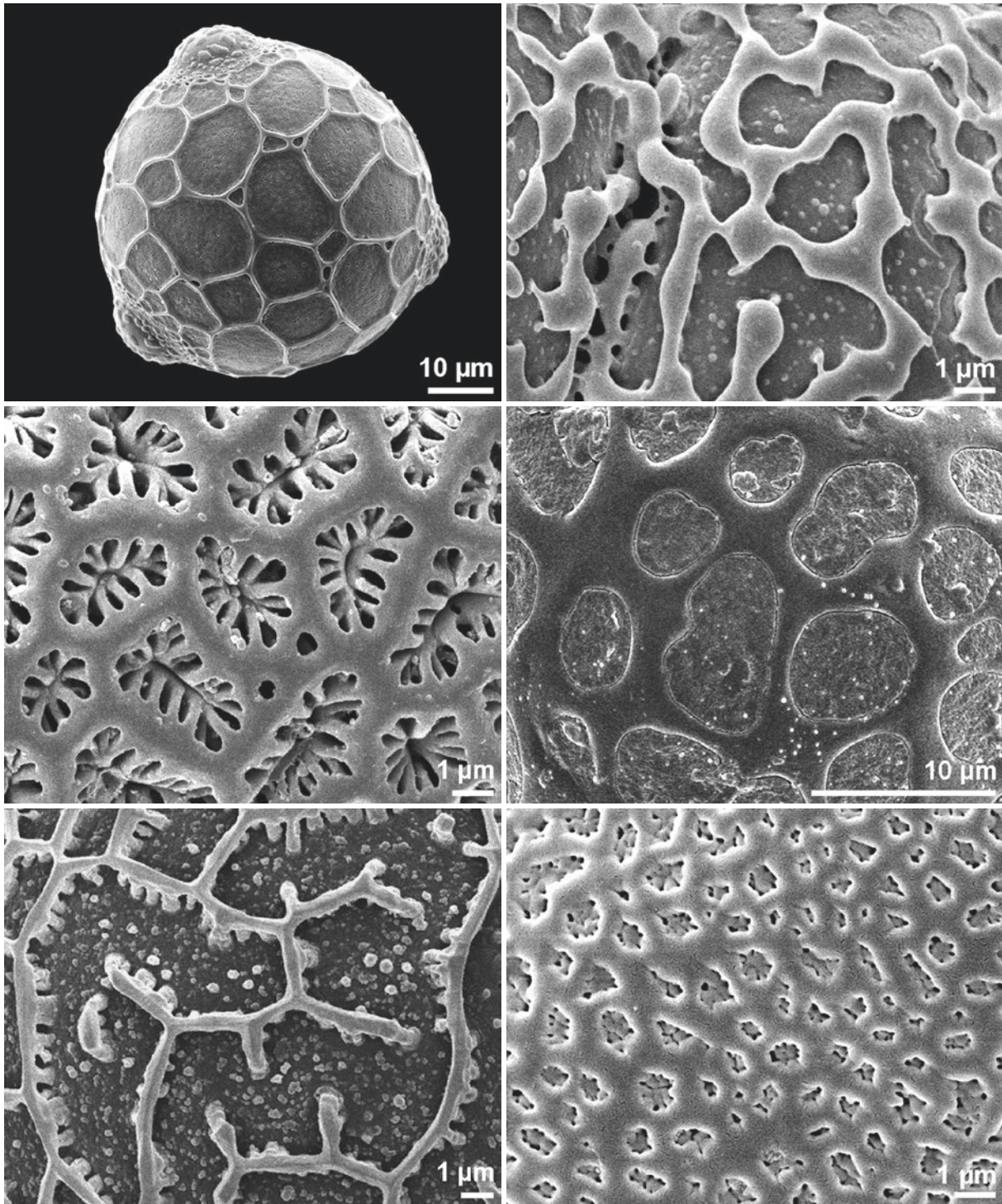
■ *Werauhia tarmaensis*, Bromeliaceae

■ *Poncirus trifoliata*, Rutaceae

■ *Veratrum album*, Melanthiaceae

■ *Erythronium dens-canis*, Liliaceae
 ■ reticulate with suprasculpture

■ *Melilotus officinalis*, Fabaceae
 ■ reticulate, perforate



■ *Vigna speciosa*, Fabaceae
polar view

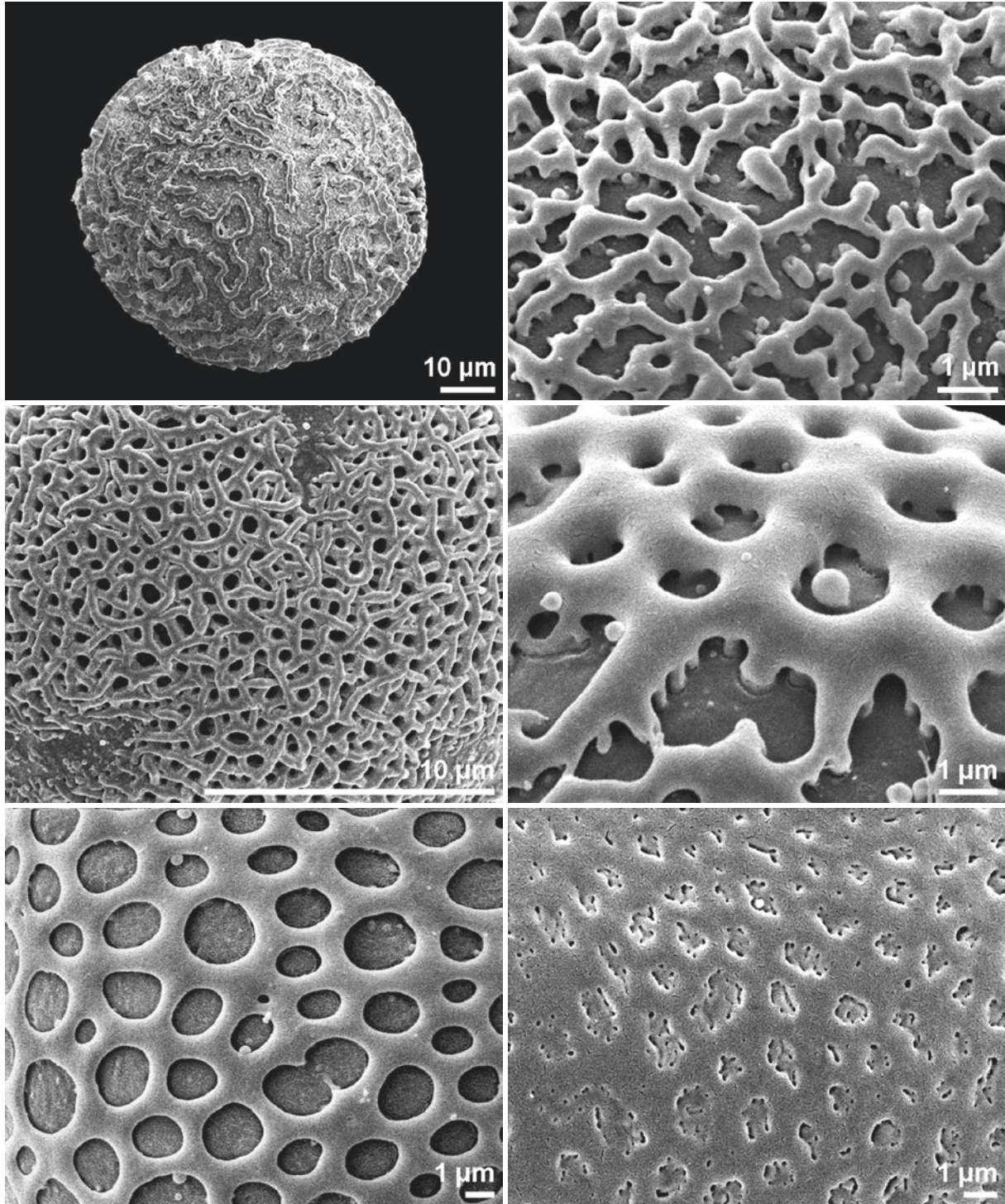
■ *Harpochilus neesianus*, Acanthaceae
reticulate, brochi with inclined columellae

■ *Adenia fruticosa*, Passifloraceae
incomplete reticulum

■ *Epipactis helleborine*, Orchidaceae
incomplete reticulum

■ *Polygala major*, Polygalaceae
reticulate to foveolate

■ *Pisum sativum*, Fabaceae
reticulate, perforate



■ *Thladiantha hookeri*, Cucurbitaceae
 ■ oblique equatorial view, incomplete reticulum

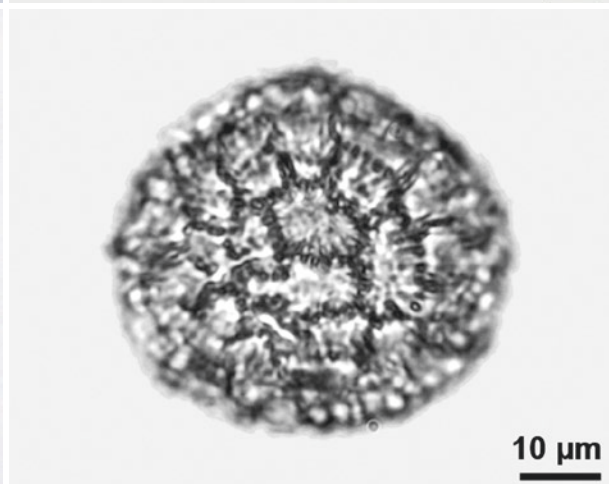
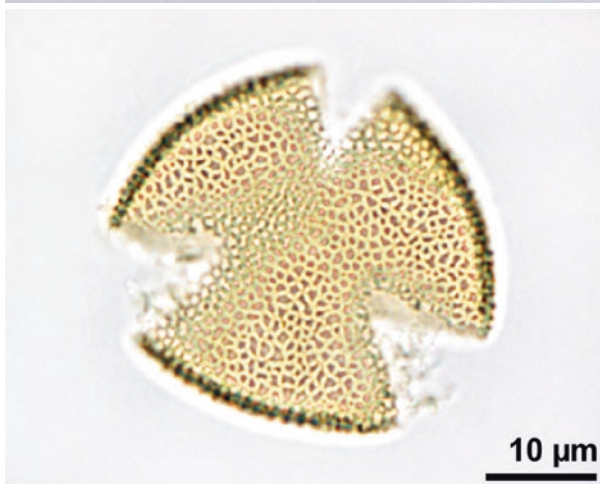
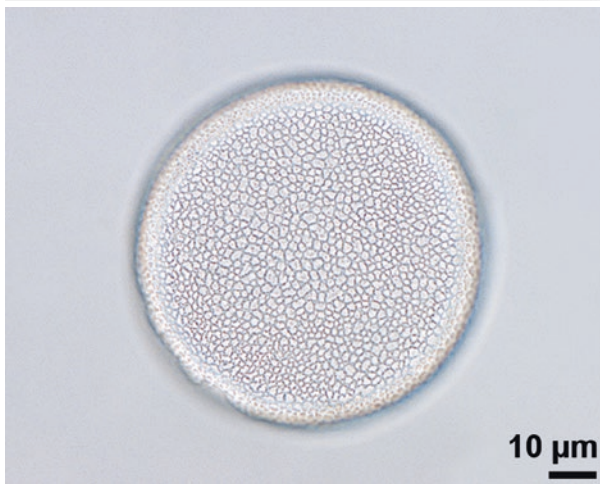
■ *Billardia heterophylla*, Pittosporaceae
 ■ reticulate to rugulate

■ *Aechmea allenii*, Bromeliaceae
 ■ reticulate to foveolate

■ *Pinguicula alpina*, Lentibulariaceae
 ■ incomplete reticulum

■ *Cephalanthera longifolia*, Orchidaceae

■ *Lathyrus vernus*, Fabaceae
 ■ reticulate, perforate



■ *Jasminum nudiflorum*, Oleaceae
equatorial view

■ *Iris pseudacorus*, Iridaceae
proximal polar view

■ *Fraxinus excelsior*, Oleaceae
polar view

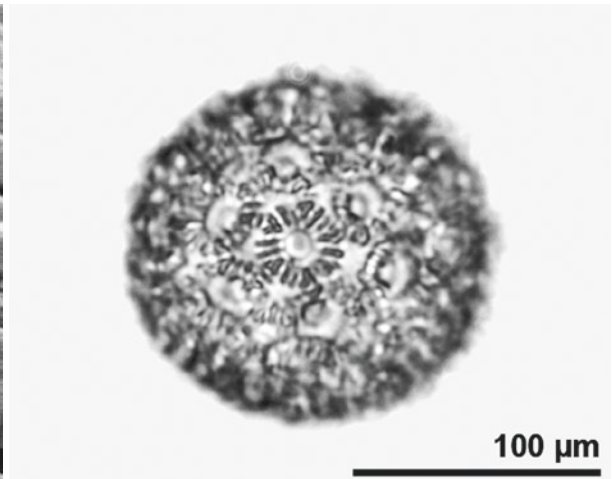
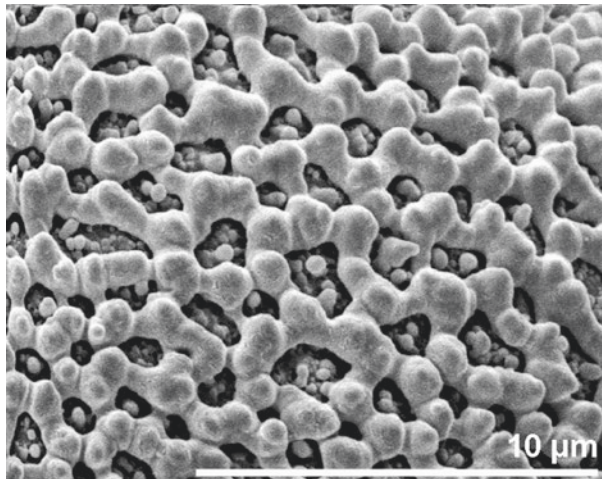
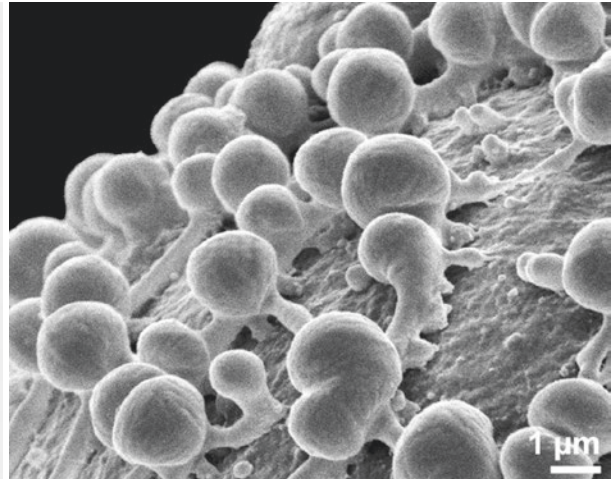
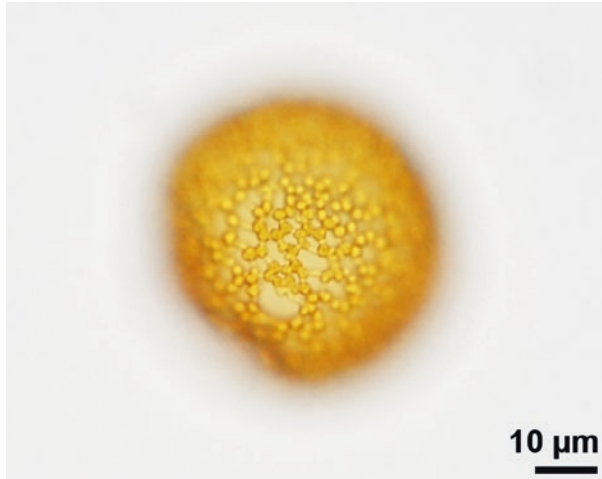
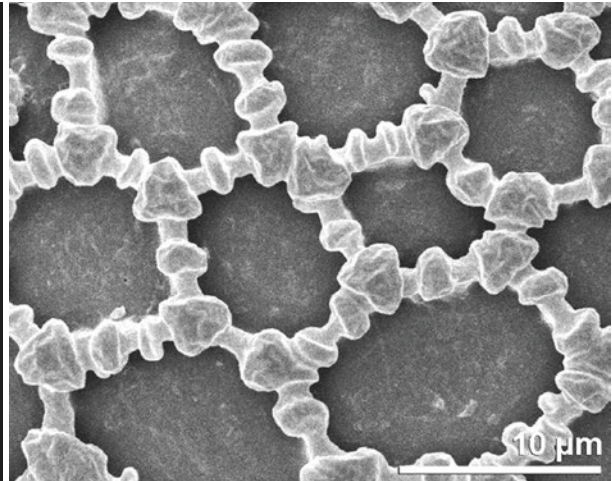
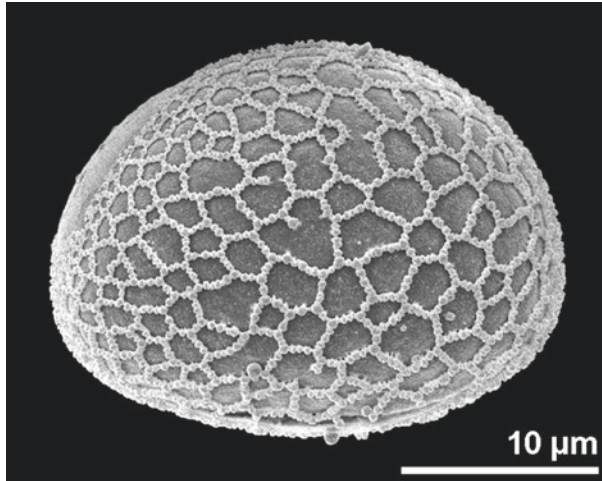
■ Lamiaceae
equatorial view

