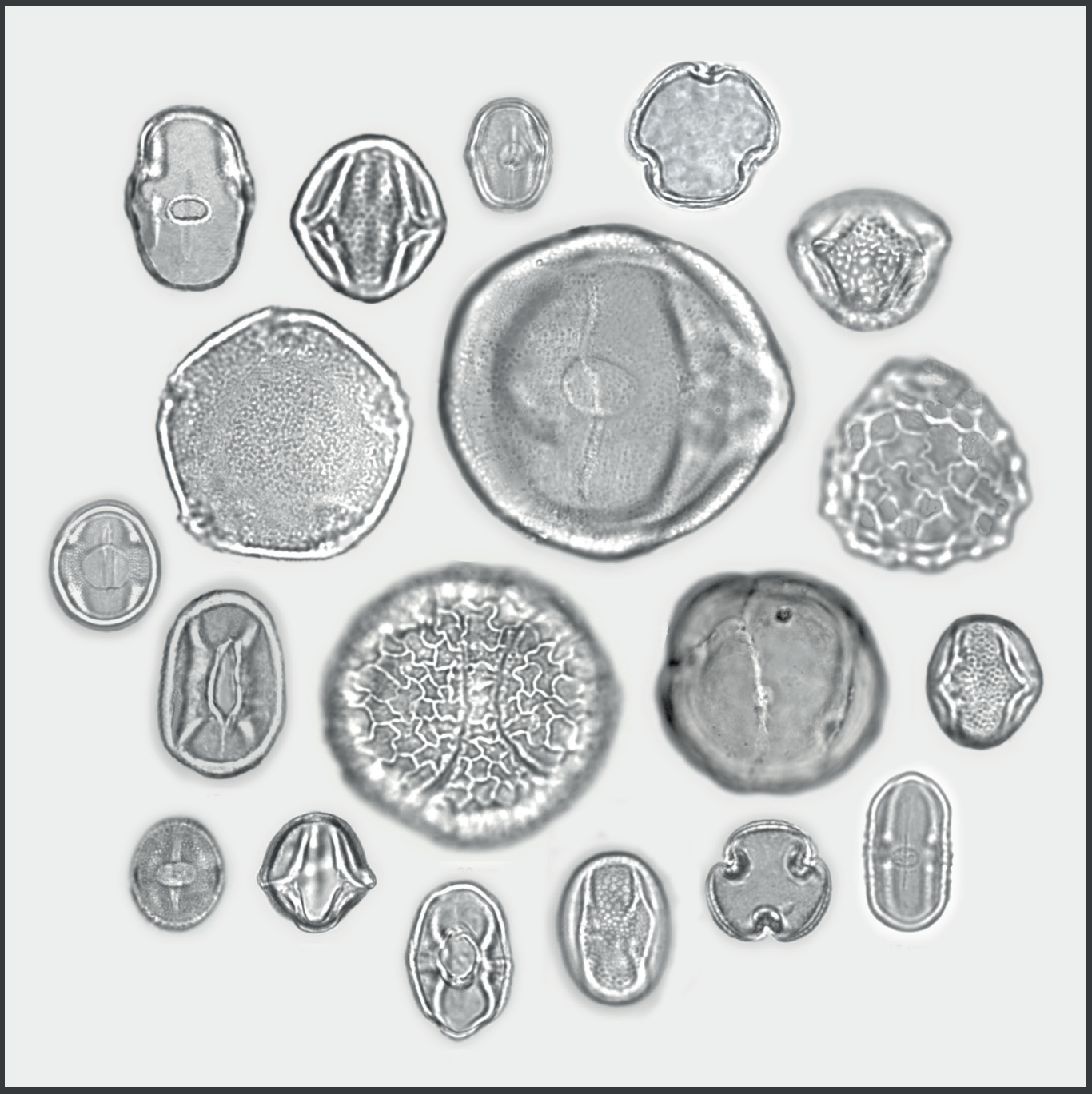
CATALOG OF ANGIOSPERM POLLEN GRAINS FROM THE RIO GRANDE DO SUL FLORA, SOUTHERN BRAZIL

VOL. 4
EUDICOTS PART 2

Maria Luisa Lorscheitter and Rinaldo Pires dos Santos



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

VOL. 4

EUDICOTS PART 2

Maria Luisa Lorscheitter and Rinaldo Pires dos Santos

2025

© 2025 by Maria Luisa Lorscheitter and Rinaldo Pires dos Santos
All rights reserved.

The copyright of this work is registered in the Câmara Brasileira do Livro (CBL) according to the certificate that can be obtained on the left (QR code), in accordance with the terms and legal regulations of the Brazilian Copyright Law (Law 9610/1998). No reproduction of any part may take place without the written permission of the authors.

Dados Internacionais de Catalogação na Publicação (CIP)
(Câmara Brasileira do Livro, SP, Brasil)

Lorscheitter, Maria Luisa
Catalog of angiosperm pollen grains from the rio grande do sul flora, southern Brazil [livro eletrônico] : vol. 4 : eudicots part 2 / Maria Luisa Lorscheitter, Rinaldo Pires dos Santos. -- 1. ed. -- Porto Alegre, RS : Ed. dos Autores, 2025.
PDF

Bibliografia
ISBN 978-65-01-83560-0

1. Angiospermas 2. Botânica 3. Plantas (Botânica) 4. Rio Grande do Sul (RS) I. Santos, Rinaldo Pires dos. II. Título.

25-321326.0 CDD-580.12098165

Índices para catálogo sistemático:

1. Angiospermas : Rio Grande do Sul : Botânica
580.12098165

Maria Alice Ferreira - Bibliotecária - CRB-8/7964

Cover, layout and typesetting: Rinaldo Pires dos Santos
Layout of the photomicrographs and legends: Maria Luisa Lorscheitter

Authors' address
Professors at Universidade Federal do Rio Grande do Sul (UFRGS)
Instituto de Biociências, Departamento de Botânica
91540-000, Porto Alegre, RS, Brazil
Maria Luisa Lorscheitter: mlorsch@uol.com.br
Rinaldo Pires dos Santos: rinaldo.santos@ufrgs.br

Acknowledgments

We are grateful to the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for providing financial aid and scholarships. We also thank the student researchers who participated in laboratory activities to develop the reference pollen collection for the current Rio Grande do Sul flora during various stages of the project: Camila C. dos Santos, Carolina J. Breitsameter, Daniel N. Viana, Ebráilon Masetto, Fernanda C. Teixeira, Gabriela S. Baum, Lionel Roth, Marcelo Menoncin, Maria Eduarda M. Marques, and Nina T.B. de Oliveira. We thank the biologists of the ICN Herbarium of the Department of Botany at the Institute of Biosciences, Universidade Federal do Rio Grande do Sul (UFRGS), who assisted us in this work: Camila Rezendo Carneiro, Joana Baptista Rocha, and Marcia Cristina Pinheiro. Special thanks to Professor Dr. Alfredo Gui Ferreira, of the UFRGS Department of Botany, who initiated this reference pollen collection.

CONTENTS

Introduction 1

Methods 2

Characteristics of pollen grains 3

Images

MALPIGHIALES (cont.)

Malpighiaceae 5

Ochnaceae 16

Passifloraceae 18

Phyllanthaceae 20

Violaceae 22

FABALES

Fabaceae (1. Leguminosae - Papilionoideae) 30

References 93

Index 95

Introduction

Eudicots are characterized by radially symmetrical pollen grains, and generally display great taxonomic diversity. The relationship between the polar axis and equatorial diameter determines the main forms of eudicot pollen grains. For example, prolate, oblate, and spherical pollen grains are common among eudicots.

Pollen grains can be classified according to the number, position, shape, and structure of their apertures (Walker & Doyle 1975). Eudicots have pollen grains with at least two, but usually three or more apertures. These apertures are distributed around the grain equator in zonoaperturate/stephanoaperturate pollen grains, whereas in other eudicots, they are distributed over all the surface, the pantoaperturate pollen grains. The elongated furrow-like pollen apertures are common in eudicots, and may be simple, the colpus, or compound, the colporus, consisting of an ectocolpus with one or more endoapertures; these pollen grains are described as colpate and colporate, respectively. Eudicots can also have circular or elliptical simple apertures, the pore, or compound, consisting of a circular ectoaperture and endoaperture; these pollen grains are described as porate and pororate, respectively.

Various types of pollen sculpturing (including ornamentation) have been observed in eudicots.

In angiosperms frequently the semitectate-reticulate pollen grains (reticulate grains) are associated with reproductive systems that are based on genetic self-incompatibility. Sporophytic incompatibility proteins, it appears, are stored in the interior of exine itself by way of tectal perforations and in the lumina of semitectate-reticulate pollen grains (Walker 1976). These sporophytic proteins inhibit pollen germination on stigmas of the same plant, preventing self-fertilization, or of another plant with a similar genetic makeup.

The prolate or subprolate tricolporate semitectate-reticulate pollen grain is frequent in eudicot taxa.

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 the plant taxa and reconstituting the paleoenvironments of a site over geological time through qualitative and quantitative palynological analyses and radiocarbon dating.

Palynological studies of Quaternary sediment profiles, which aim to reconstitute the paleoenvironment of the last millennia in the coastal plain and eastern plateau of Rio Grande do Sul, have been 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; Ledru *et al.* 1998; 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 the current Rio Grande do Sul flora was essential for identifying the pollen material preserved in these sediments. This collection has been expanded as needed to identify new palynomorphs for paleoenvironment analysis.

