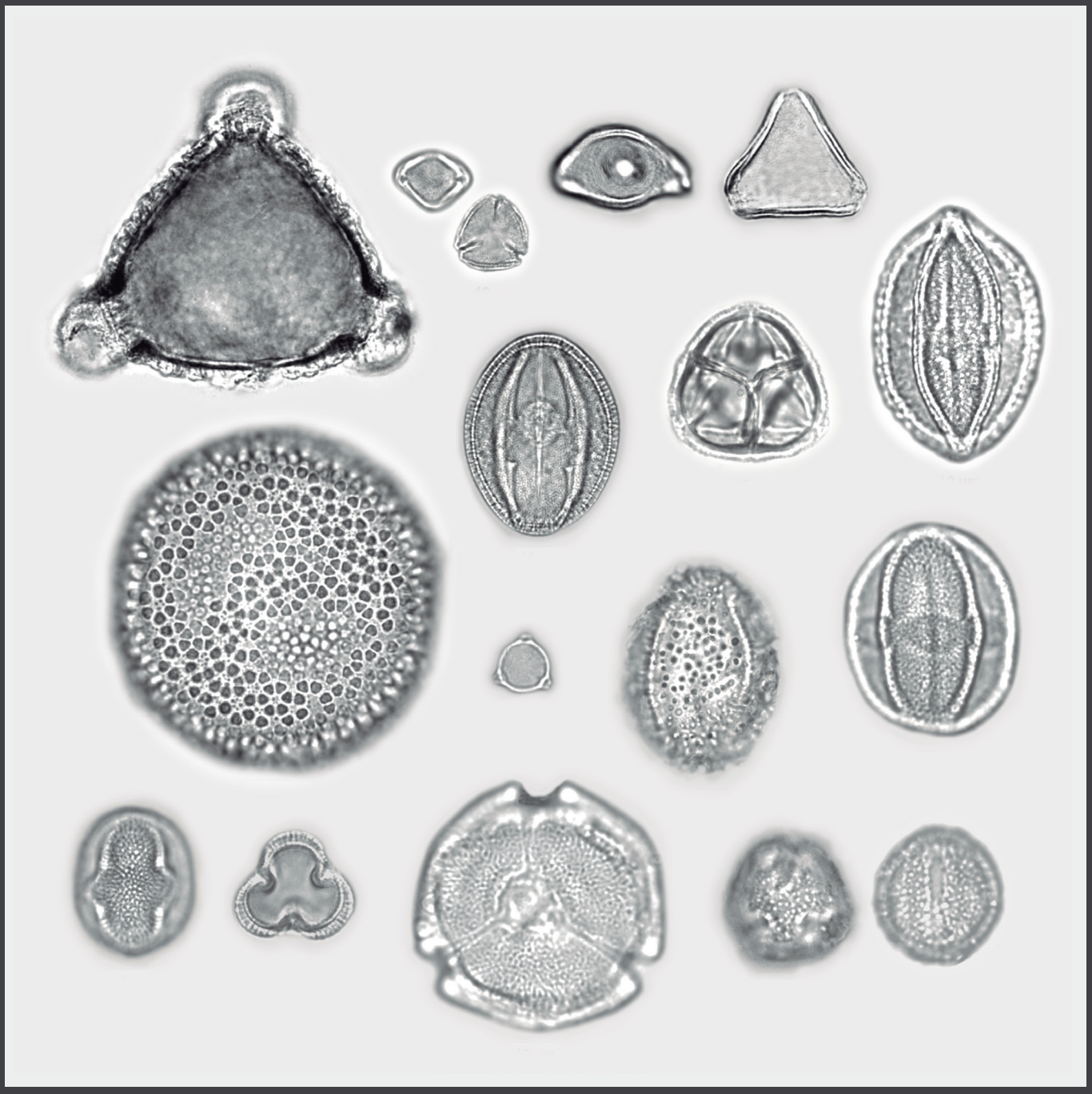
CATALOG OF ANGIOSPERM POLLEN GRAINS FROM THE RIO GRANDE DO SUL FLORA, SOUTHERN BRAZIL

VOL. 3
EUDICOTS PART 1

Maria Luisa Lorscheitter and Rinaldo Pires dos Santos



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CONTENTS

Introduction

In angiosperms, monosulcate and monosulcate-derived pollen (with unusual and rare exceptions in the eudicots) are typically found in many basal dicots and in monocots, but are absent in eudicots, the higher dicotyledons (Erdtman 1952; Walker 1974; Harley 2004, Byng *et al.* 2016; Cole *et al.* 2017).

The tricolpate pollen, characteristic of eudicots, features three elongate longitudinal meridional apertures, a shift in aperture position from polar to equatorial, with their long axis perpendicular to the equator of the pollen grain. The tricolpate pollen of eudicots can be simple (three ectoapertures) or tricolporate (three compound apertures, each with an elongate ectoaperture and one or more endoapertures). This tricolporate pollen is predominant and unique to eudicots (Walker & Doyle 1975). These tricolpate conditions (tricolpate/tricolporate), have led to various evolutionary transformations resulting in numerous types of pollen grains (Walker & Doyle 1975). The tricolpate pollen is one of the main characteristics that distinguish eudicots from other angiosperms in APP (Angiosperm Phylogeny Poster) (Cole *et al.* 2017).

Furness & Rudall (2004) observed that, “Increased aperture number in angiosperm pollen grains offers a potential selective advantage because it increases the number of prospective germination sites, thus facilitating contact between at least one aperture and the stigmatic surface. Such an increase occurred at the base of the eudicot clade, coupled with an apparently fundamental shift in aperture position from polar to equatorial. This transition could represent a key innovation underlying eudicot success and subsequent radiations. There is a general trend in angiosperms to an increase in pollen aperture number, suggesting that pollen apertures are under strong selection pressure.”

The great resistance of the exine (composed of sporopollenin) allows the preservation of pollen grains deposited in appropriate sediments (Birks & Birks 1980; Birks & Gordon 1985; Berglund 1986). Therefore, pollen grains are excellent tools for identifying taxa and reconstituting the paleoenvironments of a site over geological time through qualitative and quantitative palynological analyses and radiocarbon dating.

The palynology of Quaternary sediment profiles, which aims to reconstitute the paleoenvironment of the last millennia in the coastal plain and the east plateau of Rio Grande do Sul, was conducted at the Laboratory of Palynology, Department of Botany, Institute of Biosciences, Universidade Federal do Rio Grande do Sul, UFRGS (Lorscheitter 1983; Lorscheitter & Romero 1985; Lorscheitter 1992, Roth & Lorscheitter 1993; Cordeiro & Lorscheitter 1994; Neves & Lorscheitter 1995; Lorscheitter 1997; Lorscheitter & Dillenburg

1998; Lorscheitter 2003; Leal & Lorscheitter 2007; Leonhardt & Lorscheitter 2010; Scherer & Lorscheitter 2014; Spalding & Lorscheitter 2015; Masetto & Lorscheitter 2019; Roth *et al.* 2021). A reference collection of pollen and spores from Rio Grande do Sul's current flora was essential to identify the palynological material preserved in these sediments. This collection was expanded as needed to identify new palynomorphs for paleoenvironment analysis.

Here, we report a catalog of the first eudicot pollen photomicrographs from this reference collection to support palynological research, mainly in Southern Brazil. The findings also provide palynological insights into some evolutionary aspects of angiosperms.

Methods

The reference pollen of the current eudicots presented here for paleoenvironmental analyses was mainly extracted from exsiccate of the herbarium of the Instituto de Ciências Naturais (ICN), Department of Botany, Institute of Biosciences, UFRGS, which contains species from the flora of Rio Grande do Sul. Some taxa that are unrecorded in Rio Grande do Sul but that occur in Brazil's southern region may be exceptionally included in the reference collection to highlight specific pollen characteristics.

The reference pollen material was collected directly from the herbarium exsiccate using a magnifying glass and the sample (anthers) was placed in a 10 ml glass centrifuge tube. For each species analyzed, information about the exsiccate was recorded, including the respective numbers in the reference pollen collection and in the herbarium acronym. The samples were chemically processed by acetolysis (Faegri & Iversen 1975) and subsequently filtered through a 250 µm mesh. Five permanent slides were mounted in glycerol-jelly for each species (Salgado-Labouriau 1973; Faegri & Iversen 1975).

Light microscopy (DIAPLAN; Leitz, Wetzlar, Germany) was used for microscopic analyses and photomicrographs. The photomicrographs were taken with a digital camera (DFC295; Leica Microsystems, Wetzlar, Germany) connected to the microscope.

The polar axis and equatorial diameter of 25 grains were measured for each pollen species, and the average was used to obtain an approximate size. In spheroidal inaperturate pollen grains, only the diameter was measured. Measurements were always taken within 1 week after acetolysis owing to the tendency for the exine to increase over time until the volume stabilized (Salgado-Labouriau 1973). This may explain why certain photomicrographs had larger pollen grain sizes than indicated in the averages, as they were taken after the respective measurements but preserved the original morphology.

The species were named following the Missouri Botanical Garden (MOBOT) nomenclature (2024), and pollen terminology was based on Punt *et al.* (2007). The taxa sequence in the pollen catalog followed the APP (Cole *et al.* 2017), according to the Angiosperm Phylogeny Group version IV (APG IV) (Byng *et al.* 2016). A band of the same color as the respective APP clade was placed along the margin of each page of the photomicrograph catalog.

Each pollen grain photomicrograph is accompanied by a legend detailing the name of the species, the registration numbers of the reference collection (left) and of the acronym herbarium, an equatorial or polar view of the grain and respective plane of focus, and the grain's shape to facilitate comparison. For aperturate pollen grains, the number, position, and aperture characteristic are indicated. The legends also include the type of ornamentation or sculpturing and the average pollen grain measurements in micrometers (P = polar axis, EQ = equatorial diameter).

Characteristics of pollen grains

The morphological diversity of radially symmetric pollen grains was evident in the first 40 eudicot species analyzed. Several presented prolate pollen grains (8 species) and subprolate grains (10 species), both elongated, with a polar axis greater than the equatorial diameter, which is very common in eudicots. Conversely, oblate grains (3 species) and suboblate grains (4 species), with a polar axis smaller than the equatorial diameter, were found in smaller numbers. Spheroidal grains were also observed in the studied eudicots (14 species).

Tricolpate pollen grains predominated in the species analyzed: simple tricolpate (5 species), tricolporate (24 species), and tricolporoidate (1 species). A smaller number of species exhibited pollen with other types of apertures: triporate (5 species) and spiraperturate (1 species). Some of the spheroidal grains were inaperturate (4 species).

Most grains were reticulate (28 species), with some being echinate (4 species), Croton pattern (4 species) and papillate, verrucate, and rugulate (1 species each). Few species with psilate grains (smooth surface) were found (2 species).

The equatorial position of the pollen apertures and their triaperturate condition, typical of eudicot pollen, were clearly prominent in the species analyzed. Most of the grains were tricolporate, reticulate, prolate or subprolate, common in eudicots. The diversity of pollen, related to the size and shape of the grains, the shape of the apertures, and various types of ornamentation, was evident.

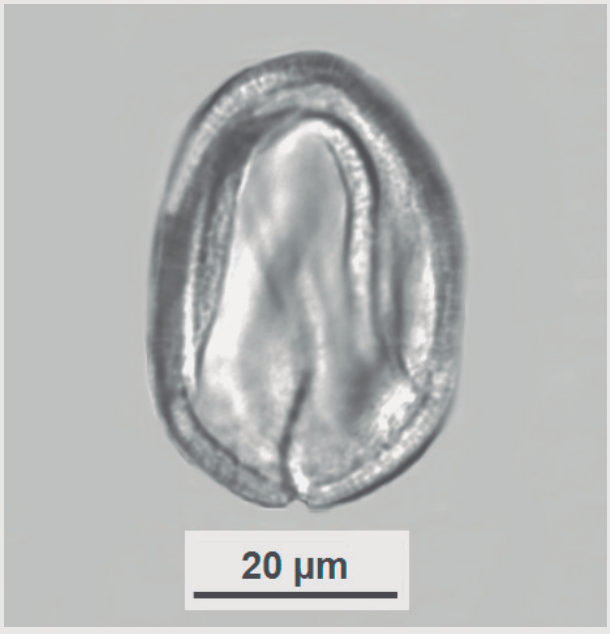
As observed in basal dicots and in monocots (Lorscheitter & Santos 2023, 2024) the results from the analyzed eudicots confirm that pollen morphology can significantly contribute to our understanding of angiosperm evolution.

The following pages present the catalog, containing photomicrographs of the first 40 studied species of eudicot pollen.

Berberidaceae

Berberis laurina Thunb.
843 – ICN 68287
Equatorial view: first plane
Subprolate - Spiraperturate - Reticulate
P $\bar{x}$= 45 µm EQ $\bar{x}$= 34 µm
Note: Grain faintly reticulate.

Berberis laurina Thunb.
843 – ICN 68287
Equatorial view: second plane
Subprolate - Spiraperturate - Reticulate
P $\bar{x}$= 45 µm EQ $\bar{x}$= 34 µm
Note: Grain faintly reticulate.



Berberis laurina Thunb.
843 – ICN 68287
Equatorial view: third plane
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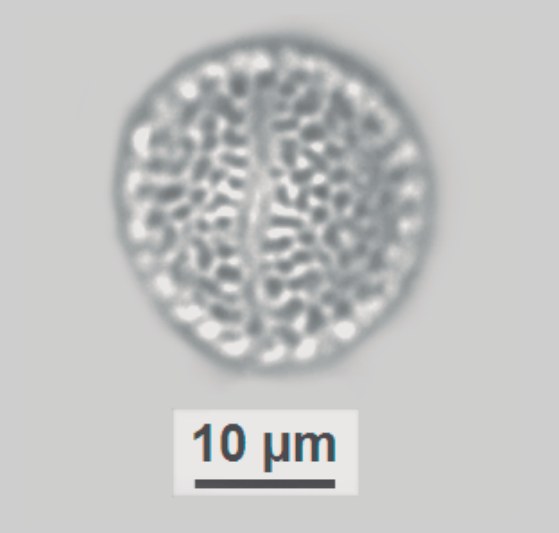
Menispermaceae



Cissampelos pareira L.
807 – ICN 8444
Equatorial view: first plane
Spheroidal - Tricolpate - Reticulate
P $\bar{x}$= 25 µm EQ $\bar{x}$= 24 µm
Note: Colpus frontal view.

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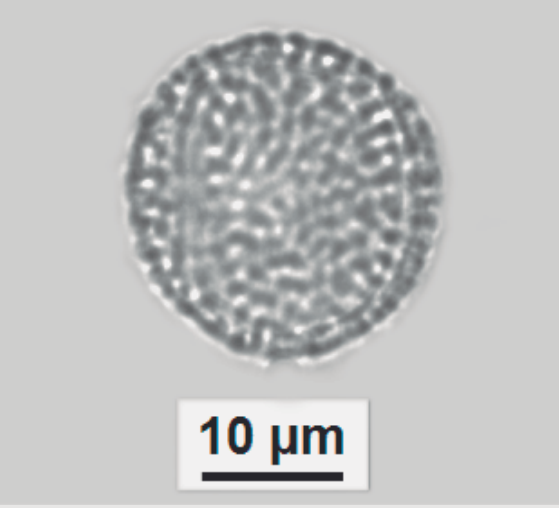

Cissampelos pareira L.
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Equatorial view: third plane
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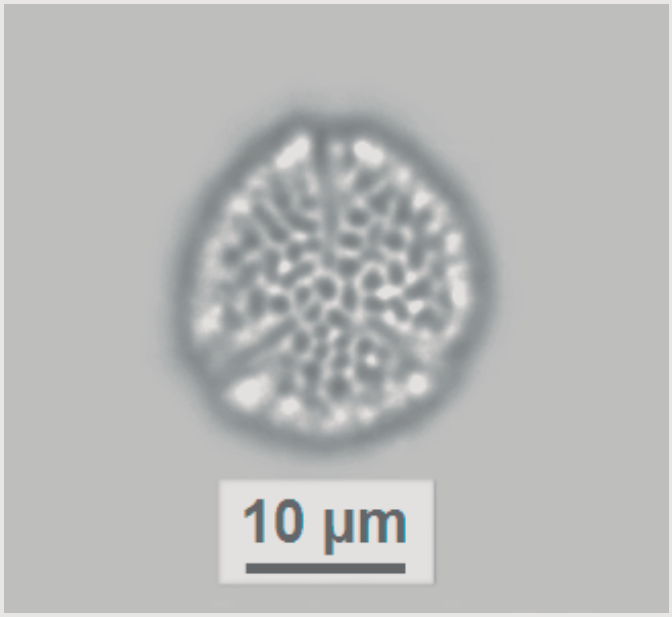
Menispermaceae



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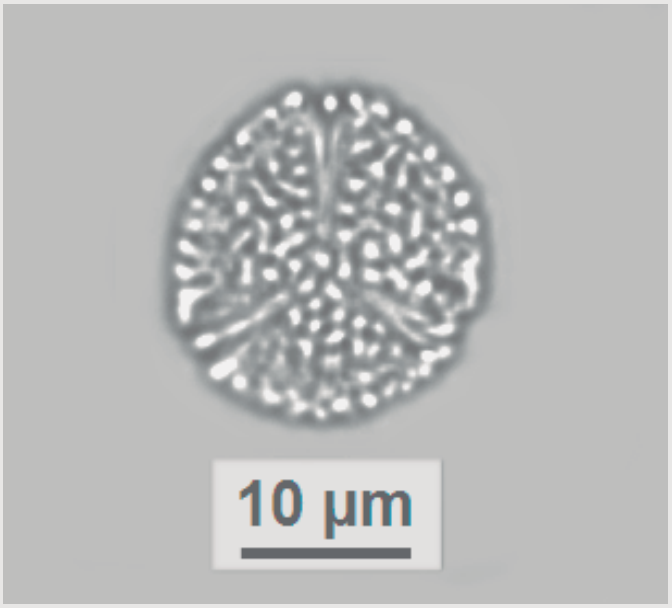

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Menispermaceae

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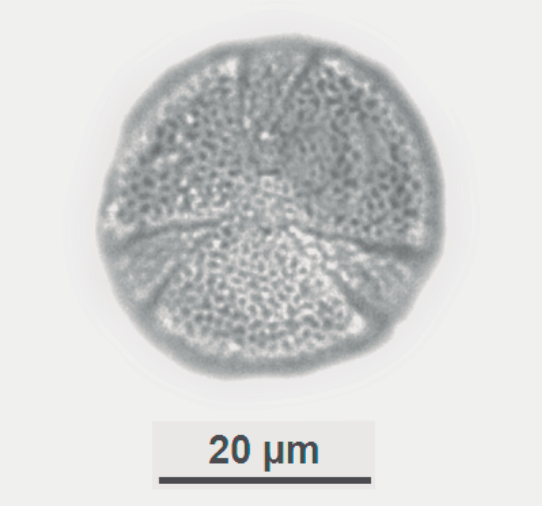

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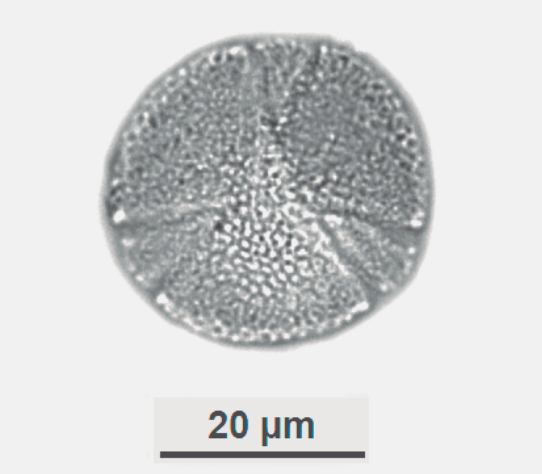

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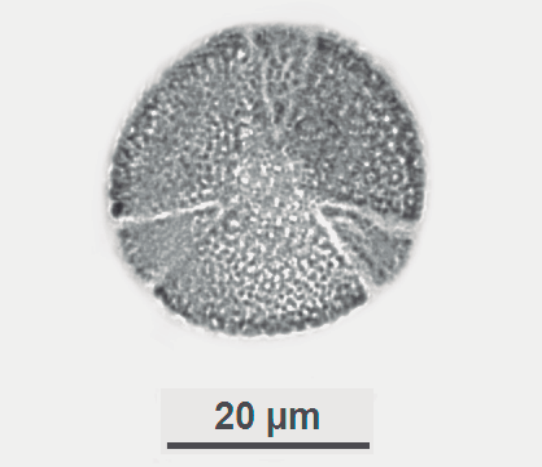

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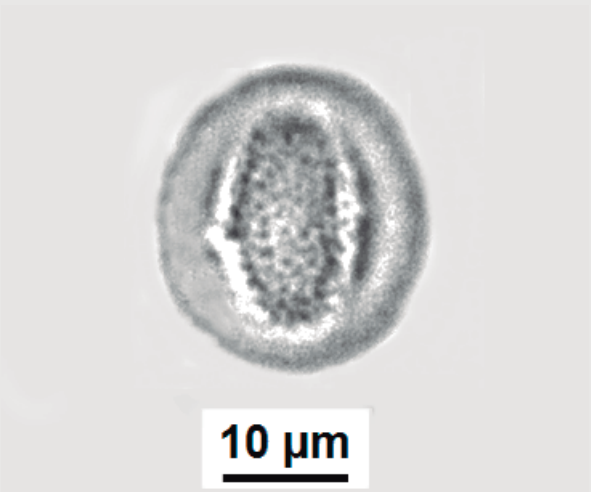

*Hyperbaena domingensis (*DC.) Benth.
805 – ICN 16387
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
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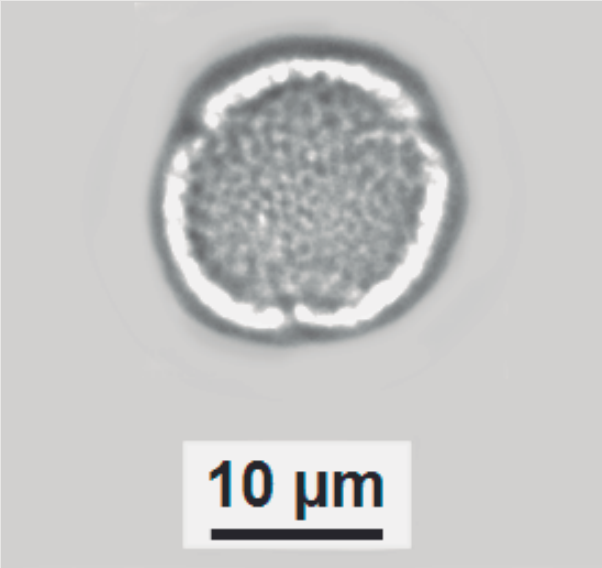

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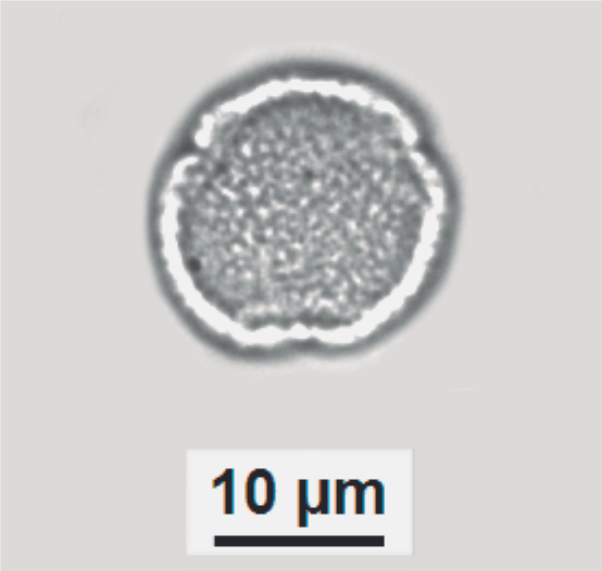

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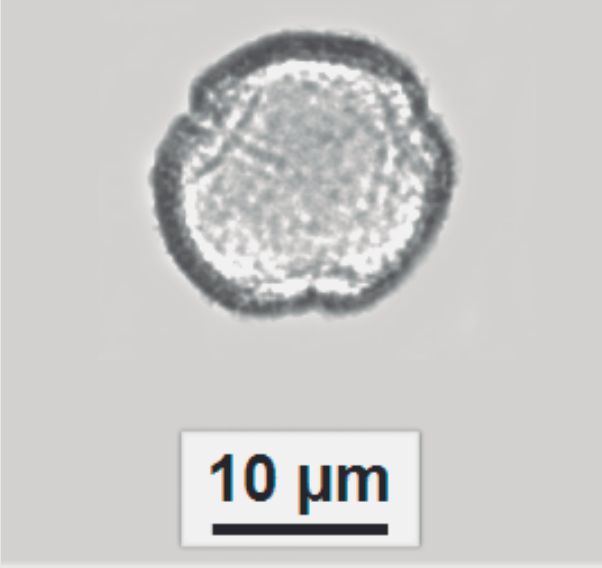

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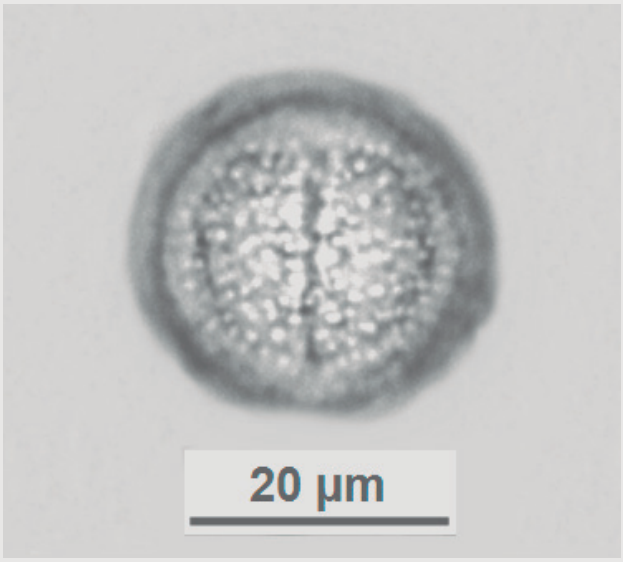
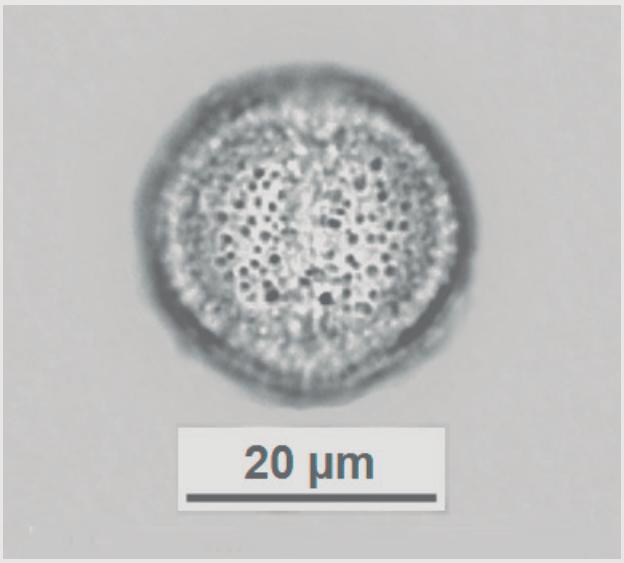
Ranunculaceae



Anemone decapetala Ard.
847 – ICN 68254
Equatorial view: first plane
Spheroidal - Tricolpate - Microechinate
P $\bar{x}$= 29 µm EQ $\bar{x}$= 27 µm
Note: Colpus frontal view.