■ *Iris domestica*, Iridaceae
proximal polar view

■ *Persicaria* sp., Polygonaceae
fossil, Miocene, Austria

reticulum cristatum

special type of reticulum; muri with prominent suprasculpture



■ ■ *Lilium martagon*, Liliaceae
■ ■ equatorial view

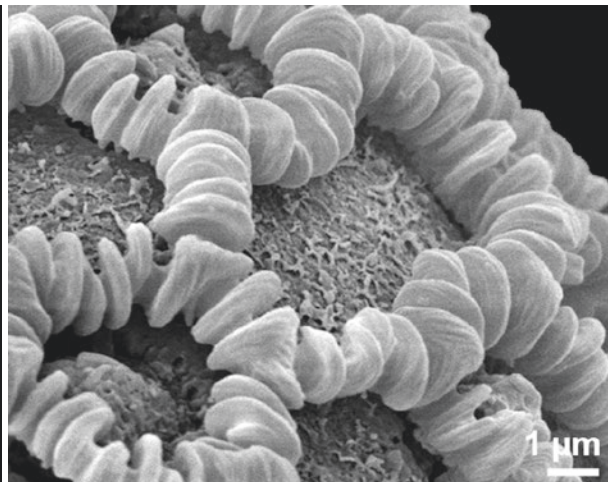
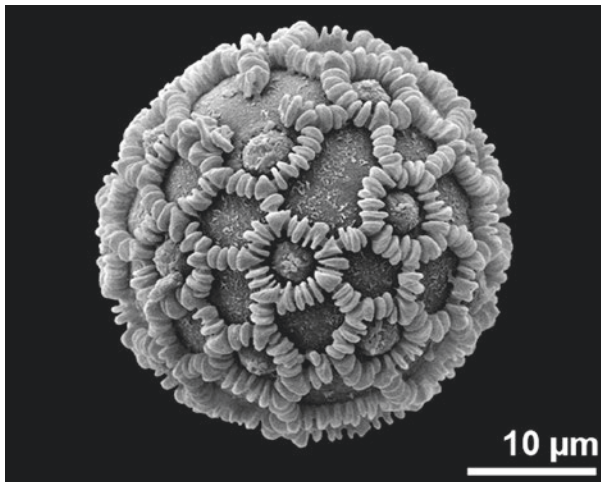
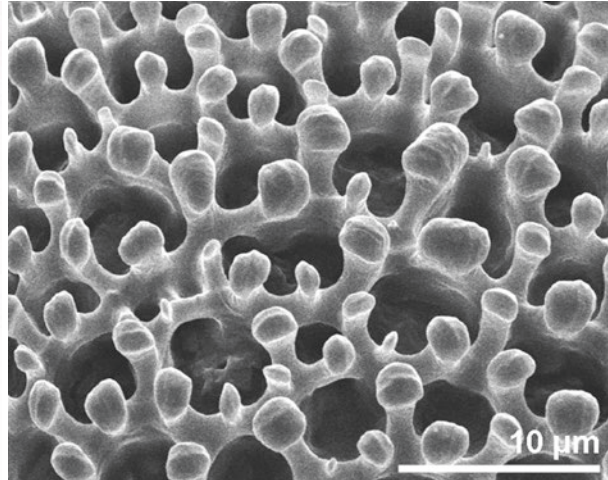
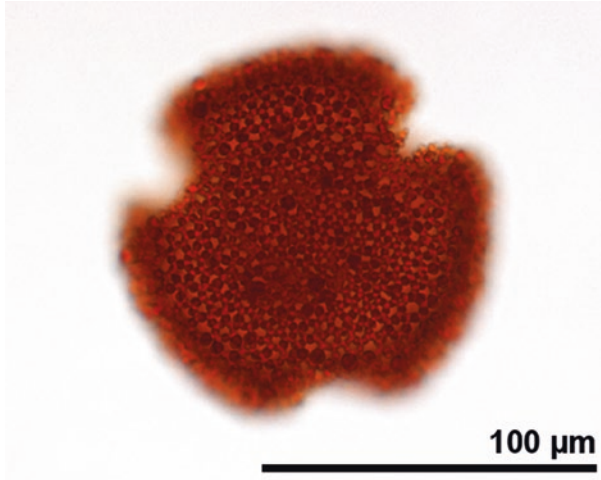
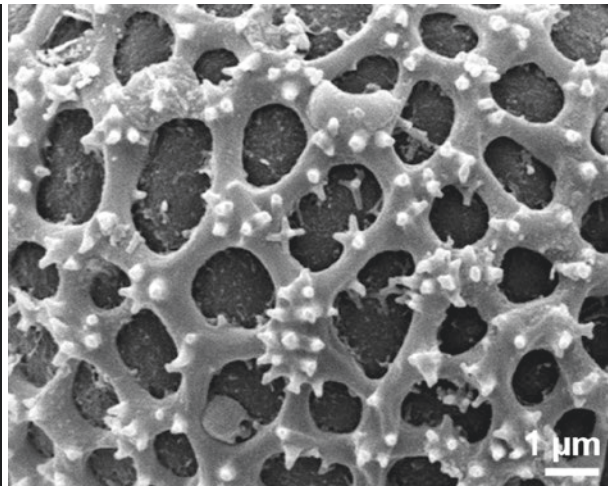
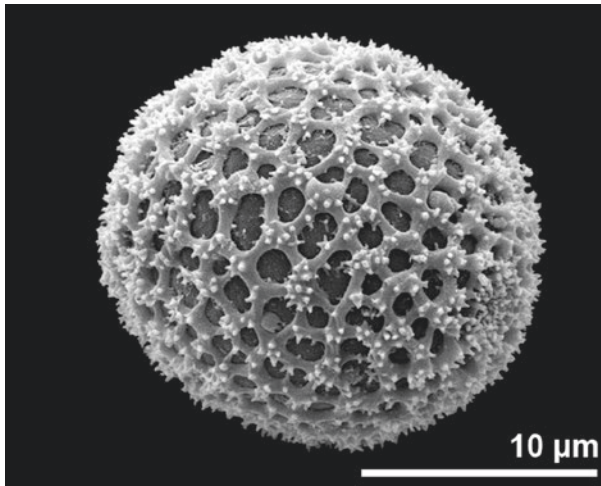
■ ■ *Phaleria capitata*, Thymelaeaceae
■ ■ reticulum with gemmae or clavae

■ ■ *Fumana procumbens*, Cistaceae

■ ■ *Lilium candidum*, Liliaceae

■ ■ *Phaleria capitata*, Thymelaeaceae
■ ■ reticulum with gemmae or clavae

■ ■ *Erdtmanipollis*, Buxaceae
■ ■ fossil, Upper Cretaceous, USA



■ ■ ■ *Anthurium gracile*, Araceae

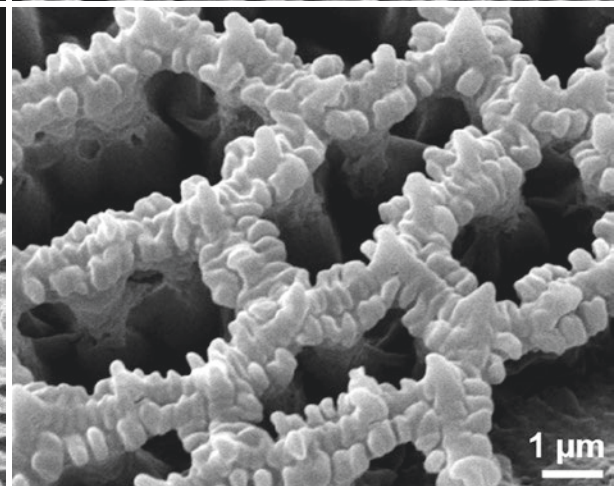
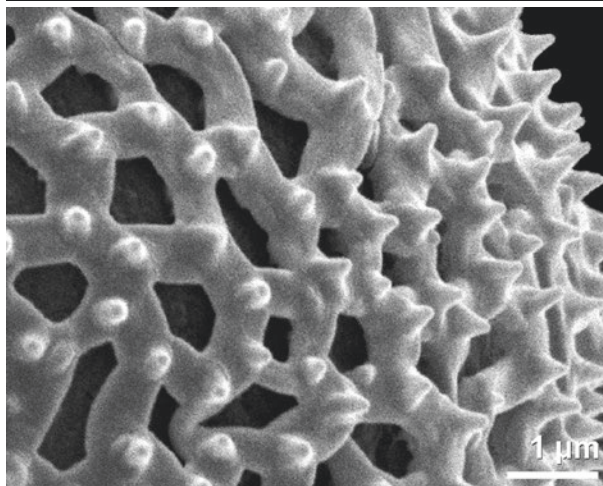
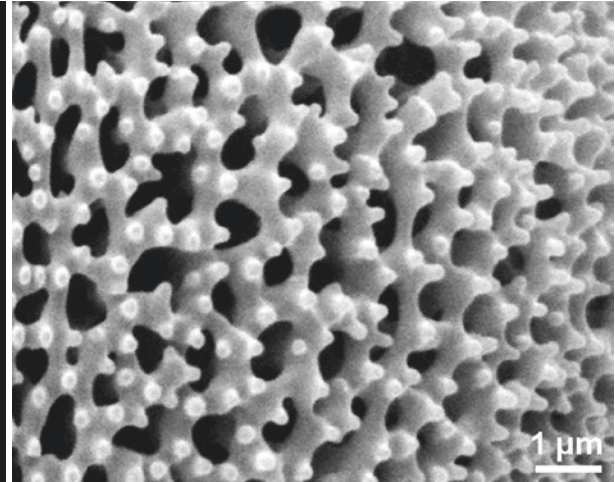
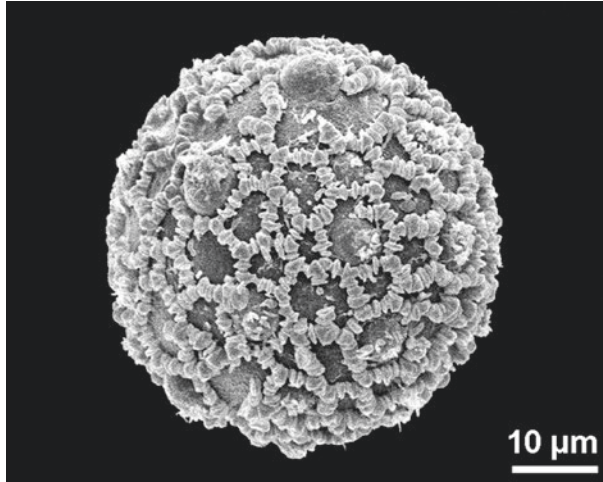
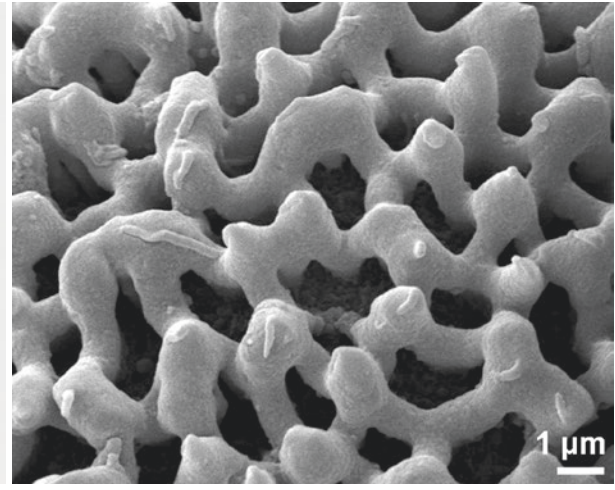
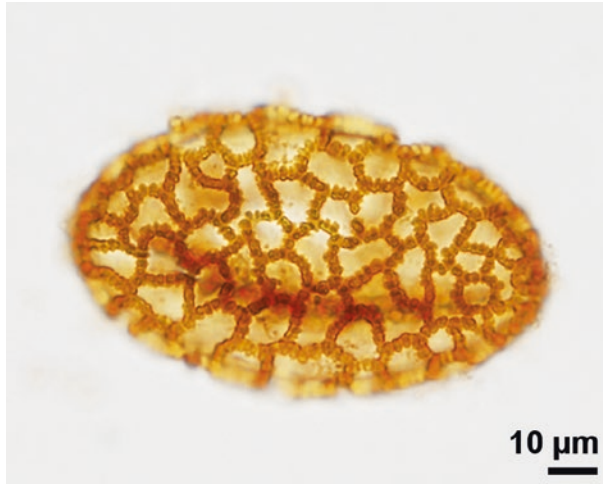
■ ■ ■ *Geranium pratense*, Geraniaceae