Here we present a catalog of photomicrographs of current eudicot pollen grains from this reference collection. The main objective of developing this catalog was to support palynological research including paleoenvironmental studies, particularly in Rio Grande do Sul, southern Brazil. This catalog also provides palynological insights into certain evolutionary aspects of angiosperms, following Cole *et al.* (2017).

Methods

Reference pollen grains of current eudicots were extracted for paleoenvironmental analyses, mainly from exsiccates from the ICN herbarium, Department of Botany, Institute of Biosciences, UFRGS, which contains species from the Rio Grande do Sul flora.

Each reference pollen sample (anthers) was collected directly from the herbarium exsiccate using a magnifying glass; the reference sample was placed in a 10 ml glass centrifuge tube. For each sample collected, informations about the respective exsiccated specie was recorded, including the sample number in the current pollen reference collection and the herbarium acronym.

The samples were chemically processed via 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).

Photomicrographs were obtained by light microscopy (DIAPLAN; Leitz, Wetzlar, Germany) using a digital camera (DFC295; Leica Microsystems, Wetzlar, Germany) connected to the microscope.

For each species, the polar axis and equatorial diameter were measured in 25 pollen grains, and the average was calculated to obtain an approximate size. In spheroidal pantoaperturate pollen grains, only the diameter was measured. Measurements were always taken within 1 week after acetolysis because the exine tends to increase in size over time until the volume stabilized (Salgado-Labouriau 1973). This trend may explain why certain photomicrographs had larger pollen grain sizes than expected based on averages,

as they were taken after size measurements; however, they preserved the original grain morphology.

Species were identified based on the Missouri Botanical Garden (MOBOT) nomenclature (2025), and pollen terminology followed Punt *et al.* (2007). Information about native Fabaceae (Leguminosae - Papilionoideae) species in Rio Grande do Sul was according to Miotto *et al.* (2022).

The taxonomic sequence of the photomicrograph pollen catalog followed the Angiosperm Phylogeny Poster, APP (Cole *et al.* 2017), compiled by the Angiosperm Phylogeny Group IV, APG IV (Byng *et al.* 2016). A colored band along the margin of each page in this photomicrograph catalog is according to the APP clades. To facilitate comparation, each pollen grain photomicrograph is accompanied by a legend indicating the species name and its number in the current pollen reference collection and in the herbarium acronym, equatorial or polar view of the grain (when possible) and respective plane of focus. The grain shape, aperture characteristics, the sculpturing type (including ornamentation), and average pollen grain measurements (µm) are provided in the legend, where P = polar axis and EQ = equatorial diameter.

Characteristics of pollen grains

This volume presents photomicrographs of pollen grains from the last 18 species of Malpighiales and the first 45 species of Fabales of the current pollen reference collection, comprising a catalog of 63 eudicot species.

These analyzed pollen grains exhibit 18 species having prolate grains and 15 species having subprolate grains. These pollen grains share an elongated shape (polar axis greater than the equatorial diameter), very common traits among eudicot pollen grains. In contrast, some species had suboblate grains (polar axis smaller than the equatorial diameter), 9 species. Spheroidal grains were also common, observed in 21 species.

All pollen grains were aperturate. The tricolporate grains, which are characteristic of eudicots, were predominated, 48 species. Pantocolporate-like grains were less common, with 6 species, while stephanocolporate, pantocolporate, stephanocolporoidate, tricolpoidorate, stephanocolpate, triporate and pantoporate grains were rare (1 or 2 species each).

Most of the pollen grains were semitectate-reticulate (28 species), microreticulate (12 species) or psilate (smooth surface, 17 species). Pollen grains areolate, rugulate, scabrate or verrucate were rare (1 or 2 species each).

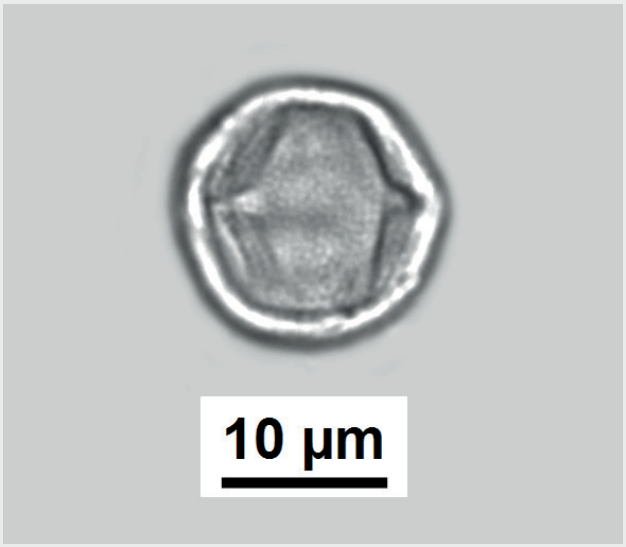
Among the analyzed pollen material, prolate or subprolate tricolporate grains with semitectate-reticulate surface, frequent in eudicot taxa, were more common among Fabales

species, whereas Malpighiales species presented some spheroidal pantoaperturate grains (i.e., pantoporate, pantocolporate or pantocolporate-like), most psilate.

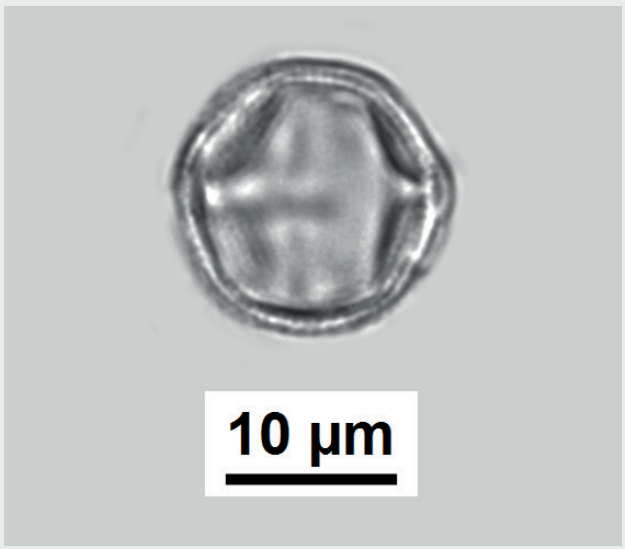
The results obtained confirm the high morphological diversity in pollen grains among eudicot species, a likely reflection of distinct strategies for ensuring pollination and pollen germination on the stigma.

The following pages continue the catalog of angiosperm pollen grains from the Rio Grande do Sul flora, southern Brazil (Lorscheitter & Santos 2023, 2024a, 2024b), with photomicrographs and analysis of pollen grains from 63 eudicot species.

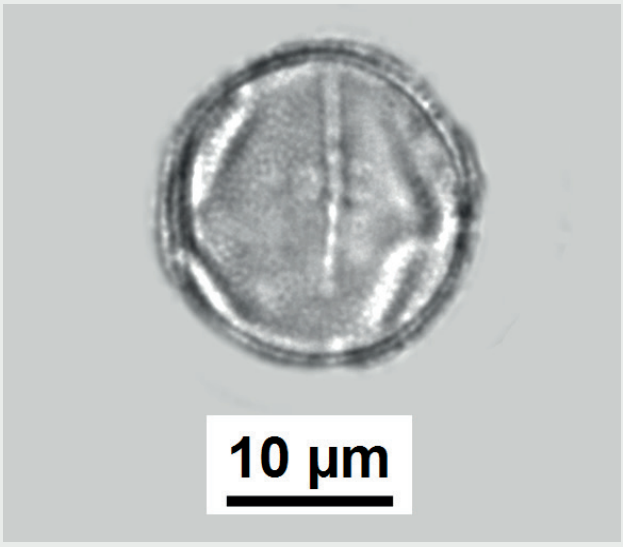
Malpighiaceae



Byrsonima niedenzuiana Skottsb.
701 – ICN 35723
Equatorial view: first plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 16 µm EQ $\bar{x}$= 15 µm



Byrsonima niedenzuiana Skottsb.
701 – ICN 35723
Equatorial view: second plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 16 µm EQ $\bar{x}$= 15 µm

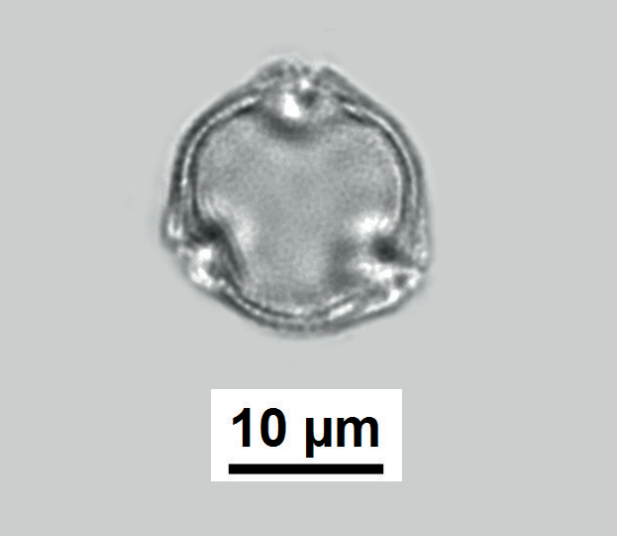


Byrsonima niedenzuiana Skottsb.
701 – ICN 35723
Equatorial view
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 16 µm EQ $\bar{x}$= 15 µm
Note: Colporus frontal view.