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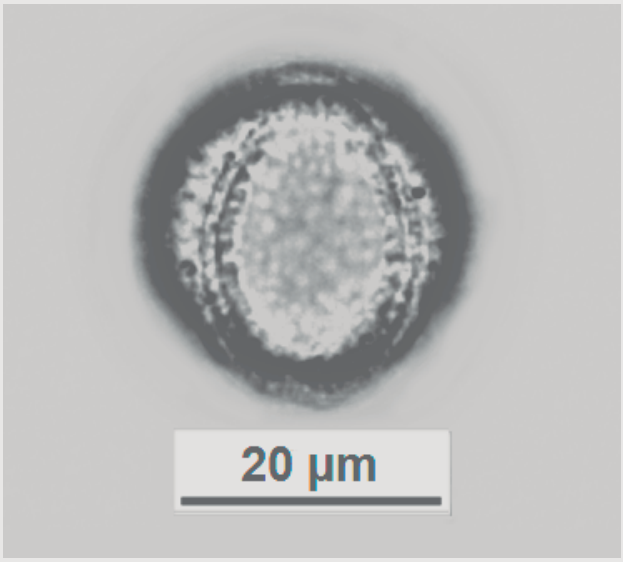

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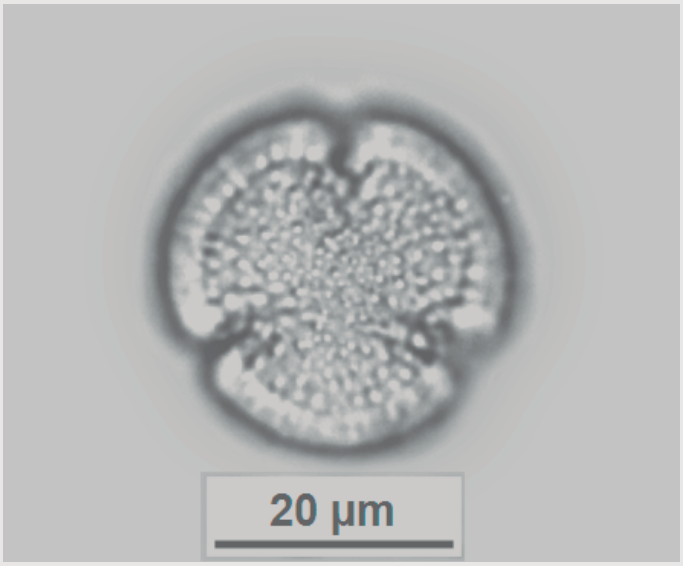

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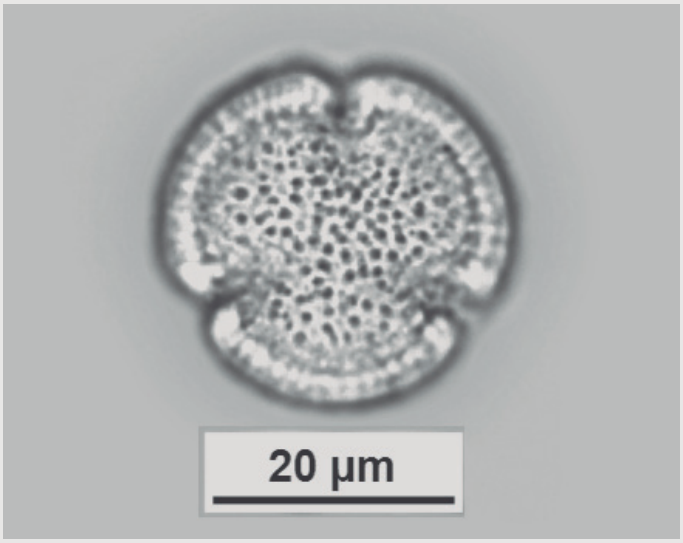

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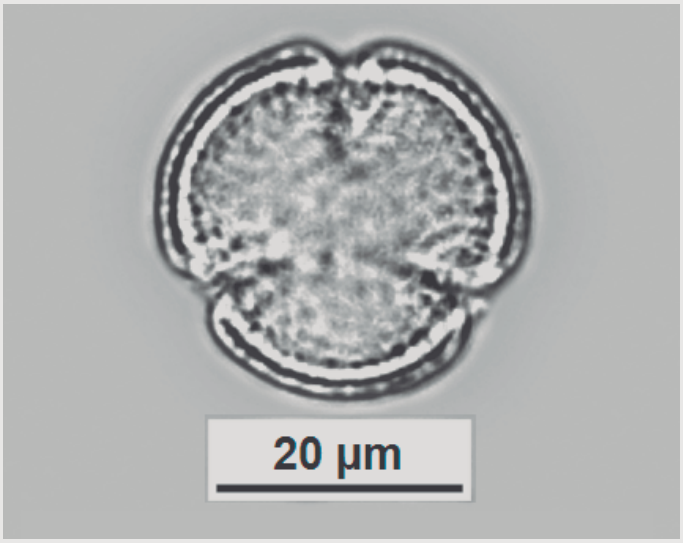

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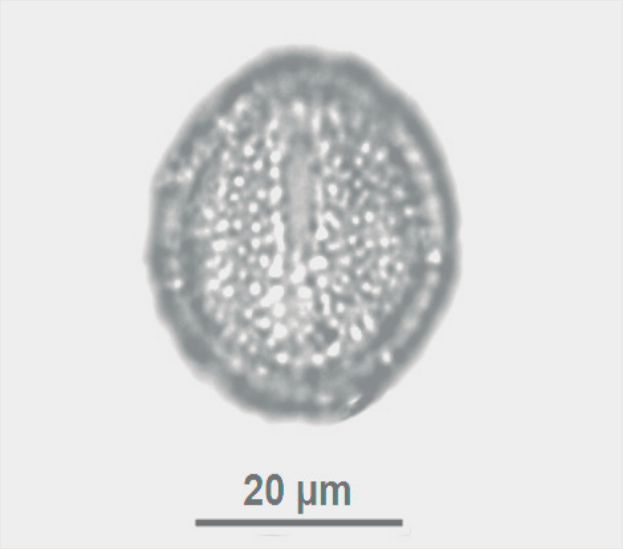
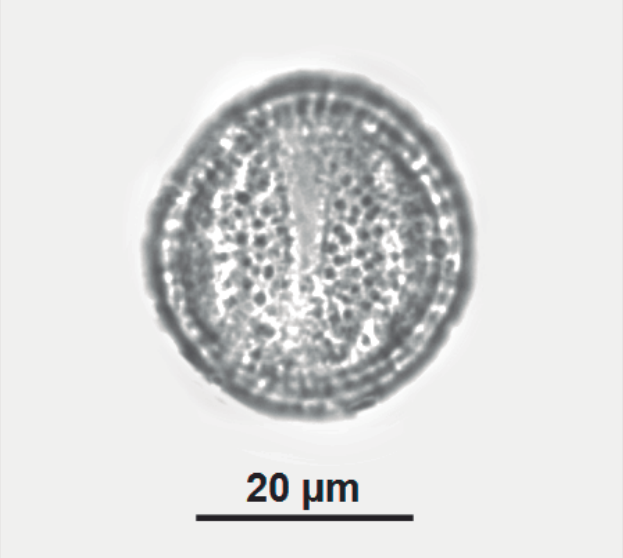


Clematis dioica L.
454 – ICN 2142
Equatorial view: first plane
Spheroidal - Tricolpate - Microechinate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 34 µm
Note: Colpus frontal view.



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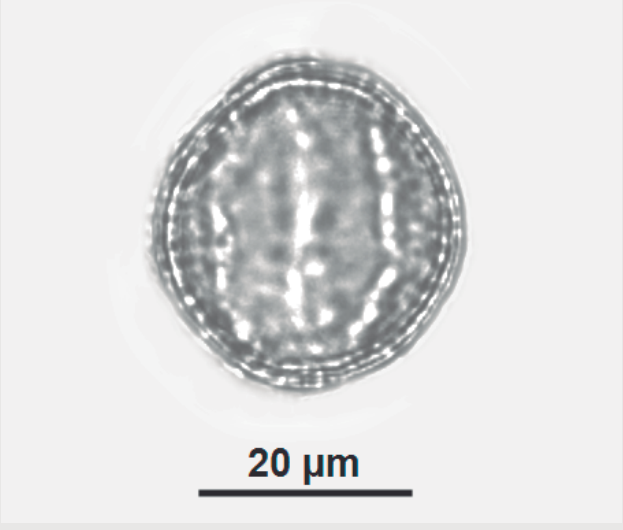

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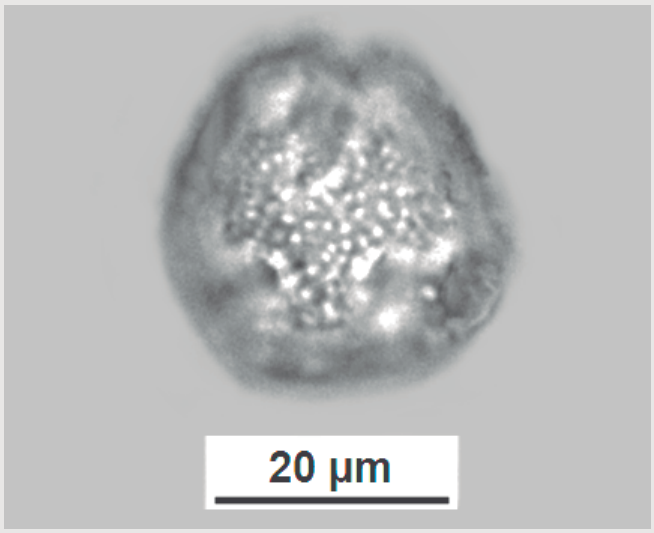

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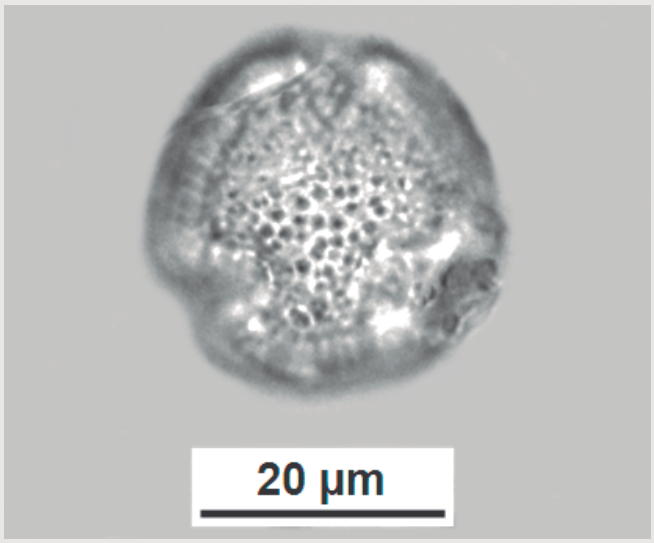

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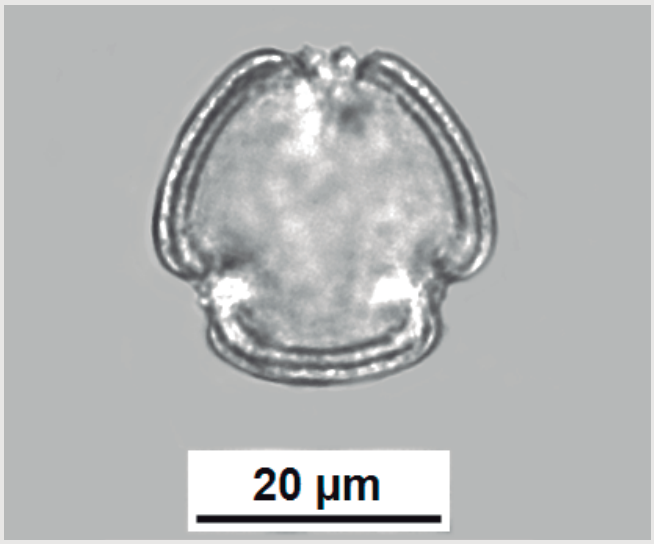
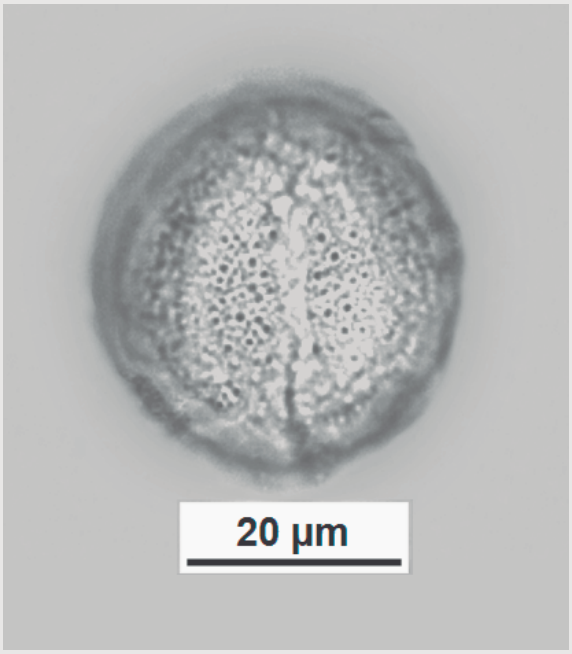
Spheroidal - Tricolpate - Microechinate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 34 µm

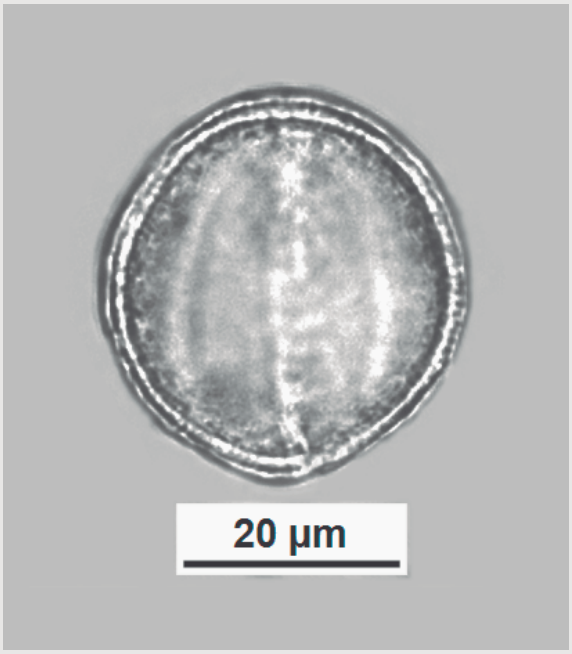


Clematis dioica L.
454 – ICN 2142
Polarl view: third plane
Spheroidal - Tricolpate - Microechinate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 34 µm

Ranunculaceae

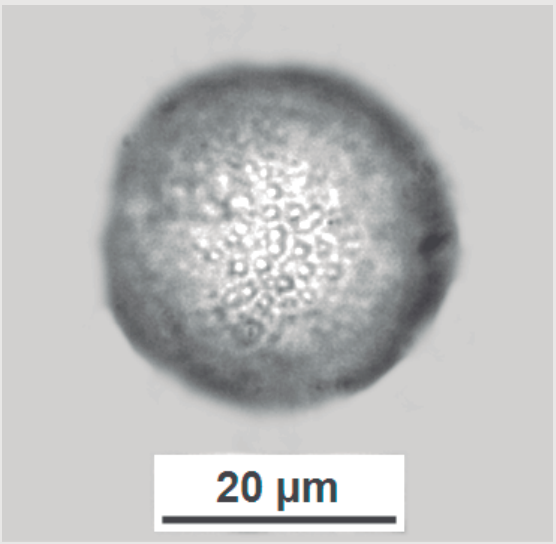


Ranunculus bonariensis Poir.
455 – ICN 9307
Equatorial view: second plane
Spheroidal - Tricolpate - Microechinate
P $\bar{x}$= 37 µm EQ $\bar{x}$= 35 µm
Note: Colpus frontal view.

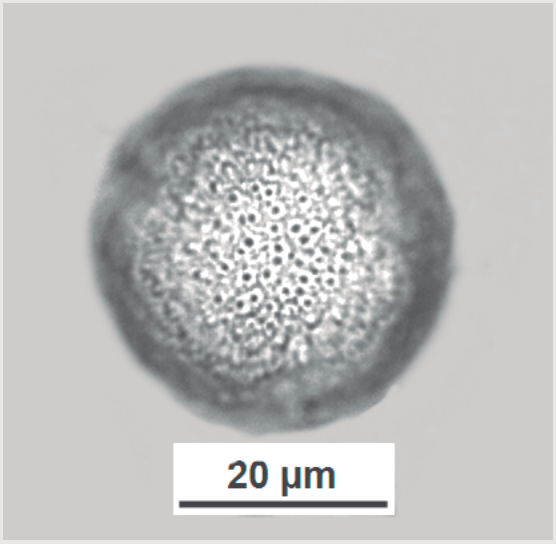


Ranunculus bonariensis Poir.
455 – ICN 9307
Equatorial view: third plane
Spheroidal - Tricolpate - Microechinate
P $\bar{x}$= 37 µm EQ $\bar{x}$= 35 µm

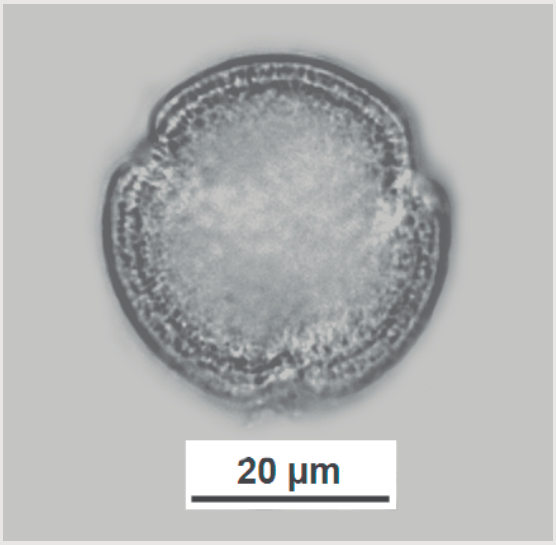
Ranunculaceae



Ranunculus bonariensis Poir.
455 – ICN 9307
Polar view: first plane
Spheroidal - Tricolpate - Microechinate
P $\bar{x}$= 37 µm EQ $\bar{x}$= 35 µm

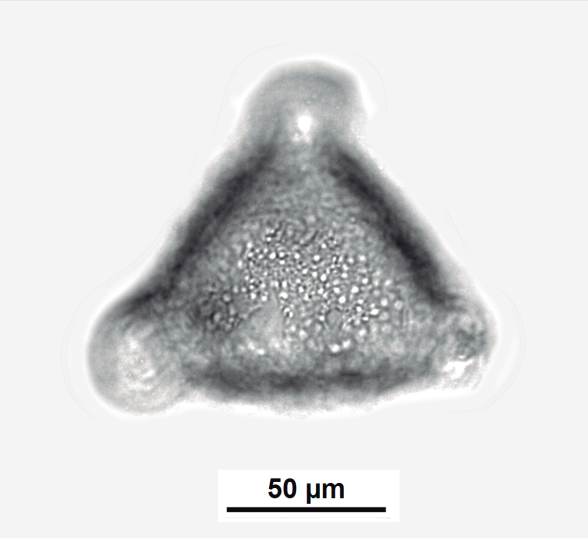


Ranunculus bonariensis Poir.
455 – ICN 9307
Polar view: second plane
Spheroidal - Tricolpate - Microechinate
P $\bar{x}$= 37 µm EQ $\bar{x}$= 35 µm

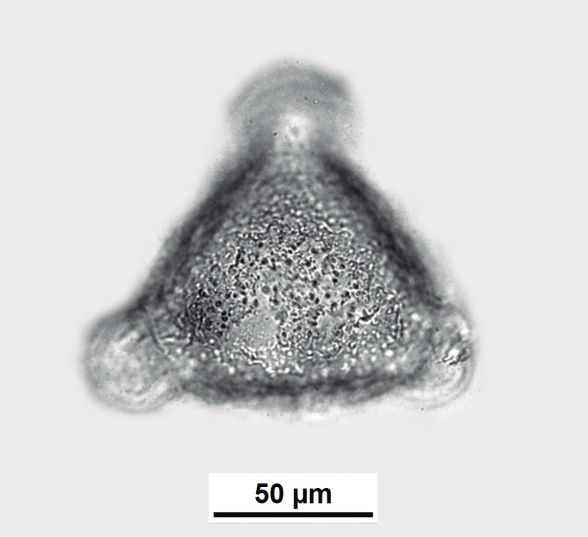


Ranunculus bonariensis Poir.
455 – ICN 9307
Polar view: third plane
Spheroidal - Tricolpate - Microechinate
P $\bar{x}$= 37 µm EQ $\bar{x}$= 35 µm

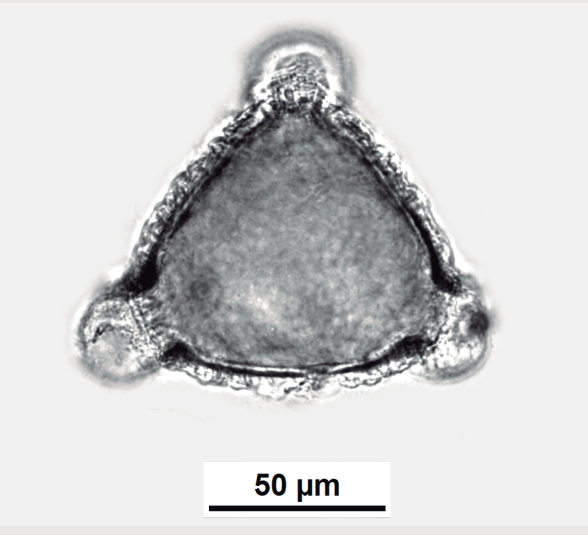
Proteaceae



Grevillea preissii Meisn.
686 – ICN 1448
Polar view: first plane
Triporate - Reticuloid - Verrucate
EQ $\bar{x}$= 87 µm
Note: Equatorial diameter much larger than the polar axis of the grain, making it difficult to see the equatorial view. Very prominent convex pores, not included in the grain equatorial diameter measurements.

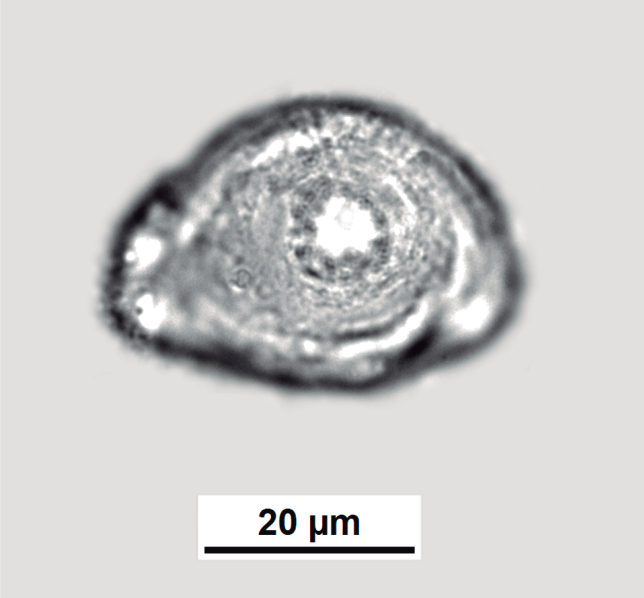


Grevillea preissii Meisn.
686 – ICN 1448
Polar view: second plane
Triporate - Reticuloid - Verrucate
EQ $\bar{x}$= 87 µm
Note: Equatorial diameter much larger than the polar axis of the grain, making it difficult to see the equatorial view. Very prominent convex pores, not included in the grain equatorial diameter measurements.