■ ■ ■ *Sarcococca pruniformis*, Buxaceae
pantoporate

■ ■ ■ *Anthurium gracile*, Araceae
reticulum with microechini

■ ■ ■ *Geranium reuteri*, Geraniaceae
reticulum with clavae

■ ■ ■ *Sarcococca pruniformis*, Buxaceae



■ Liliaceae
■ proximal polar view

■ *Pachysandra terminalis*, Buxaceae

■ *Aponogeton masoalaensis*, Aponogetonaceae
■ reticulum with microechini

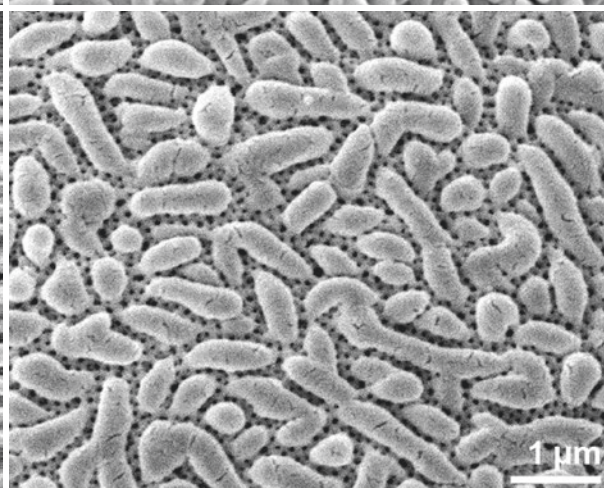
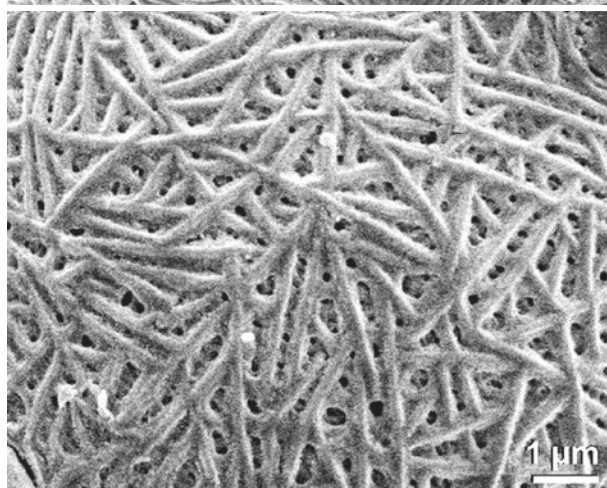
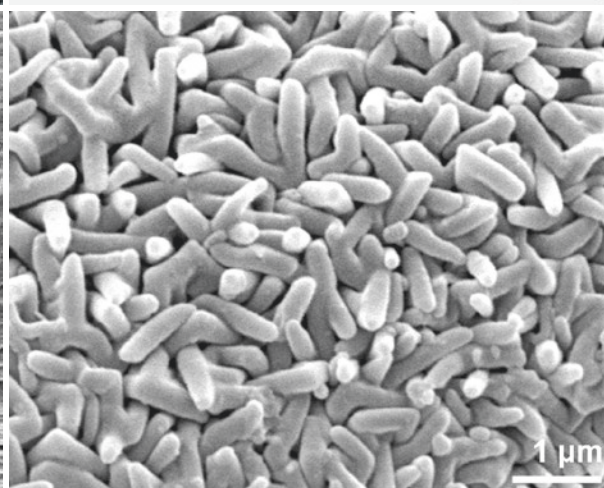
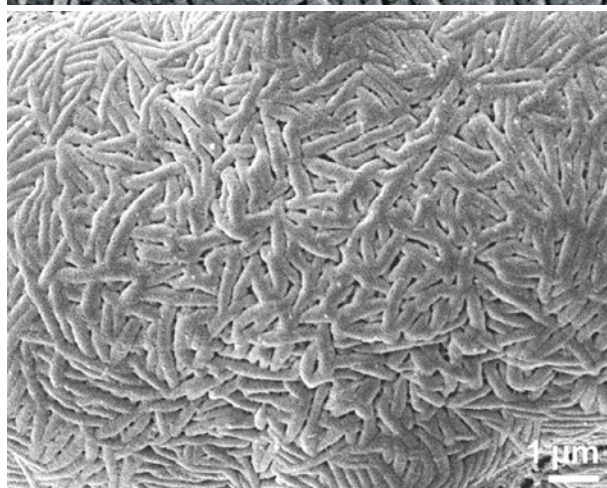
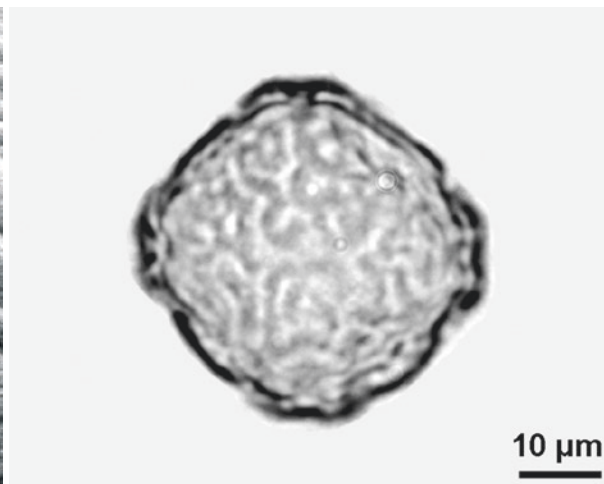
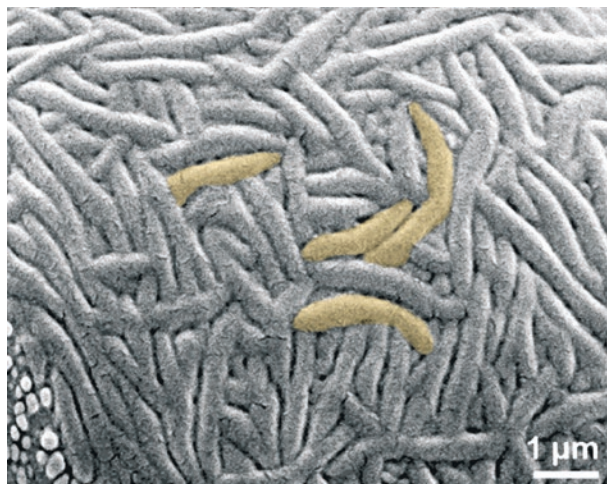
■ *Pachira aquatica*, Malvaceae

■ *Mercurialis perennis*, Euphorbiaceae
■ reticulum with microechini

■ *Armeria maritima*, Plumbaginaceae

rugulae/rugulate

elongated ornamentation elements irregularly arranged



■ ■ *Securigera varia*, Fabaceae
 ■ ■ rugulae colored

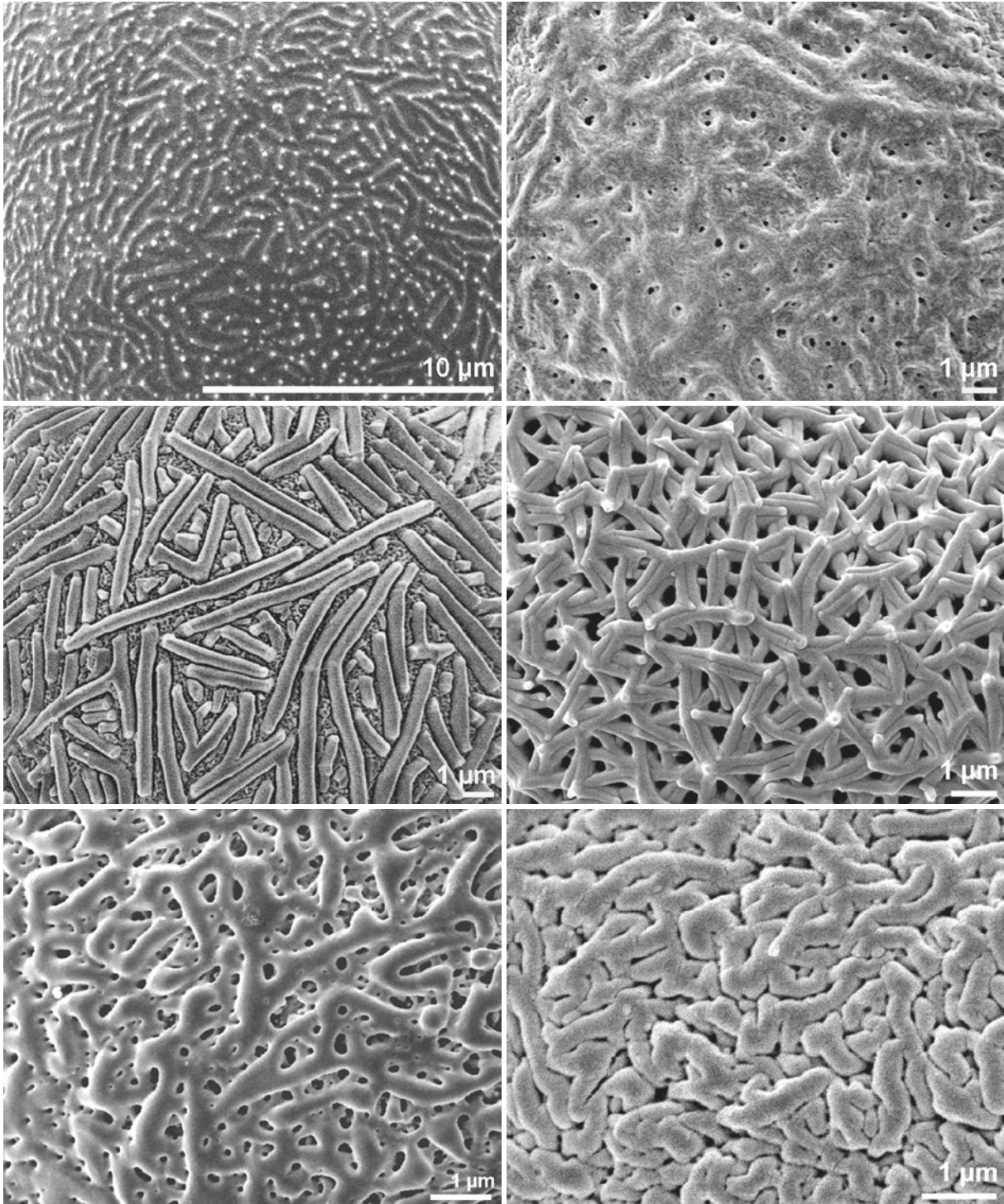
■ ■ *Peucedanum cervaria*, Apiaceae

■ ■ *Sedum acre*, Crassulaceae
 ■ ■ rugulate, perforate

■ ■ *Zelkova* sp., Ulmaceae
 ■ ■ fossil, Miocene, Austria, polar view

■ ■ *Fagus* sp., Fagaceae
 ■ ■ fossil, Miocene, Austria, polar view

■ ■ *Circaea lutetiana*, Onagraceae
 ■ ■ rugulate, perforate



■ ■ *Carpinus betulus*, Betulaceae
 rugulate, granulate

■ ■ *Nymphoides peltata*, Menyanthaceae

■ ■ *Nicotiana tabacum*, Solanaceae
 rugulate, perforate

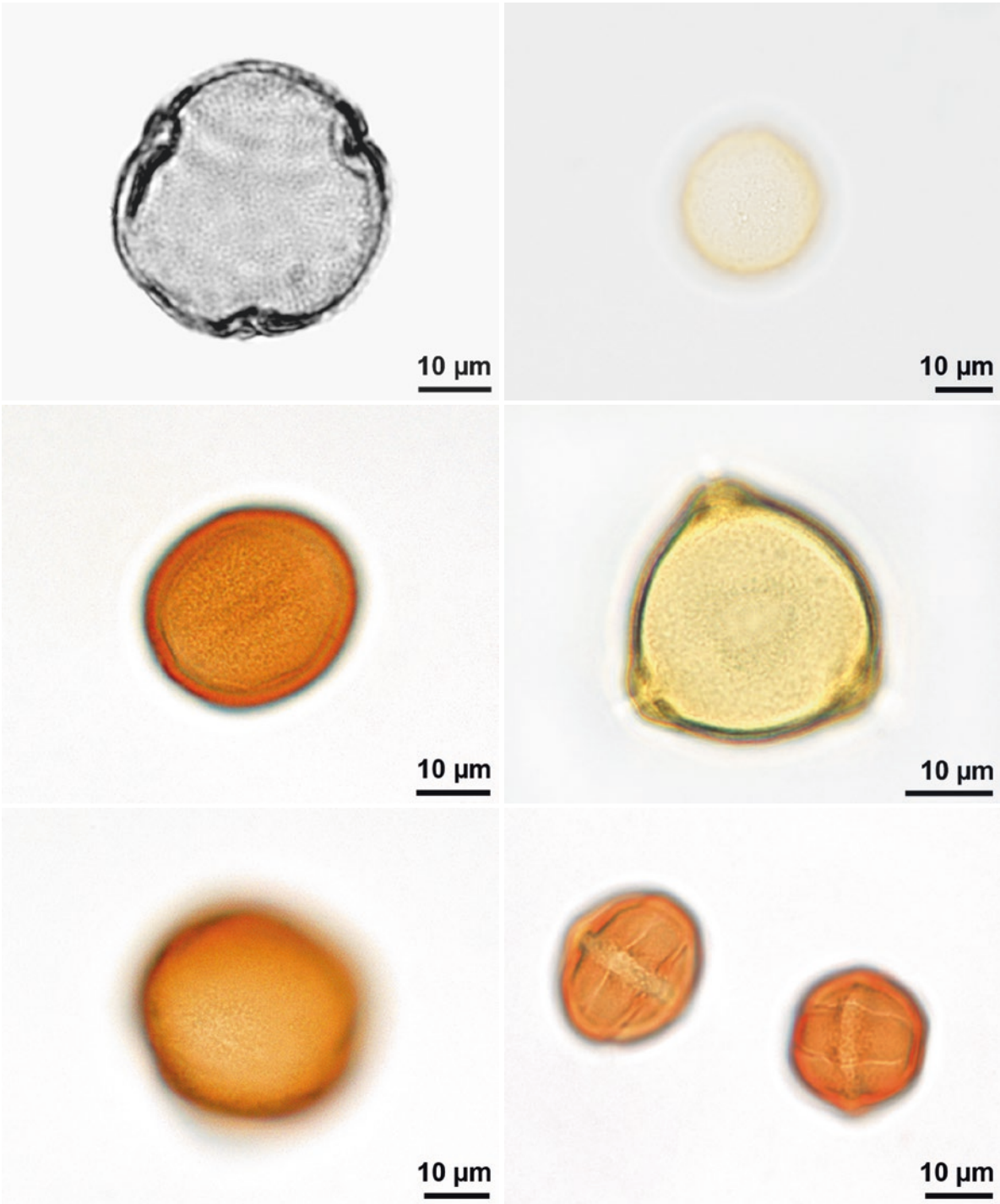
■ ■ *Acer negundo*, Sapindaceae
 rugulate, perforate