Malpighiaceae



Byrsonima niedenzuiana Skottsb.
701 – ICN 35723
Polar view: first plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 16 µm EQ $\bar{x}$= 15 µm

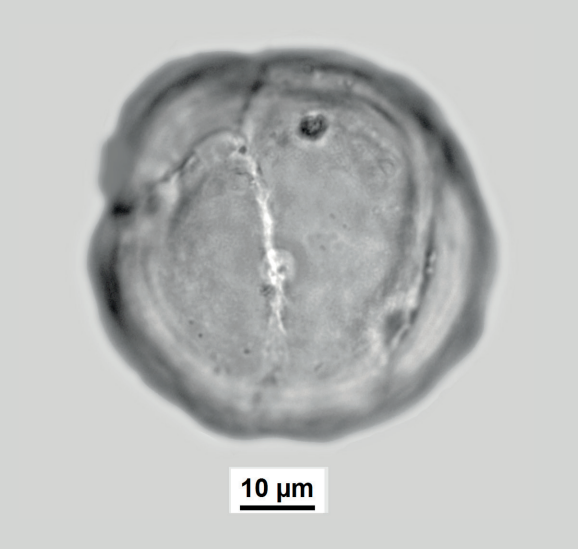


Byrsonima niedenzuiana Skottsb.
701 – ICN 35723
Polar view: second plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 16 µm EQ $\bar{x}$= 15 µm

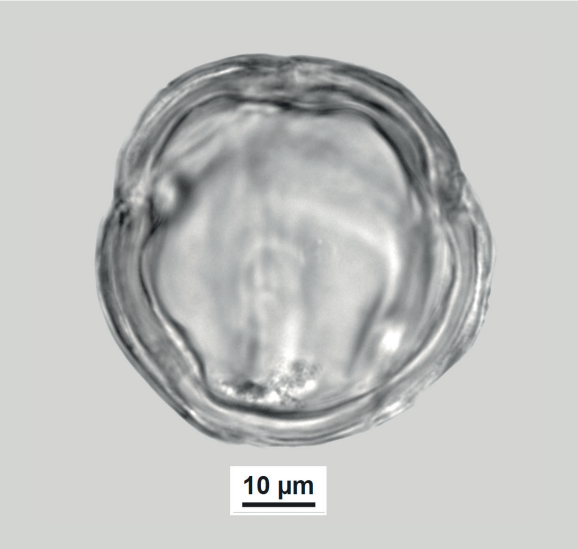
Malpighiaceae



Dicella nucifera Chodat
380 – ICN 18642
Apolar: first plane
Spheroidal - Pantoaperturate - Psilate
diameter $\bar{x}$= 55 µm
Note: Colporate-like apertures, narrow and long, not well defined and anastomosed at the ends.

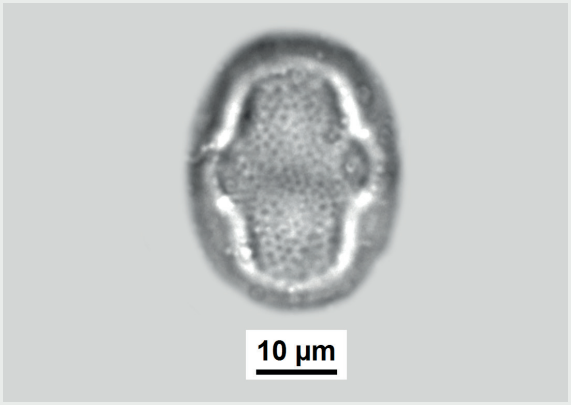


Dicella nucifera Chodat
380 – ICN 18642
Apolar: second plane
Spheroidal - Pantoaperturate - Psilate
diameter $\bar{x}$= 55 µm
Note: Colporate-like apertures, narrow and long, not well defined and anastomosed at the ends.

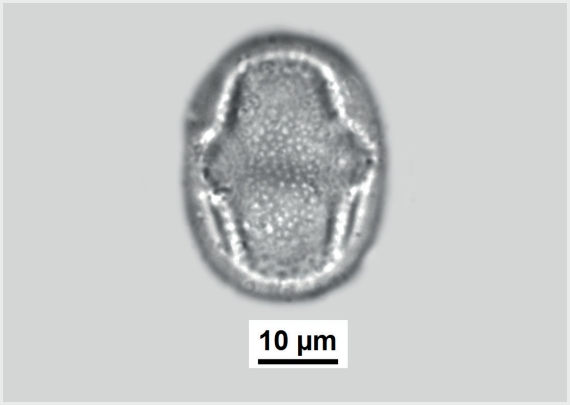


Dicella nucifera Chodat
380 – ICN 18642
Apolar: third plane
Spheroidal - Pantoaperturate - Psilate
diameter $\bar{x}$= 55 µm
Note: Colporate-like apertures, narrow and long, not well defined and anastomosed at the ends.

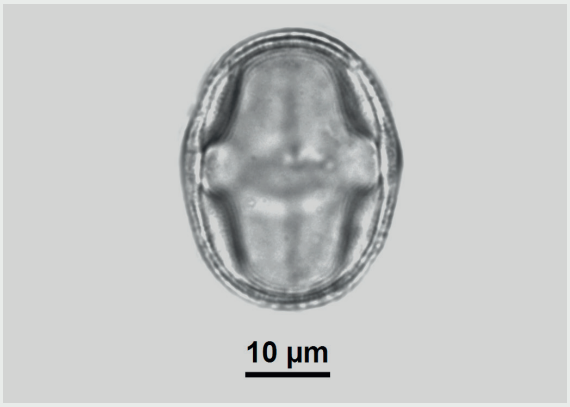
Malpighiaceae



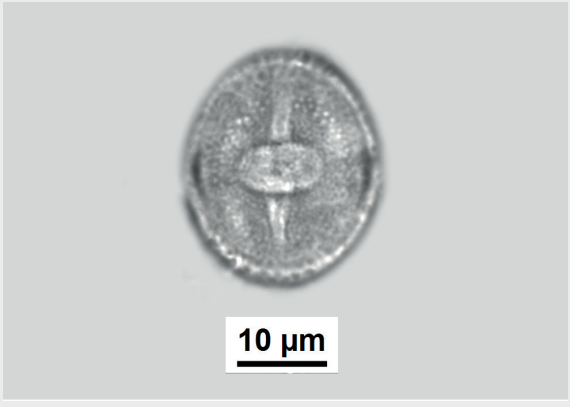
Galphimia australis Chodat
702 – ICN 8260
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 24 µm



Galphimia australis Chodat
702 – ICN 8260
Equatorial view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 24 µm

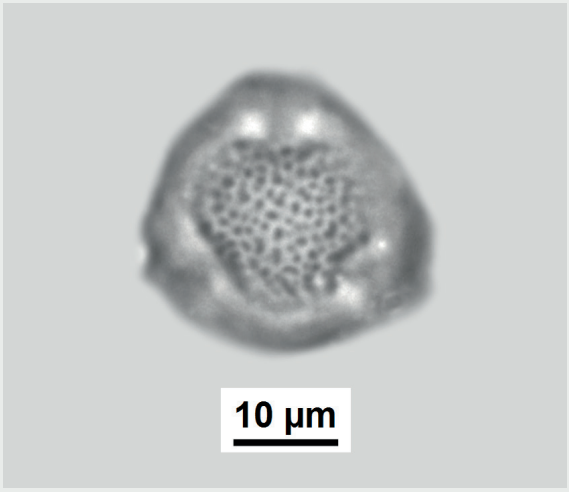


Galphimia australis Chodat
702 – ICN 8260
Equatorial view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 24 µm

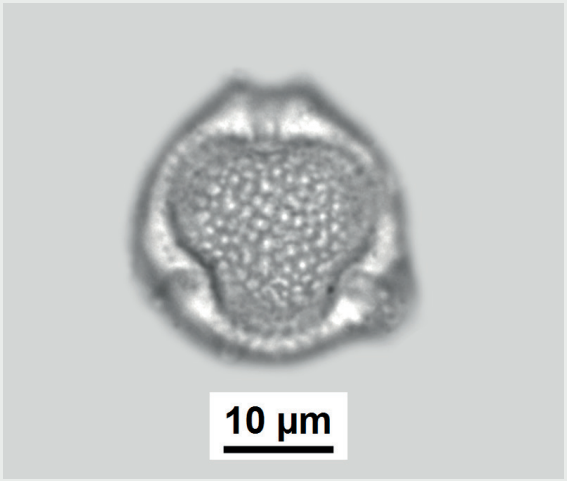


Galphimia australis Chodat
702 – ICN 8260
Equatorial view
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 24 µm
Note: Colporus frontal view. Large endoaperture.