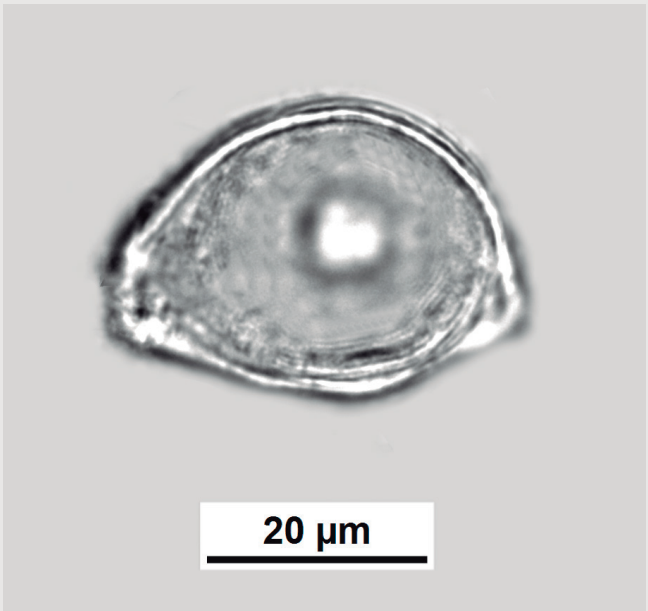


Grevillea preissii Meisn.
686 – ICN 1448
Polar view: third plane
Triporate - Reticuloid - Verrucate
EQ $\bar{x}$= 87 µm
Note: Equatorial diameter much larger than the polar axis of the grain, making it difficult to see the equatorial view. Very prominent convex pores, not included in the grain equatorial diameter measurements.

Proteaceae



Roupala asplenioides Sleumer
286 – ICN 48819
Equatorial view: second plane
Oblate - Triporate - Reticulate
P $\bar{x}$= 29 µm EQ $\bar{x}$= 40 µm
Note: Pore frontal view.



Roupala asplenioides Sleumer
286 – ICN 48819
Equatorial view: third plane
Oblate - Triporate - Reticulate
P $\bar{x}$= 29 µm EQ $\bar{x}$= 40 µm

Proteaceae

Roupala asplenioides Sleumer
286 – ICN 48819
Polar view: first plane
Oblate - Triporate - Reticulate
P $\bar{x}$= 29 µm EQ $\bar{x}$= 40 µm

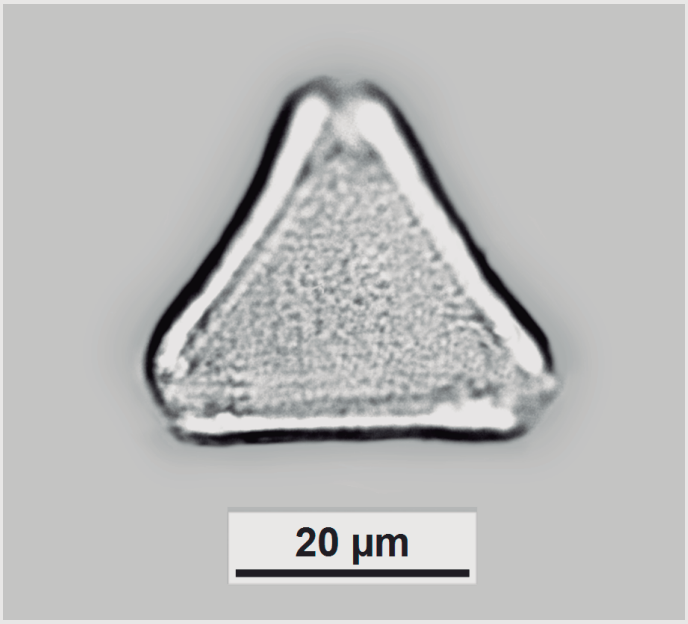
Roupala asplenioides Sleumer
286 – ICN 48819
Polar view: second plane
Oblate - Triporate - Reticulate
P $\bar{x}$= 29 µm EQ $\bar{x}$= 40 µm

Proteaceae

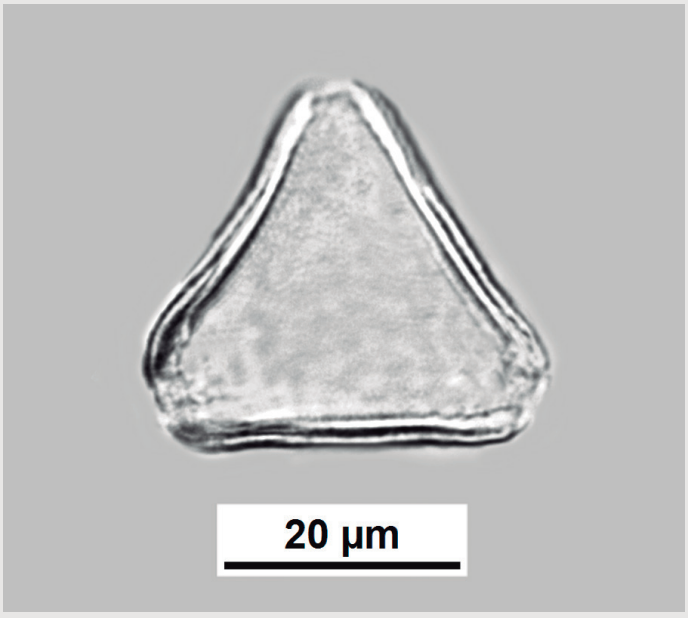
Roupala brasiliensis Klotzsch
1043 – ICN 92269
Equatorial view: first plane
Oblate - Triporate - Reticulate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 35 µm
Note: Pore frontal view.

Roupala brasiliensis Klotzsch
1043 – ICN 92269
Equatorial view: second plane
Oblate - Triporate - Reticulate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 35 µm
Note: Pore frontal view.

Proteaceae

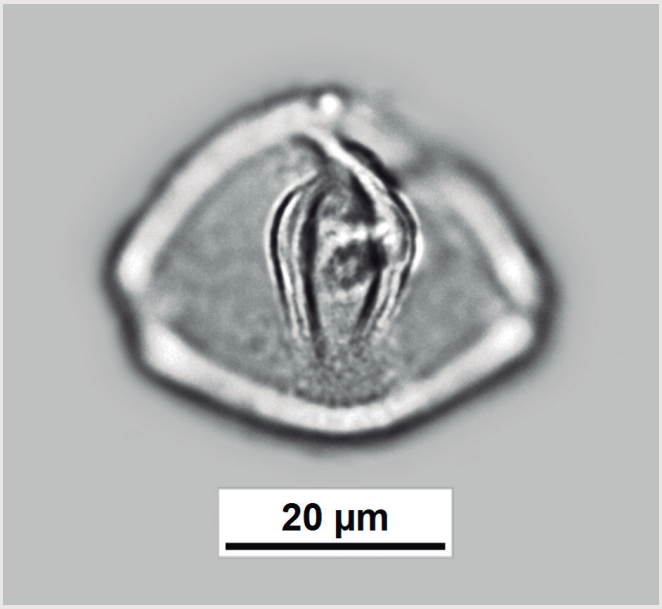


Roupala brasiliensis Klotzsch
1043 – ICN 92269
Polar view: first plane
Oblate - Triporate - Reticulate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 35 µm

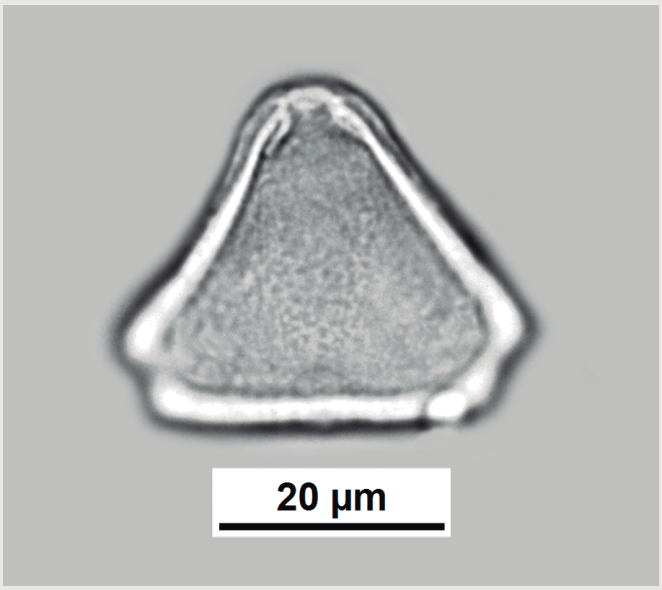


Roupala brasiliensis Klotzsch
1043 – ICN 92269
Polar view: second plane
Oblate - Triporate - Reticulate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 35 µm

Proteaceae

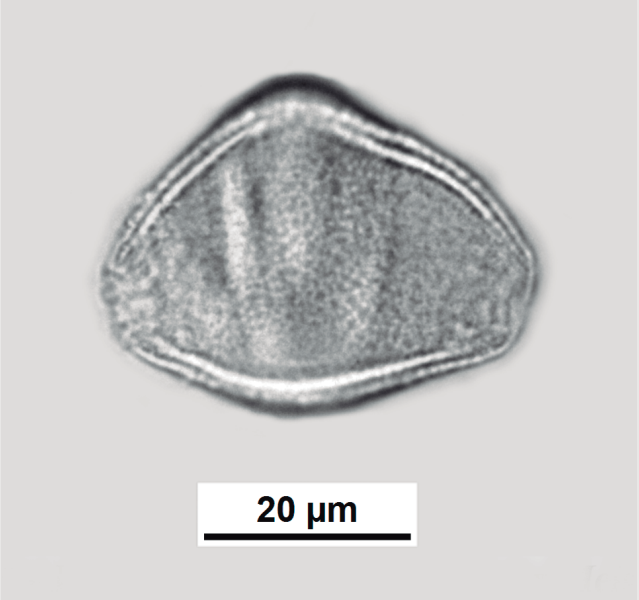


Roupala meisneri Sleumer
1044 – ICN 16660
Equatorial view
Suboblate - Triporate - Reticulate
P $\bar{x}$= 33 µm EQ $\bar{x}$= 42 µm
Note: Pore frontal view.

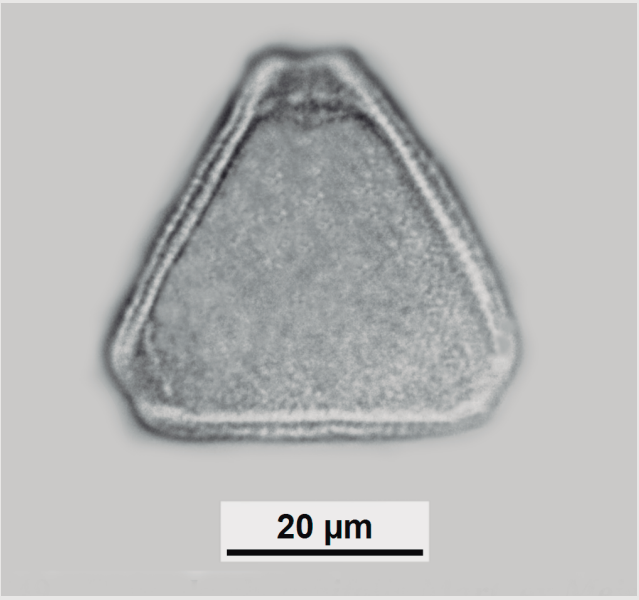


Roupala meisneri Sleumer
1044 – ICN 16660
Polar view
Suboblate - Triporate - Reticulate
P $\bar{x}$= 33 µm EQ $\bar{x}$= 42 µm

Proteaceae

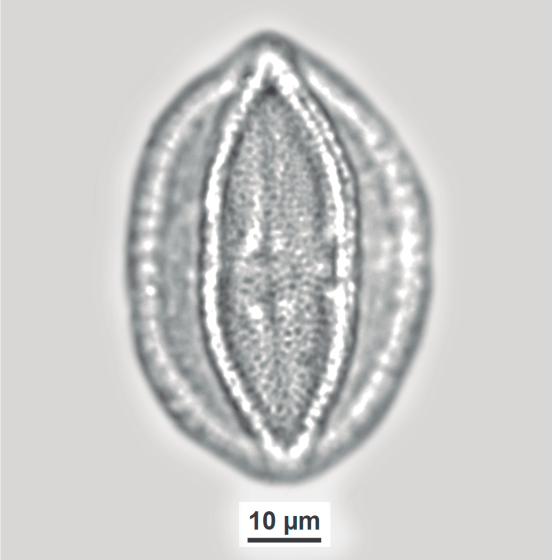


Roupala rhombifolia Mart. ex Meisn.
1049 – ICN 92270
Equatorial view
Suboblate - Triporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 42 µm

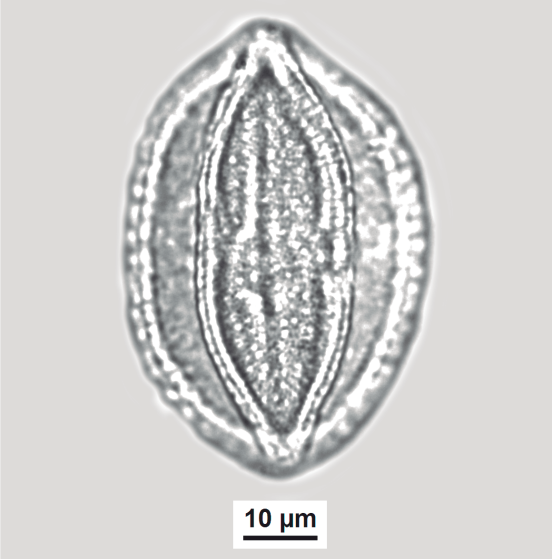


Roupala rhombifolia Mart. ex Meisn.
1049 – ICN 92270
Polar view
Suboblate - Triporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 42 µm

Vitaceae



Cissus sicyoides L.
446 – ICN 18713
Equatorial view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 60 µm EQ $\bar{x}$= 40 µm

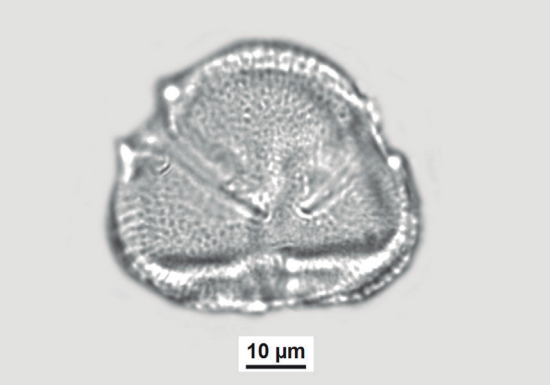


Cissus sicyoides L.
446 – ICN 18713
Equatorial view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 60 µm EQ $\bar{x}$= 40 µm

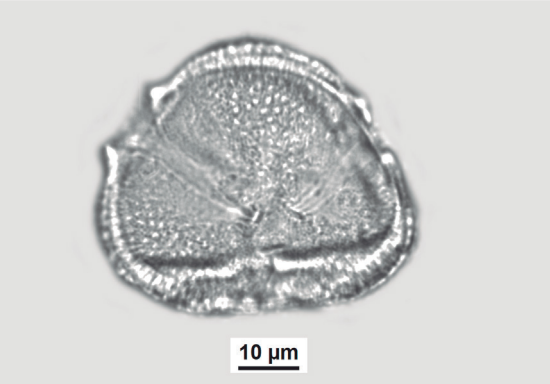
Cissus sicyoides L.
446 – ICN 18713
Equatorial view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 60 µm EQ $\bar{x}$= 40 µm

Vitaceae

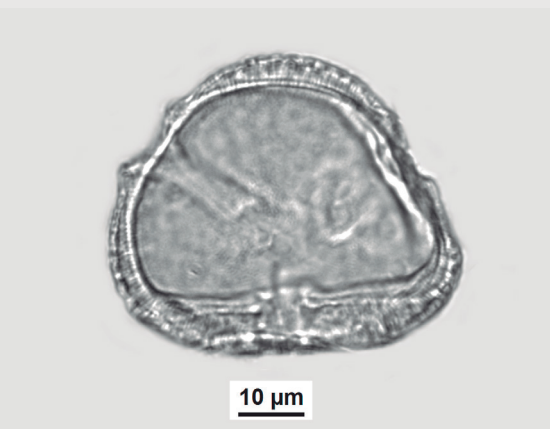
Cissus sicyoides L.
446 – ICN 18713
Equatorial view
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 60 µm EQ $\bar{x}$= 40 µm
Note: Colporus frontal view.



Cissus sicyoides L.
446 – ICN 18713
Polar view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 60 µm EQ $\bar{x}$= 40 µm

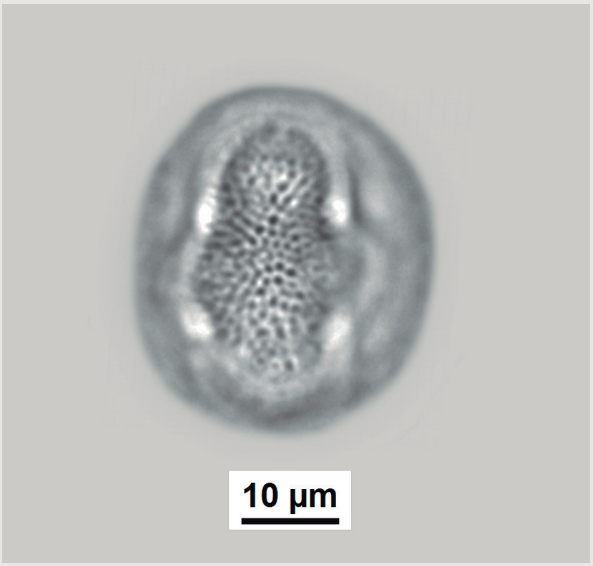


Cissus sicyoides L.
446 – ICN 18713
Polar view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 60 µm EQ $\bar{x}$= 40 µm

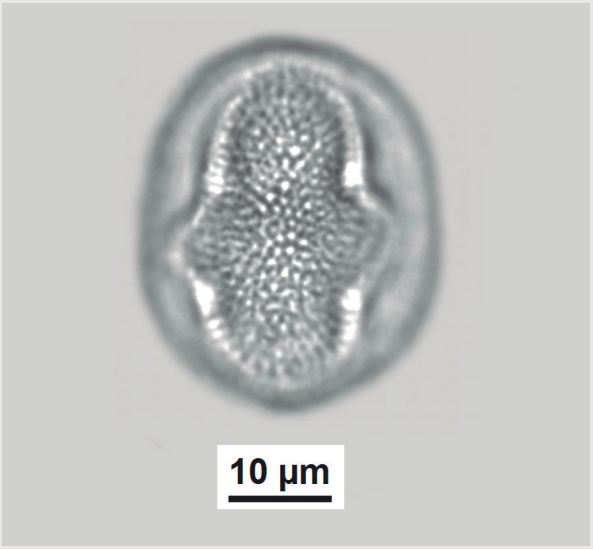


Cissus sicyoides L.
446 – ICN 18713
Polar view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 60 µm EQ $\bar{x}$= 40 µm

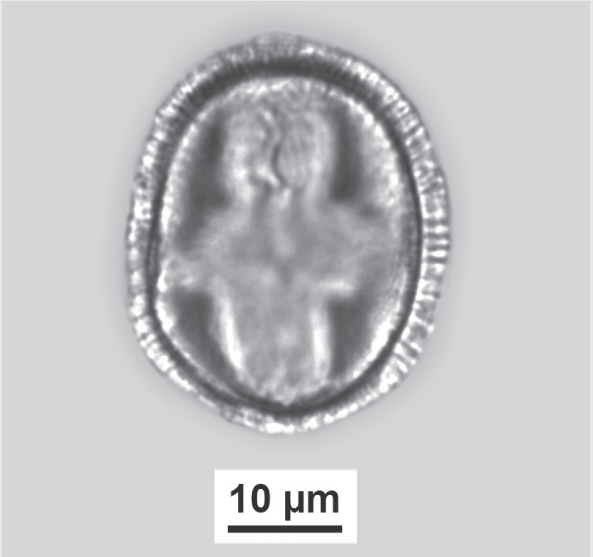
Celastraceae



Monteverdia cassineformis (Reissek) Biral
187 – ICN 5335
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 30 µm

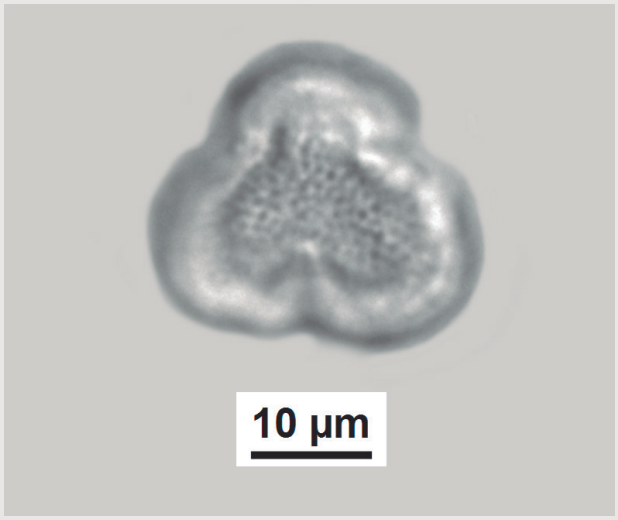


Monteverdia cassineformis (Reissek) Biral
187 – ICN 5335
Equatorial view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 30 µm

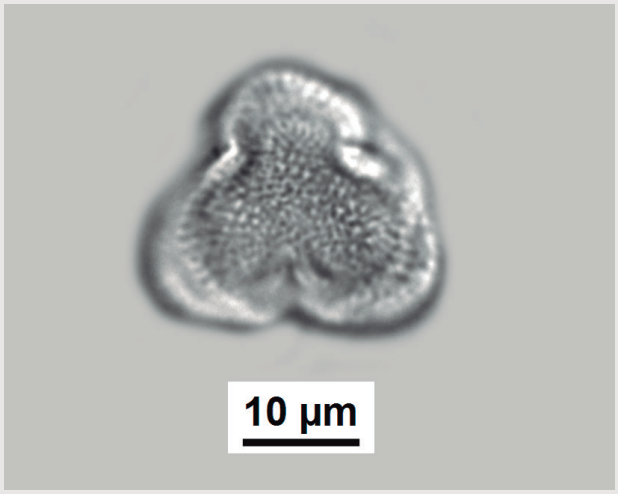


Monteverdia cassineformis (Reissek) Biral
187 – ICN 5335
Equatorial view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 30 µm

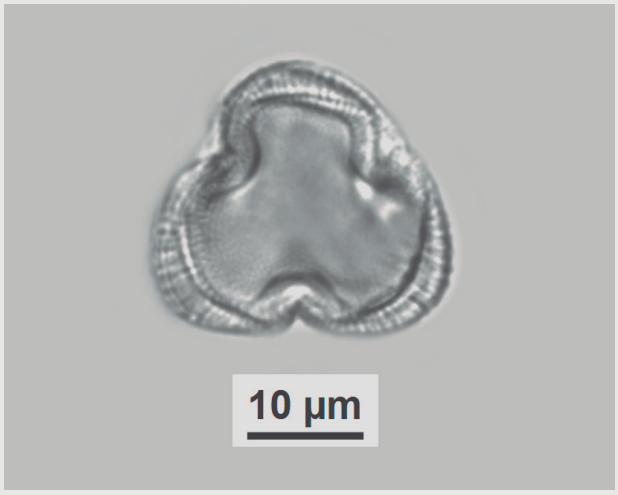
Celastraceae



Monteverdia cassineformis (Reissek) Biral
187 – ICN 5335
Polar view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 30 µm

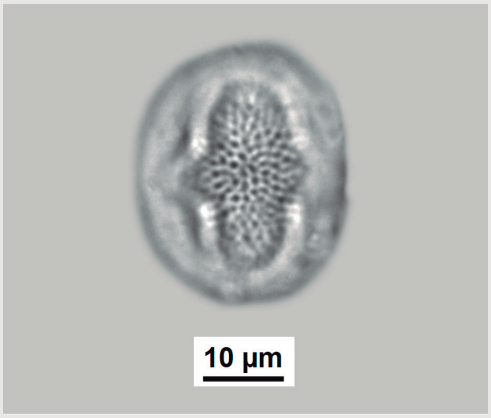


Monteverdia cassineformis (Reissek) Biral
187 – ICN 5335
Polar view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 30 µm

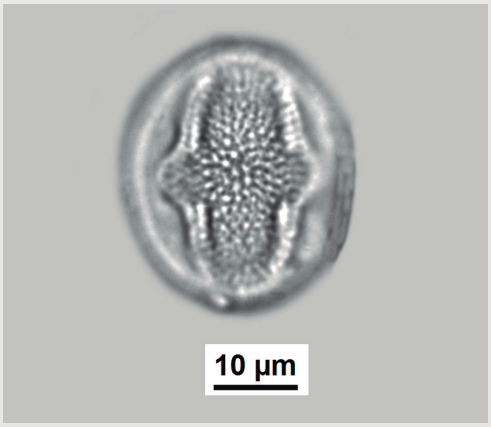


Monteverdia cassineformis (Reissek) Biral
187 – ICN 5335
Polar view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 30 µm

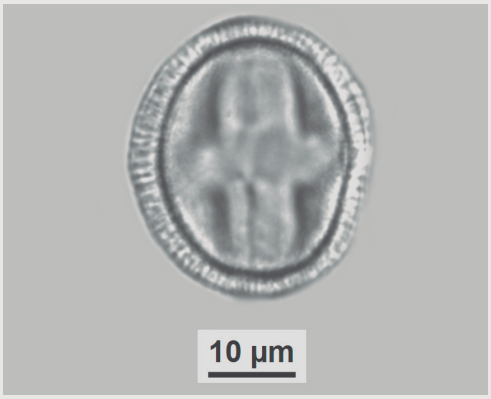
Celastraceae



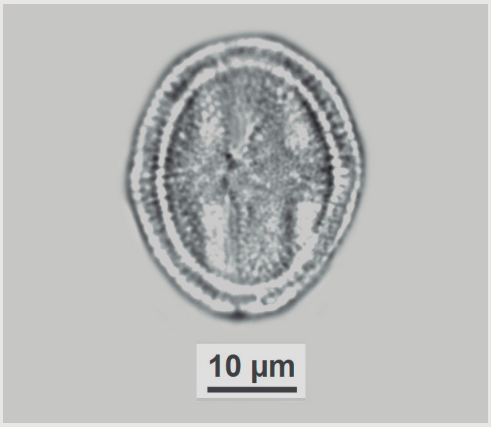
Monteverdia gonoclada (Mart.) Biral
1142 – UPCB 5383
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm



Monteverdia gonoclada (Mart.) Biral
1142 – UPCB 5383
Equatorial view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm

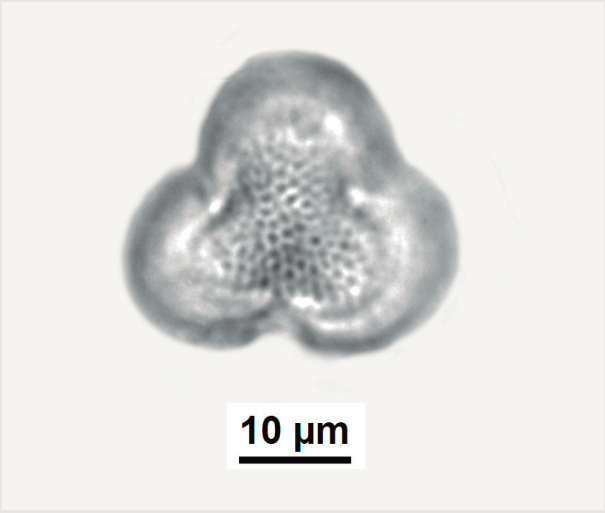


Monteverdia gonoclada (Mart.) Biral
1142 – UPCB 5383
Equatorial view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm

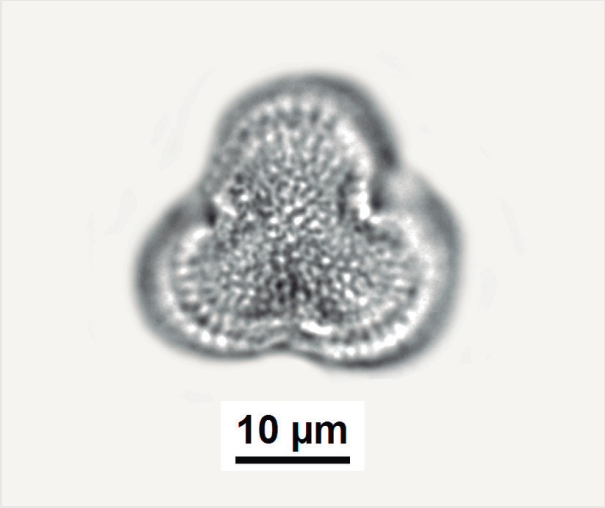


Monteverdia gonoclada (Mart.) Biral
1142 – UPCB 5383
Equatorial view
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm
Note: Colporus frontal view.