■ ■ *Leucadendron discolor*, Proteaceae
 rugulate, perforate or microreticulate

■ ■ *Myrrhis odorata*, Apiaceae

scabrate

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



■ ■ *Fagus* sp., Fagaceae
 ■ ■ fossil, Quaternary, Austria

■ ■ *Dioon edule*, Zamiaceae

■ ■ *Ceratozamia mexicana*, Zamiaceae

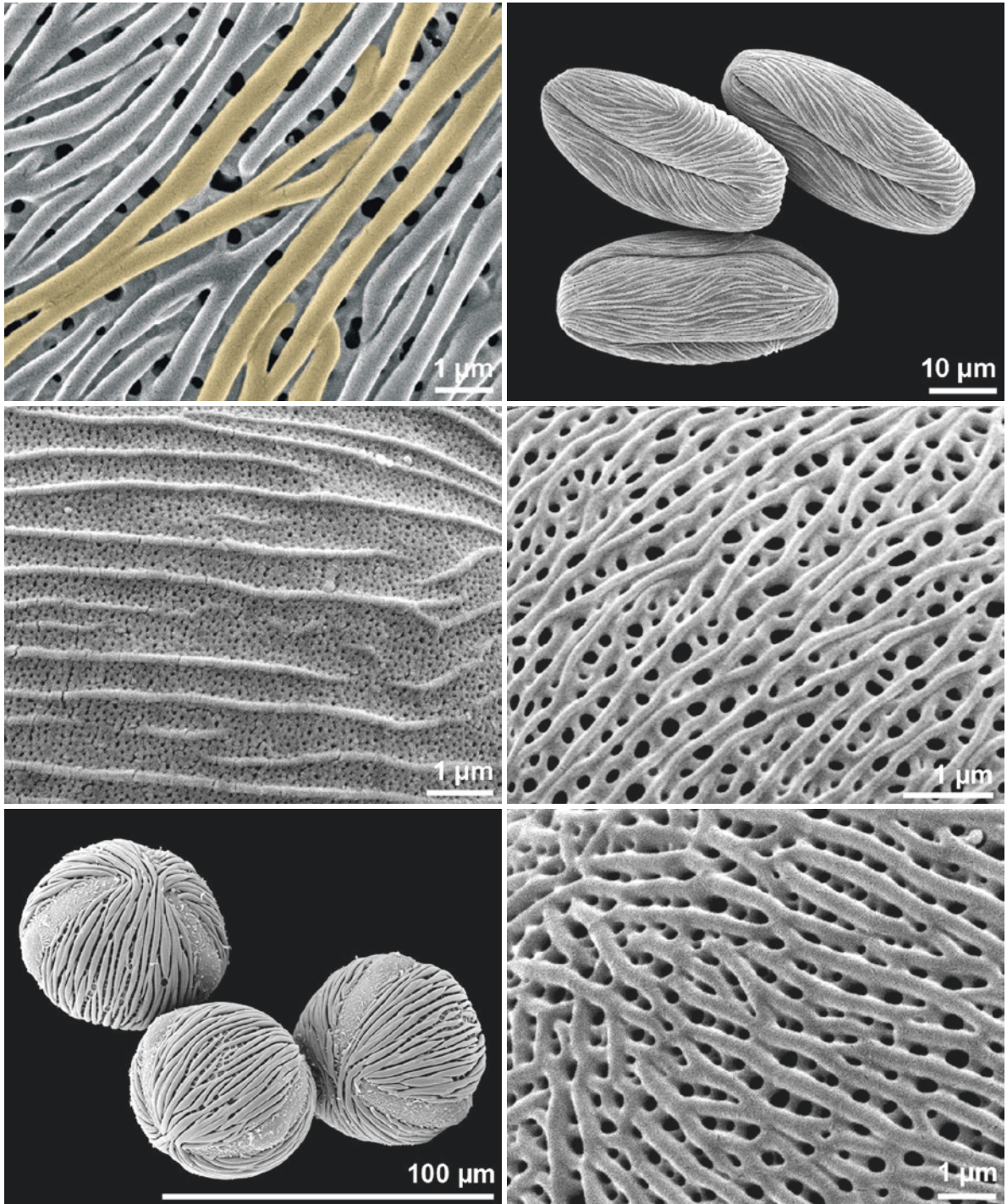
■ ■ *Populus alba*, Salicaceae

■ ■ *Betula humilis*, Betulaceae

■ ■ *Sanguisorba officinalis*, Rosaceae

striae/striate

elongated ornamentation elements separated by grooves parallelly arranged



■ *Acer pseudoplatanus*, Sapindaceae
striae colored

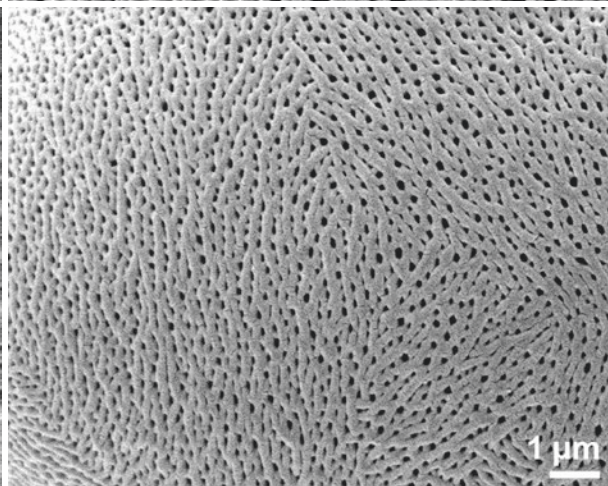
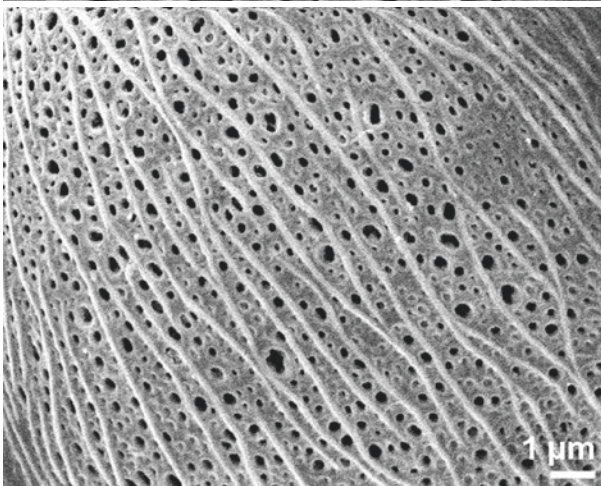
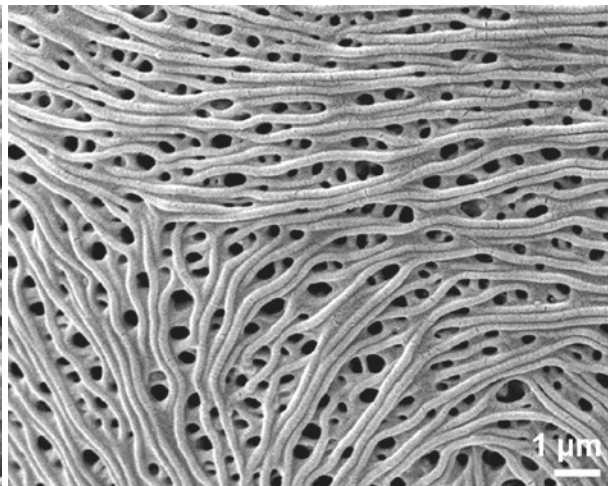
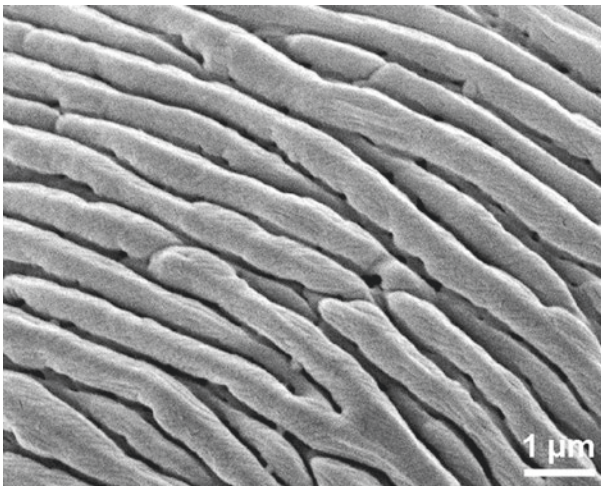
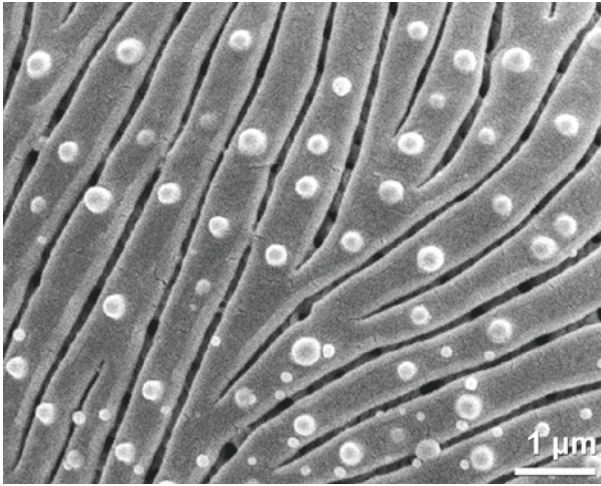
■ *Potentilla inclinata*, Rosaceae
striate, perforate

■ *Amherstia nobilis*, Fabaceae

■ *Prunus avium*, Rosaceae
dry pollen

■ *Veronica cinerea*, Plantaginaceae
striate, perforate

■ *Gentiana lutea*, Gentianaceae
striate, perforate



■ *Saxifraga rotundifolia*, Saxifragaceae
 ■ striate, microgemmate

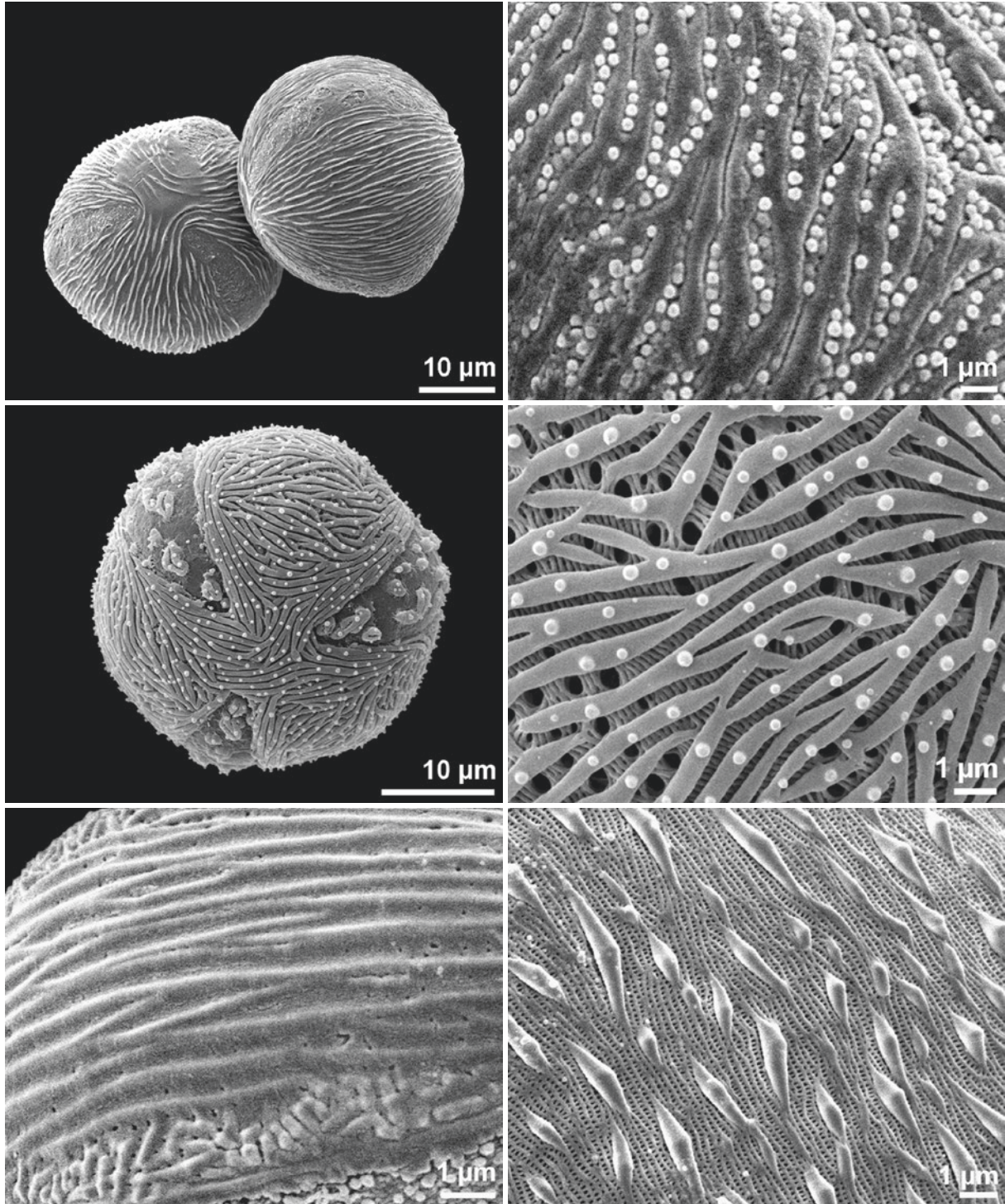
■ *Lycium barbarum*, Solanaceae

■ *Rubus caesius*, Rosaceae
 ■ striate, perforate

■ *Aesculus hippocastanum*, Sapindaceae
 ■ equatorial view, striate, perforate

■ *Chaenomeles sinensis*, Rosaceae
 ■ striate, perforate

■ *Allium flavum*, Amaryllidaceae
 ■ striate, perforate



■ ■ ■ *Geum reptans*, Rosaceae
 ■ ■ ■ polar (left) and equatorial (right) view

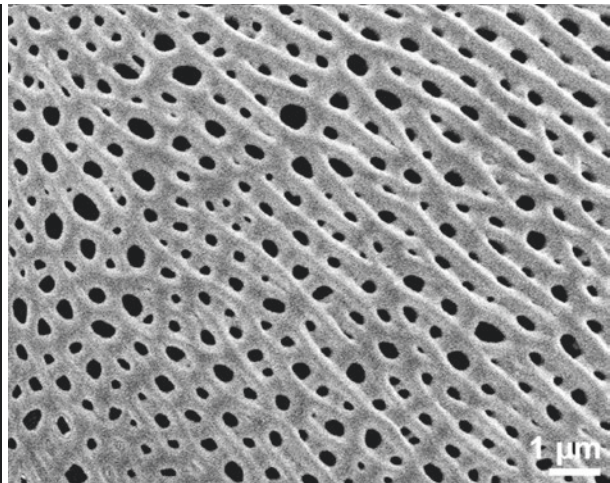
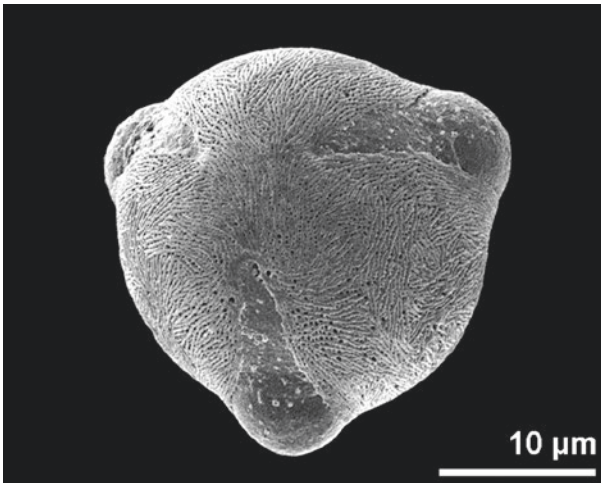
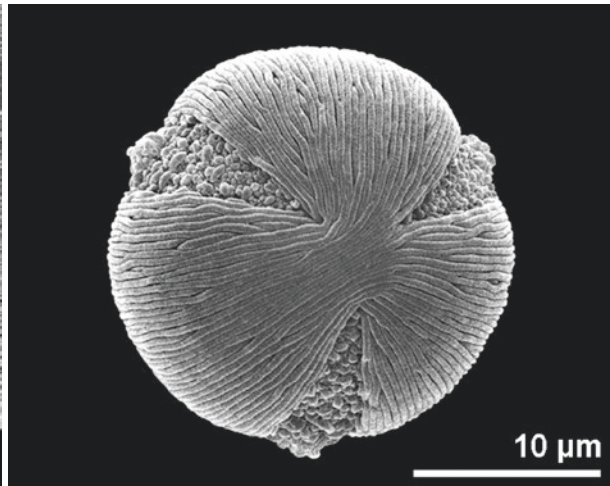
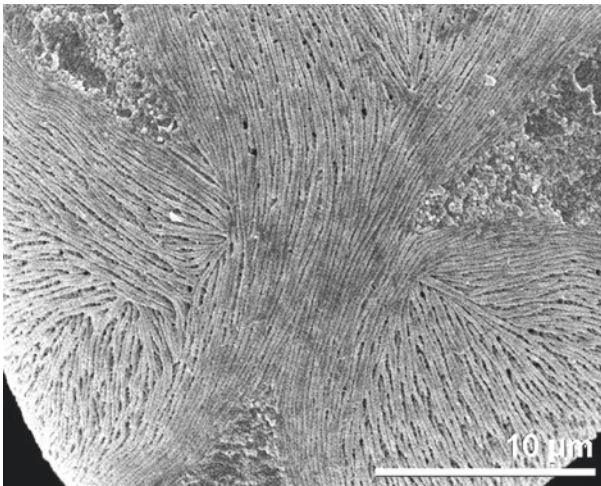
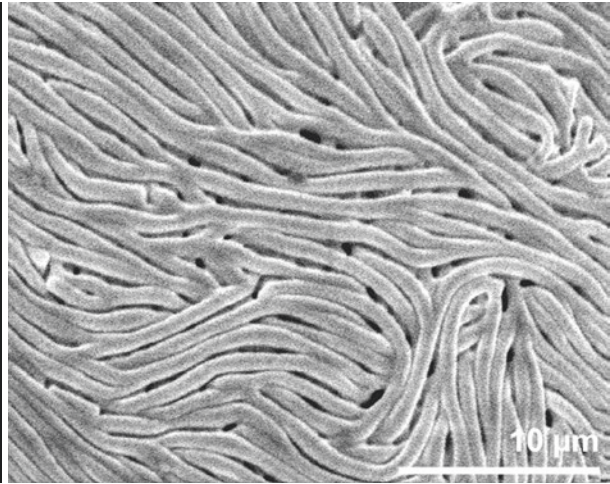
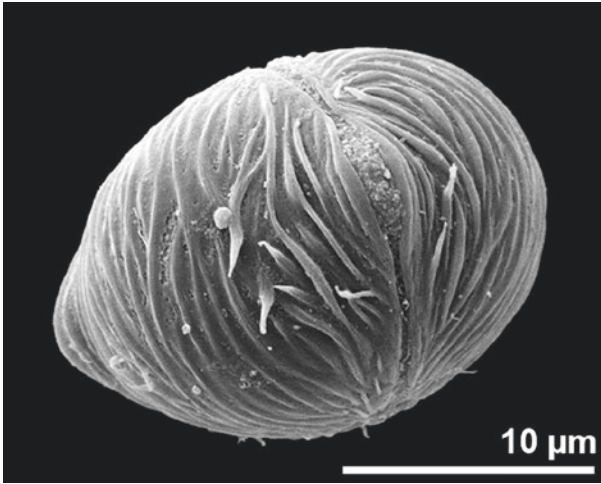
■ ■ ■ *Saxifraga taygetea*, Saxifragaceae
 ■ ■ ■ polar view

■ ■ ■ *Begonia heracleifolia*, Begoniaceae

■ ■ ■ *Sanguisorba minor*, Rosaceae
 ■ ■ ■ striate, nanogemmate

■ ■ ■ *Saxifraga taygetea*, Saxifragaceae
 ■ ■ ■ striate, microgemmate, perforate