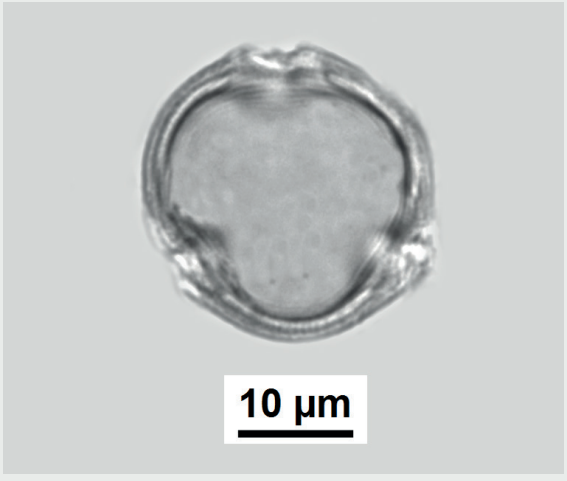
Malpighiaceae



Galphimia australis Chodat
702 – ICN 8260
Polar view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 24 µm

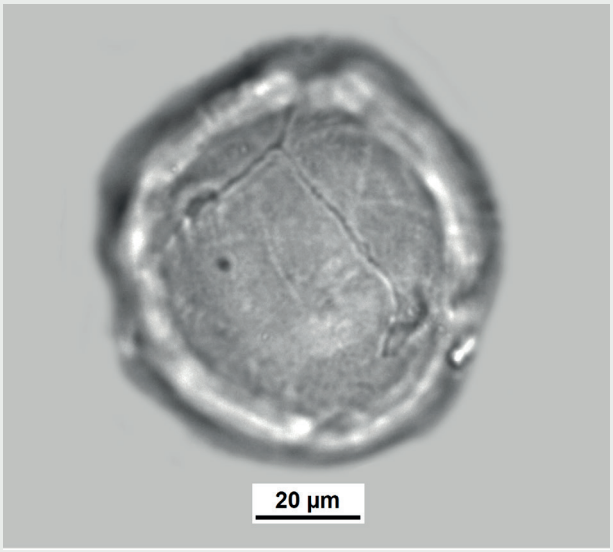


Galphimia australis Chodat
702 – ICN 8260
Polar view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 24 µm

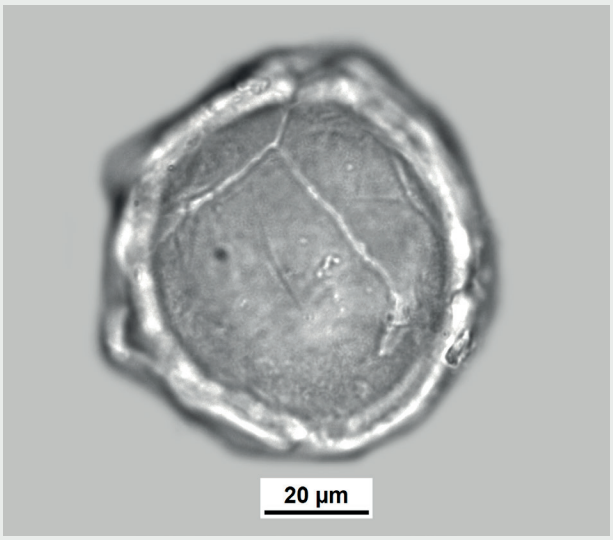


Galphimia australis Chodat
702 – ICN 8260
Polar view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 24 µm

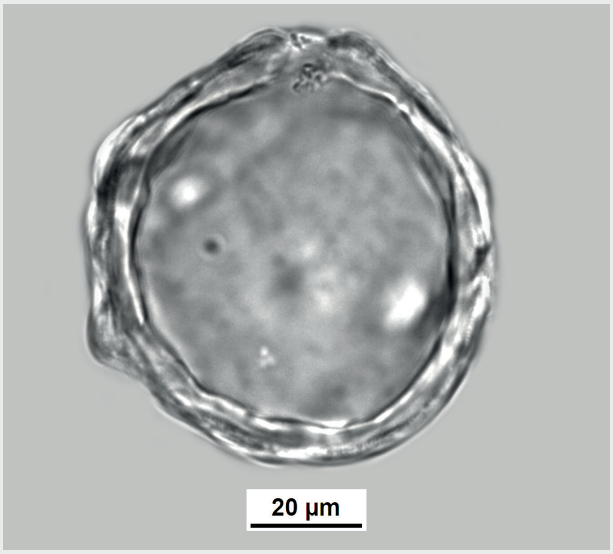
Malpighiaceae



Heteropterys aenea Griseb.
706 – ICN 33414
Apolar: first plane
Spheroidal - Pantoaperturate - Psilate
diameter $\bar{x}$= 65 µm
Note: Colporate-like apertures, narrow and long, not well defined and anastomosed at the ends.



Heteropterys aenea Griseb.
706 – ICN 33414
Apolar: second plane
Spheroidal - Pantoaperturate - Psilate
diameter $\bar{x}$= 65 µm
Note: Colporate-like apertures, narrow and long, not well defined and anastomosed at the ends.

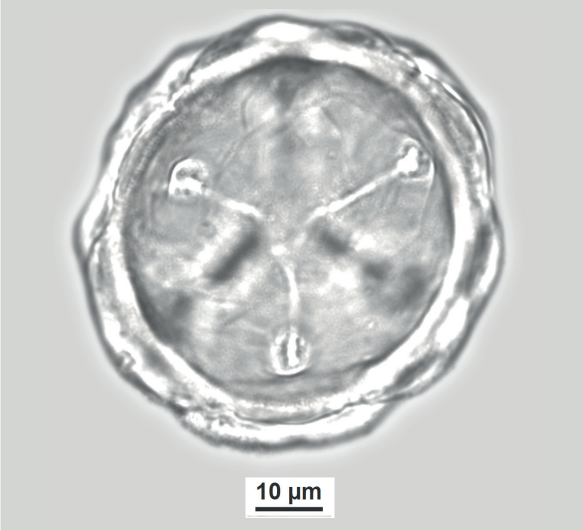


Heteropterys aenea Griseb.
706 – ICN 33414
Apolar: third plane
Spheroidal - Pantoaperturate - Psilate
diameter $\bar{x}$= 65 µm
Note: Colporate-like apertures, narrow and long, not well defined and anastomosed at the ends.

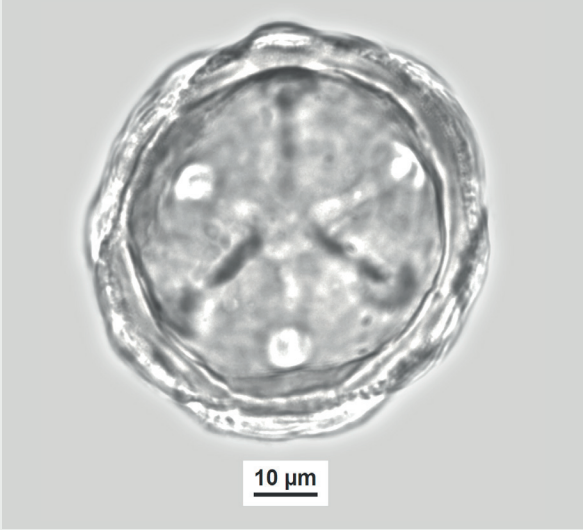
Malpighiaceae



Janusia guaranitica (A. St.-Hil.) A. Juss.
703 – ICN 40757
Apolar: first plane
Spheroidal - Pantocolporate - Psilate
diameter $\bar{x}$= 60 µm



Janusia guaranitica (A. St.-Hil.) A. Juss.
703 – ICN 40757
Apolar: second plane
Spheroidal - Pantocolporate - Psilate
diameter $\bar{x}$= 60 µm

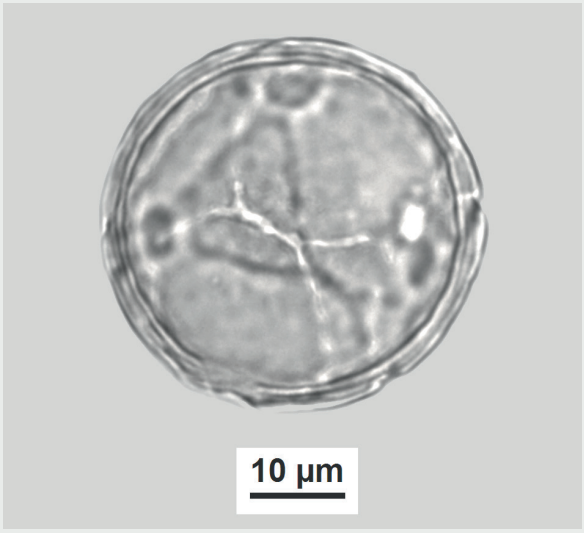


Janusia guaranitica (A. St.-Hil.) A. Juss.
703 – ICN 40757
Apolar: third plane
Spheroidal - Pantocolporate - Psilate
diameter $\bar{x}$= 60 µm

Malpighiaceae



Mascagnia divaricata (Kunth) Nied.
704 – ICN 51634
Apolar: first plane
Spheroidal - Pantoaperturate - Psilate
diameter $\bar{x}$= 38 µm
Note: Colporate-like apertures, narrow and long, not well defined and anastomosed at the ends.



Mascagnia divaricata (Kunth) Nied.
704 – ICN 51634
Apolar: second plane
Spheroidal - Pantoaperturate - Psilate
diameter $\bar{x}$= 38 µm
Note: Colporate-like apertures, narrow and long, not well defined and anastomosed at the ends.



Mascagnia divaricata (Kunth) Nied.
704 – ICN 51634
Apolar: third plane
Spheroidal - Pantoaperturate - Psilate
diameter $\bar{x}$= 38 µm
Note: Colporate-like apertures, narrow and long, not well defined and anastomosed at the ends.

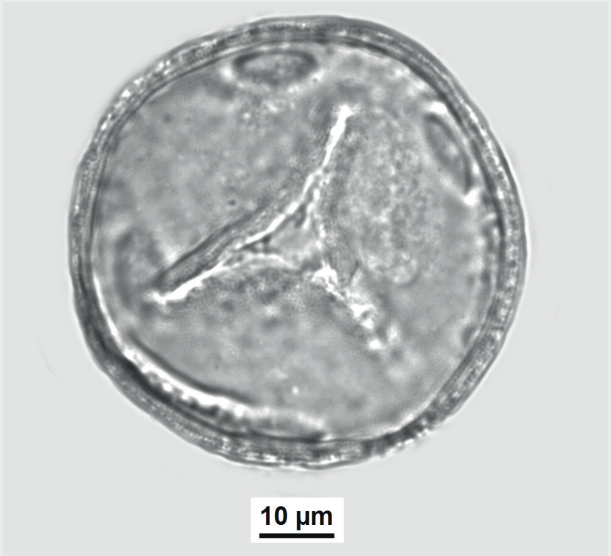
Malpighiaceae



Peixotoa catarinensis C.E. Anderson
707 – ICN 18644
Apolar: first plane
Spheroidal - Pantoaperturate - Reticulate
diameter $\bar{x}$= 60 µm
Note: Colporate-like apertures, not well defined and anastomosed at the ends.