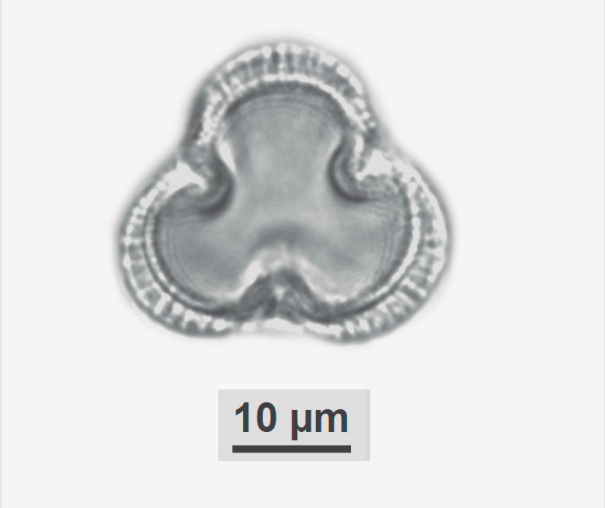
Celastraceae



Monteverdia gonoclada (Mart.) Biral
1142 – UPCB 5383
Polar view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm

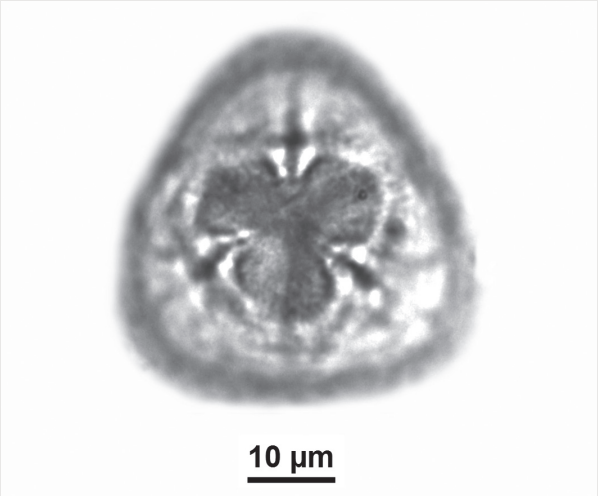


Monteverdia gonoclada (Mart.) Biral
1142 – UPCB 5383
Polar view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm

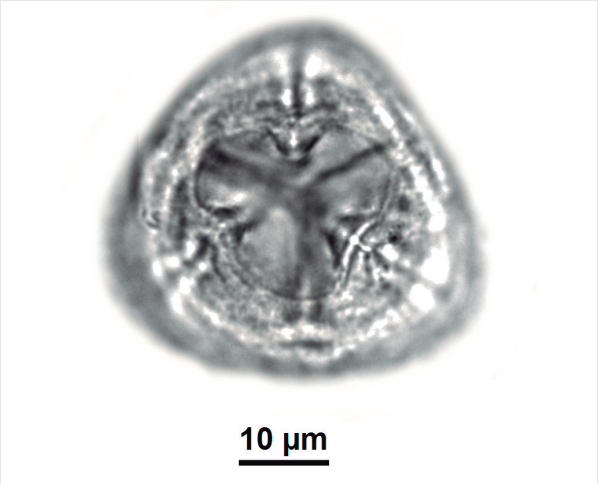


Monteverdia gonoclada (Mart.) Biral
1142 – UPCB 5383
Polar view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm

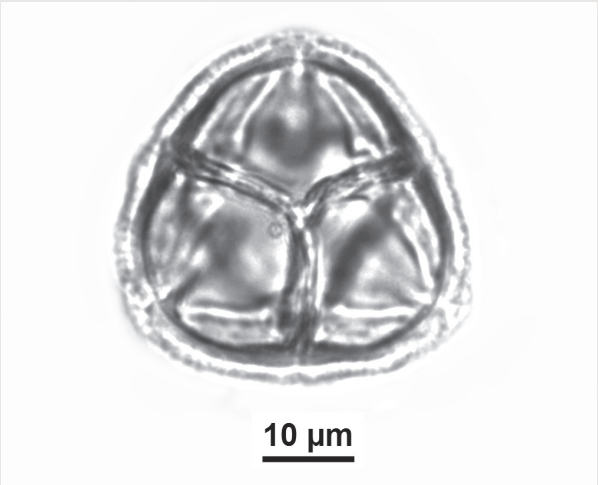
Celastraceae



Peritassa calypsoides (Cambess.) A.C. Sm.
745 – ICN 61530
Polar view: first plane
Oblate - Tricolporate - Reticulate
P $\overline{x}$= 20 µm EQ $\overline{x}$= 31 µm
Tetrad diameter $\overline{x}$ = 39 µm
Note: Grain faintly reticulate.



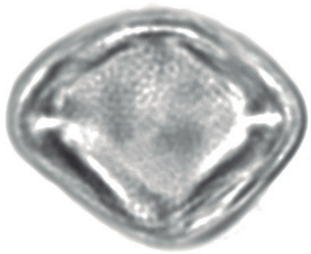
Peritassa calypsoides (Cambess.) A.C. Sm.
745 – ICN 61530
Polar view: second plane
Oblate - Tricolporate - Reticulate
P $\overline{x}$= 20 µm EQ $\overline{x}$= 31 µm
Tetrad diameter $\overline{x}$ = 39 µm
Note: Grain faintly reticulate.



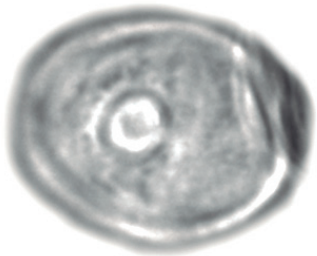
Peritassa calypsoides (Cambess.) A.C. Sm.
745 – ICN 61530
Polar view: third plane
Oblate - Tricolporate - Reticulate
P $\overline{x}$= 20 µm EQ $\overline{x}$= 31 µm
Tetrad diameter $\overline{x}$ = 39 µm
Note: Grain faintly reticulate.

Celastraceae

Pristimera celastroides (Kunth) A.C. Sm.
744 – ICN 46546
Equatorial view: first plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 15 µm EQ $\bar{x}$= 19 µm
Note: Grain faintly reticulate.

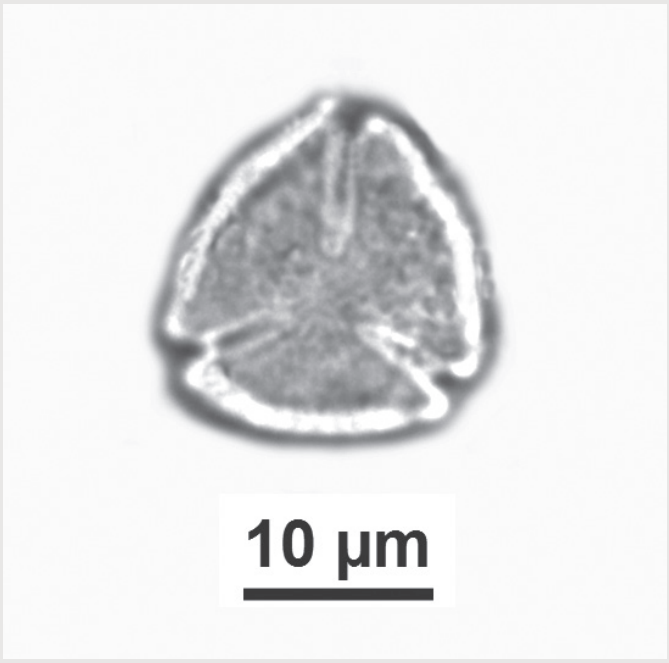


Pristimera celastroides (Kunth) A.C. Sm.
744 – ICN 46546
Equatorial view: second plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 15 µm EQ $\bar{x}$= 19 µm
Note: Grain faintly reticulate.



Pristimera celastroides (Kunth) A.C. Sm.
744 – ICN 46546
Equatorial view
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 15 µm EQ $\bar{x}$= 19 µm
Note: Colporus frontal view. Grain faintly reticulate.

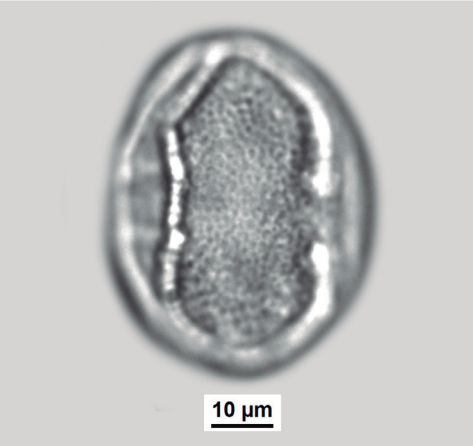
Celastraceae



Pristimera celastroides (Kunth) A.C. Sm.
744 – ICN 46546
Polar view: first plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 15 µm EQ $\bar{x}$= 19 µm
Note: Grain faintly reticulate.-

Pristimera celastroides (Kunth) A.C. Sm.
744 – ICN 46546
Polar view: second plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 15 µm EQ $\bar{x}$= 19 µm
Note: Grain faintly reticulate.

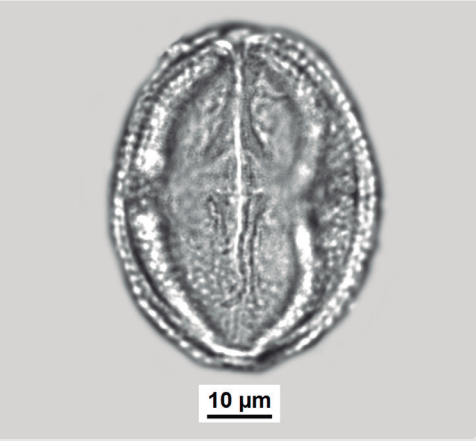
Erythroxylaceae



Erythroxylum amplifolium Baill.
335 – ICN 42517
Equatorial view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 54 µm EQ $\bar{x}$= 40 µm

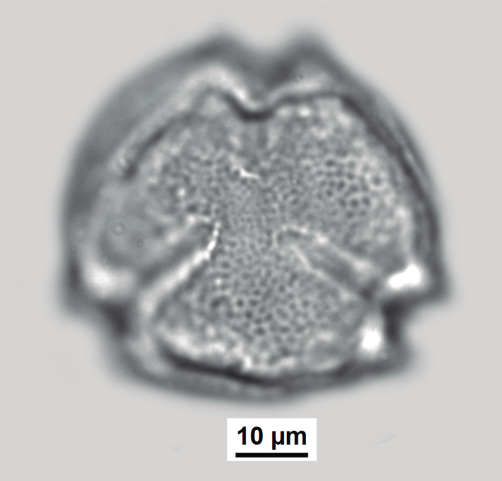
Erythroxylum amplifolium Baill.
335 – ICN 42517
Equatorial view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 54 µm EQ $\bar{x}$= 40 µm

Erythroxylum amplifolium Baill.
335 – ICN 42517
Equatorial view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 54 µm EQ $\bar{x}$= 40 µm

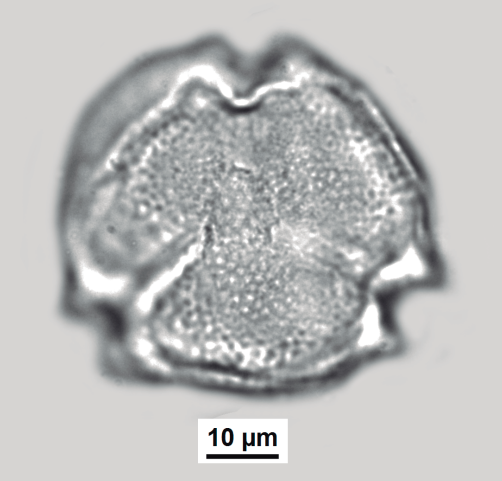


Erythroxylum amplifolium Baill.
335 – ICN 42517
Equatorial view
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 54 µm EQ $\bar{x}$= 40 µm
Note: Colporus frontal view.

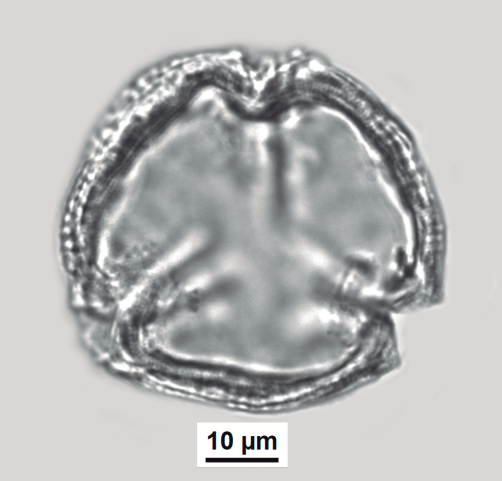
Erythroxylaceae



Erythroxylum amplifolium Baill.
335 – ICN 42517
Polar view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 54 µm EQ $\bar{x}$= 40 µm

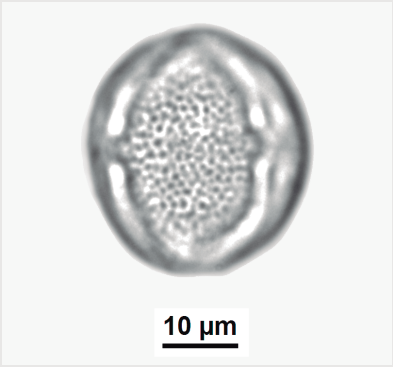


Erythroxylum amplifolium Baill.
335 – ICN 42517
Polar view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 54 µm EQ $\bar{x}$= 40 µm



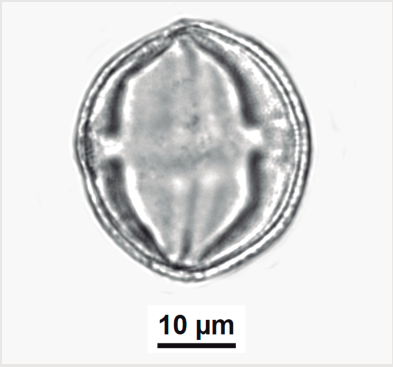
Erythroxylum amplifolium Baill.
335 – ICN 42517
Polar view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 54 µm EQ $\bar{x}$= 40 µm

Erythroxylaceae

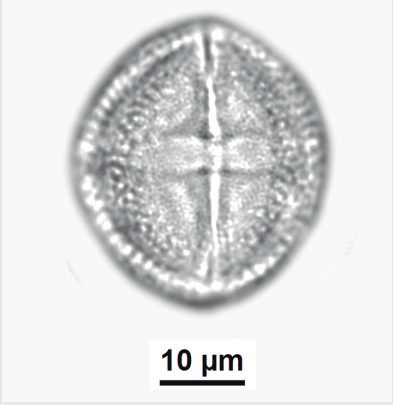


Erythroxylum argentinum O.E. Schulz
820 – ICN 63553
Equatorial view: first plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 28 µm

Erythroxylum argentinum O.E. Schulz
820 – ICN 63553
Equatorial view: second plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 28 µm

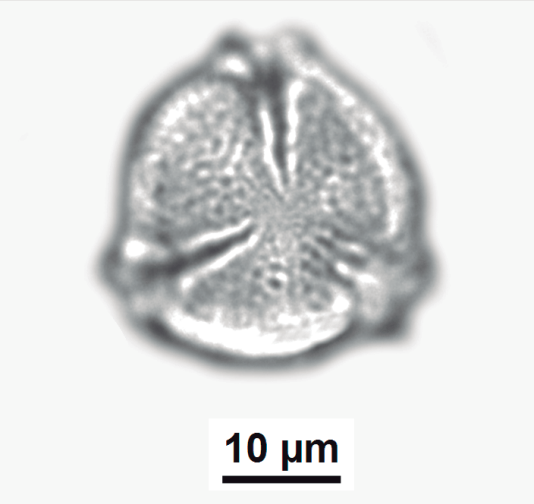


Erythroxylum argentinum O.E. Schulz
820 – ICN 63553
Equatorial view: third plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 28 µm

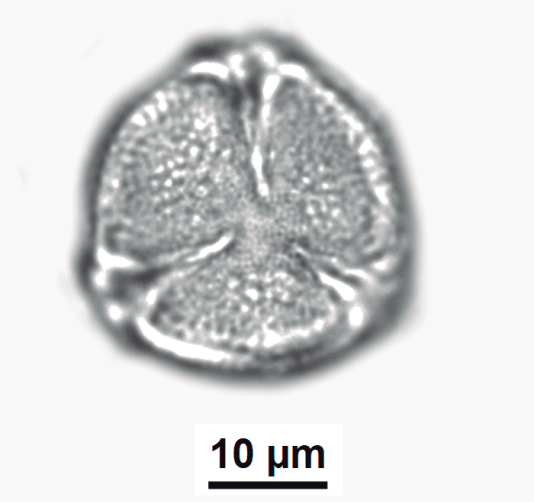


Erythroxylum argentinum O.E. Schulz
820 – ICN 63553
Equatorial view
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 28 µm
Note: Colporus frontal view.

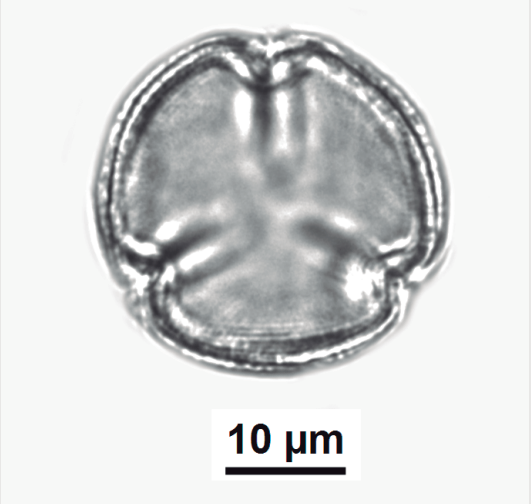
Erythroxylaceae



Erythroxylum argentinum O.E. Schulz
820 – ICN 63553
Polar view: first plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 28 µm



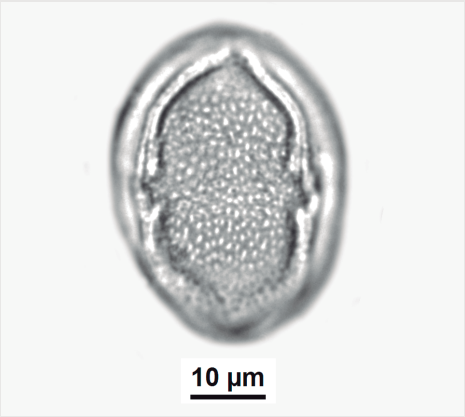
Erythroxylum argentinum O.E. Schulz
820 – ICN 63553
Polar view: second plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 28 µm



Erythroxylum argentinum O.E. Schulz
820 – ICN 63553
Polar view: third plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 28 µm

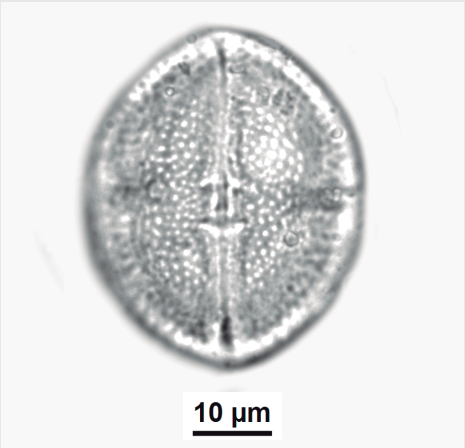
Erythroxylaceae

Erythroxylum cuspidifolium Mart.
334 – ICN 48873
Equatorial view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 40 µm EQ $\bar{x}$= 29 µm



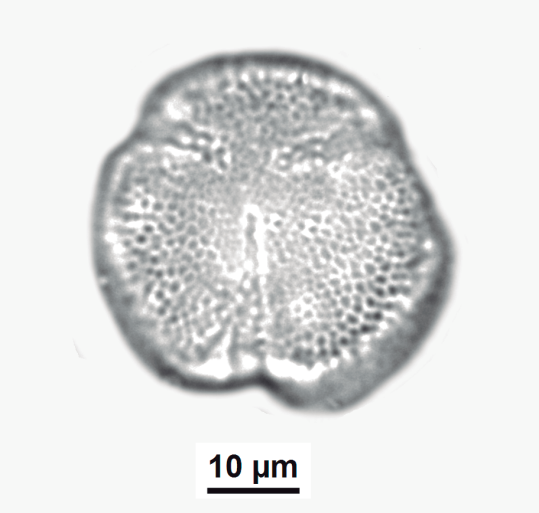
Erythroxylum cuspidifolium Mart.
334 – ICN 48873
Equatorial view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 40 µm EQ $\bar{x}$= 29 µm

Erythroxylum cuspidifolium Mart.
334 – ICN 48873
Equatorial view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 40 µm EQ $\bar{x}$= 29 µm



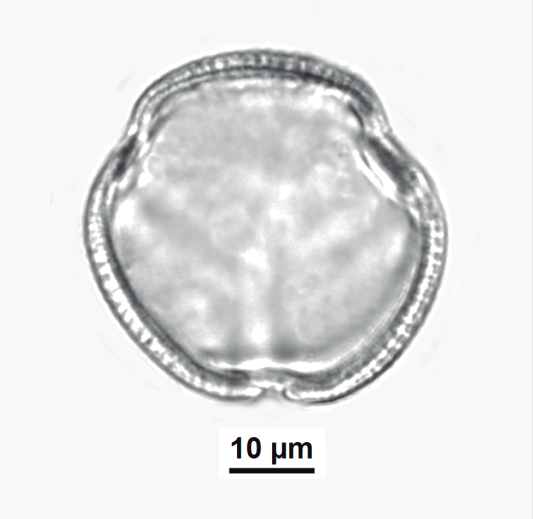
Erythroxylum cuspidifolium Mart.
334 – ICN 48873
Equatorial view
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 40 µm EQ $\bar{x}$= 29 µm
Note: Colporus frontal view.