■ ■ ■ *Cabomba palaeformis*, Cabombaceae
 ■ ■ ■ striate, perforate



■ ■ *Cuphea llavea*, Lythraceae
equatorial view

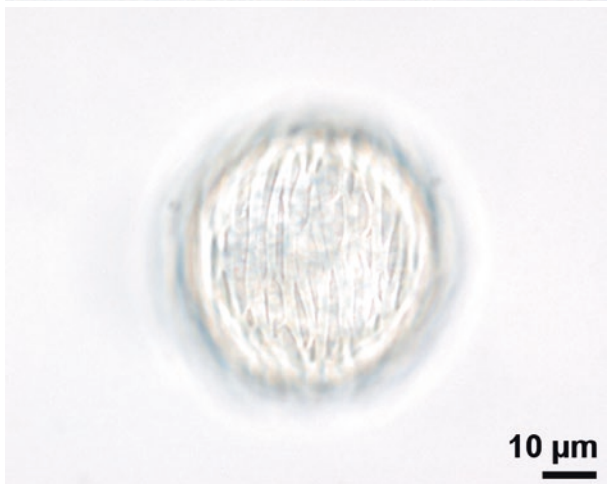
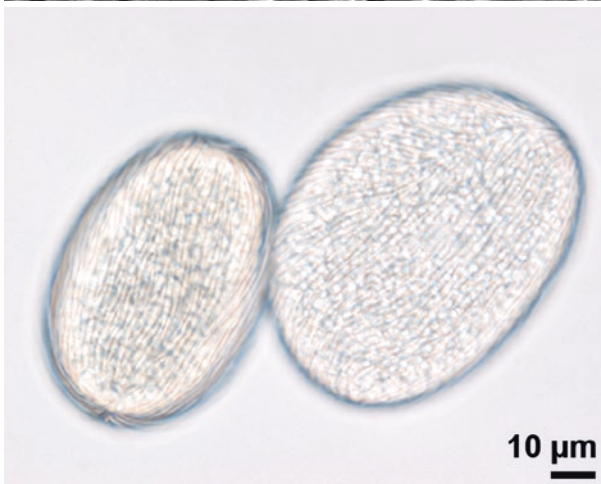
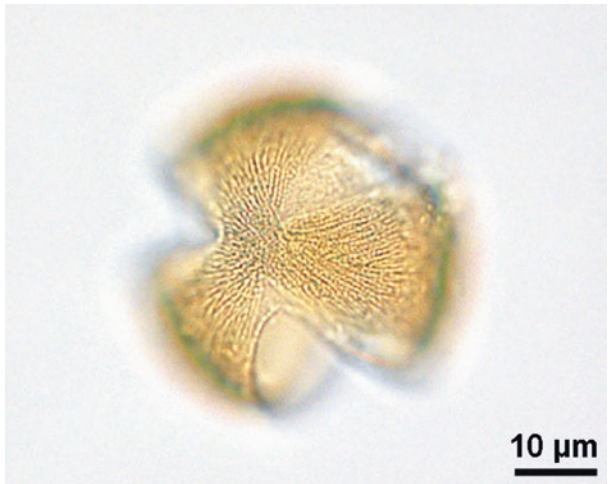
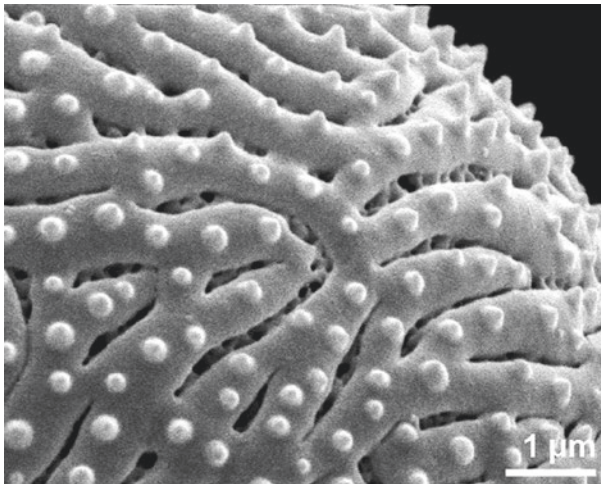
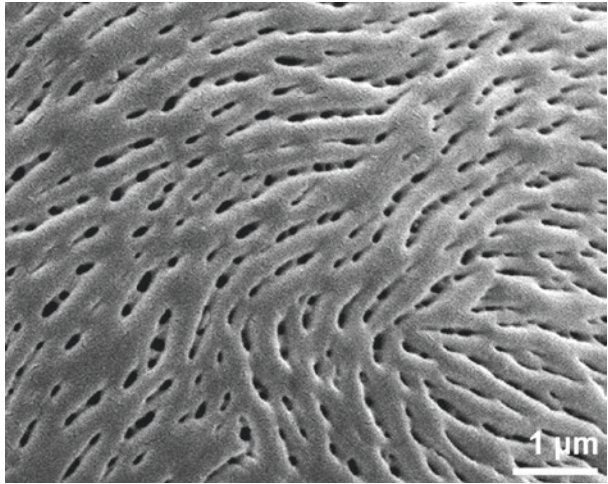
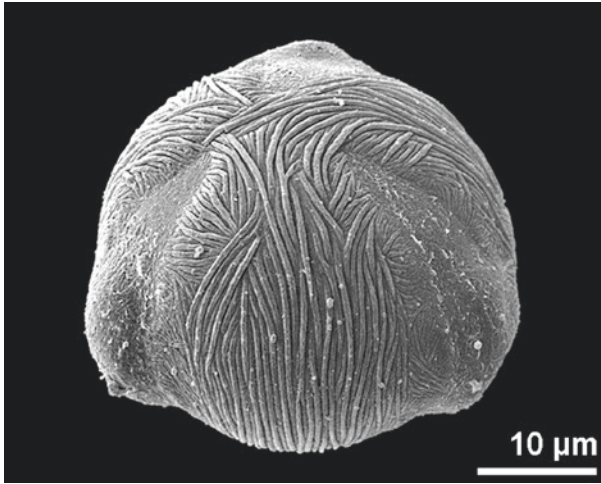
■ ■ *Malus sylvestris*, Rosaceae
striate, perforate, polar area

■ ■ *Ruta graveolens*, Rutaceae
polar view

■ ■ *Crataegus laevigata*, Rosaceae
striate, perforate

■ ■ *Nealsomitra sarcophylla*, Cucurbitaceae
polar view

■ ■ *Helianthemum nummularium*, Cistaceae
striate, perforate



■ ■ *Menyanthes trifoliata*, Menyanthaceae
■ ■ oblique polar view

■ ■ *Saxifraga tridactylites*, Saxifragaceae
■ ■ striate, microechinate, perforate

■ ■ *Amorphophallus interruptus*, Araceae
■ ■ hydrated

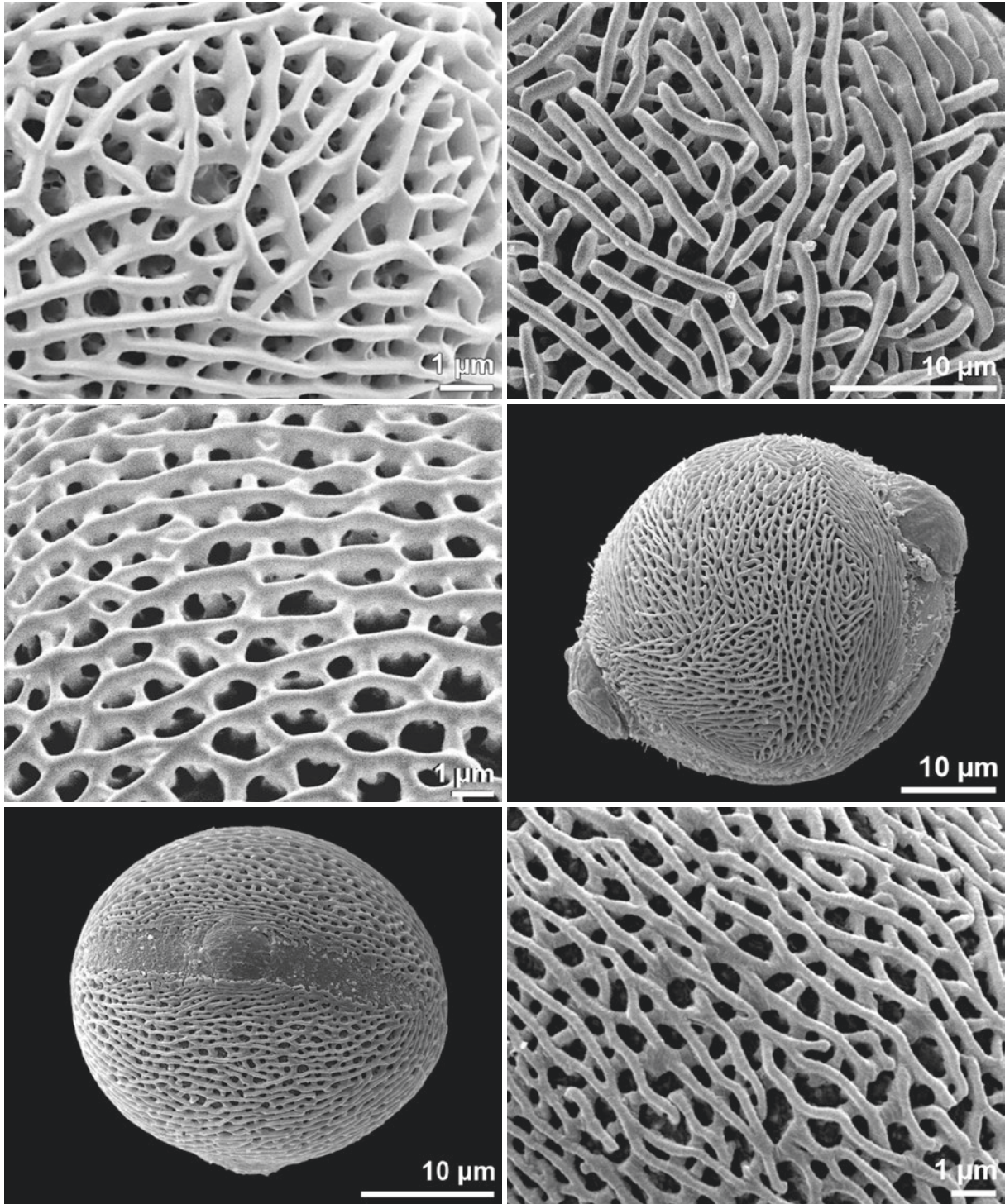
■ ■ *Prunus laurocerasus*, Rosaceae
■ ■ striate, perforate

■ ■ *Acer pseudoplatanus*, Sapindaceae
■ ■ polar view

■ ■ *Amorphophallus serrulatus*, Araceae
■ ■ hydrated

striato-reticulate

ornamentation intermediate between striate and reticulate



■ ■ ■ *Blackstonia perfoliata*, Gentianaceae

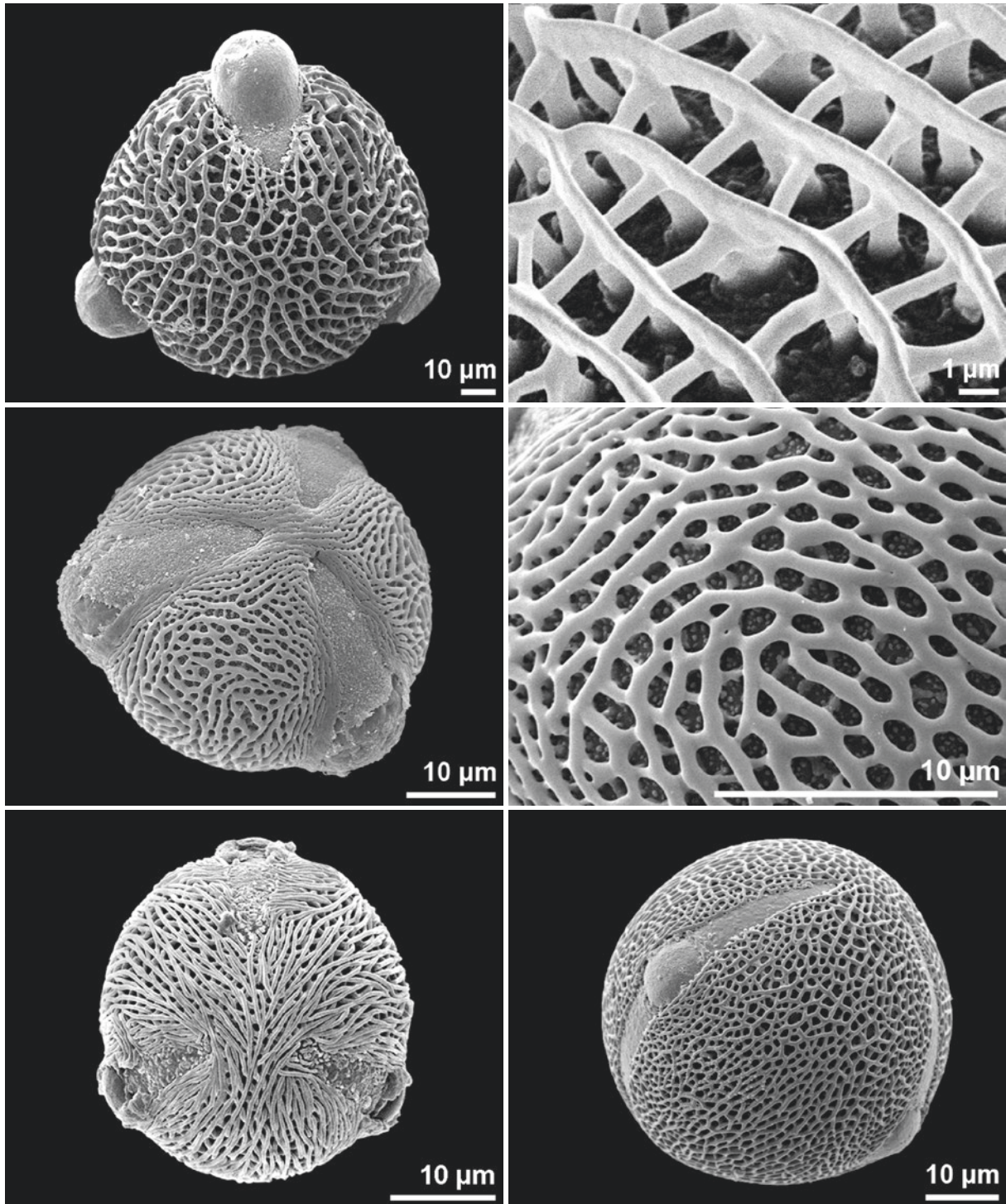
■ ■ ■ *Gentianella austriaca*, Gentianaceae

■ ■ ■ *Cotinus coggygria*, Anacardiaceae
equatorial view

■ ■ ■ *Erodium cicutarium*, Geraniaceae

■ ■ ■ *Gelsemium sempervirens*, Gelsemiaceae
equatorial view

■ ■ ■ *Cotinus coggygria*, Anacardiaceae



■ ■ ■ *Pelargonium tetragonum*, Geraniaceae
polar view

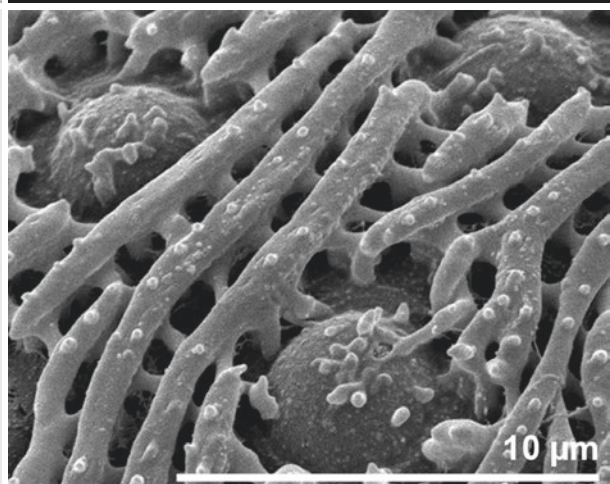
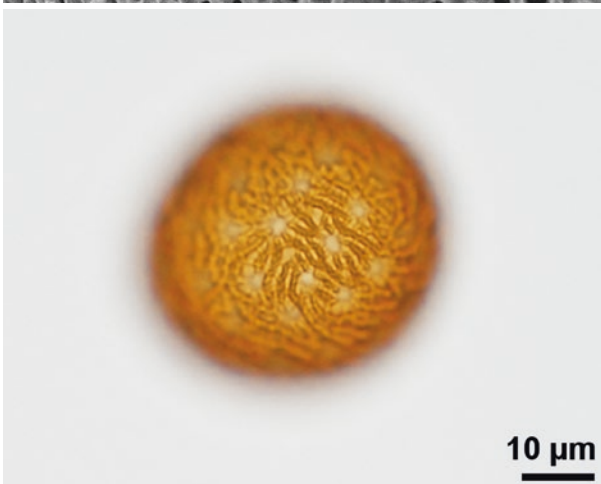
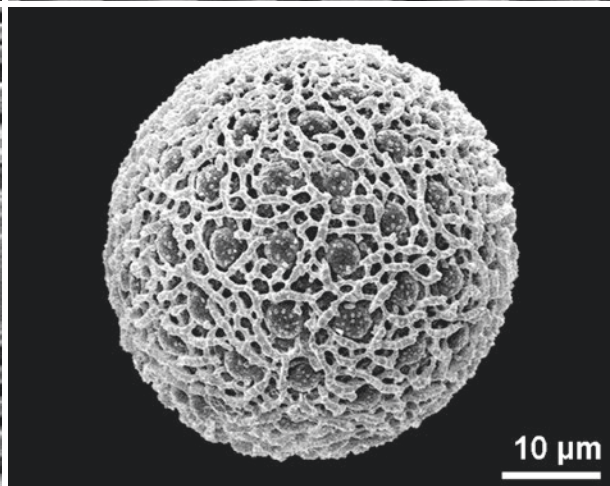
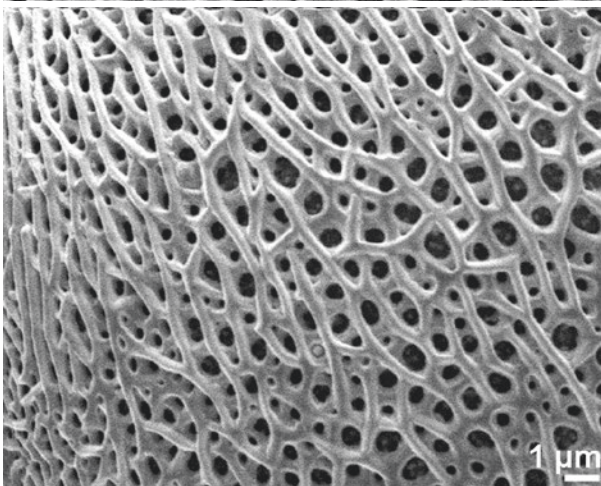
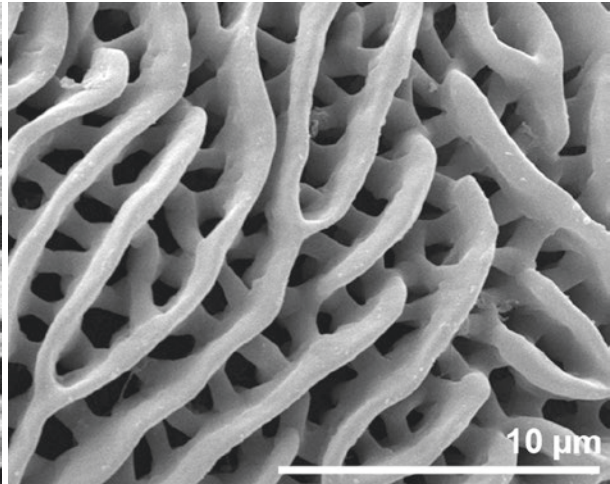
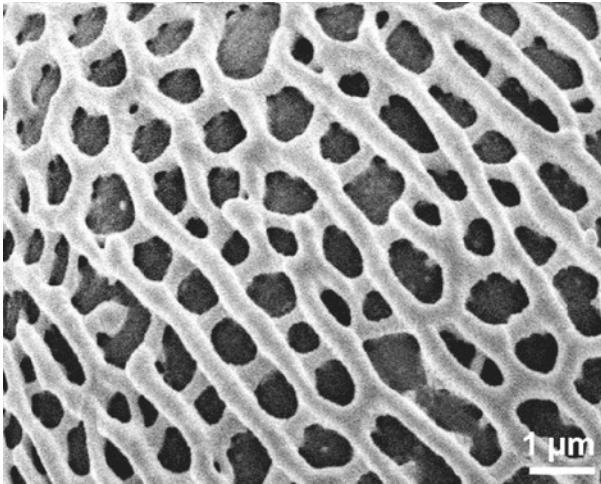
■ ■ ■ *Fouquieria macdougallii*, Fouquieriaceae
polar view