Peixotoa catarinensis C.E. Anderson
707 – ICN 18644
Apolar: second plane
Spheroidal - Pantoaperturate - Reticulate
diameter $\bar{x}$= 60 µm
Note: Colporate-like apertures, not well defined and anastomosed at the ends.



Peixotoa catarinensis C.E. Anderson
707 – ICN 18644
Apolar: third plane
Spheroidal - Pantoaperturate - Reticulate
diameter $\bar{x}$= 60 µm
Note: Colporate-like apertures, not well defined and anastomosed at the ends.

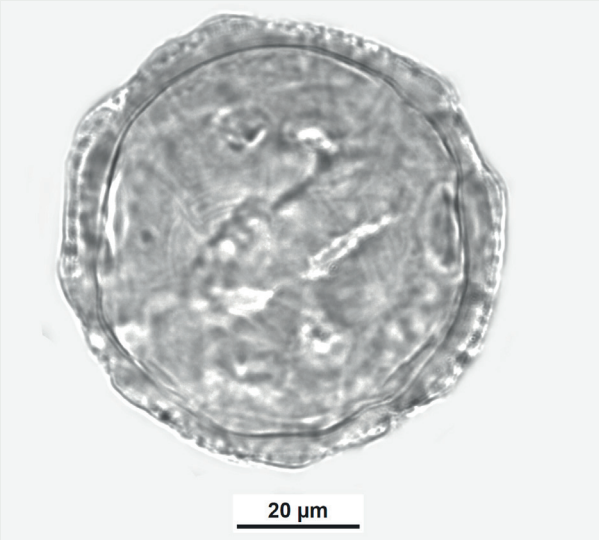
Malpighiaceae



Stigmaphyllon ciliatum (Lam.) A. Juss.
708 – ICN 61582
Apolar: first plane
Spheroidal - Pantoaperturate - Psilate
diameter $\bar{x}$= 68 µm
Note: Colporate-like apertures, irregular and not well defined.

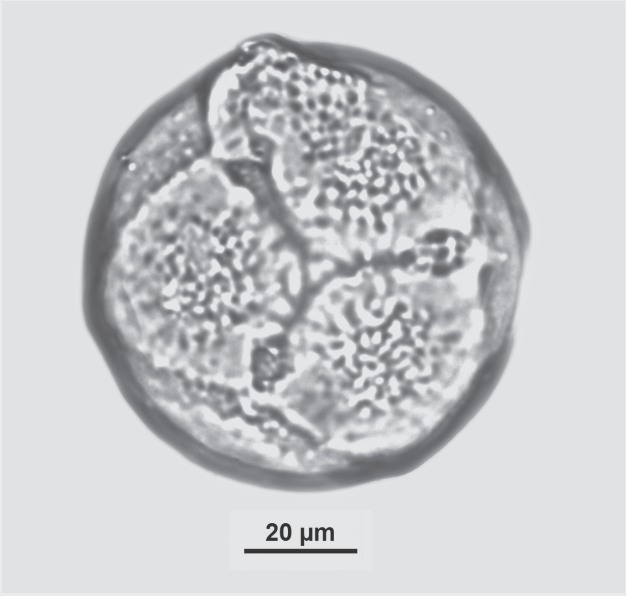


Stigmaphyllon ciliatum (Lam.) A. Juss.
708 – ICN 61582
Apolar: second plane
Spheroidal - Pantoaperturate - Psilate
diameter $\bar{x}$= 68 µm
Note: Colporate-like apertures, irregular and not well defined.



Stigmaphyllon ciliatum (Lam.) A. Juss.
708 – ICN 61582
Apolar: third plane
Spheroidal - Pantoaperturate - Psilate
diameter $\bar{x}$= 68 µm
Note: Colporate-like apertures, irregular and not well defined.

Malpighiaceae

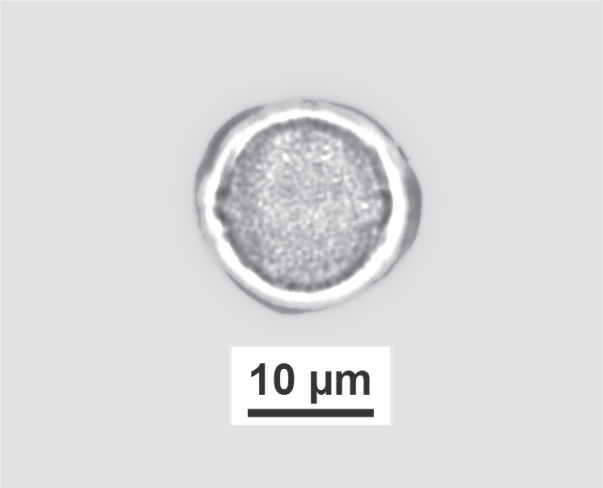


Tetrapterys mollis Griseb.
709 – ICN 61573
Apolar: first plane
Spheroidal - Pantoaperturate - Rugulate
diameter $\bar{x}$= 77 µm
Note: Colporate-like apertures, narrow, anastomosed at the ends.



Tetrapterys mollis Griseb.
709 – ICN 61573
Apolar: second plane
Spheroidal - Pantoaperturate - Rugulate
diameter $\bar{x}$= 77 µm
Note: Colporate-like apertures, narrow, anastomosed at the ends.

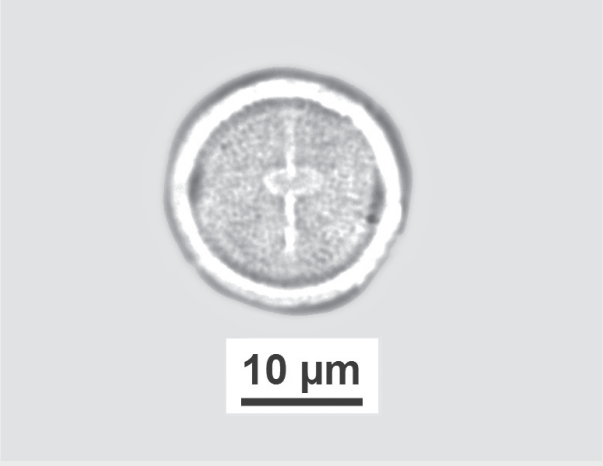
Ochnaceae



Ouratea parviflora Engl.
284 – ICN 32781
Equatorial view: first plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 17 µm EQ $\bar{x}$= 18 µm

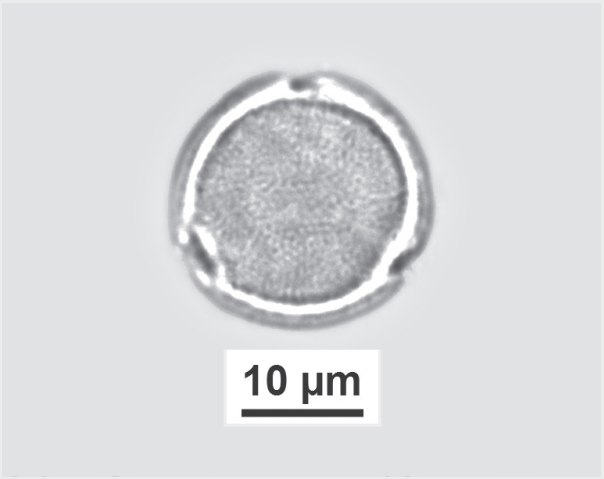


Ouratea parviflora Engl.
284 – ICN 32781
Equatorial view: second plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 17 µm EQ $\bar{x}$= 18 µm

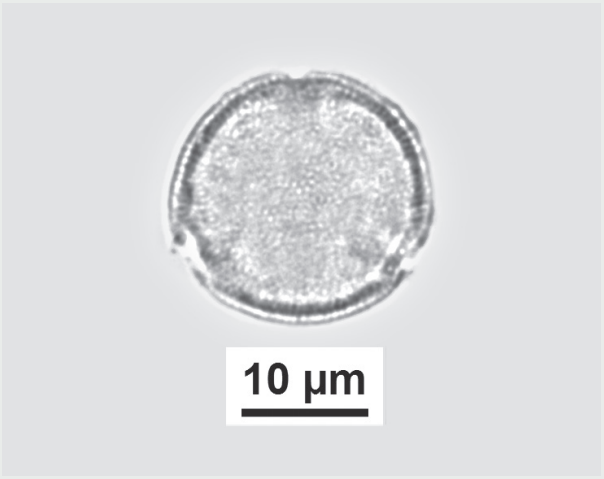


Ouratea parviflora Engl.
284 – ICN 32781
Equatorial view
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 17 µm EQ $\bar{x}$= 18 µm
Note: Colporus frontal view.