Erythroxylaceae



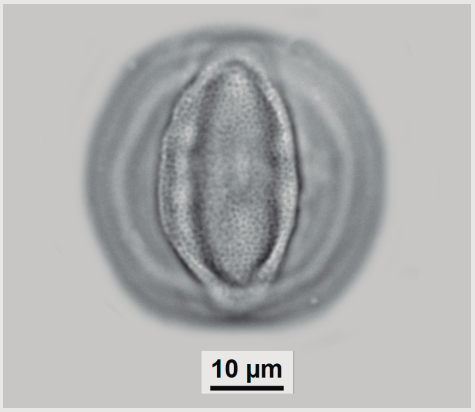
Erythroxylum cuspidifolium Mart.
334 – ICN 48873
Polar view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 40 µm EQ $\bar{x}$= 29 µm

Erythroxylum cuspidifolium Mart.
334 – ICN 48873
Polar view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 40 µm EQ $\bar{x}$= 29 µm

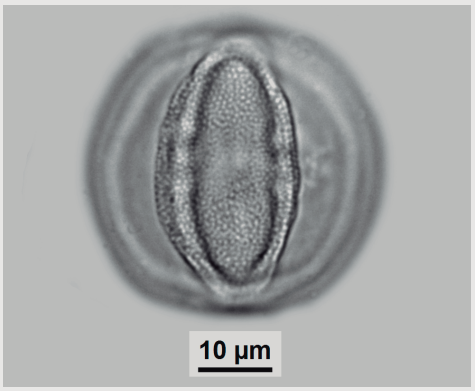


Erythroxylum cuspidifolium Mart.
334 – ICN 48873
Polar view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 40 µm EQ $\bar{x}$= 29 µm

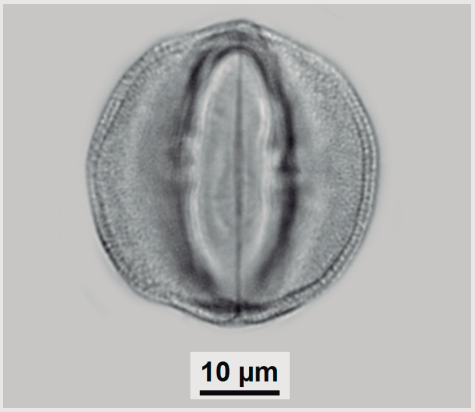
Euphorbiaceae



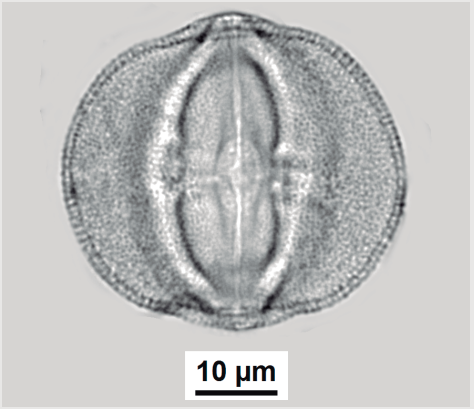
Actinostemon concolor (Spreng.) Müll. Arg.
735 – ICN 48438
Equatorial view: first plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 36 µm



Actinostemon concolor (Spreng.) Müll. Arg.
735 – ICN 48438
Equatorial view: second plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 36 µm

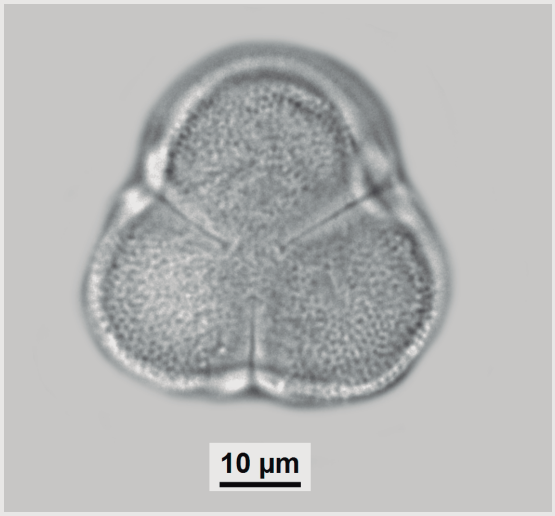


Actinostemon concolor (Spreng.) Müll. Arg.
735 – ICN 48438
Equatorial view: third plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 36 µm

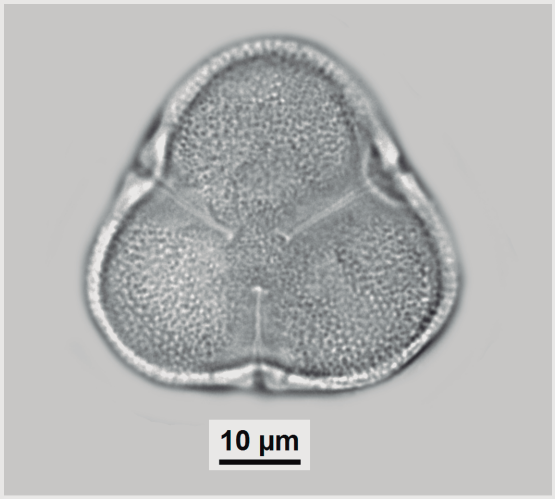


Actinostemon concolor (Spreng.) Müll. Arg.
735 – ICN 48438
Equatorial view
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 36 µm
Note: Colporus frontal view.

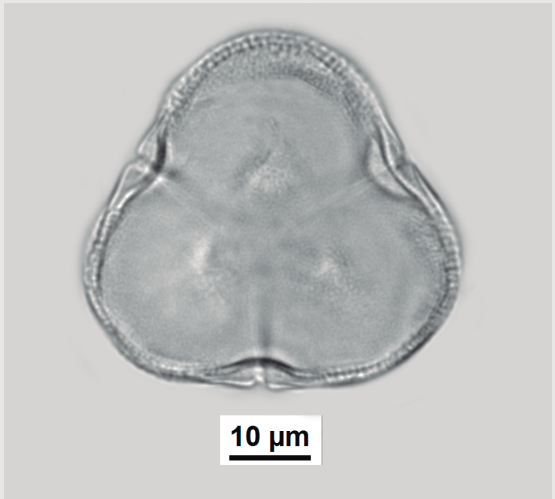
Euphorbiaceae



Actinostemon concolor (Spreng.) Müll. Arg.
735 – ICN 48438
Polar view: first plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 36 µm



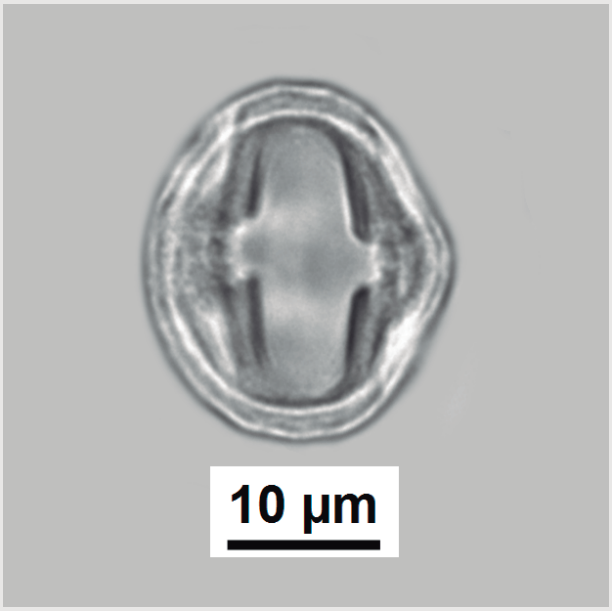
Actinostemon concolor (Spreng.) Müll. Arg.
735 – ICN 48438
Polar view: second plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 36 µm



Actinostemon concolor (Spreng.) Müll. Arg.
735 – ICN 48438
Polar view: third plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 36 µm

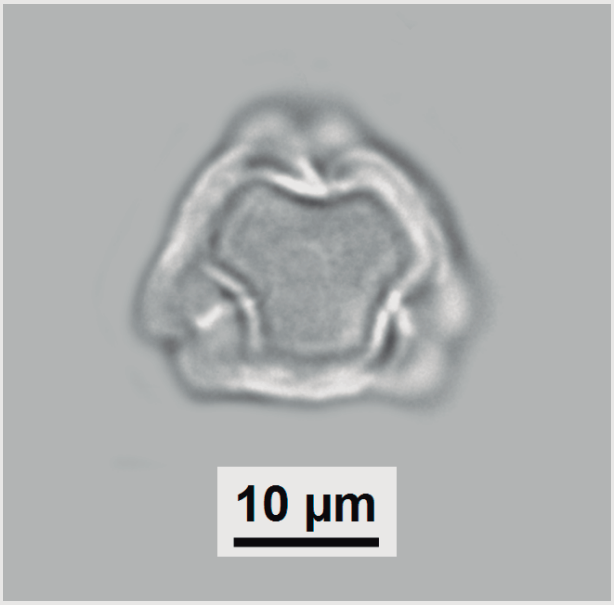
Euphorbiaceae

Alchornea triplinervia (Spreng.) Müll. Arg.
65 – ICN 25269
Equatorial view: first plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 20 µm

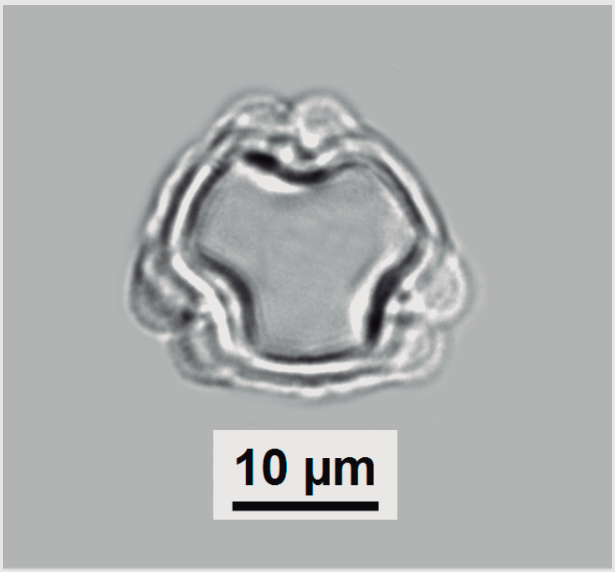


Alchornea triplinervia (Spreng.) Müll. Arg.
65 – ICN 25269
Equatorial view: second plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 20 µm

Euphorbiaceae

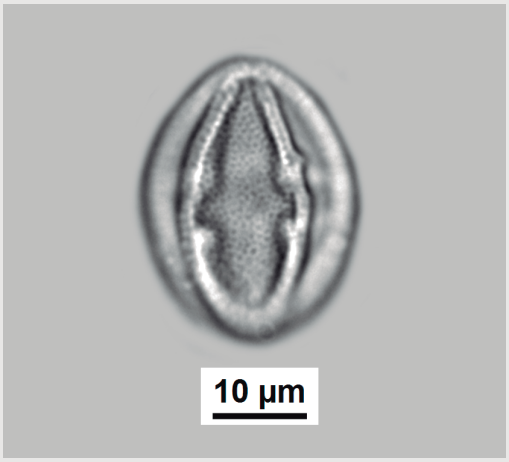


Alchornea triplinervia (Spreng.) Müll. Arg.
65 – ICN 25269
Polar view: first plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 20 µm

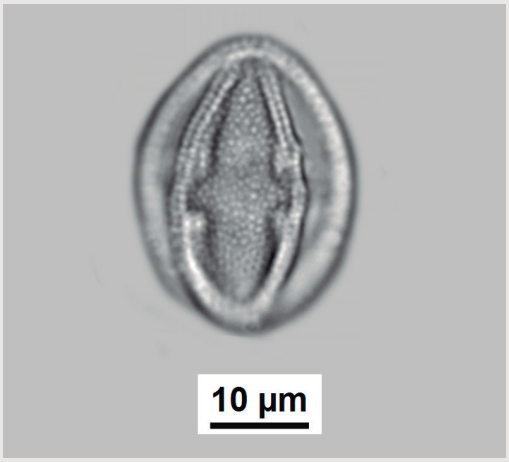


Alchornea triplinervia (Spreng.) Müll. Arg.
65 – ICN 25269
Polar view: second plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 20 µm

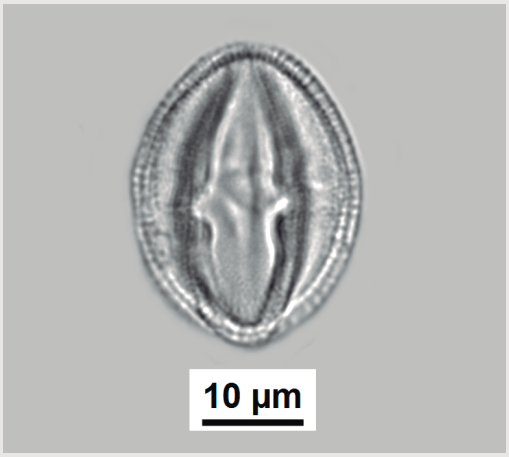
Euphorbiaceae



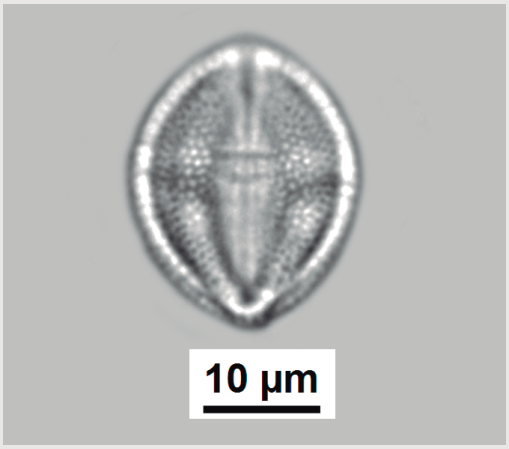
Bernardia flexuosa Pax & K. Hoffm.
339 – ICN 5468
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 21 µm



Bernardia flexuosa Pax & K. Hoffm.
339 – ICN 5468
Equatorial view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 21 µm

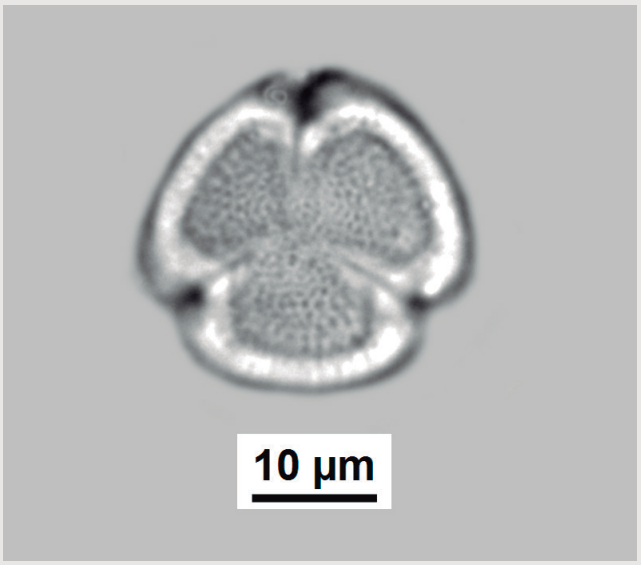


Bernardia flexuosa Pax & K. Hoffm.
339 – ICN 5468
Equatorial view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 21 µm

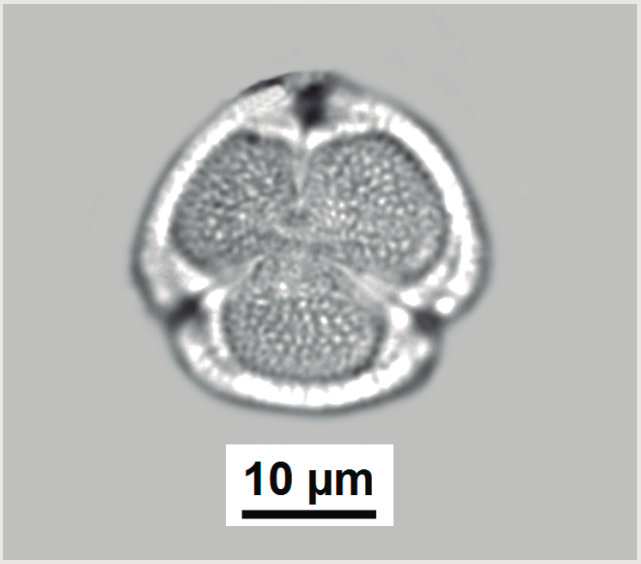


Bernardia flexuosa Pax & K. Hoffm.
339 – ICN 5468
Equatorial view
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 21 µm
Note: Colporus frontal view.

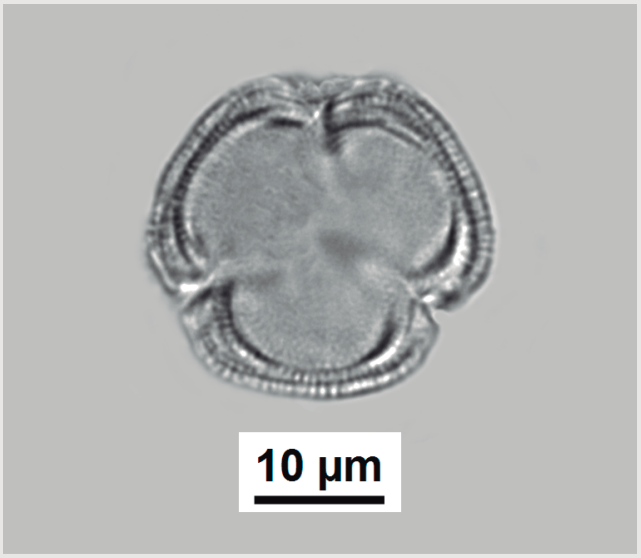
Euphorbiaceae



Bernardia flexuosa Pax & K. Hoffm.
339 – ICN 5468
Polar view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 21 µm

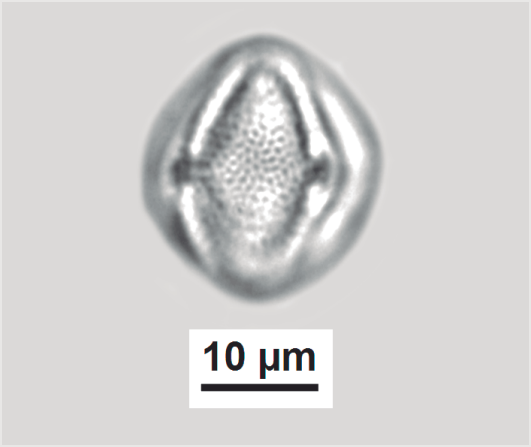


Bernardia flexuosa Pax & K. Hoffm.
339 – ICN 5468
Polar view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 21 µm

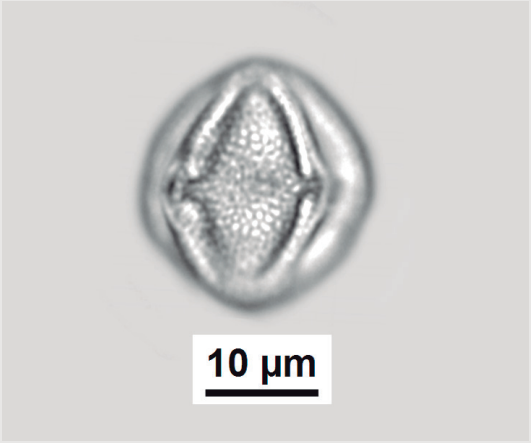


Bernardia flexuosa Pax & K. Hoffm.
339 – ICN 5468
Polar view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 21 µm

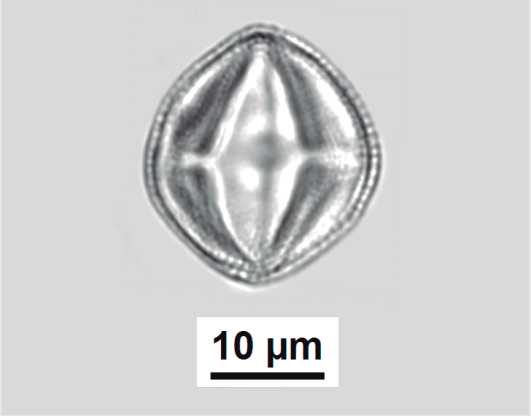
Euphorbiaceae



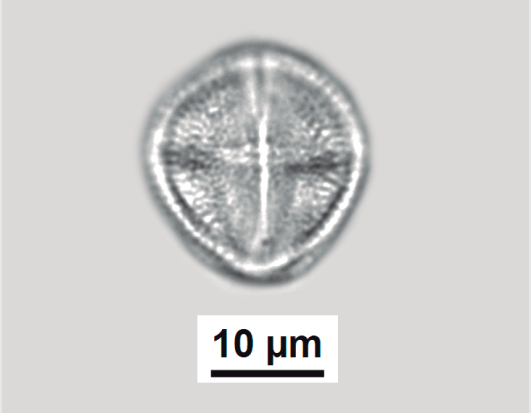
Bernardia pulchella (Baill.) Müll. Arg.
822 – ICN 64296
Equatorial view: first plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 22 µm EQ $\bar{x}$= 20 µm



Bernardia pulchella (Baill.) Müll. Arg.
822 – ICN 64296
Equatorial view: second plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 22 µm EQ $\bar{x}$= 20 µm

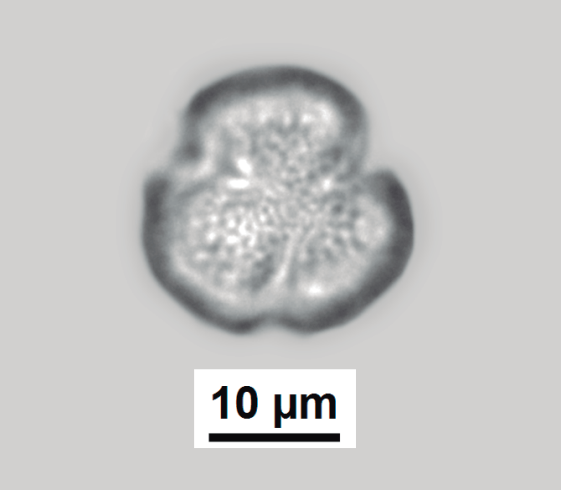


Bernardia pulchella (Baill.) Müll. Arg.
822 – ICN 64296
Equatorial view: third plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 22 µm EQ $\bar{x}$= 20 µm



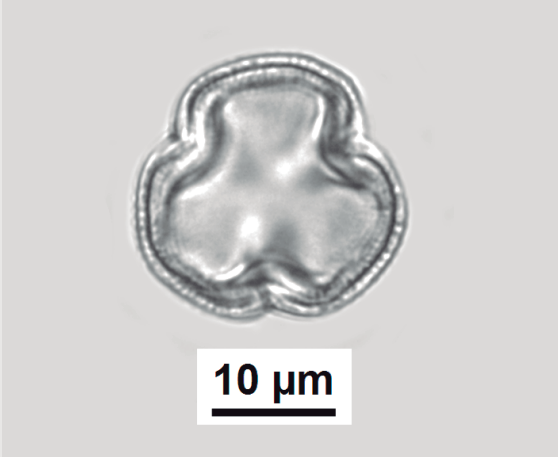
Bernardia pulchella (Baill.) Müll. Arg.
822 – ICN 64296
Equatorial view
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 22 µm EQ $\bar{x}$= 20 µm
Note: Colporus frontal view.