■ ■ ■ *Ailanthus altissima*, Simaroubaceae
polar view

■ ■ ■ *Pelargonium carnosum*, Geraniaceae

■ ■ ■ *Fouquieria macdougallii*, Fouquieriaceae

■ ■ ■ *Cistus clusii*, Cistaceae
equatorial view



■ ■ ■ *Solandra longiflora*, Solanaceae

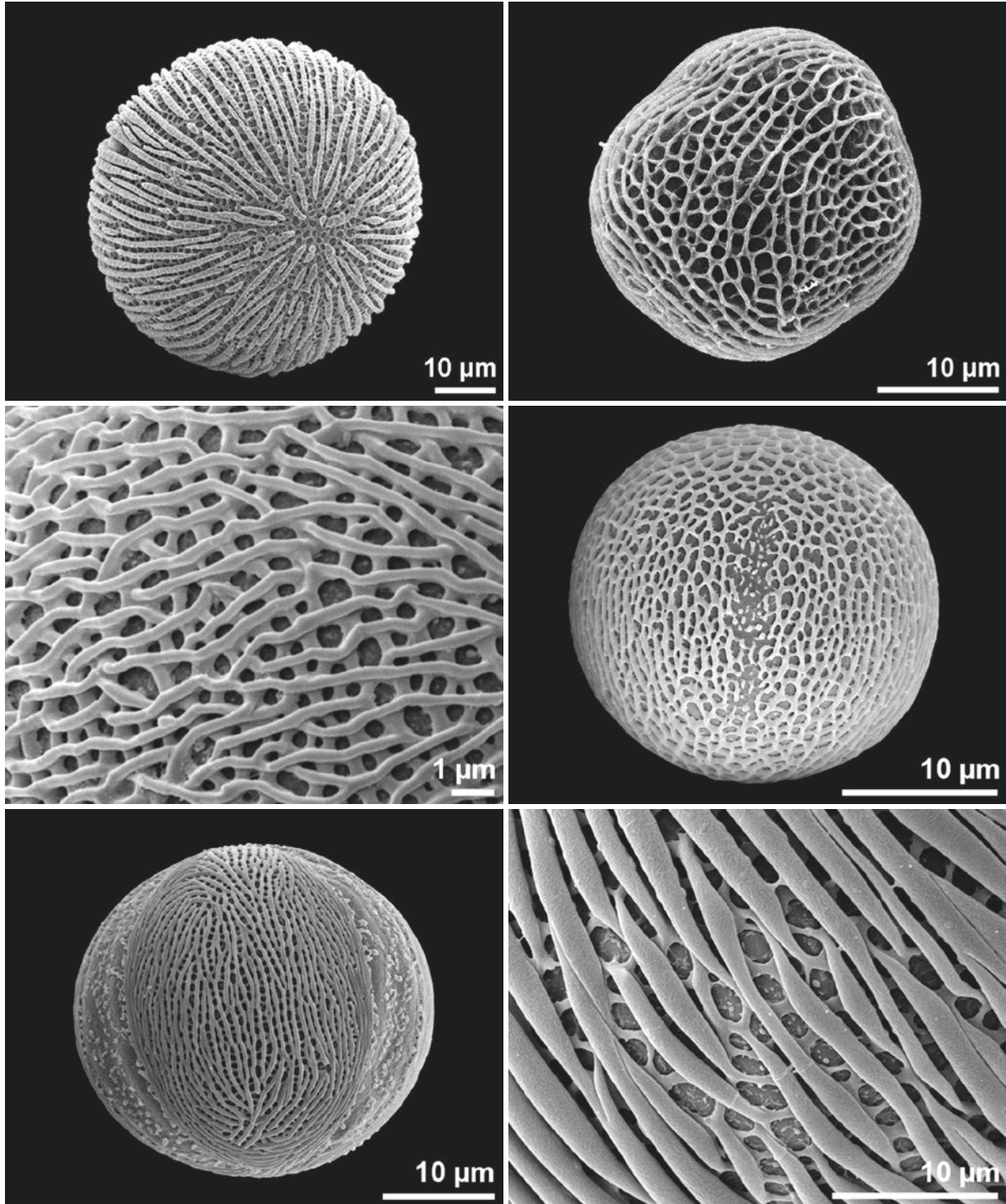
■ ■ ■ *Gentiana acaulis*, Gentianaceae

■ ■ ■ *Polemonium caeruleum*, Polemoniaceae
pantoporate

■ ■ ■ *Pelargonium punctatum*, Geraniaceae

■ ■ ■ *Polemonium caeruleum*, Polemoniaceae
pantoporate

■ ■ ■ *Polemonium pauciflorum*, Polemoniaceae



■ ■ *Brugmansia suaveolens*, Solanaceae
 ■ ■ polar view

■ ■ *Schinus molle*, Anacardiaceae
 ■ ■

■ ■ *Plagiorhegma dubium*, Berberidaceae
 ■ ■ equatorial view

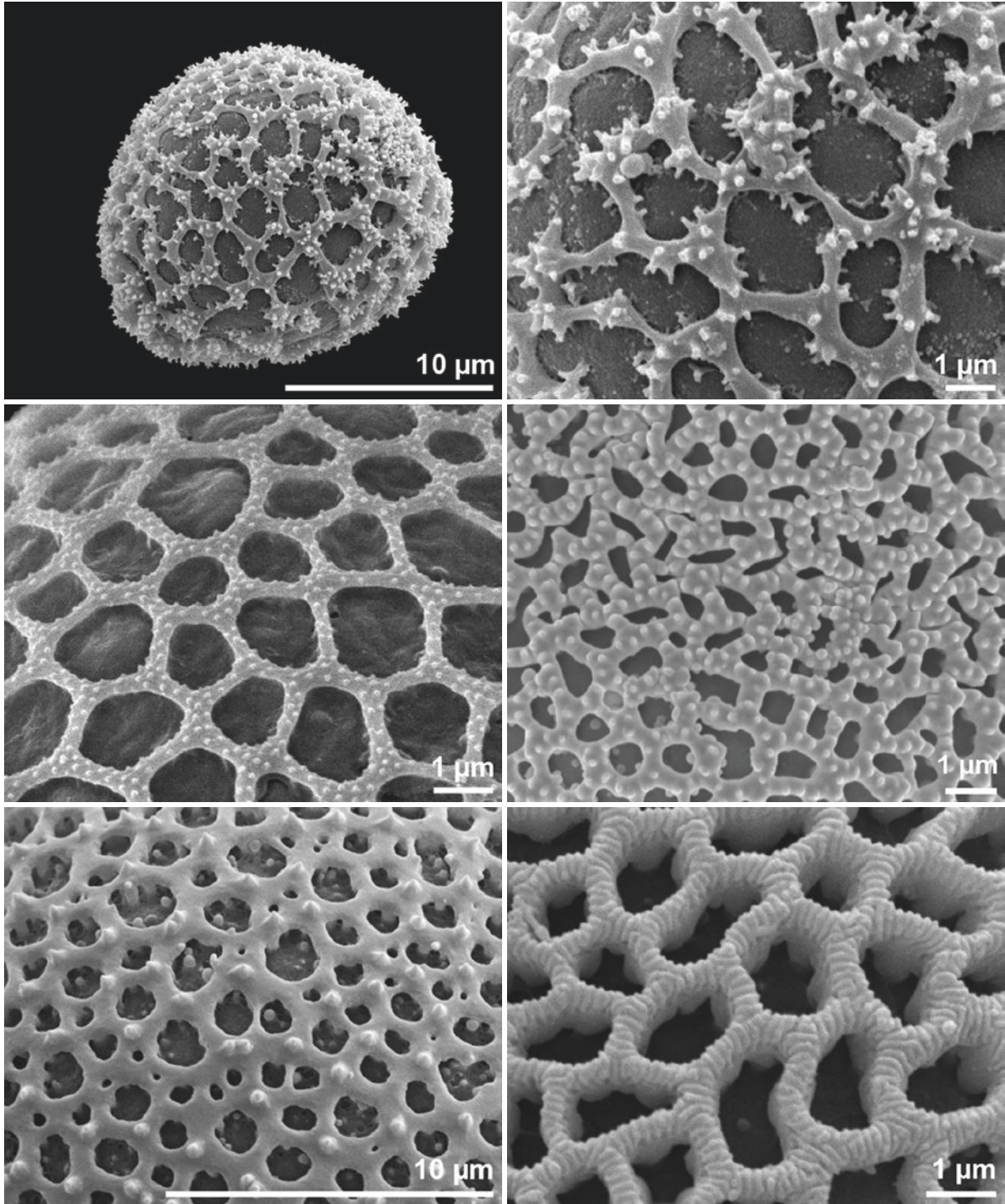
■ ■ *Chlorospatha pubescens*, Araceae
 ■ ■ tetrad

■ ■ *Solandra maxima*, Solanaceae
 ■ ■ equatorial view

■ ■ *Amherstia nobilis*, Fabaceae
 ■ ■

suprasculpture

secondary sculpture elements positioned on the primary sculpture of the pollen surface



■ ■ *Anthurium gracile*, Araceae
 nano- to microechinate

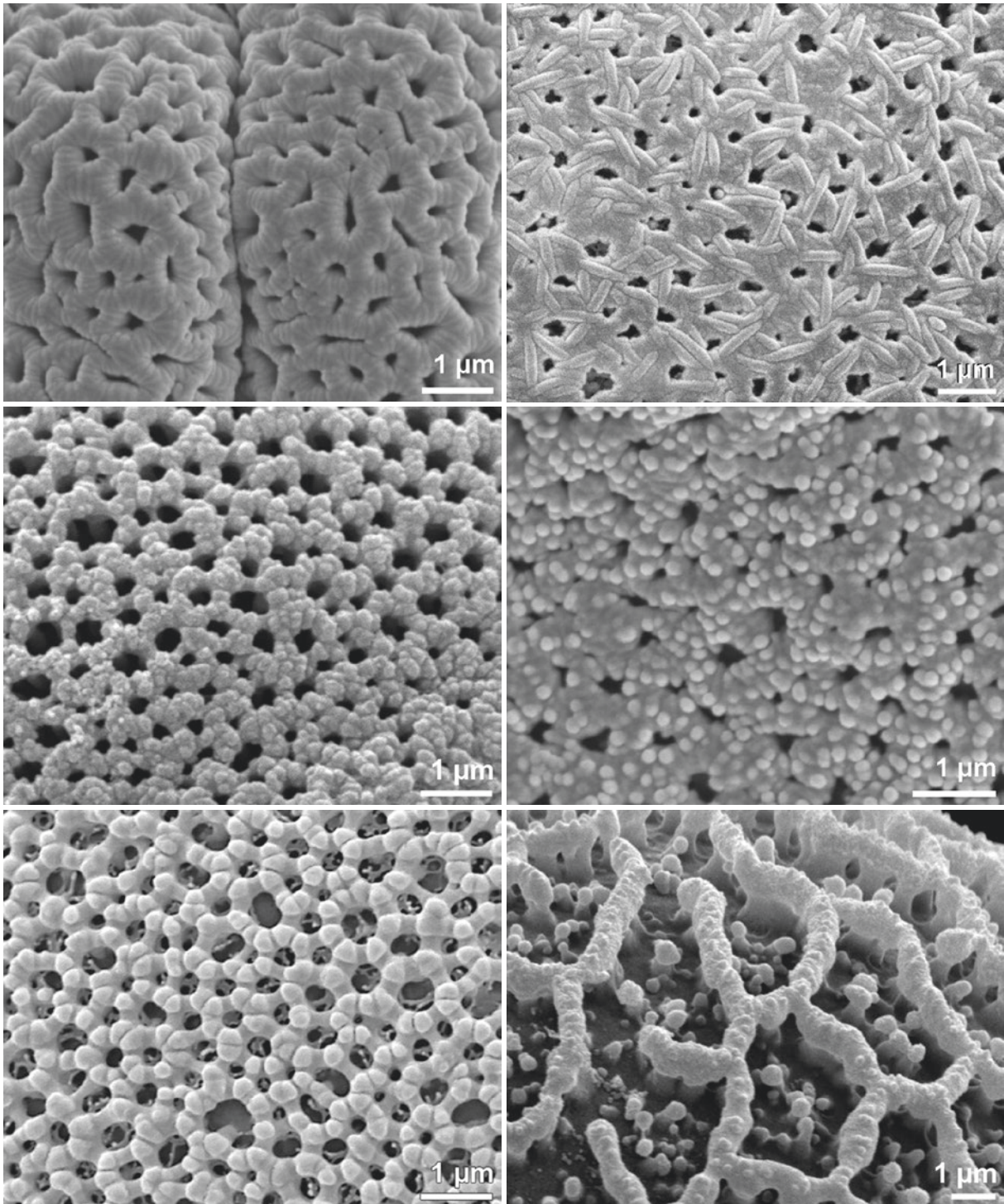
■ ■ *Triglochin maritima*, Juncaginaceae
 nanoechinate