Ochnaceae

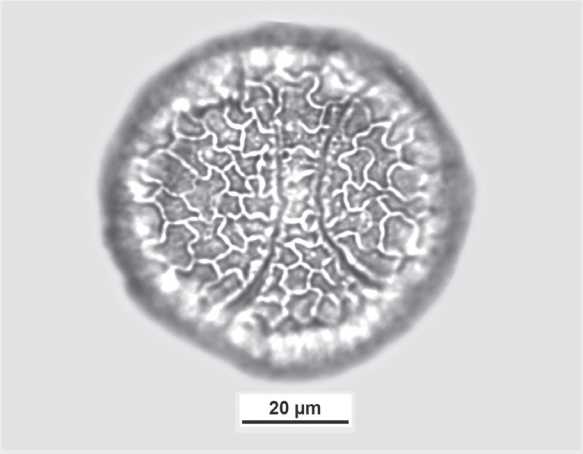


Ouratea parviflora Engl.
284 – ICN 32781
Polar view: first plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 17 µm EQ $\bar{x}$= 18 µm

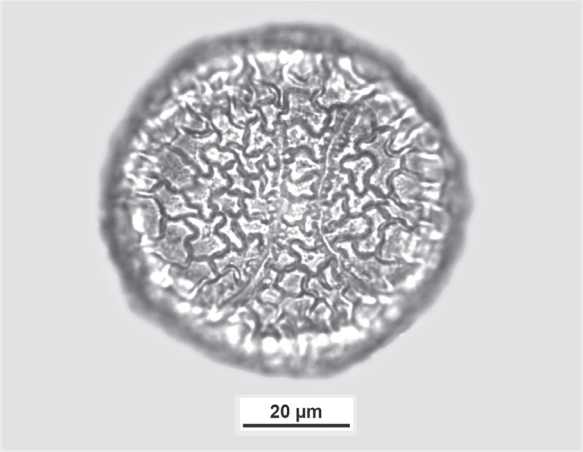


Ouratea parviflora Engl.
284 – ICN 32781
Polar view: second plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 17 µm EQ $\bar{x}$= 18 µm

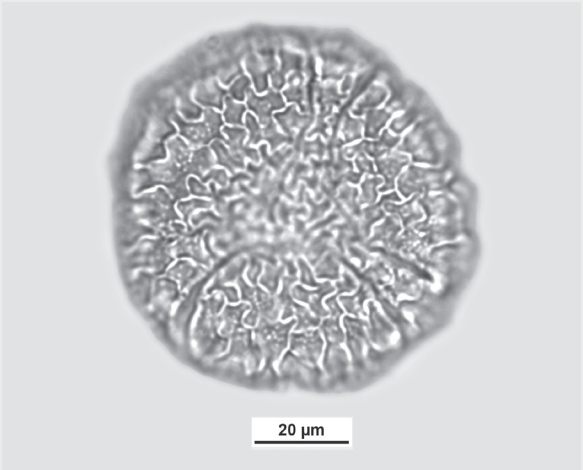
Passifloraceae



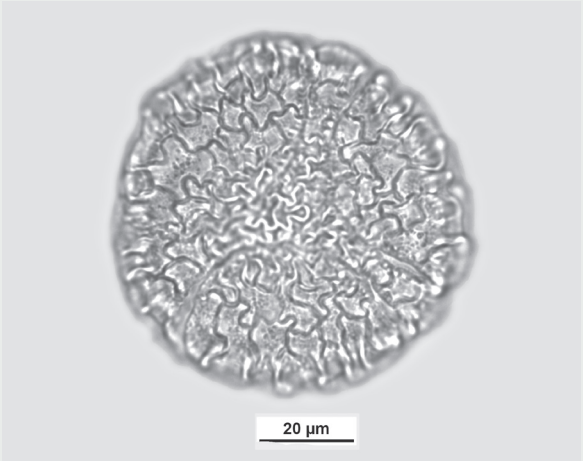
Passiflora caerulea L.
294 – ICN 9038
Equatorial view: first plane
Spheroidal - Stephanocolpate - Reticulate
P $\bar{x}$= 65 µm EQ $\bar{x}$= 69 µm
Note: Coarse reticulum, 6-colpate, 3-operculate. Colpi fused in pairs. Each pair forming a longitudinal ring that delimited an operculum.



Passiflora caerulea L.
294 – ICN 9038
Equatorial view: second plane
Spheroidal - Stephanocolpate - Reticulate
P $\bar{x}$= 65 µm EQ $\bar{x}$= 69 µm
Note: Coarse reticulum, 6-colpate, 3-operculate. Colpi fused in pairs. Each pair forming a longitudinal ring that delimited an operculum.

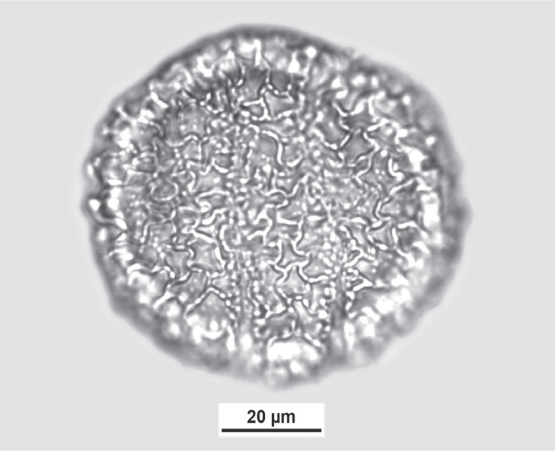


Passiflora caerulea L.
294 – ICN 9038
Polar view: first plane
Spheroidal - Stephanocolpate - Reticulate
P $\bar{x}$= 65 µm EQ $\bar{x}$= 69 µm
Note: Coarse reticulum, 6-colpate, 3-operculate. Colpi fused in pairs. Each pair forming a longitudinal ring that delimited an operculum.

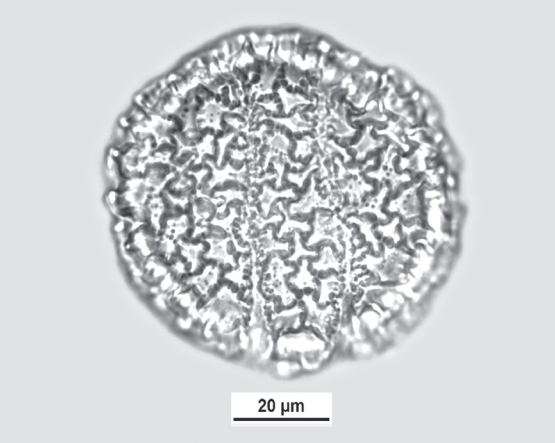


Passiflora caerulea L.
294 – ICN 9038
Polar view: second plane
Spheroidal - Stephanocolpate - Reticulate
P $\bar{x}$= 65 µm EQ $\bar{x}$= 69 µm
Note: Coarse reticulum, 6-colpate, 3-operculate. Colpi fused in pairs. Each pair forming a longitudinal ring that delimited an operculum.

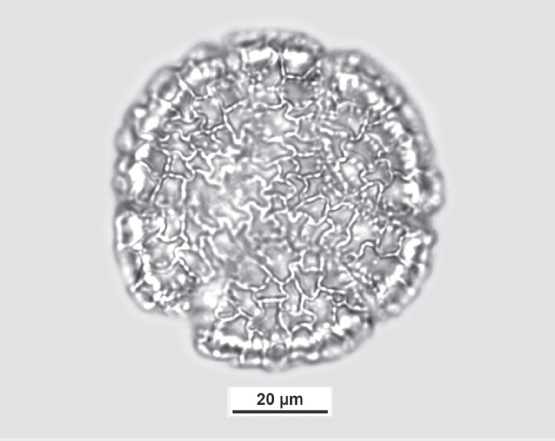
Passifloraceae



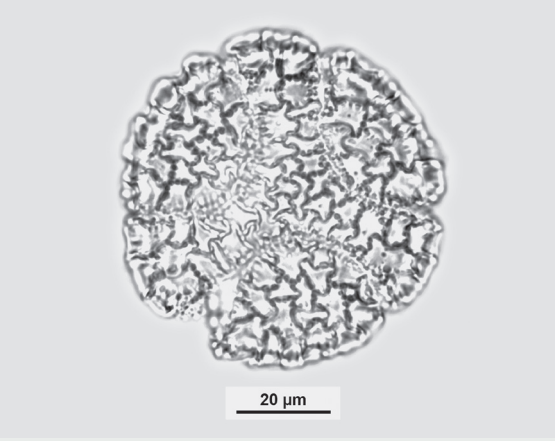
Passiflora edulis Sims
296 – ICN 596
Equatorial view: first plane
Spheroidal - Stephanocolpate - Reticulate
P $\bar{x}$= 69 µm EQ $\bar{x}$= 73 µm
Note: Coarse reticulum, 6-colpate, 3-operculate. Colpi fused in pairs. Each pair forming a longitudinal ring that delimited an operculum.



Passiflora edulis Sims
296 – ICN 596
Equatorial view: second plane
Spheroidal - Stephanocolpate - Reticulate
P $\bar{x}$= 69 µm EQ $\bar{x}$= 73 µm
Note: Coarse reticulum, 6-colpate, 3-operculate. Colpi fused in pairs. Each pair forming a longitudinal ring that delimited an operculum.

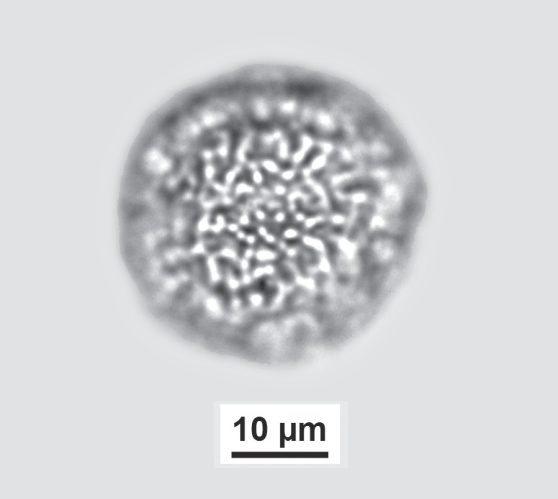


Passiflora edulis Sims
296 – ICN 596
Polar view: first plane
Spheroidal - Stephanocolpate - Reticulate
P $\bar{x}$= 69 µm EQ $\bar{x}$= 73 µm
Note: Coarse reticulum, 6-colpate, 3-operculate. Colpi fused in pairs. Each pair forming a longitudinal ring that delimited an operculum.