Euphorbiaceae



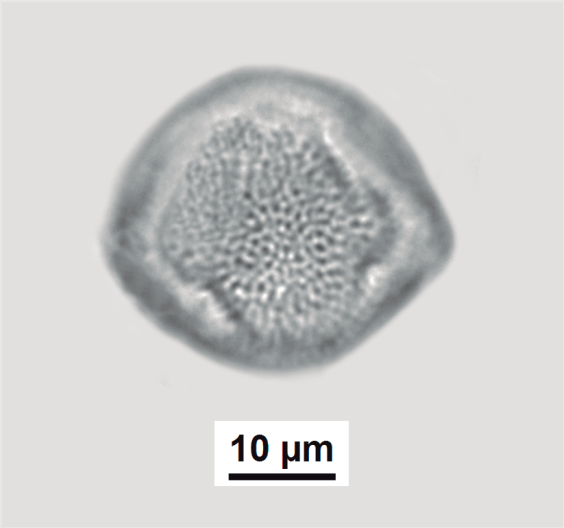
Bernardia pulchella (Baill.) Müll. Arg.
822 – ICN 64296
Polar view: first plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 22 µm EQ $\bar{x}$= 20 µm

Bernardia pulchella (Baill.) Müll. Arg.
822 – ICN 64296
Polar view: second plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 22 µm EQ $\bar{x}$= 20 µm

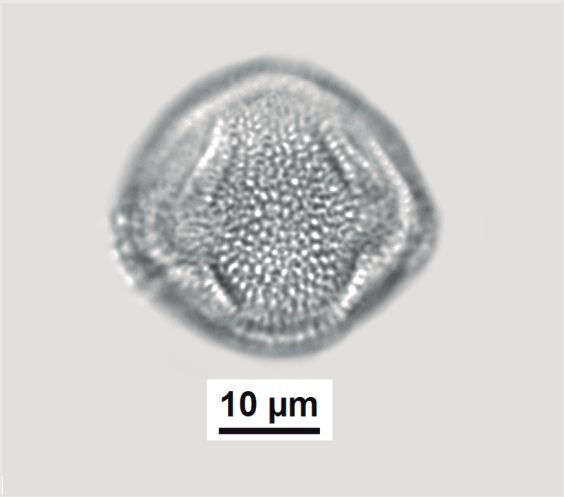


Bernardia pulchella (Baill.) Müll. Arg.
822 – ICN 64296
Polar view: third plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 22 µm EQ $\bar{x}$= 20 µm

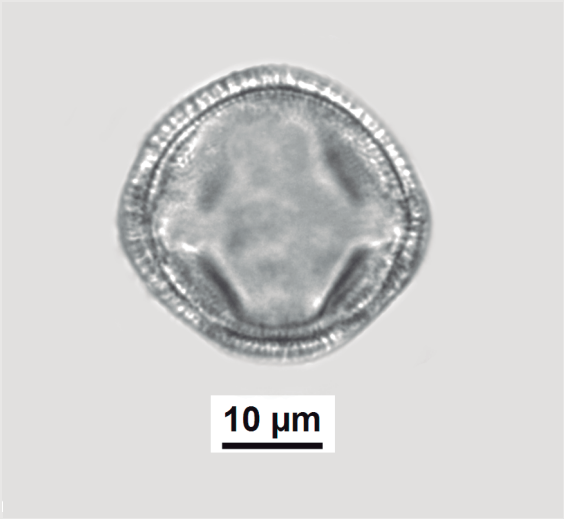
Euphorbiaceae



Caperonia hystrix Pax & K. Hoffm.
363 – ICN 22152
Equatorial view: first plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 30 µm

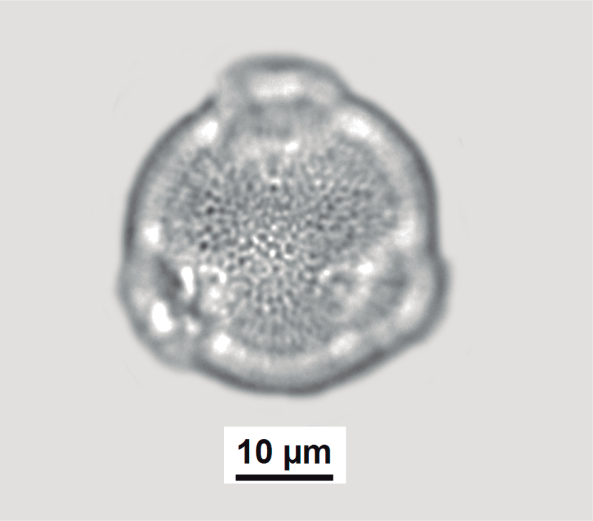


Caperonia hystrix Pax & K. Hoffm.
363 – ICN 22152
Equatorial view: second plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 30 µm

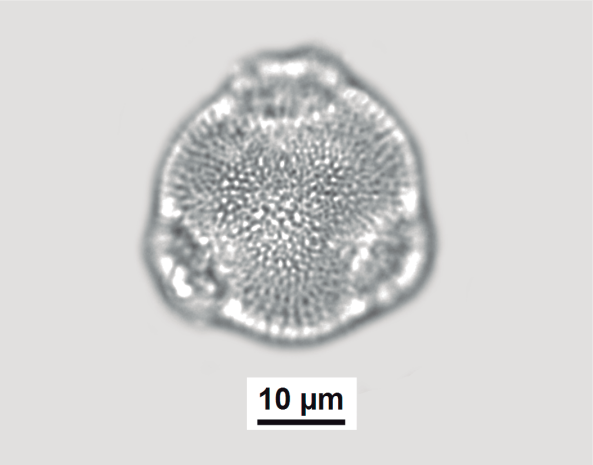


Caperonia hystrix Pax & K. Hoffm.
363 – ICN 22152
Equatorial view: third plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 30 µm

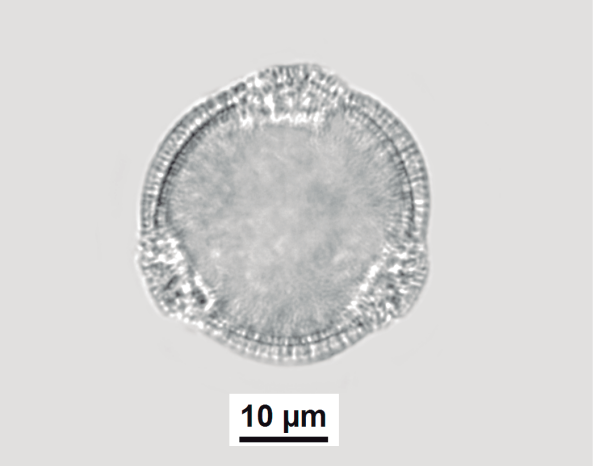
Euphorbiaceae



Caperonia hystrix Pax & K. Hoffm.
363 – ICN 22152
Polar view: first plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 30 µm

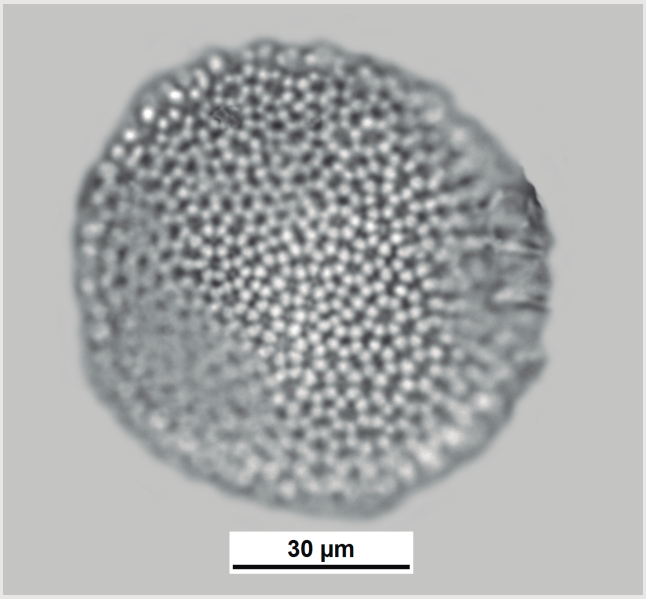


Caperonia hystrix Pax & K. Hoffm.
363 – ICN 22152
Polar view: second plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 30 µm

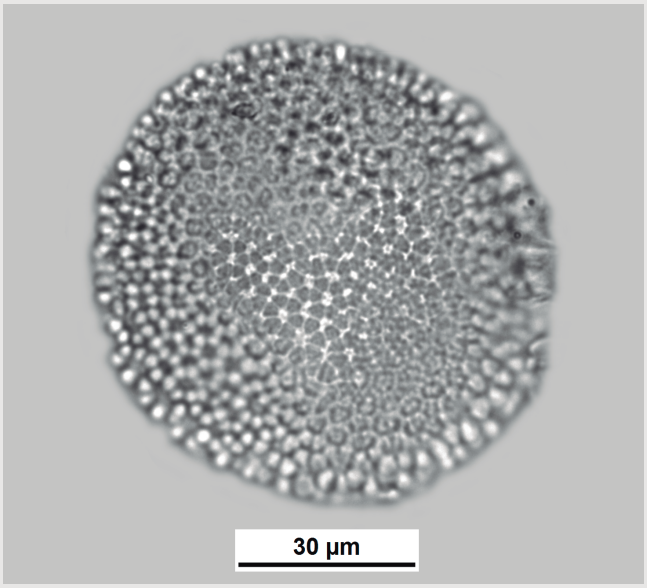


Caperonia hystrix Pax & K. Hoffm.
363 – ICN 22152
Polar view: third plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 30 µm

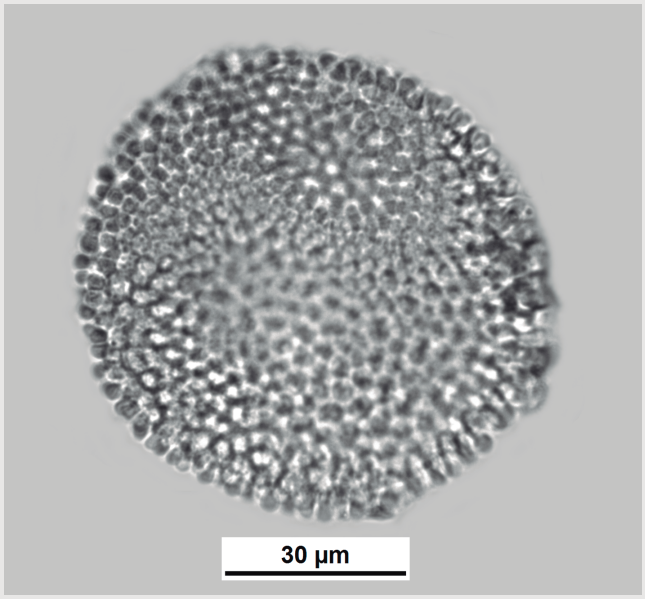
Euphorbiaceae



Croton ericoideus Baill.
181 – ICN 9267
Spheroidal - Inaperturate
Croton pattern: first plane
diameter $\bar{x}$= 73 µm
Note: Ornamentation formed by characteristic ± triangular projections arranged in regularly distributed rings (Croton pattern).

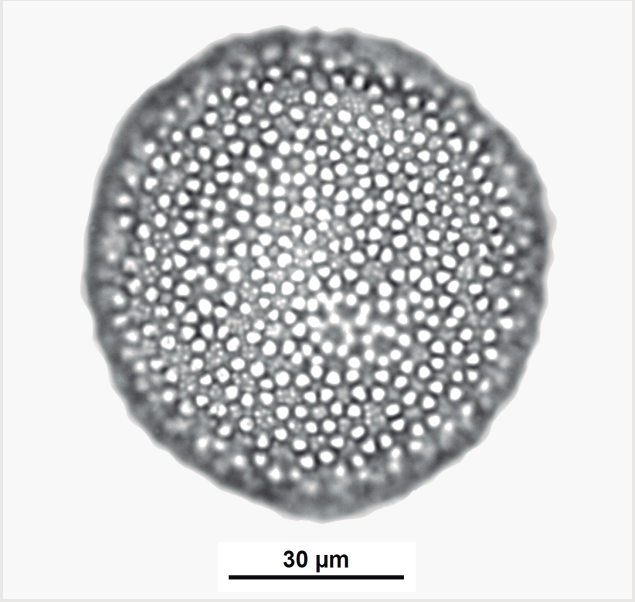


Croton ericoideus Baill.
181 – ICN 9267
Spheroidal - Inaperturate
Croton pattern: second plane
diameter $\bar{x}$= 73 µm
Note: Ornamentation formed by characteristic ± triangular projections arranged in regularly distributed rings (Croton pattern).

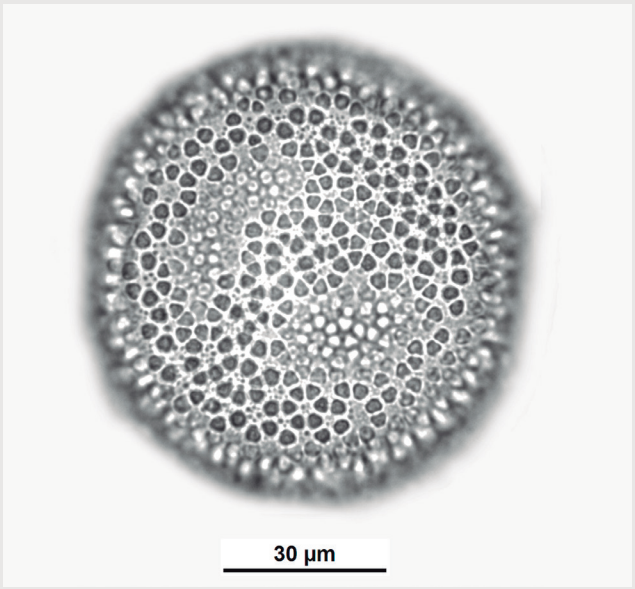


Croton ericoideus Baill.
181 – ICN 9267
Spheroidal - Inaperturate
Croton pattern: third plane
diameter $\bar{x}$= 73 µm
Note: Ornamentation formed by characteristic ± triangular projections arranged in regularly distributed rings (Croton pattern).

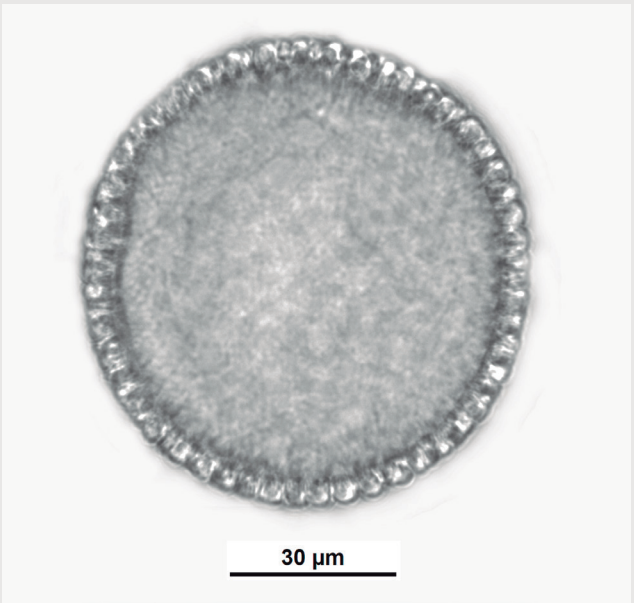
Euphorbiaceae



Croton myrianthus Müll. Arg.
837 – ICN 68262
Spheroidal - Inaperturate
Croton pattern: first plane
diameter $\bar{x}$= 75 µm
Note: Ornamentation formed by characteristic triangular projections arranged in regularly distributed rings (Croton pattern).



Croton myrianthus Müll. Arg.
837 – ICN 68262
Spheroidal - Inaperturate
Croton pattern: second plane
diameter $\bar{x}$= 75 µm
Note: Ornamentation formed by characteristic triangular projections arranged in regularly distributed rings (Croton pattern).



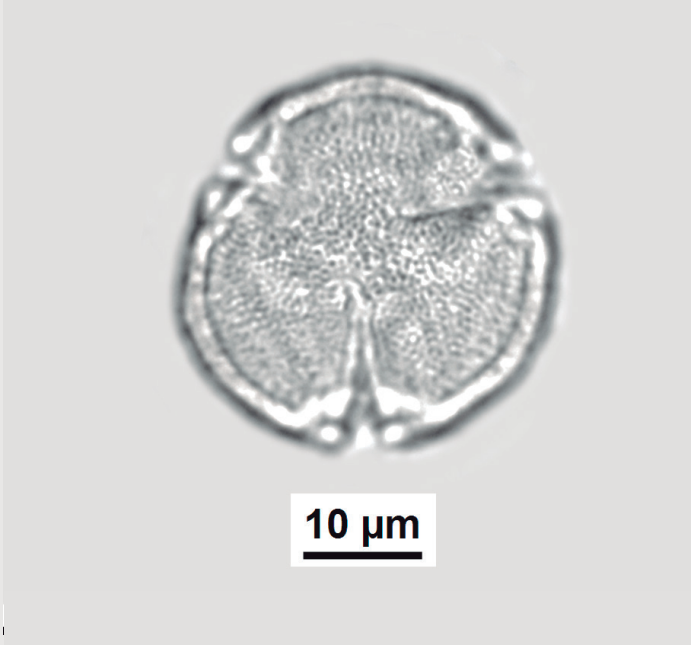
Croton myrianthus Müll. Arg.
837 – ICN 68262
Spheroidal - Inaperturate
Croton pattern: third plane
diameter $\bar{x}$= 75 µm
Note: Ornamentation formed by characteristic triangular projections arranged in regularly distributed rings (Croton pattern).

Euphorbiaceae

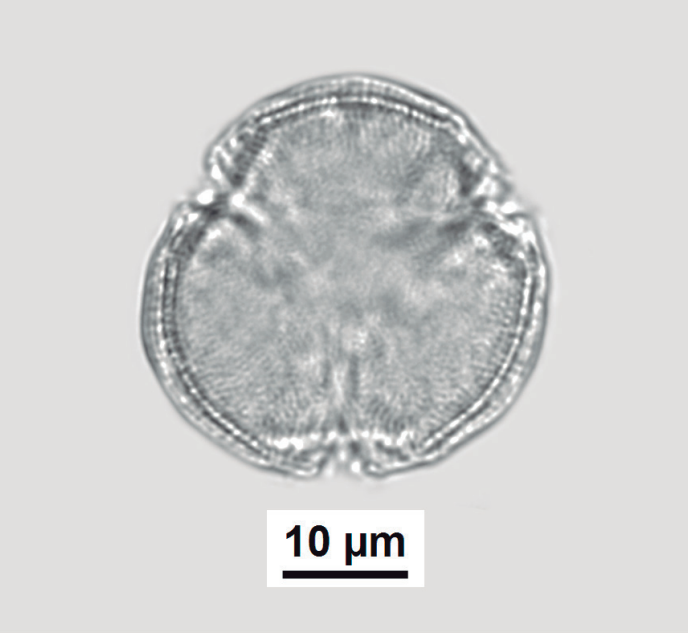
Euphorbia serpens Kunth
919 – ICN 17034
Equatorial view
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 31 µm EQ $\bar{x}$= 23 µm

Euphorbia serpens Kunth
919 – ICN 17034
Equatorial view
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 31 µm EQ $\bar{x}$= 23 µm
Note: Colporus frontal view.

Euphorbiaceae

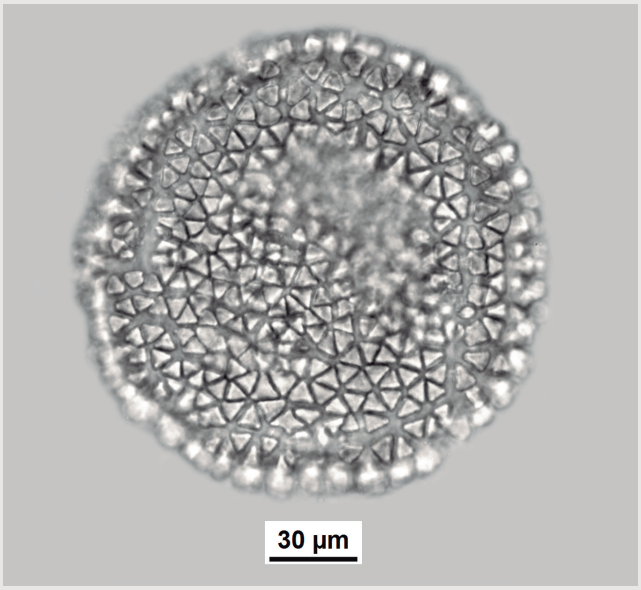


Euphorbia serpens Kunth
919 – ICN 17034
Polar view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 31 µm EQ $\bar{x}$= 23 µm

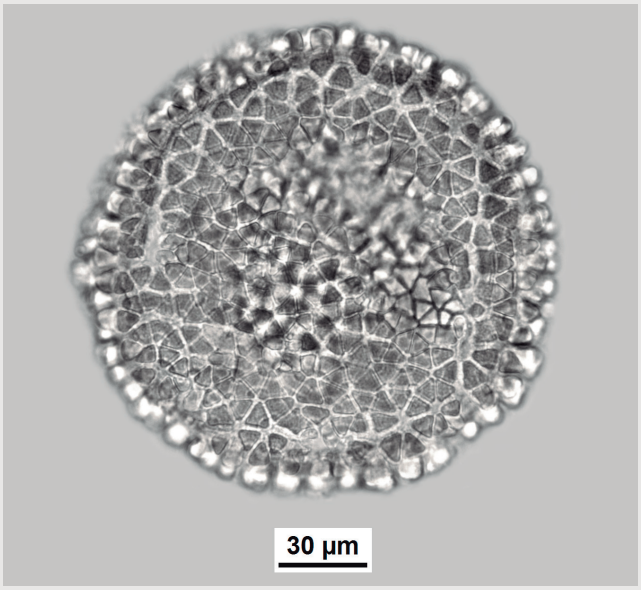


Euphorbia serpens Kunth
919 – ICN 17034
Polar view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 31 µm EQ $\bar{x}$= 23 µm

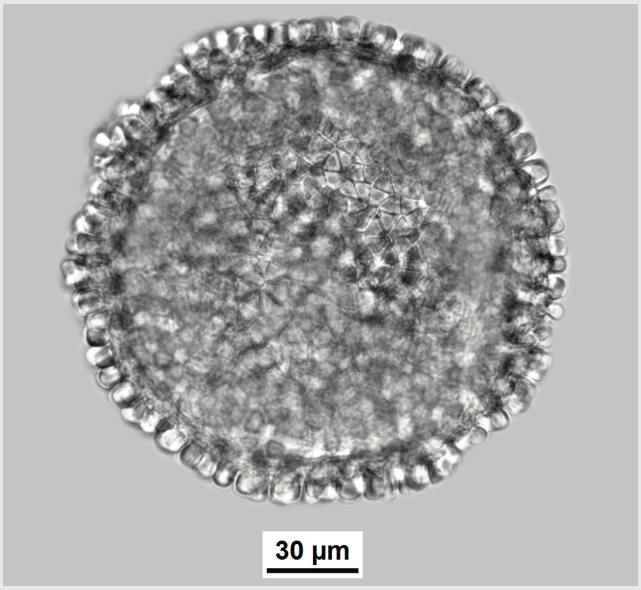
Euphorbiaceae



Jatropha flabellifolia (Pohl) Steud.
1383 – ICN 26976
Spheroidal - Inaperturate
Croton pattern: first plane
diameter $\bar{x}$= 160 µm
Note: Ornamentation formed by characteristic triangular projections arranged in regularly distributed rings (Croton pattern).

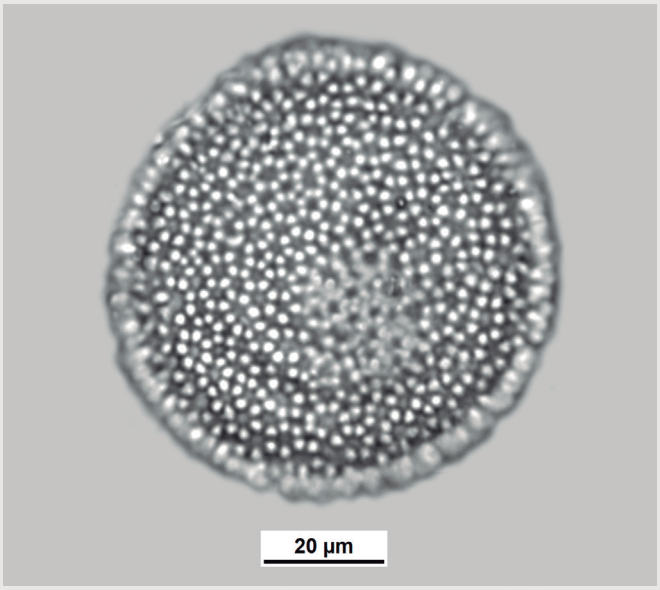


Jatropha flabellifolia (Pohl) Steud.
1383 – ICN 26976
Spheroidal - Inaperturate
Croton pattern: second plane
diameter $\bar{x}$= 160 µm
Note: Ornamentation formed by characteristic triangular projections arranged in regularly distributed rings (Croton pattern).

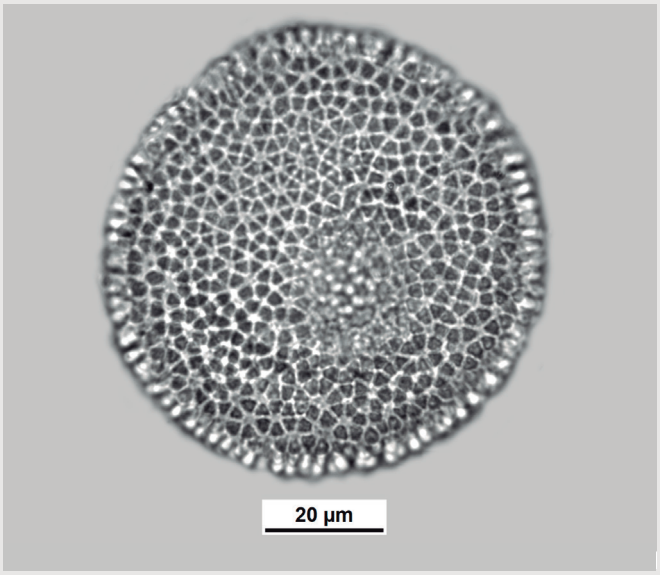


Jatropha flabellifolia (Pohl) Steud.
1383 – ICN 26976
Spheroidal - Inaperturate
Croton pattern: third plane
diameter $\bar{x}$= 160 µm
Note: Ornamentation formed by characteristic triangular projections arranged in regularly distributed rings (Croton pattern).

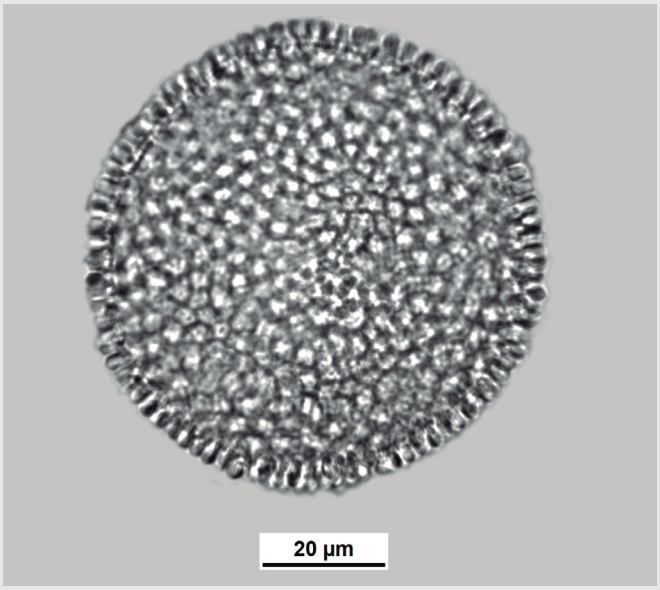
Euphorbiaceae



Jatropha isabelliae Müll. Arg.
770 – ICN 29927
Spheroidal - Inaperturate
Croton pattern: first plane
diameter $\bar{x}$= 72 µm
Note: Ornamentation formed by characteristic triangular projections arranged in regularly distributed rings (Croton pattern).

