

GLOSSARY*

* GLOSSARY OF POLLEN AND SPORE TERMINOLOGY
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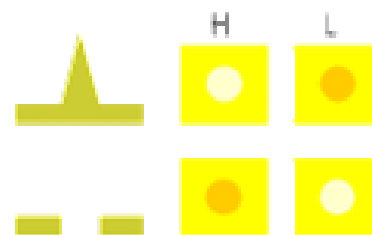
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LO-analysis (Erdtman, 1952)

A method for analyzing patterns of **sexine** organization by means of light microscopy.

Comment: This method is valuable for elucidating exine patterns. When focused at high level (H), raised sexine elements appear bright (Lux), whereas holes in the **tectum** are relatively dark (Obscuritas). At lower focus (L) holes become lighter and the sexine elements become darker.



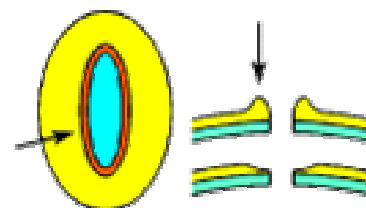
Aperture (adj. aperturate)

A specialized region of the (**sporoderm**, that is thinner than the remainder of the sporoderm and generally differs in **ornamentation** and/or in structure.

Comment: Apertures are described as simple if they are present in only one wall layer, or compound if they affect more than one layer of the wall. In **compound apertures** the shape of apertures may differ between layers. **Ectoapertures** occur in the **sexine/ectexine**, **endoapertures** in the **nexine/endexine**, and **mesoapertures** are sometimes found in an intermediate position between an ecto- and endoaperture. Various types of apertures are recognised on the basis of their shape (see, **colpus**, **laesura**, **porus**, **sulcus**, **ulcus**), position (see, **ana-**, **cata-**, **zona-**, **zono-**) or fusion (see, **syn-**). In living **pollen** grains or **spores** the apertures usually function as sites of germination, they may also provide routes for transfer of water and other substances, and play a part in **harmomegathy**. The term is often used in conjunction with a prefix or suffix, as for example in, **ectoaperture**, **endoaperture**, **inaperturate**, omniaperturate, pseudoaperture, **triaperturate**.

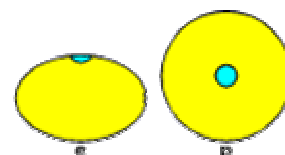
Pore (pl. pores, adj. porate) (

A general term, applied in **palynology** to a circular or elliptic aperture with a length/breadth ratio less than 2



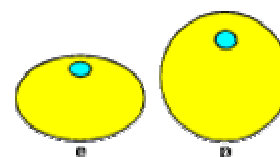
Ulcus (pl. ulci, adj. ulcerate)

A rounded **ectoaperture** situated at the **distal** or **proximal pole** of a **pollen** grain. Examples: *Sparganium* (Sparganiaceae), *Typha* (Typhaceae).



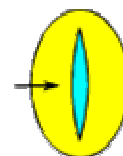
Ulculus (pl. ulculi, adj. ulculate)

A rounded **ectoaperture** not situated at a **pole**. Example: Poaceae.



Colpus (pl. colpi, adj. colpate)

An elongated, **aperture** with a length/breadth ratio greater than 2.

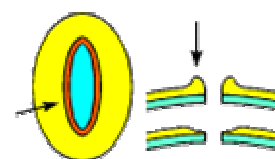


Margo (pl. margines, adj. marginate)

An area of **exine** around an **ectocolpus** that is differentiated from the remainder of the **sexine**, either in **ornamentation** or by difference in thickness.

Margo (pl. margines, adj. marginate))

An area of **exine** around an **ectocolpus** that is differentiated from the remainder of the **sexine**, either in **ornamentation** or by difference in thickness.



Aperture membrane

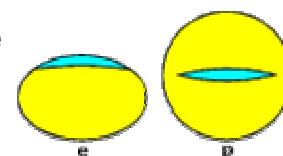
The exine which forms the floor of an ectoaperture.

Comment: Depending on the type of ectoaperture these may be colpus membranes or pore membranes, usually representing the nexine. The membrane may be partially or completely covered by an operculum.

Sulcus (pl. sulci, adj. sulcate)

An elongated latitudinal ectoaperture situated at the distal or proximal pole of a pollen grain.