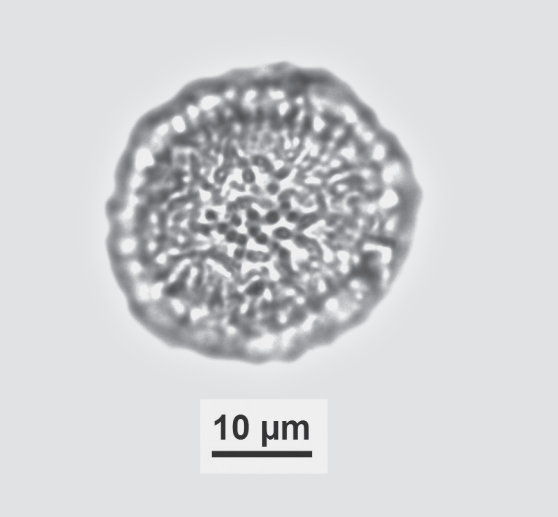


Passiflora edulis Sims
296 – ICN 596
Polar view: second plane
Spheroidal - Stephanocolpate - Reticulate
P $\bar{x}$= 69 µm EQ $\bar{x}$= 73 µm
Note: Coarse reticulum, 6-colpate, 3-operculate. Colpi fused in pairs. Each pair forming a longitudinal ring that delimited an operculum.

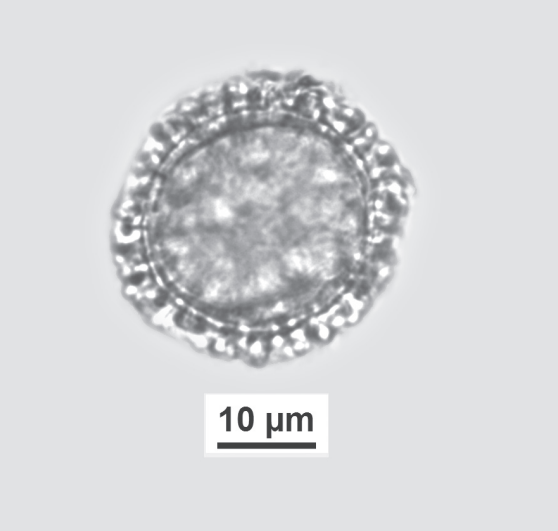
Phyllanthaceae



Phyllanthus ramillosus Müll. Arg.
917 – ICN 61757
Apolar: first plane
Spheroidal - Pantoporate - Rugulate
diameter $\bar{x}$= 30 µm
Note: small and scattered pores.

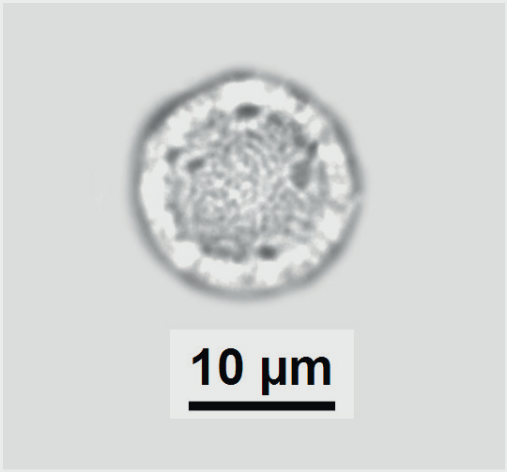


Phyllanthus ramillosus Müll. Arg.
917 – ICN 61757
Apolar: second plane
Spheroidal - Pantoporate - Rugulate
diameter $\bar{x}$= 30 µm
Note: small and scattered pores.

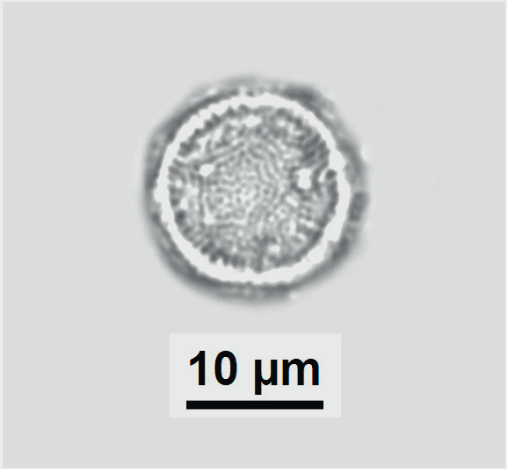


Phyllanthus ramillosus Müll. Arg.
917 – ICN 61757
Apolar: third plane
Spheroidal - Pantoporate - Rugulate
diameter $\bar{x}$= 30 µm
Note: small and scattered pores.

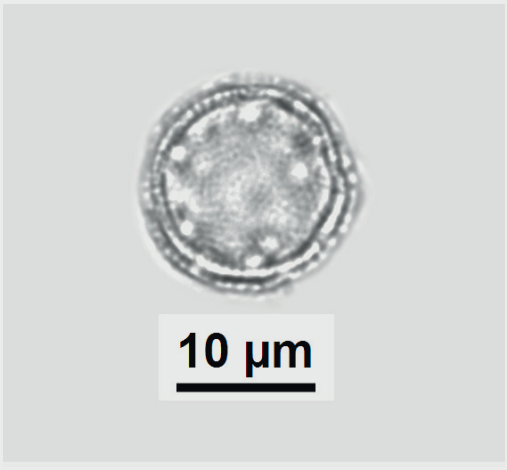
Phyllanthaceae



Phyllanthus sellowianus (Klotzsch) Müll. Arg.
347 – ICN 49893
Apolar: first plane
Spheroidal - Pantocolporate - Areolate
diameter: 17 µm
Note: Colpori anastomosed at the ends of the tenuous ectoapertures.



Phyllanthus sellowianus (Klotzsch) Müll. Arg.
347 – ICN 49893
Apolar: second plane
Spheroidal - Pantocolporate - Areolate
diameter: 17 µm
Note: Colpori anastomosed at the ends of the tenuous ectoapertures.



Phyllanthus sellowianus (Klotzsch) Müll. Arg.
347 – ICN 49893
Apolar: third plane
Spheroidal - Pantocolporate - Areolate
diameter: 17 µm
Note: Colpori anastomosed at the ends of the tenuous ectoapertures.

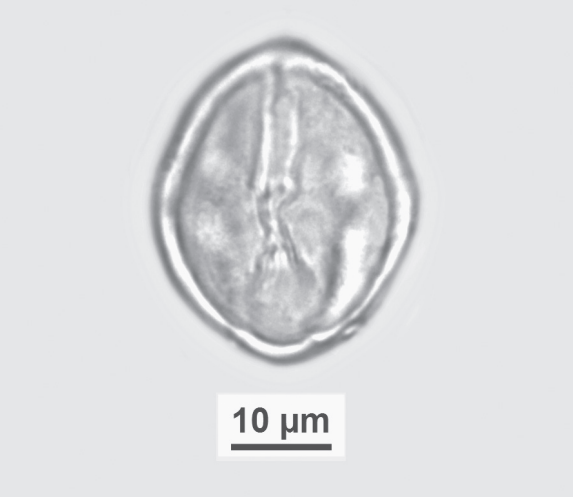
Violaceae



Anchietea salutaris A. St.-Hil.
444 – ICN 100
Equatorial view: first plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 36 µm EQ $\bar{x}$= 26 µm



Anchietea salutaris A. St.-Hil.
444 – ICN 100
Equatorial view: second plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 36 µm EQ $\bar{x}$= 26 µm



Anchietea salutaris A. St.-Hil.
444 – ICN 100
Equatorial view
Prolate - Tricolporate - Psilate
P $\bar{x}$= 36 µm EQ $\bar{x}$= 26 µm
Note: Colporus frontal view.

Violaceae



Anchietea salutaris A. St.-Hil.
444 – ICN 100
Polar view: first plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 36 µm EQ $\bar{x}$= 26 µm



Anchietea salutaris A. St.-Hil.
444 – ICN 100
Polar view: second plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 36 µm EQ $\bar{x}$= 26 µm

Violaceae



Hybanthus bicolor (A. St.-Hil.) Baill.
1007 – ICN 9640
Equatorial view: first plane
Prolate - Tricolporate - Psilate
P $\overline{x}$= 60 µm EQ $\overline{x}$= 44 µm



Hybanthus bicolor (A. St.-Hil.) Baill.
1007 – ICN 9640
Equatorial view: second plane
Prolate - Tricolporate - Psilate
P $\overline{x}$= 60 µm EQ $\overline{x}$= 44 µm

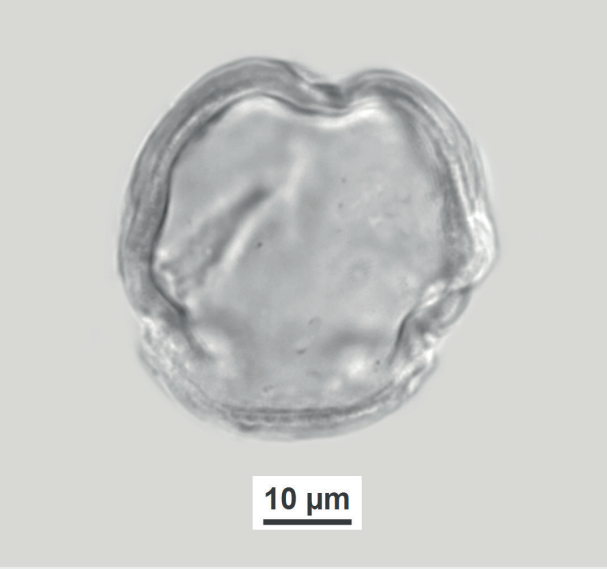


Hybanthus bicolor (A. St.-Hil.) Baill.
1007 – ICN 9640
Equatorial view
Prolate - Tricolporate - Psilate
P $\overline{x}$= 60 µm EQ $\overline{x}$= 44 µm
Note: Colporus frontal view.