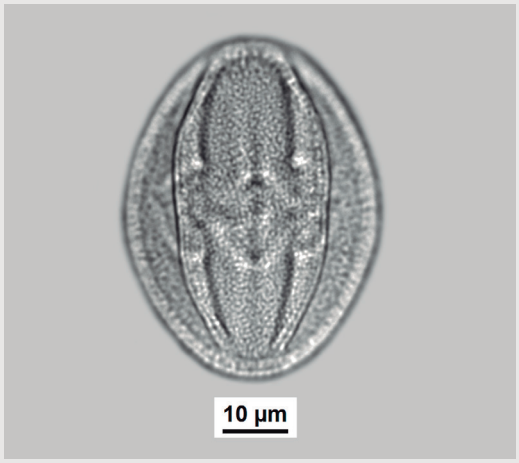


Jatropha isabelliae Müll. Arg.
770 – ICN 29927
Spheroidal - Inaperturate
Croton pattern: second plane
diameter $\bar{x}$= 72 µm
Note: Ornamentation formed by characteristic triangular projections arranged in regularly distributed rings (Croton pattern).

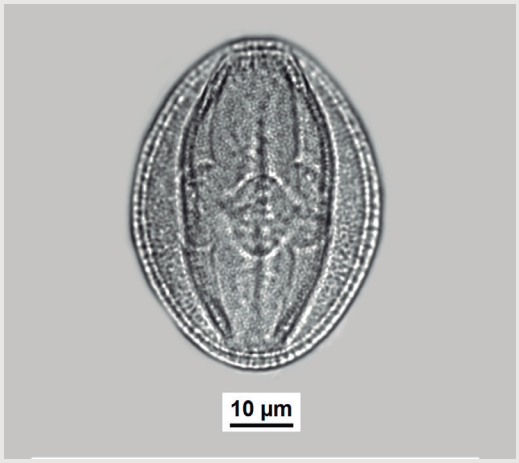


Jatropha isabelliae Müll. Arg.
770 – ICN 29927
Spheroidal - Inaperturate
Croton pattern: third plane
diameter $\bar{x}$= 72 µm
Note: Ornamentation formed by characteristic triangular projections arranged in regularly distributed rings (Croton pattern).

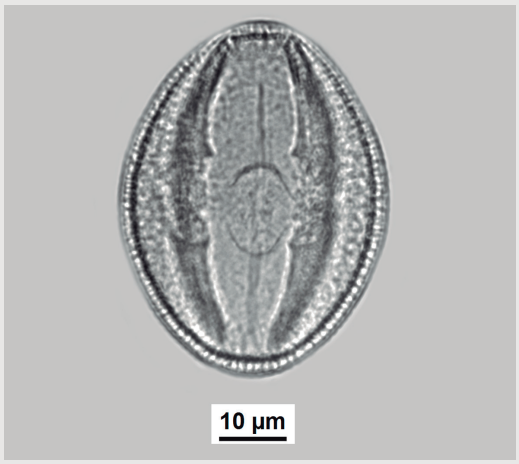
Euphorbiaceae



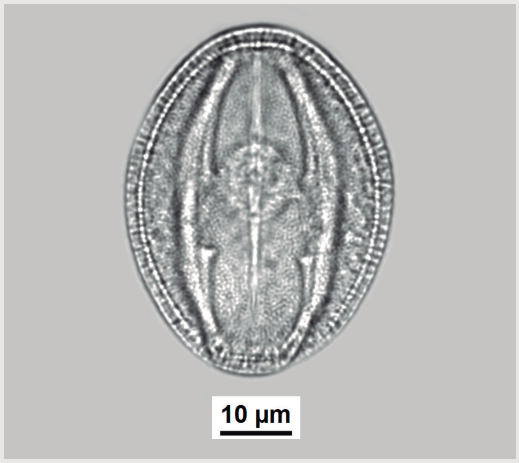
Pachystroma longifolium (Nees) I.M. Johnst.
338 – ICN 16553a
Equatorial view: first plane
Subprolate - Tricolporate - Rugulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 35 µm



Pachystroma longifolium (Nees) I.M. Johnst.
338 – ICN 16553a
Equatorial view: second plane
Subprolate - Tricolporate - Rugulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 35 µm

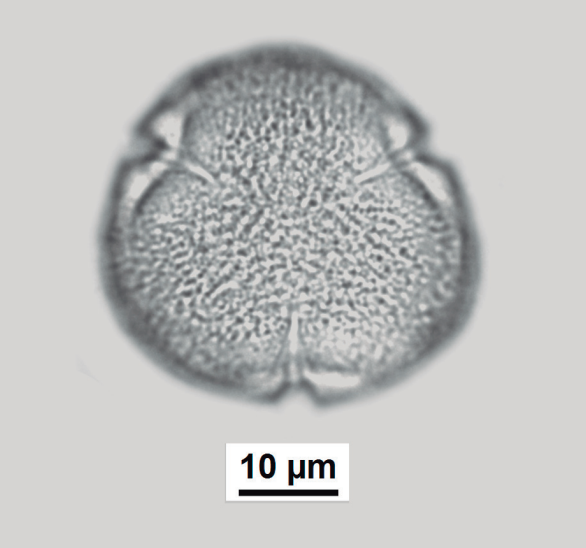


Pachystroma longifolium (Nees) I.M. Johnst.
338 – ICN 16553a
Equatorial view: third plane
Subprolate - Tricolporate - Rugulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 35 µm
Note: Colporus frontal view.

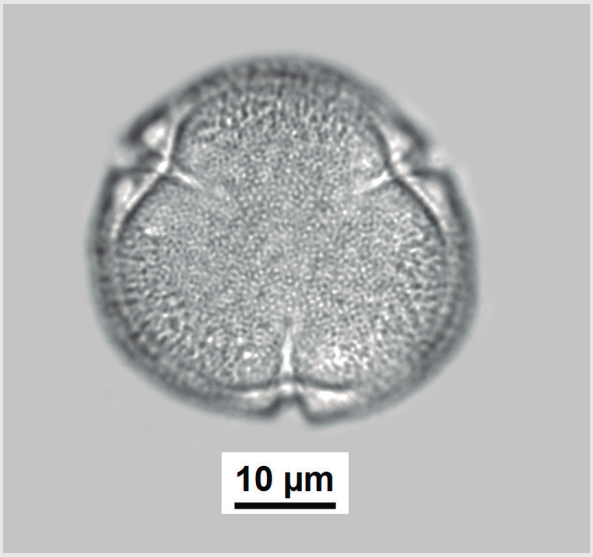


Pachystroma longifolium (Nees) I.M. Johnst.
338 – ICN 16553a
Equatorial view
Subprolate - Tricolporate - Rugulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 35 µm
Note: Colporus frontal view.

Euphorbiaceae



Pachystroma longifolium (Nees) I.M. Johnst.
338 – ICN 16553a
Polar view: first plane
Subprolate - Tricolporate - Rugulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 35 µm



Pachystroma longifolium (Nees) I.M. Johnst.
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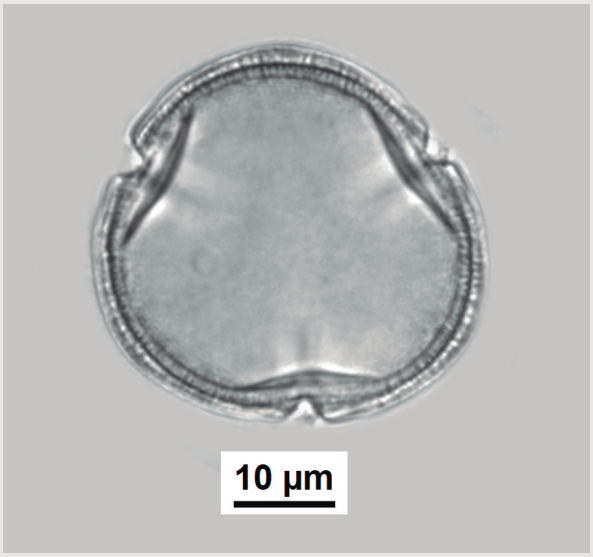
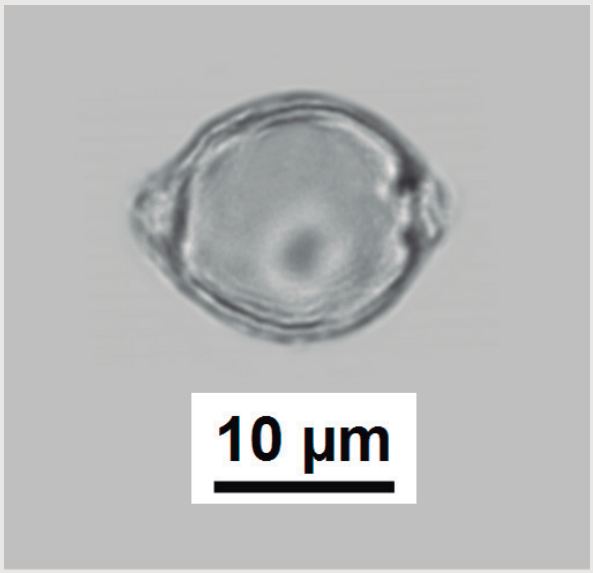
Polar view: second plane
Subprolate - Tricolporate - Rugulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 35 µm

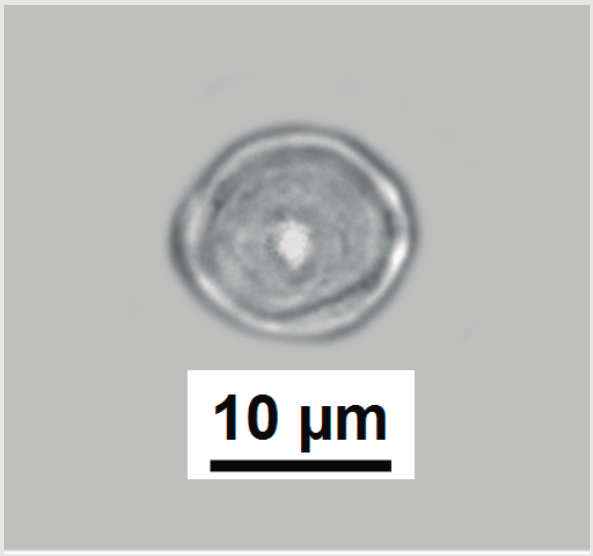


Pachystroma longifolium (Nees) I.M. Johnst.
338 – ICN 16553a
Polar view: third plane
Subprolate - Tricolporate - Rugulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 35 µm

Euphorbiaceae

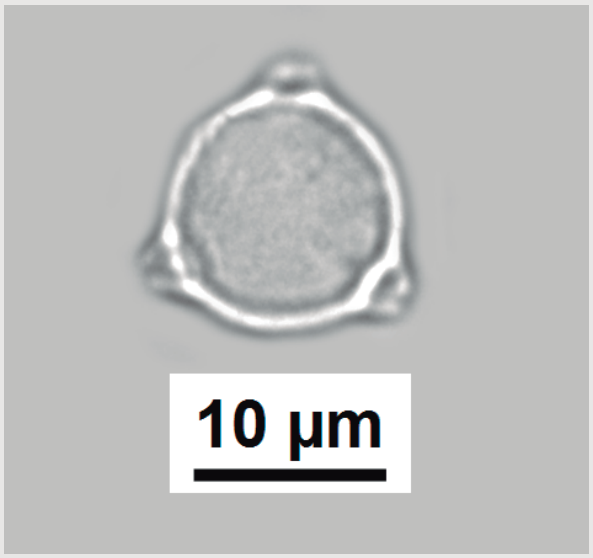


Ricinocarpus communis (Müll. Arg.) Kuntze
340 – ICN 931
Equatorial view
Suboblate - Tricolporate - Psilate
P $\bar{x}$= 12 µm EQ $\bar{x}$= 16 µm

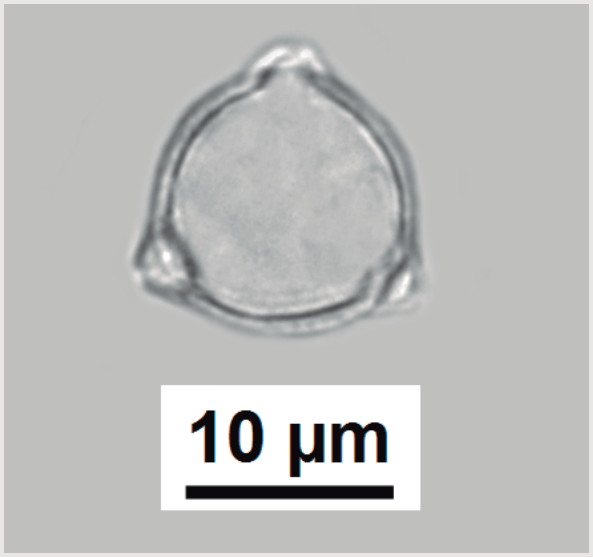


Ricinocarpus communis (Müll. Arg.) Kuntze
340 – ICN 931
Equatorial view
Suboblate - Tricolporate - Psilate
P $\bar{x}$= 12 µm EQ $\bar{x}$= 16 µm
Note: Colporus frontal view.

Euphorbiaceae

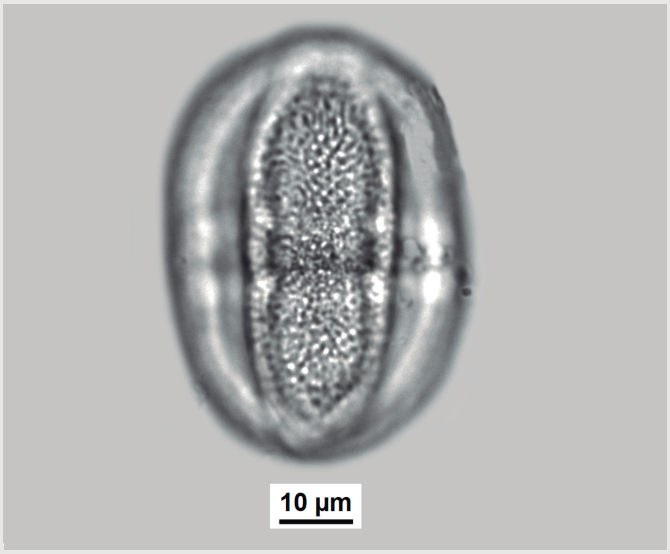


Ricinocarpus communis (Müll. Arg.) Kuntze
340 – ICN 931
Polar view: first plane
Suboblate - Tricolporate - Psilate
P $\bar{x}$= 12 µm EQ $\bar{x}$= 16 µm

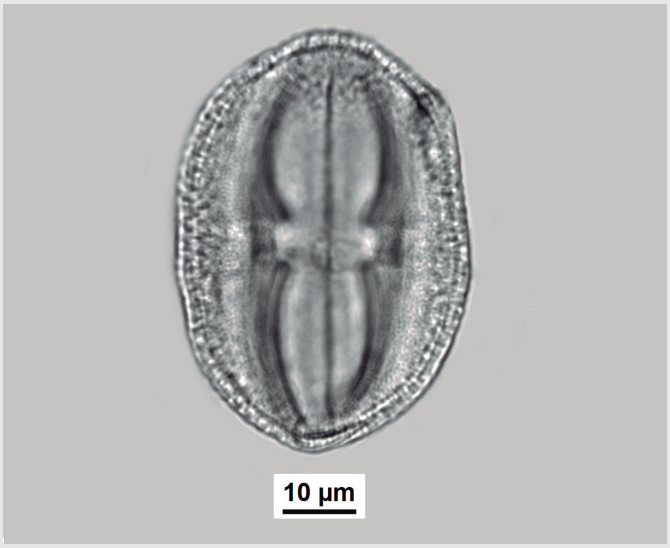


Ricinocarpus communis (Müll. Arg.) Kuntze
340 – ICN 931
Polar view: second plane
Suboblate - Tricolporate - Psilate
P $\bar{x}$= 12 µm EQ $\bar{x}$= 16 µm

Euphorbiaceae



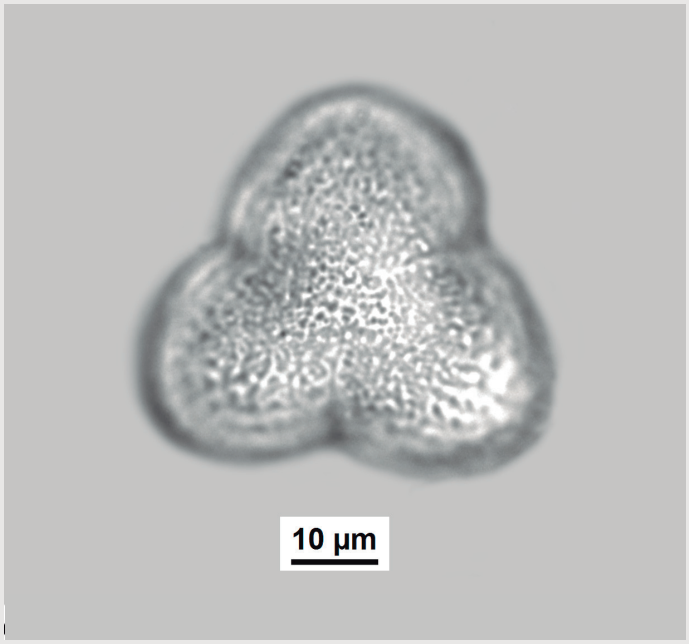
Sapium glandulatum (Vell.) Pax
818 – ICN 32831
Equatorial view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 56 µm EQ $\bar{x}$= 35 µm



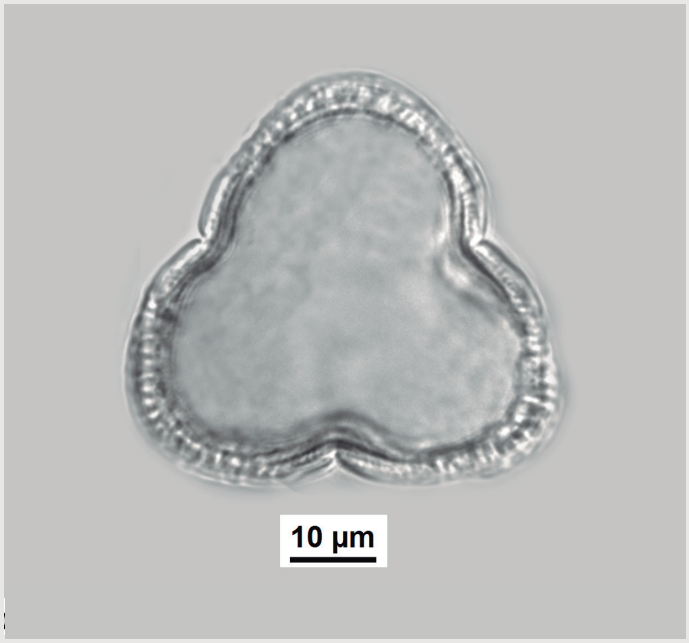
Sapium glandulatum (Vell.) Pax
818 – ICN 32831
Equatorial view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 56 µm EQ $\bar{x}$= 35 µm

Sapium glandulatum (Vell.) Pax
818 – ICN 32831
Equatorial view
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 56 µm EQ $\bar{x}$= 35 µm
Note: Colporus frontal view.

Euphorbiaceae



Sapium glandulatum (Vell.) Pax
818 – ICN 32831
Polar view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 56 µm EQ $\bar{x}$= 35 µm

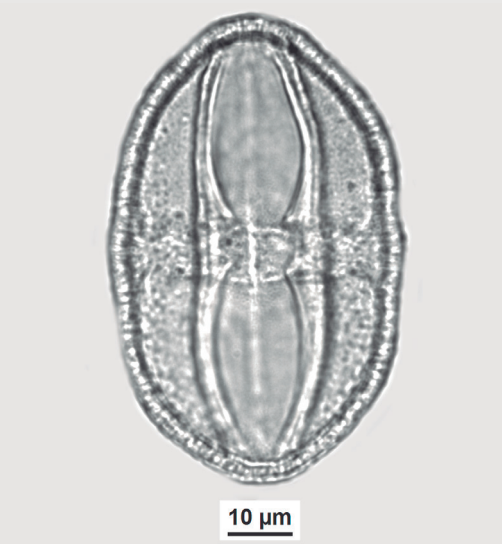


Sapium glandulatum (Vell.) Pax
818 – ICN 32831
Polar view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 56 µm EQ $\bar{x}$= 35 µm

Euphorbiaceae

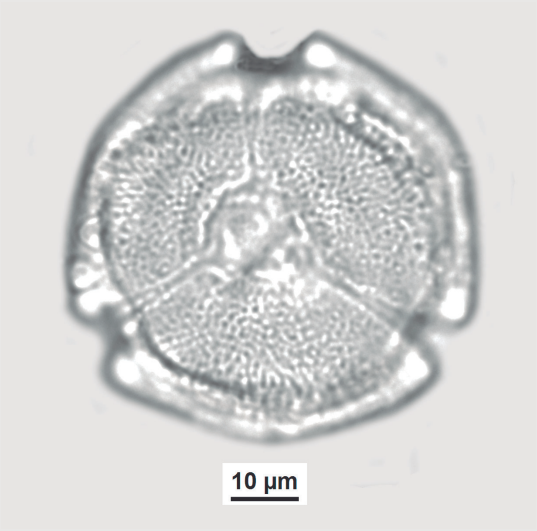
Sapium haematospermum Müll. Arg.
345 – ICN 40688
Equatorial view: first plane
Prolate - Tricolporate parasyncolporate - Reticulate
P $\bar{x}$= 67 µm EQ $\bar{x}$= 42 µm

Sapium haematospermum Müll. Arg.
345 – ICN 40688
Equatorial view: third plane
Prolate - Tricolporate parasyncolporate - Reticulate
P $\bar{x}$= 67 µm EQ $\bar{x}$= 42 µm

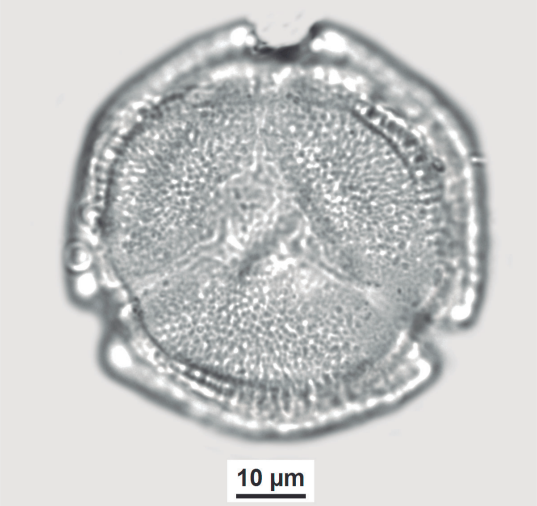


Sapium haematospermum Müll. Arg.
345 – ICN 40688
Equatorial view
Prolate - Tricolporate parasyncolporate - Reticulate
P $\bar{x}$= 67 µm EQ $\bar{x}$= 42 µm
Note: Colporus frontal view.

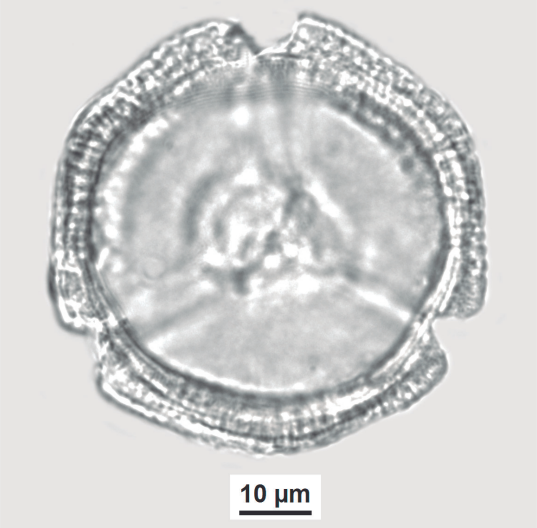
Euphorbiaceae



Sapium haematospermum Müll. Arg.
345 – ICN 40688
Polar view: first plane
Prolate - Tricolporate parasyncolporate - Reticulate
P $\bar{x}$= 67 µm EQ $\bar{x}$= 42 µm
Note: Colpori bifurcate at the apices and anastomosed towards the poles, forming a triangular apocopial field (parasyncolporate).



Sapium haematospermum Müll. Arg.
345 – ICN 40688
Polar view: second plane
Prolate - Tricolporate parasyncolporate - Reticulate
P $\bar{x}$= 67 µm EQ $\bar{x}$= 42 µm
Note: Colpori bifurcate at the apices and anastomosed towards the poles, forming a triangular apocopial field (parasyncolporate).



Sapium haematospermum Müll. Arg.
345 – ICN 40688
Polar view: third plane
Prolate - Tricolporate parasyncolporate - Reticulate
P $\bar{x}$= 67 µm EQ $\bar{x}$= 42 µm
Note: Colpori bifurcate at the apices and anastomosed towards the poles, forming a triangular apocopial field (parasyncolporate).