■ ■ *Lophophora williamsii*, Cactaceae
 microechinate

■ ■ *Anthurium gracile*, Araceae
 nano- to microechinate

■ ■ *Ascarina lucida*, Chloranthaceae
 nanogemmate

■ ■ *Phillyrea angustifolia*, Oleaceae
 microrugulate



■ ■ *Fraxinus* sp., Oleaceae
fossil, Miocene, China, microrugulate

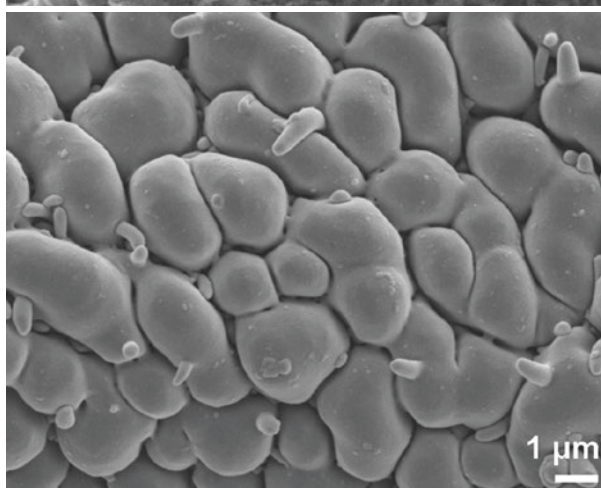
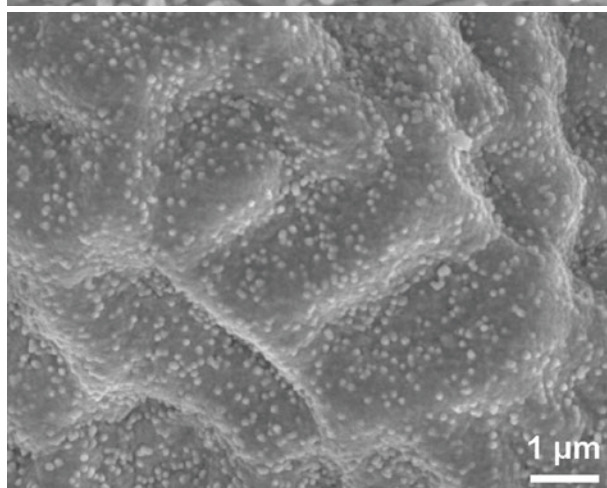
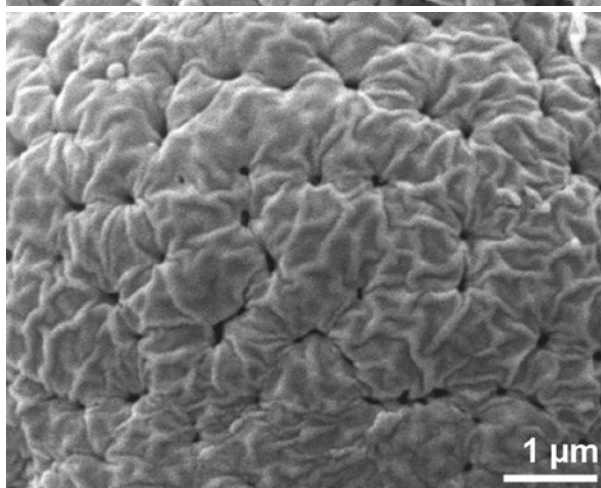
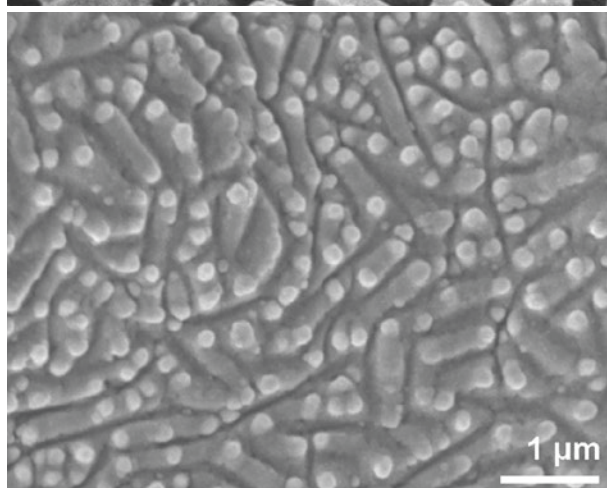
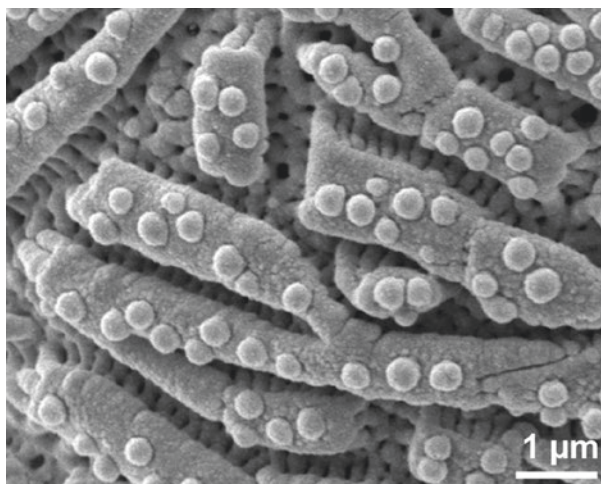
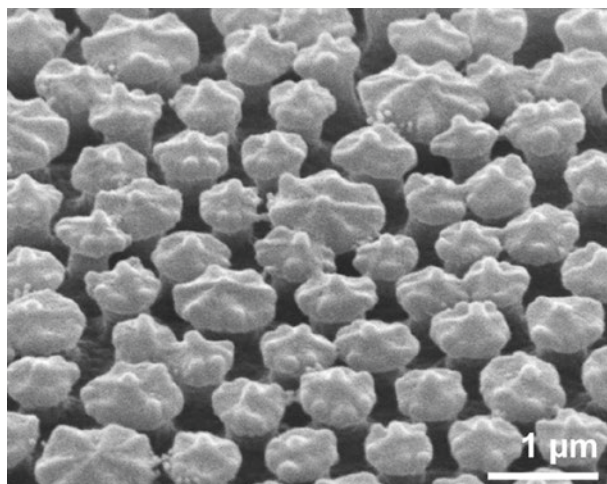
■ ■ *Helleborus foetidus*, Ranunculaceae
nanoverrucate to nanogemmate

■ ■ *Parentucellia latifolia*, Orobanchaceae
microgemmate

■ ■ *Tulipa turkestanica*, Liliaceae
microrugulate

■ ■ *Cercidiphyllum* sp., Cercidiphyllaceae
fossil, Miocene, China, nanogemmate

■ ■ *Viburnum utile*, Adoxaceae
micro- to nanoechinate



■ ■ *Linum bienne*, Linaceae
 ■ ■ micro- to nanorugulate, nanoechinate

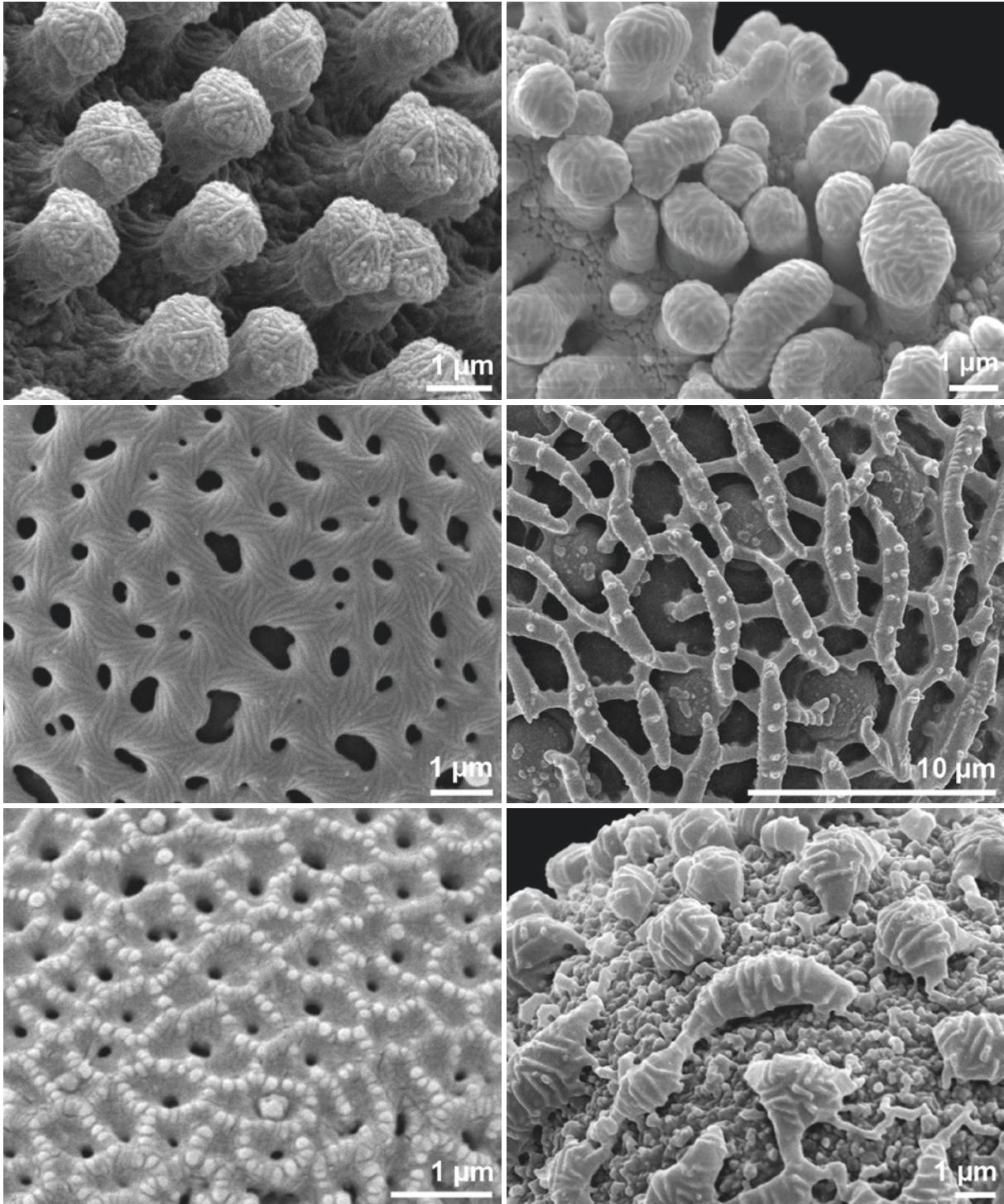
■ ■ *Betula* sp., Betulaceae
 ■ ■ fossil, Miocene, China, nanogemmate to nanoechinate

■ ■ *Ulmus* sp., Ulmaceae
 ■ ■ fossil, Miocene, China, granulate

■ ■ *Saxifraga hostii*, Saxifragaceae
 ■ ■ microgemmate

■ ■ *Piper auritum*, Piperaceae
 ■ ■ microrugulate

■ ■ *Tsuga* sp., Pinaceae
 ■ ■ fossil, Miocene, China, echinate to baculate



■ *Ceratostigma plumbaginoides*, Plumbaginaceae
 ■ micro- to nanorugulate, granulate

■ *Akebia quinata*, Lardizabalaceae
 ■ microrugulate to rugulate

■ *Ouratea hexasperma*, Ochnaceae
 ■ nanogemmate

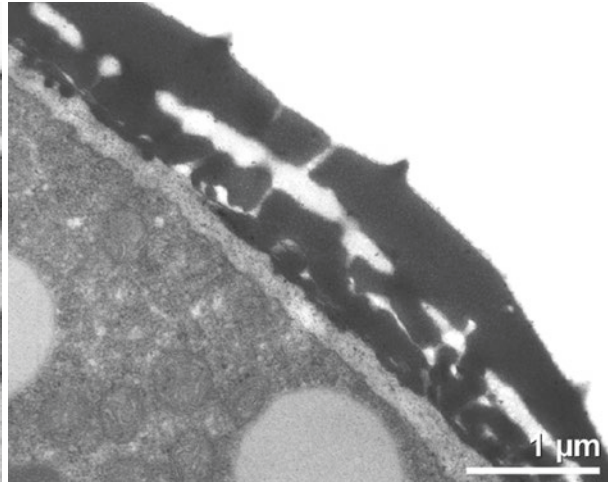
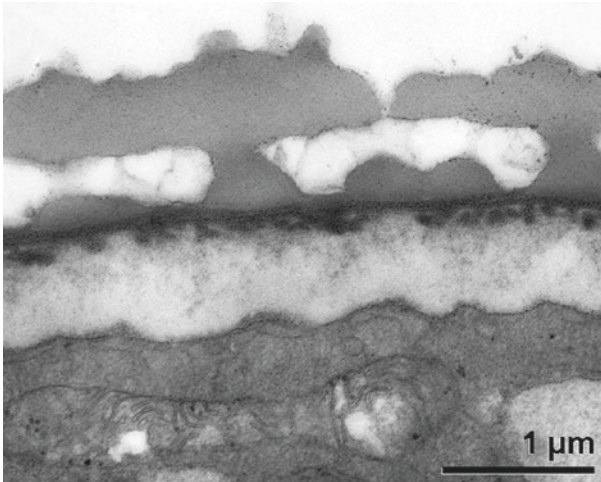
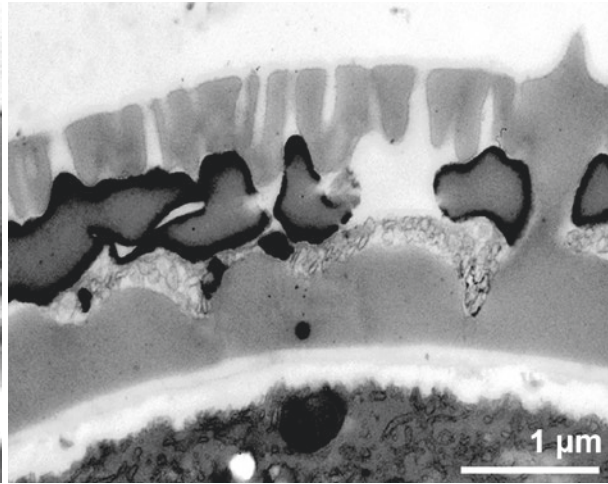
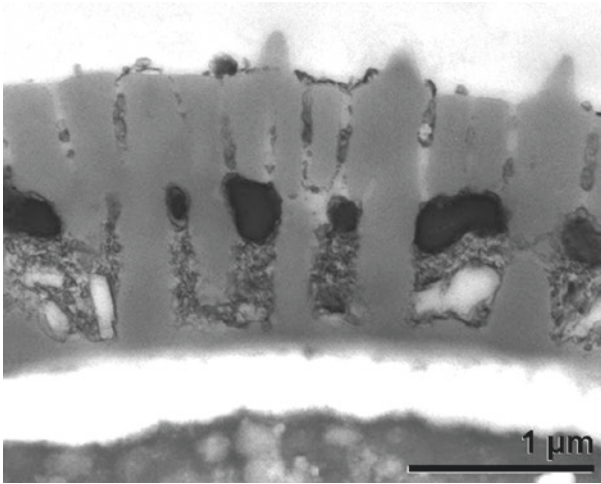
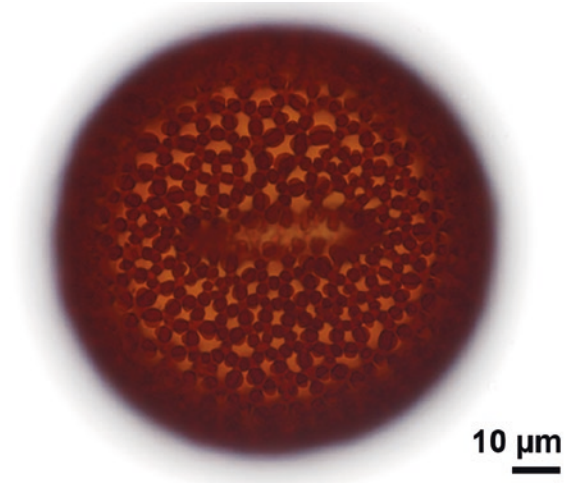
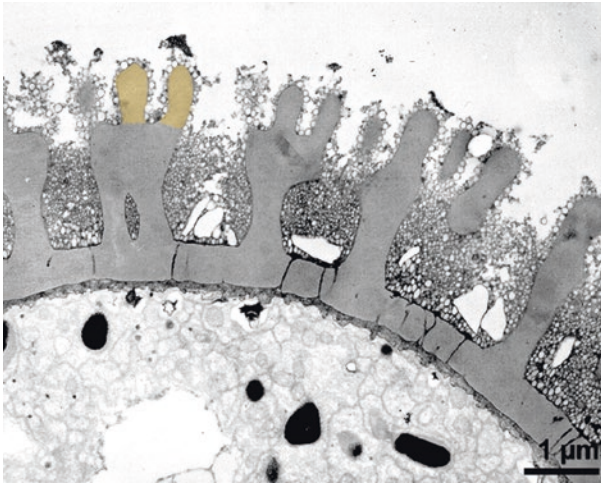
■ *Ilex* sp., Aquifoliaceae
 ■ fossil, Miocene, China, microrugulate