Comment: A sulcus has the same shape as a colpus, but differs in orientation. Sulci are essentially latitudinal apertures whereas colpi are essentially longitudinal apertures.



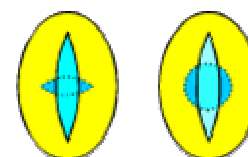
Lumina: The space enclosed by the muri (blue)

Muri: A ridge that is part of the ornamentation (yellow) and, for example, separates the lumina in a reticulate pollen grain or the striae in striate pollen grain.



Colporus (pl. colpori, adj. colporate)

A compound aperture consisting of an ectocolpus with one or more endoapertures.



Pantoaperture (adj.)

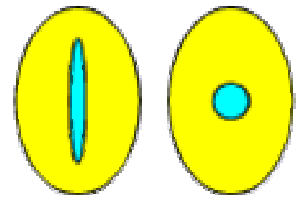
Describing a **pollen** grain with **apertures** spread over the surface sometimes forming a regular pattern.

Such **pollen** grains may be, for example, **pantocolpate**, **pantocolporate** or **pantoporate**.



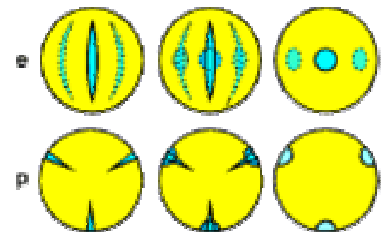
Monoaperturate (adj.)

Describing a **pollen** grain or **spore** with a single **aperture**.



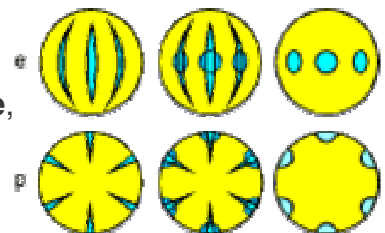
Tricolpate, tricolporate, triporate (adj.)

Describing **pollen** grains with three **ectocolpi**, three **compound apertures** or three **pores**.



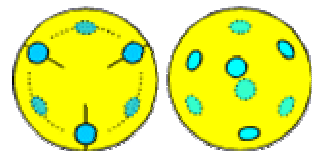
Zonoaperturate (adj.)

Describing a **pollen** grain with **apertures** situated only at the **equator**. **Pollen classes** with zonoaperturate pollen include, **zonocolpate**, **zonocolporate**, **zonoporate**.



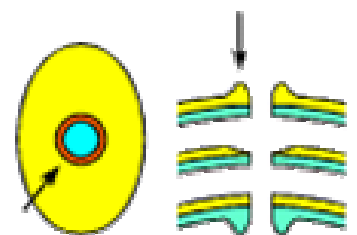
Apolar (adj.)

Describing **pollen** and **spores** without distinct **polarity**. Example: *Plantago* (Plantaginaceae).



Annulus (pl. annuli, adj. annulate)

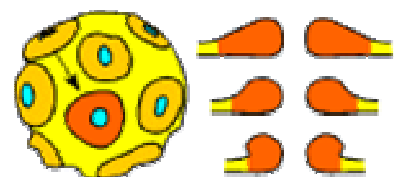
An area of the exine surrounding a **pore** that is sharply differentiated from the remainder of the **exine**, either in ornamentation or thickness.



Aspis (pl. aspides, adj. aspidate)

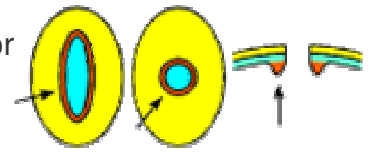
A prominently protruding thickening of the **exine** around a **pore**. Examples: *Betula* (Betulaceae).

An aspis is a special form of annulus, represented by a thickening rather than a thinning.



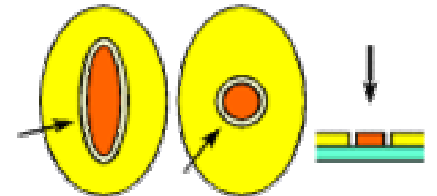
Costa (pl. costae, adj. costate)

A thickening of the **nexine/endexine** bordering an **endoaperture**, or following the outline of an **ectoaperture**.



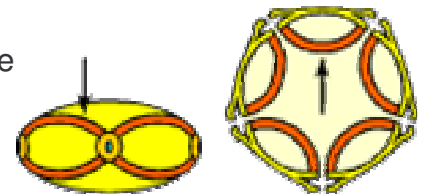
Operculum (pl. opercula, adj. operculate)

A distinctly delimited **sexine**ectexine structure which covers part of an **ectoaperture** and which is completely isolated from the rest of the sexine.