Euphorbiaceae

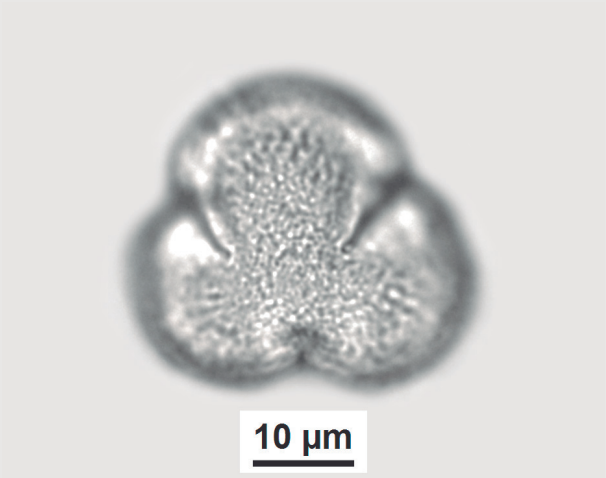
Sebastiania brasiliensis Spreng.
346 – ICN 016684
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 51 µm EQ $\bar{x}$= 42 µm

Sebastiania brasiliensis Spreng.
346 – ICN 016684
Equatorial view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 51 µm EQ $\bar{x}$= 42 µm

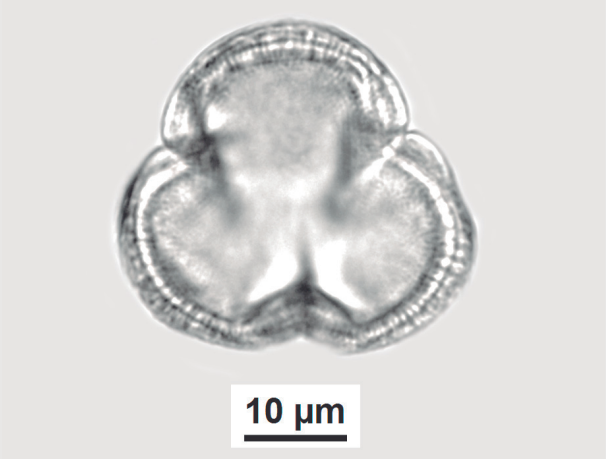
Sebastiania brasiliensis Spreng.
346 – ICN 016684
Equatorial view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 51 µm EQ $\bar{x}$= 42 µm

Euphorbiaceae

Sebastiania brasiliensis Spreng.
346 – ICN 016684
Equatorial view
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 51 µm EQ $\bar{x}$= 42 µm
Note: Colporus frontal view.

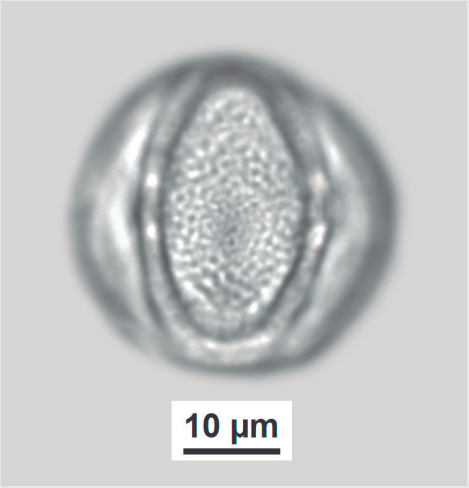


Sebastiania brasiliensis Spreng.
346 – ICN 016684
Polar view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 51 µm EQ $\bar{x}$= 42 µm

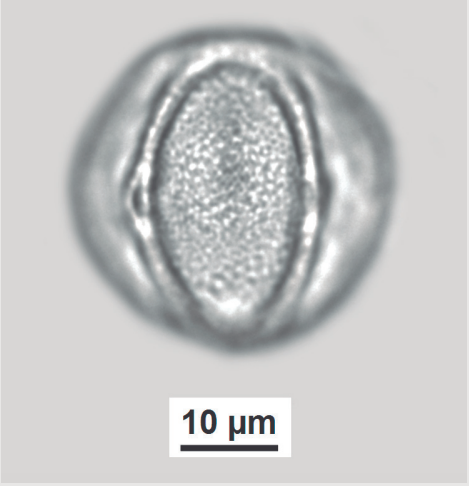


Sebastiania brasiliensis Spreng.
346 – ICN 016684
Polar view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 51 µm EQ $\bar{x}$= 42 µm

Euphorbiaceae



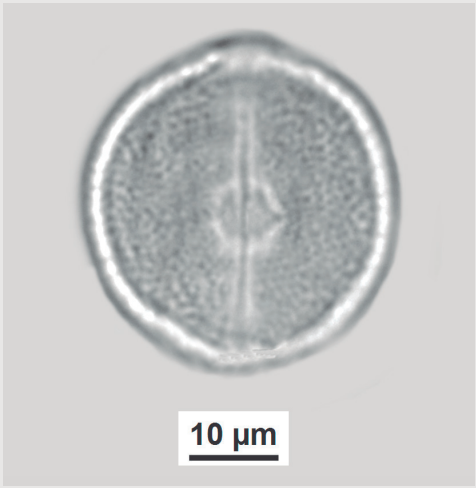
Sebastiania klotzschiana (Müll. Arg.) Müll. Arg.
1003 – ICN 32498
Equatorial view: first plane
Spheroidal - Tricolporate parasyncolporate - Reticulate
P $\bar{x}$= 36 µm EQ $\bar{x}$= 33 µm



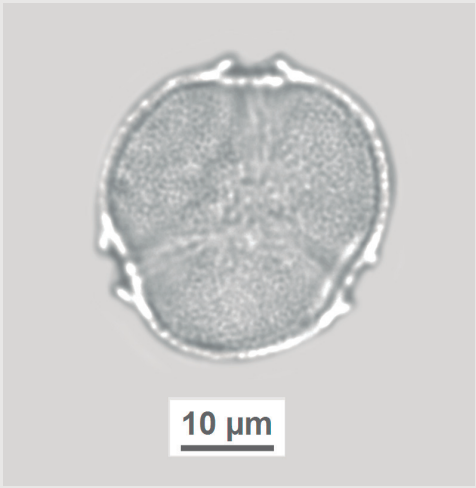
Sebastiania klotzschiana (Müll. Arg.) Müll. Arg.
1003 – ICN 32498
Equatorial view: second plane
Spheroidal - Tricolporate parasyncolporate - Reticulate
P $\bar{x}$= 36 µm EQ $\bar{x}$= 33 µm

Sebastiania klotzschiana (Müll. Arg.) Müll. Arg.
1003 – ICN 32498
Equatorial view: third plane
Spheroidal - Tricolporate parasyncolporate - Reticulate
P $\bar{x}$= 36 µm EQ $\bar{x}$= 33 µm

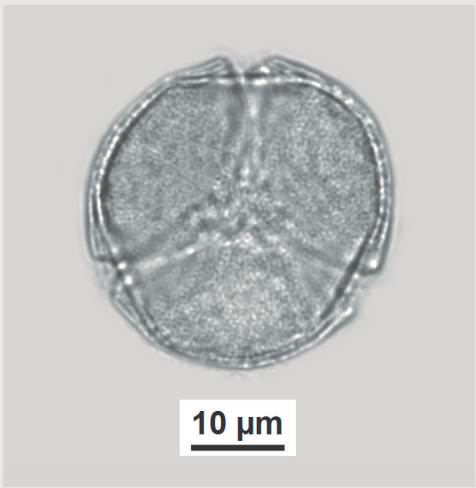
Euphorbiaceae



Sebastiania klotzschiana (Müll. Arg.) Müll. Arg.
1003 – ICN 32498
Equatorial view
Spheroidal - Tricolporate parasyncolporate - Reticulate
P $\bar{x}$= 36 µm EQ $\bar{x}$= 33 µm
Note: Colporus frontal view.

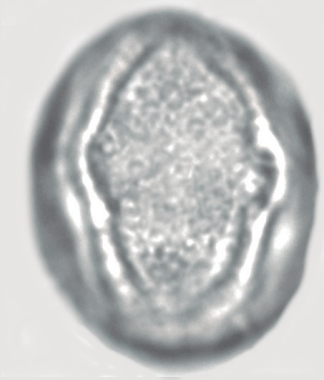


Sebastiania klotzschiana (Müll. Arg.) Müll. Arg.
1003 – ICN 32498
Polar view: first plane
Spheroidal - Tricolporate parasyncolporate - Reticulate
P $\bar{x}$= 36 µm EQ $\bar{x}$= 33 µm
Note: Colpori bifurcate at the apices and anastomosed towards the poles, forming a triangular apocopial field (parasyncolporate).

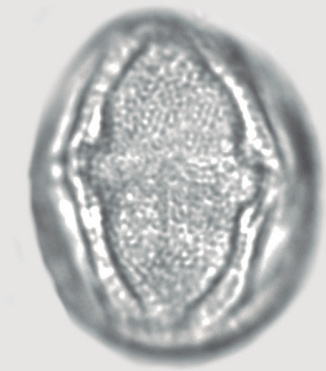


Sebastiania klotzschiana (Müll. Arg.) Müll. Arg.
1003 – ICN 32498
Polar view: second plane
Spheroidal - Tricolporate parasyncolporate - Reticulate
P $\bar{x}$= 36 µm EQ $\bar{x}$= 33 µm
Note: Colpori bifurcate at the apices and anastomosed towards the poles, forming a triangular apocopial field (parasyncolporate).

Euphorbiaceae



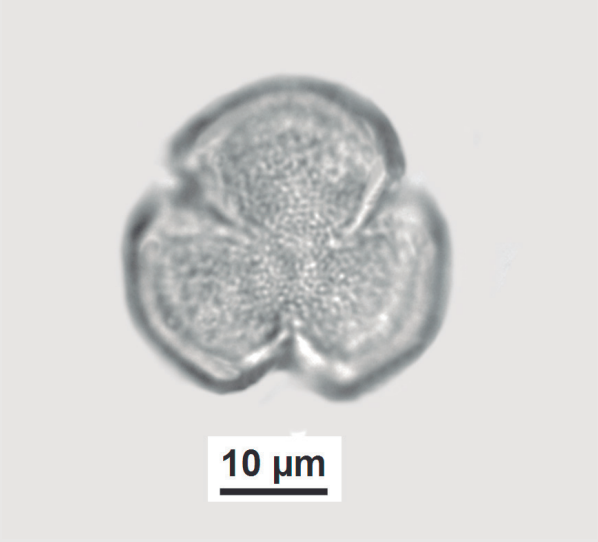
Tithymalus papillosus Klotzsch & Garcke
922 – ICN 25276
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 25 µm



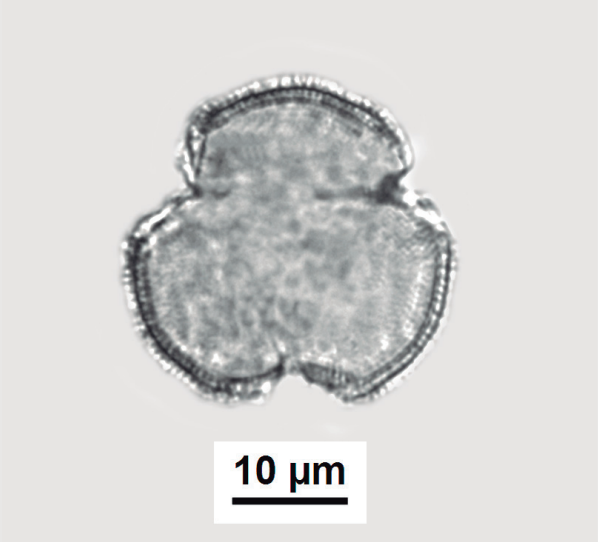
Tithymalus papillosus Klotzsch & Garcke
922 – ICN 25276
Equatorial view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 25 µm

Tithymalus papillosus Klotzsch & Garcke
922 – ICN 25276
Equatorial view
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 25 µm
Note: Colporus frontal view.

Euphorbiaceae

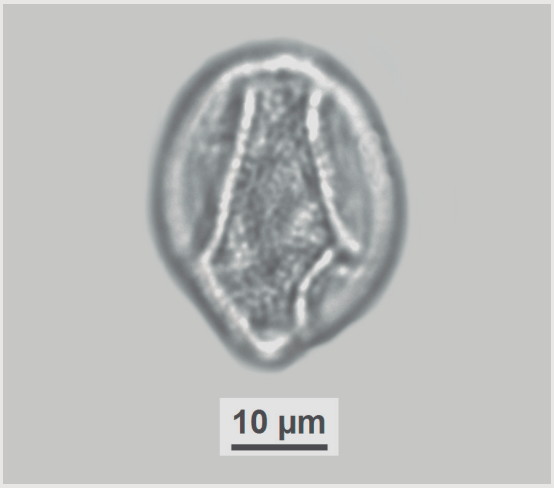


Tithymalus papillosus Klotzsch & Garcke
922 – ICN 25276
Polar view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 25 µm

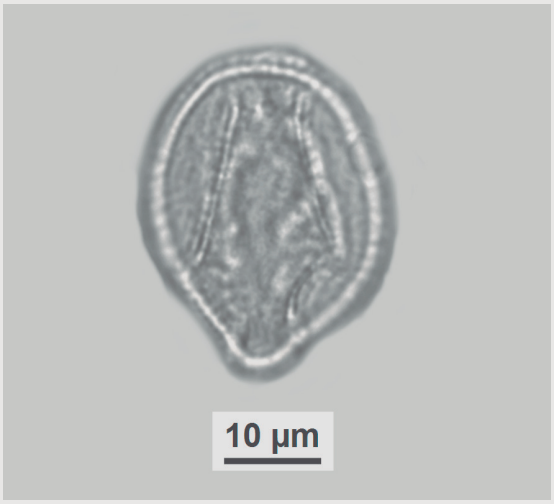


Tithymalus papillosus Klotzsch & Garcke
922 – ICN 25276
Polar view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 25 µm

Euphorbiaceae



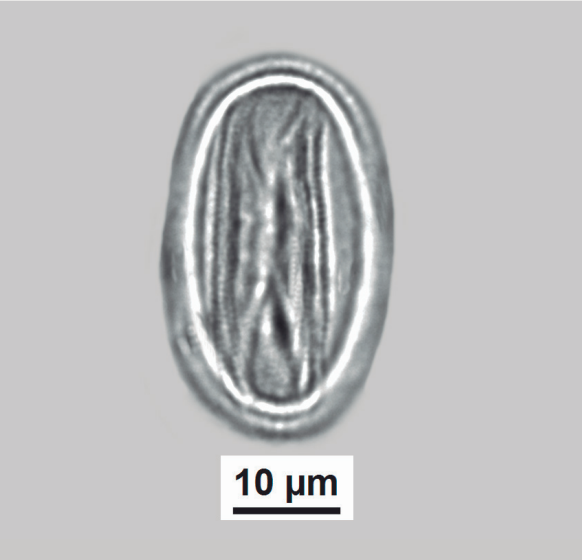
Tragia geraniifolia Klotzsch ex Baill.
1012 – ICN 20964
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 28 µm



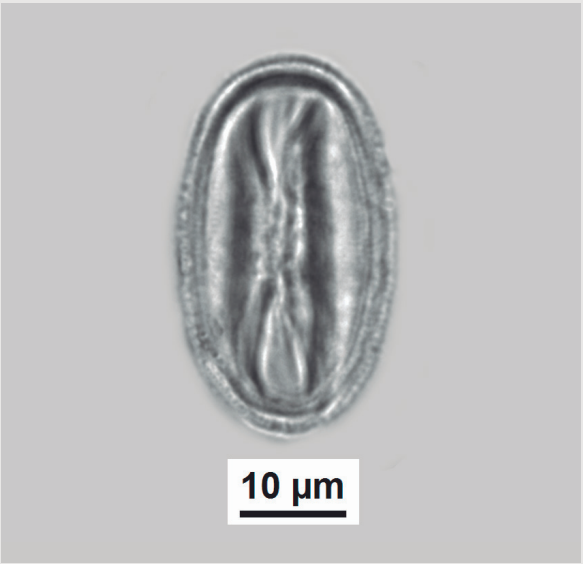
Tragia geraniifolia Klotzsch ex Baill.
1012 – ICN 20964
Equatorial view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 28 µm

Tragia geraniifolia Klotzsch ex Baill.
1012 – ICN 20964
Polar view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 28 µm

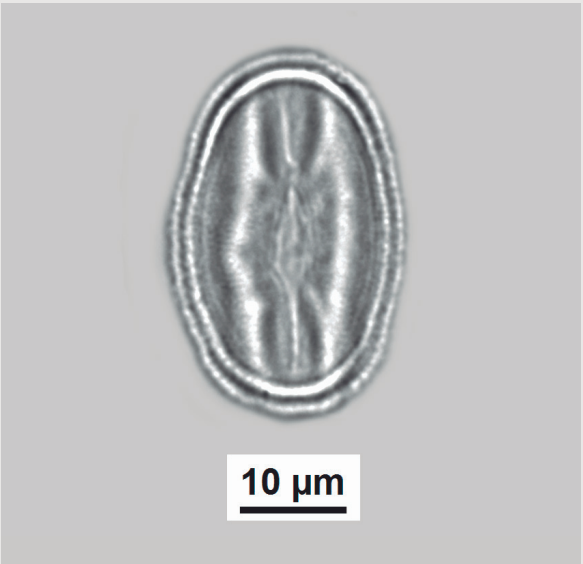
Hypericaceae



Hypericum denudatum A. St.-Hil.
863 – ICN 68274
Equatorial view: first plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 33 µm EQ $\bar{x}$= 18 µm
Note: Grain faintly microreticulate.



Hypericum denudatum A. St.-Hil.
863 – ICN 68274
Equatorial view: second plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 33 µm EQ $\bar{x}$= 18 µm
Note: Grain faintly microreticulate.



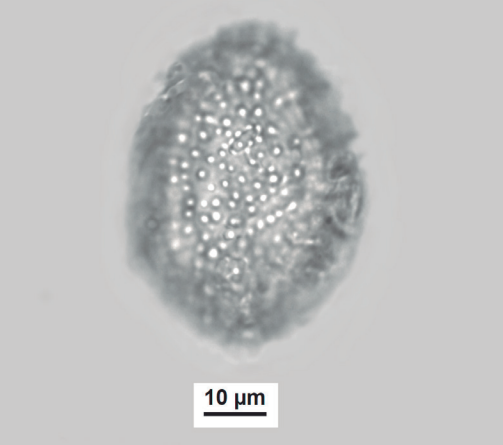
Hypericum denudatum A. St.-Hil.
863 – ICN 68274
Equatorial view
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 33 µm EQ $\bar{x}$= 18 µm
Note: Colporus frontal view. Grain faintly microreticulate.

Hypericaceae

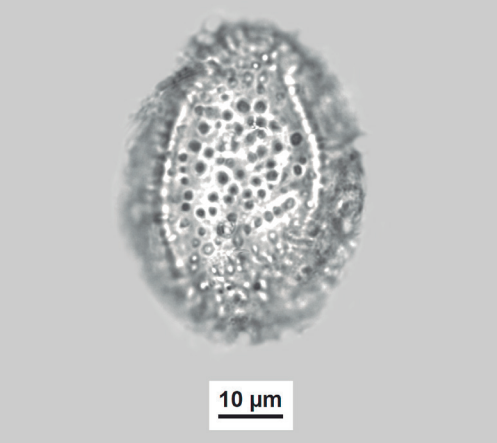
Hypericum denudatum A. St.-Hil.
863 – ICN 68274
Polar view: first plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 33 µm EQ $\bar{x}$= 18 µm
Note: Grain faintly microreticulate.

Hypericum denudatum A. St.-Hil.
863 – ICN 68274
Polar view: second plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 33 µm EQ $\bar{x}$= 18 µm
Note: Grain faintly microreticulate.

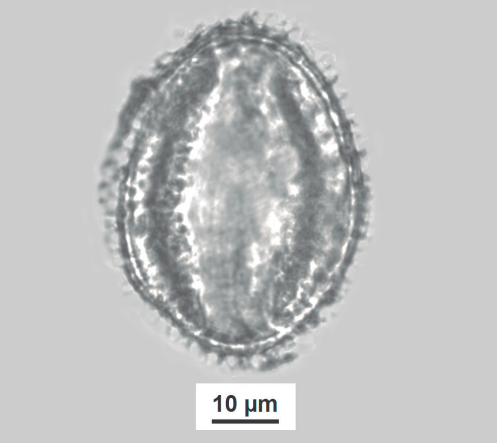
Linaceae



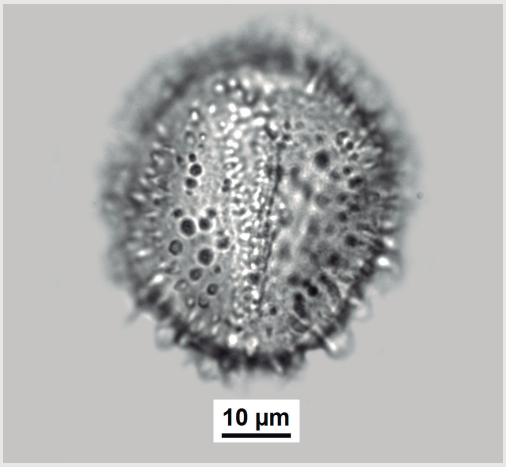
Cliococca selaginoides (Lam.) C.M. Rogers & Mildner
382 – ICN 307
Equatorial view: first plane
Prolate - Tricolporoidate - Echinate-Papillate and thin irregular projections.
P $\bar{x}$= 47 µm EQ $\bar{x}$= 34 µm



Cliococca selaginoides (Lam.) C.M. Rogers & Mildner
382 – ICN 307
Equatorial view: second plane
Prolate - Tricolporoidate - Echinate-Papillate and thin irregular projections.
P $\bar{x}$= 47 µm EQ $\bar{x}$= 34 µm

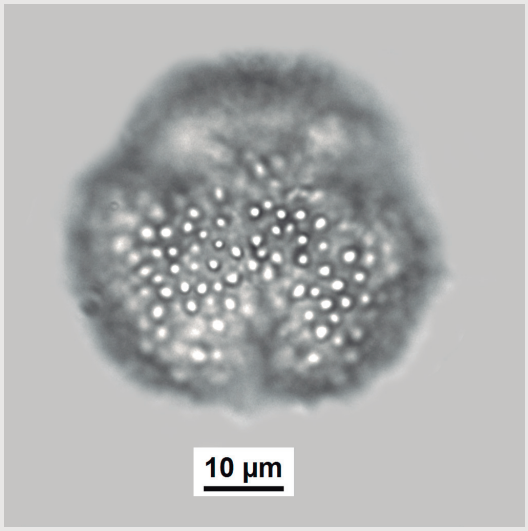


Cliococca selaginoides (Lam.) C.M. Rogers & Mildner
382 – ICN 307
Equatorial view: third plane
Prolate - Tricolporoidate - Echinate-Papillate and thin irregular projections.
P $\bar{x}$= 47 µm EQ $\bar{x}$= 34 µm

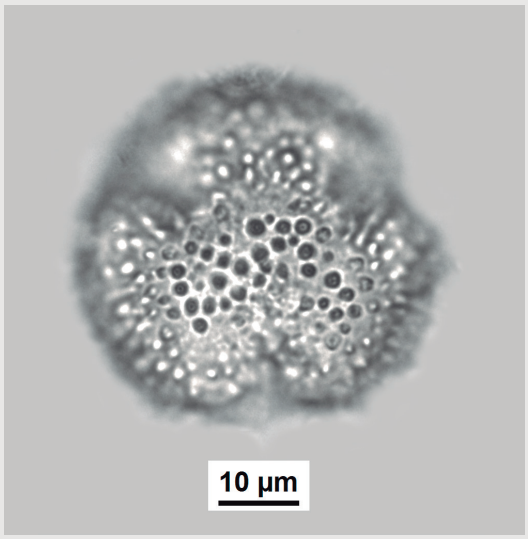


Cliococca selaginoides (Lam.) C.M. Rogers & Mildner
382 – ICN 307
Equatorial view
Prolate - Tricolporoidate - Echinate-Papillate and thin irregular projections.
P $\bar{x}$= 47 µm EQ $\bar{x}$= 34 µm
Note: Frontal view of the colporoidate aperture, with ectocolpus (ectoaperture) and indistinct os (endoaperture).

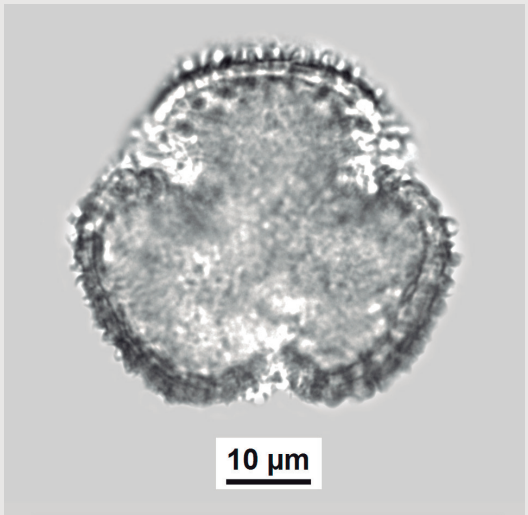
Linaceae



Cliococca selaginoides (Lam.) C.M. Rogers & Mildner
382 – ICN 307
Polar view: first plane
Prolate - Tricolporoidate - Echinate-Papillate and thin irregular projections.
P $\bar{x}$= 47 µm EQ $\bar{x}$= 34 µm



Cliococca selaginoides (Lam.) C.M. Rogers & Mildner
382 – ICN 307
Polar view: second plane
Prolate - Tricolporoidate - Echinate-Papillate and thin irregular projections.
P $\bar{x}$= 47 µm EQ $\bar{x}$= 34 µm



Cliococca selaginoides (Lam.) C.M. Rogers & Mildner
382 – ICN 307
Polar view: third plane
Prolate - Tricolporoidate - Echinate-Papillate and thin irregular projections.
P $\bar{x}$= 47 µm EQ $\bar{x}$= 34 µm

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