■ *Polemonium caeruleum*, Polemoniaceae
 ■ microgemmate

■ *Coffea arabica*, Rubiaceae
 ■ rugulate to microrugulate

supratpectal element

sculpture element positioned on top of the tectum



■ *Geranium robertianum*, Geraniaceae
 ■ clavae on tectum colored

■ *Atriplex sagittata*, Amaranthaceae
 ■ echini on tectum

■ *Quercus robur*, Fagaceae
 ■ echini on tectum

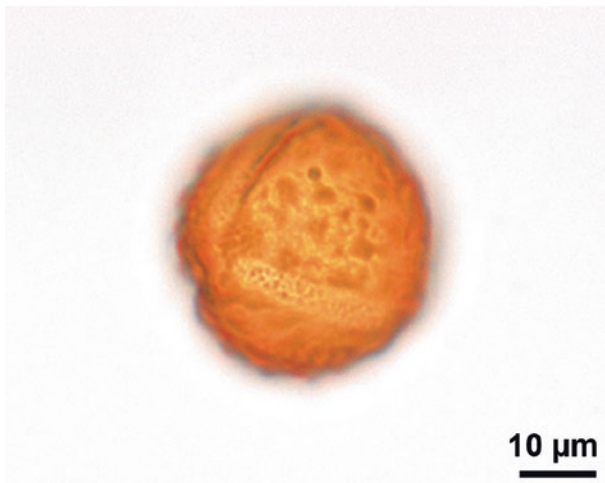
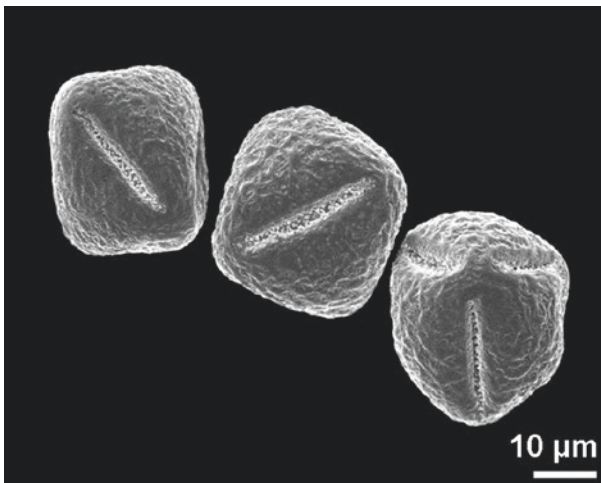
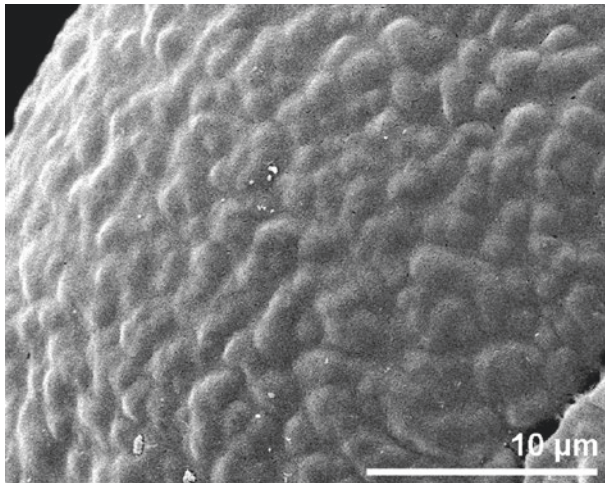
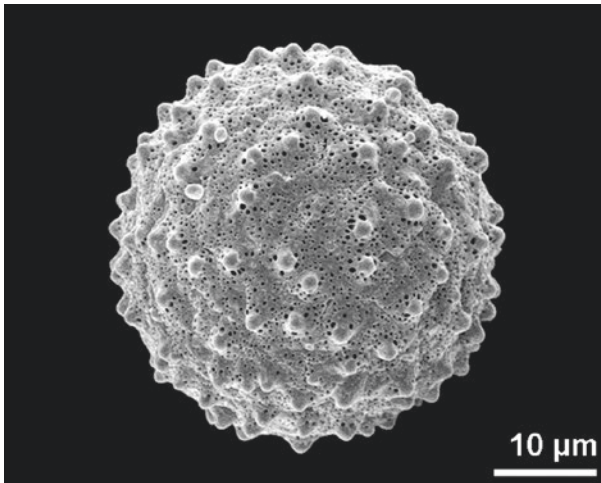
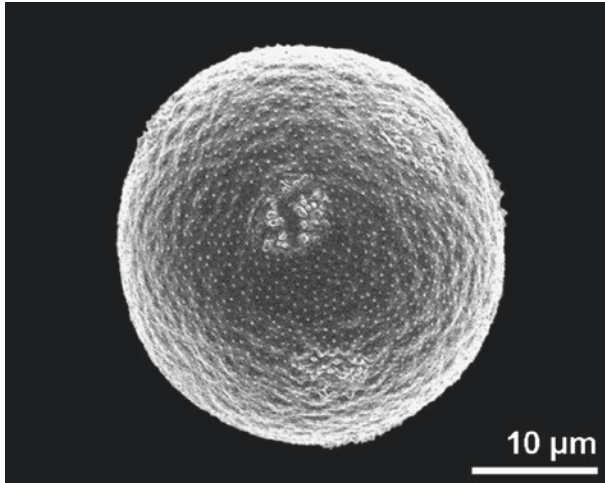
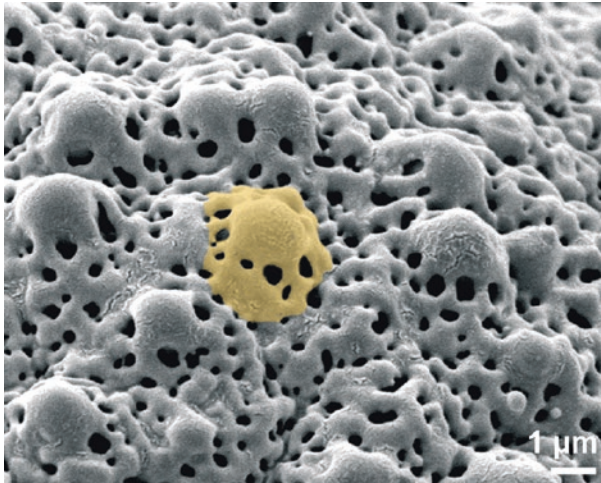
■ *Geranium robertianum*, Geraniaceae
 ■ clavae on reticulum

■ *Pulsatilla grandis*, Ranunculaceae
 ■ echini on tectum

■ *Plantago maritima*, Plantaginaceae
 ■ echini on tectum

verruca/verrucate

wart-like element broader than high



■ ■ *Aristolochia arborea*, Aristolochiaceae
verruca colored

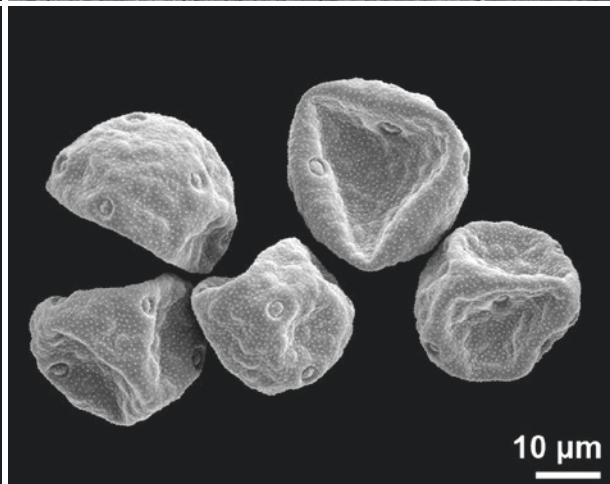
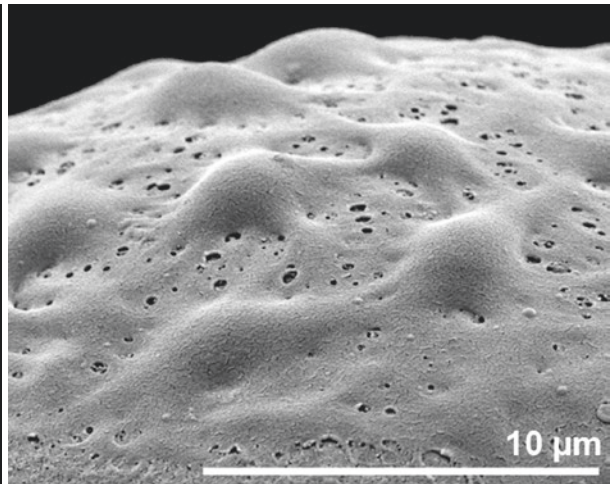
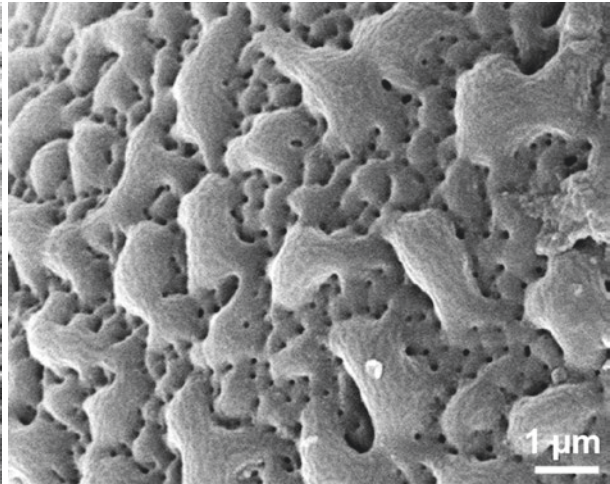
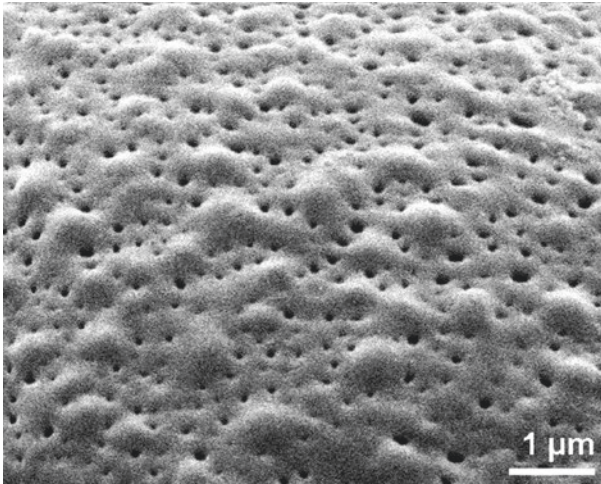
■ ■ *Aristolochia tricaudata*, Aristolochiaceae
inaperturate

■ ■ *Corydalis cava*, Papaveraceae
hexacolpate, dry pollen

■ ■ *Plantago media*, Plantaginaceae
pantoporate

■ ■ *Calliandra tergemina*, Fabaceae

■ ■ *Corydalis cava*, Papaveraceae
hexacolpate



■ *Teucrium chamaedrys*, Lamiaceae
 ■ microverrucate, perforate

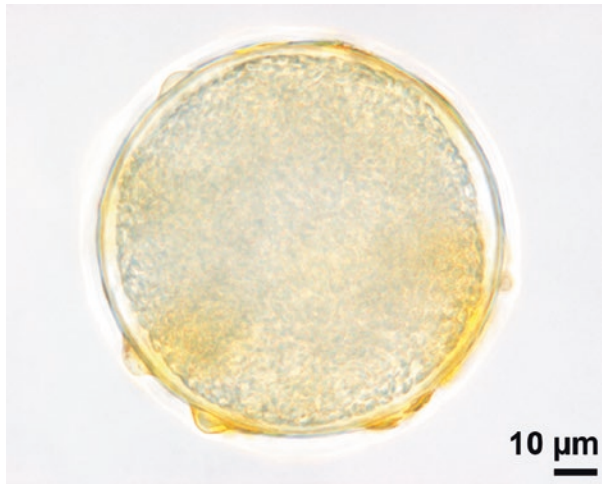
■ *Platycapnos tenuilobus*, Papaveraceae

■ *Plantago reniformis*, Plantaginaceae
 ■ verrucate, microechinate

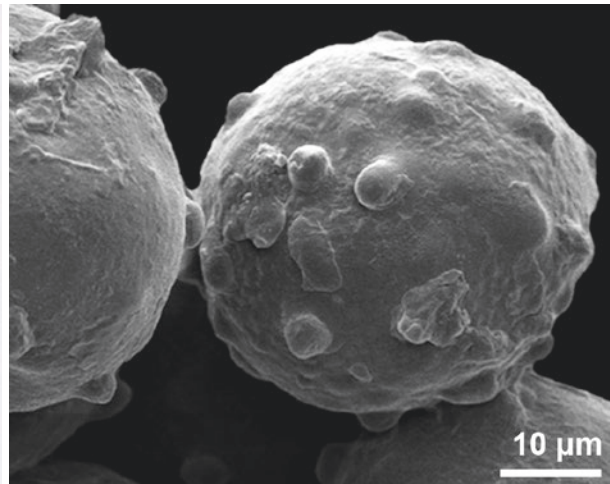
■ *Cyanastrum cordifolium*, Tecophilaeaceae
 ■ verrucate, perforate

■ *Platycapnos tenuilobus*, Papaveraceae
 ■ verrucate, perforate

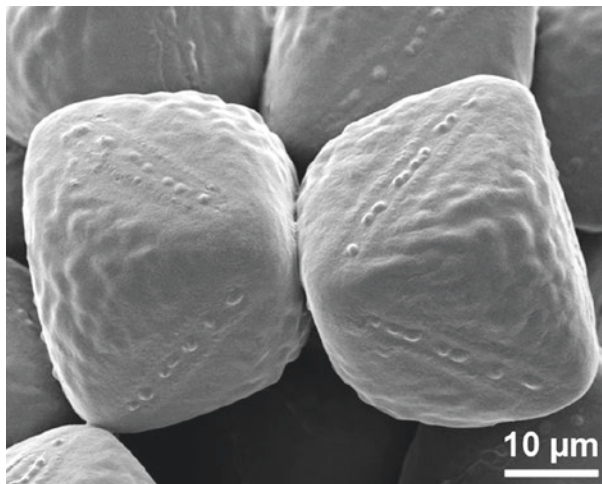
■ *Plantago lanceolata*, Plantaginaceae
 ■ verrucate, microechinate, dry pollen



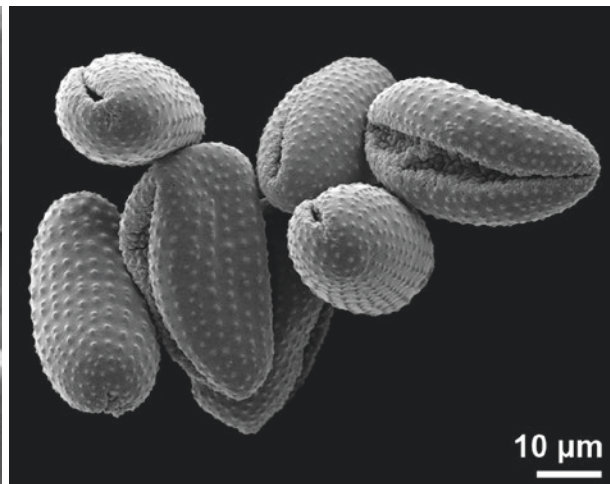
10 μm



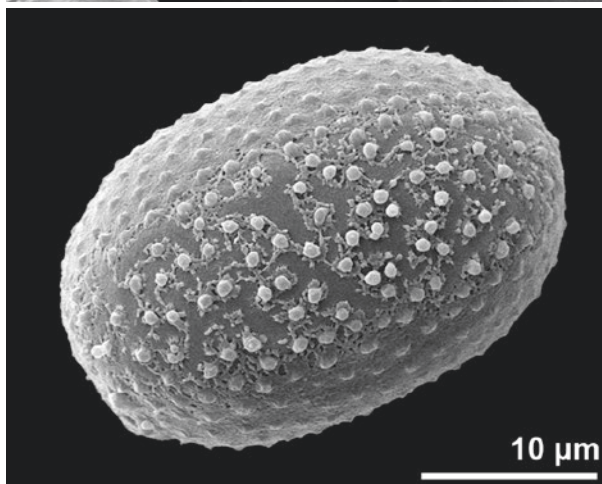
10 μm



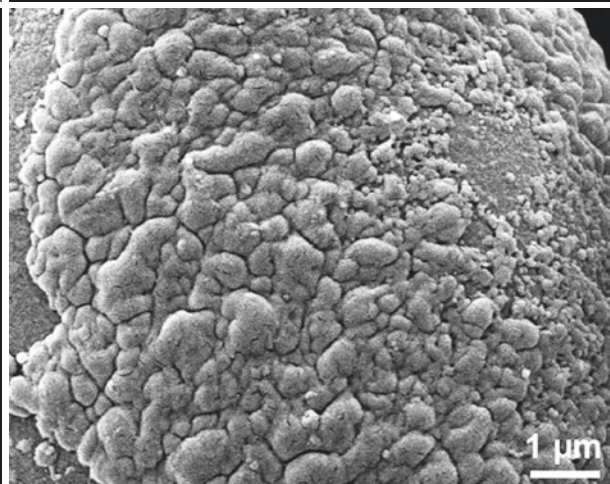
10 μm



10 μm



10 μm



1 μm

■ *Amorphophallus stuhlmannii*, Araceae
hydrated

■ *Sarcocapnos enneaphylla*, Papaveraceae
hexacolpate, dry pollen

■ *Stanfieldiella imperforata*, Commelinaceae
sulcate, distal polar view

■ *Amorphophallus stuhlmannii*, Araceae
inaperturate

■ *Commelina erecta*, Commelinaceae
sulcate, dry pollen

■ *Callistemon comboynensis*, Myrtaceae
verrucate to microverrucate

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