Arcus (pl. arcus, adj. arcuate)

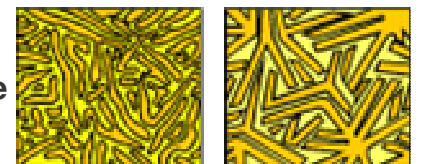
A locally thickened band of **sexine** that extends in a sweeping curve from one aperture to another. Example: *Alnus* (Betulaceae).



Sculpturing (adj. sculptured)

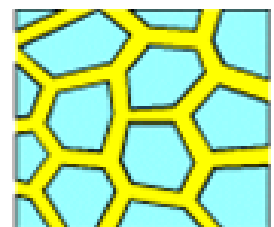
The surface relief, or topography, of a **pollen** grain or **spore**.

Rugulate: Describing a type of ornamentation consisting of elongated sexine elements more than 1µm long, arranged in an irregular pattern that is intermediate between **striate** and **reticulate**



Reticulum (pl. reticula, adj. reticulate)

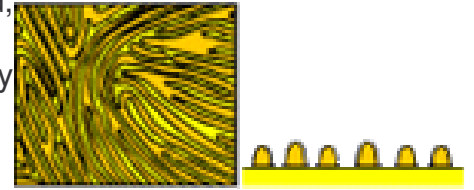
A network-like pattern consisting of **lumina** or other spaces wider than 1µm bordered by elements narrower than the lumina.



Striate (adj.)

A general descriptive term applied in **palynology** to elongated, generally parallel elements separated by grooves.

Comment: The positive elements of striate ornamentation may also be referred to as **muri**.



Psilate (adj.)

Describing a **pollen** or **spore** with a smooth surface.

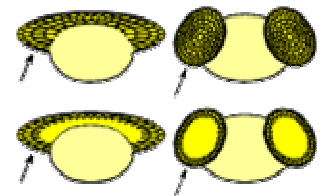
Alveolate (adj.)

Describing a type of sexine/ectexine structure, in which the infratectal layer is characterised by partitions forming compartments of irregular size and shape. Example: *Pinus* (Pinaceae).



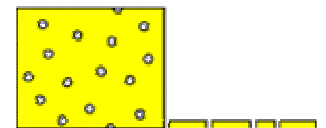
Saccus (pl. **sacci**, adj. **saccate**)

A sac formed by an expansion of the exine of a pollen grain and at least partly filled with an alveolate infrastructure



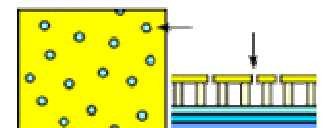
Perforate (adj.) (

A general adjective indicating the presence of holes, applied in **palynology** to holes less than 1µm in diameter and generally situated in the **tectum**.



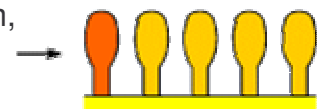
Punctum (pl. **puncta**, adj. **punctate**)

A rounded or elongate tectal perforation, less than 1µm in length or diameter.



Clava (pl. **clavae**, adj. **clavate**) (

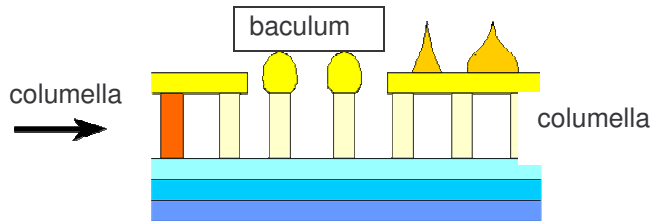
A club-shaped element of the **sexine/ectexine** that is higher than 1µm, with diameter smaller than height and thicker at the apex than the base.



Columella (pl. **columellae**, adj. **columellate**)

A rod-like element of the sexine/ectexine, either supporting a tectum or a caput.

The difference between a **baculum** and a **columella** in current usage is, that a baculum is always a free standing element of sculpturing, whereas a columella is part of the structure.



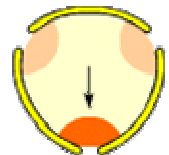
Verruca (pl. **verrucae**, adj. **verrucate**)

A wart-like sexine element, more than 1µm wide, that is broader than it is high and is not constricted at the base.



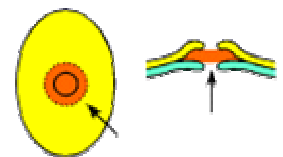
Oncus (pl. **onci**)

A lens-shaped structure that is not resistant to acetolysis and occurs beneath the apertures of many kinds of pollen grains. Example: *Corylus* (*Corylaceae*).



Vestibulum (pl. **vestibula**)

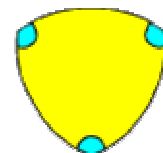
A separation between layers of the exine forming a cavity between the inner and outer pores. For example: *Betula* (*Betulaceae*).



GONIOTREME

Angulaperturate (adj.)

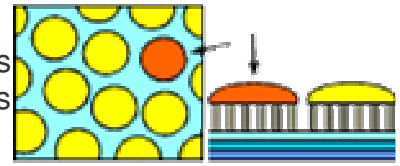
Describing an equatorially aperturate pollen grain with the apertures situated at the angles of the outline in polar view.



Insula

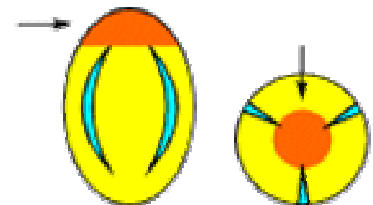
Areola (pl. areolae, adj. areolate)

A feature of ornamentation in which the sexine/ectexine is composed of circular or polygonal areas separated by grooves which form a negative reticulum.



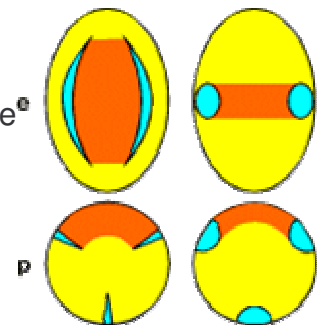
Apocolpium (pl. apocolpia)

A region at the pole of a zonocolpate pollen grain delimited by lines connecting the apices of the colpi.



Mesocolpium (pl. mesocolpia) and Mesoporium (pl. mesoporia)

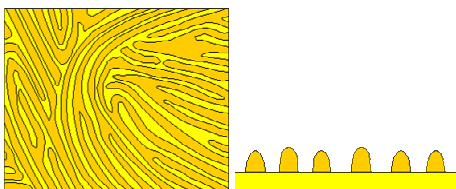
The area of a pollen grain surface delimited by lines between the apices of adjacent **colpi** or the margins of adjacent pores.



Scabrate (adj.) (sing. scabra, pl. scabrae)

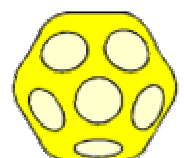
Describing elements of ornamentation, of any shape, smaller than $1\mu\text{m}$ in all directions.
Examples: *Quercus* (Fagaceae), *Artemisia* (Compositae).

Striate (adj.) A general descriptive term applied in palynology to elongated, generally parallel elements separated by grooves.



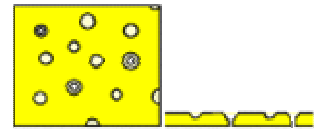
Fenestrate (adj.)

Describing a class of **pollen** grains characterized by large, window-like spaces lacking a **tectum**.



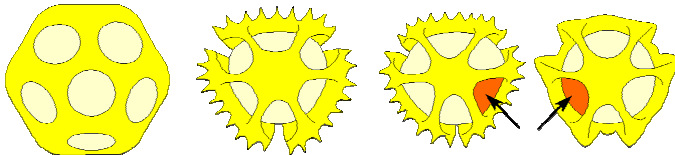
Foveola (pl. foveolae, adj. foveolate)

A feature of **ornamentation** consisting of more or less rounded depressions or **lumina** more than $1\mu\text{m}$ in diameter. The distance between foveolae is greater than their breadth.



Lophate (adj.)

Describing a pollen grain in which the outer exine is raised in a pattern of ridges (lophae) surrounding depressions (lacunae). Example: *Hieracium* (Compositae).



Gemma (pl. gemmae, adj. gemmate)

A sexine element which is constricted at its base, higher than $1\mu\text{m}$, and that has approximately the same width as its height.



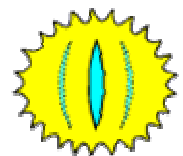
Spine (adj. spiny/spinose)

A general word, applied in **palynology** to long and tapering pointed elements, exceeding $1\mu\text{m}$.



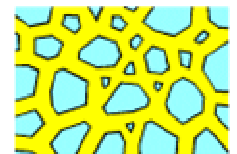
Echinate (adj.) (sing. **echina**, pl. **echinae**)

Describing pollen and spores with an ornamentation comprising spines longer than $1\mu\text{m}$.



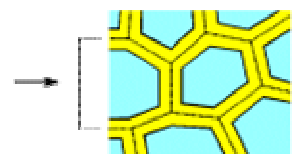
Heterobrochate (adj.)

Describing a **reticulum** with **brochi** of different sizes. Examples: *Adoxa Moschatelina* (Adoxaceae), *Forsythia europaea* (Oleaceae).



Brochus (pl. brochi, adj. brochate)

A brochus consists of one **lumen** of a **reticulum** and half of the width of the adjacent **muri**.



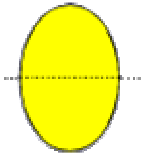
Heteropolar (adj.)

Describing pollen or spores in which the distal and proximal faces of the exine are different, either in shape, ornamentation or apertural system.
Example: *Echium vulgare* (Boraginaceae).



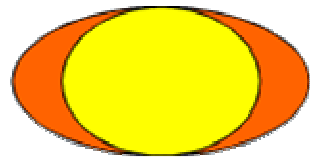
Isopolar (adj.)

Describing a pollen grain or spore in which the proximal and distal faces of the exine are alike.



Oblate (adj.)

Describing the shape of a **pollen** grain or **spore** in which the **polar axis** is shorter than the **equatorial diameter**.



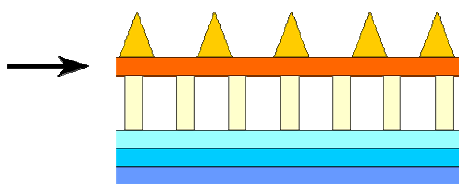
Lacuna (pl. lacunae, adj. lacunate)

A depressed area surrounded by ridges in **lophate pollen** grains.



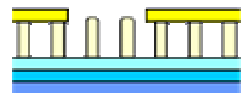
Tectum (pl. tecta, adj. tectate)

The layer of sexine, which forms a roof over the columellae, granules or other infratectal elements



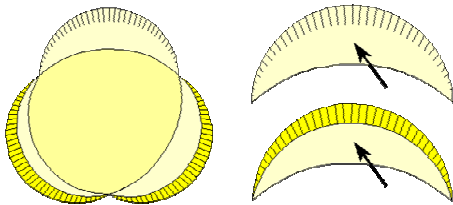
Semitectum (adj. semitectate)

A partially discontinuous **tectum** in which the tectal perforations are equal to or wider than the **muri** and usually larger than 1µm in diameter.



Cavea (pl. **caveae**, adj. **caveate**)

A cavity between two layers of the exine extending to the **colpus** margin where the layers meet. Example: *Ambrosia* (Compositae).

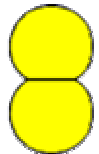


Monad

A pollen grain dispersed as an individual unit, rather than in association with others, such as in a dyad, tetrad or polyad.

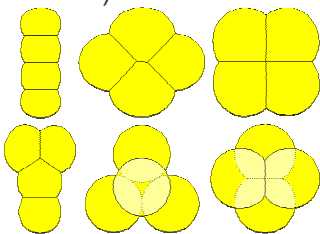
Dyad

General term for two microspores (pollen grains or spores) united as a dispersal unit.



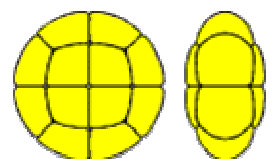
Tetrad

A general term for a group of four united pollen grains or spores, either as a dispersal unit or as a developmental stage. Tetrads may be uniplanar, with all members lying in the same plane (for example, linear, rhomboidal, tetragonal and T-shaped tetrads) or multiplanar, with members in more than one plane (for example, decussate or tetrahedral tetrads).



Polyad (Iversen and Troels-Smith, 1950)

A dispersal unit comprising more than four pollen grains. Example: *Acacia*



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All conidia photos are original made from Tedeschini Emma.

Many plants and pollen photos are original by Emma Tedeschini, Alessandro Travaglini

Other photos and pictures are of following source:

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