Violaceae



Hybanthus bicolor (A. St.-Hil.) Baill.
1007 – ICN 9640
Polar view (oblique): first plane
Prolate - Tricolporate - Psilate
P $\overline{x}$= 60 µm EQ $\overline{x}$= 44 µm

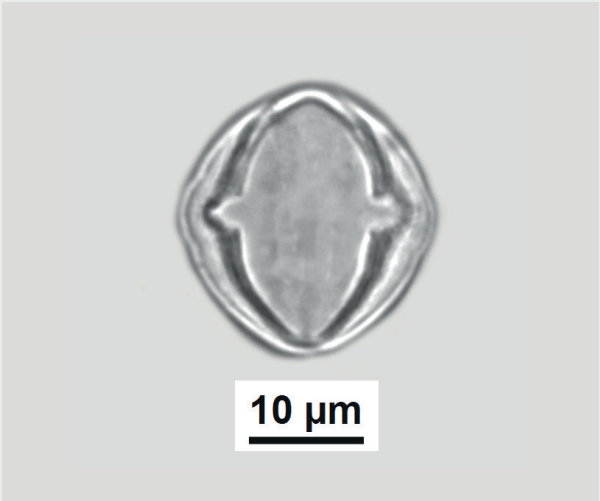


Hybanthus bicolor (A. St.-Hil.) Baill.
1007 – ICN 9640
Polar view (oblique): second plane
Prolate - Tricolporate - Psilate
P $\overline{x}$= 60 µm EQ $\overline{x}$= 44 µm

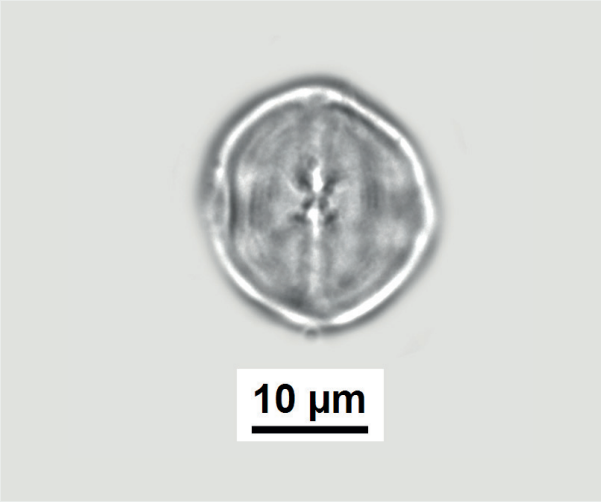
Violaceae



Hybanthus parviflorus (L. f.) Baill.
445 – ICN 8301
Equatorial view: first plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 25 µm EQ $\bar{x}$= 23 µm

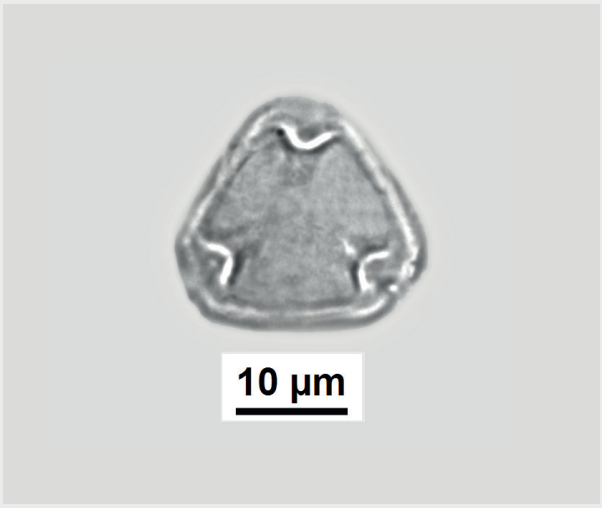


Hybanthus parviflorus (L. f.) Baill.
445 – ICN 8301
Equatorial view: second plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 25 µm EQ $\bar{x}$= 23 µm

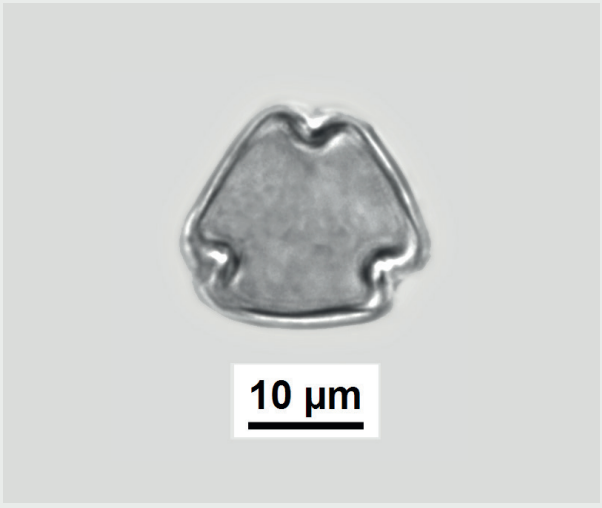


Hybanthus parviflorus (L. f.) Baill.
445 – ICN 8301
Equatorial view
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 25 µm EQ $\bar{x}$= 23 µm
Note: Colporus frontal view.

Violaceae

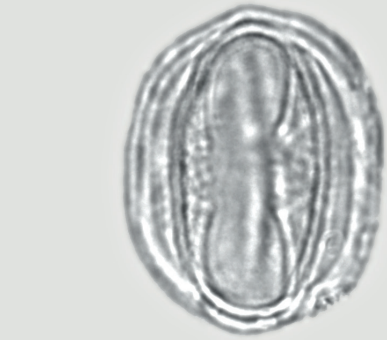


Hybanthus parviflorus (L. f.) Baill.
445 – ICN 8301
Polar view: first plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 25 µm EQ $\bar{x}$= 23 µm

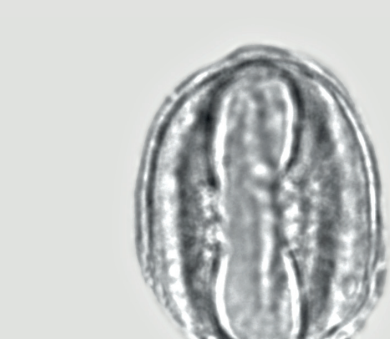


Hybanthus parviflorus (L. f.) Baill.
445 – ICN 8301
Polar view: second plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 25 µm EQ $\bar{x}$= 23 µm

Violaceae



Viola cerasifolia A. St.-Hil.
669 – ICN 2400
Equatorial view - first plane
Subprolate - Tricolporate - Scabrate
P $\bar{x}$= 39 µm EQ $\bar{x}$= 30 µm

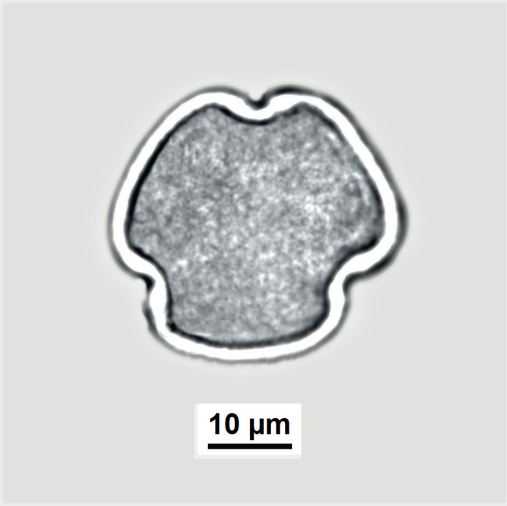


Viola cerasifolia A. St.-Hil.
669 – ICN 2400
Equatorial view - second plane
Subprolate - Tricolporate - Scabrate
P $\bar{x}$= 39 µm EQ $\bar{x}$= 30 µm

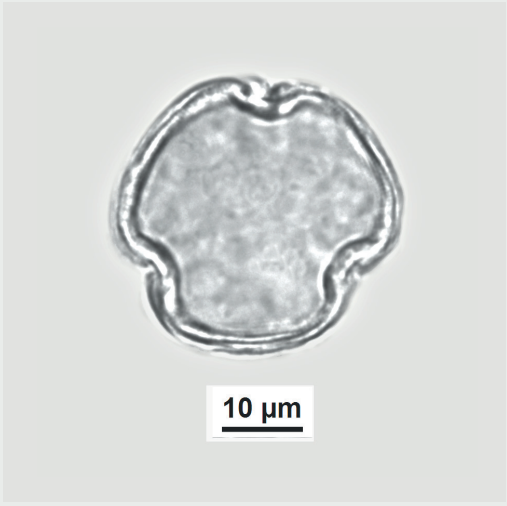


Viola cerasifolia A. St.-Hil.
669 – ICN 2400
Equatorial view
Subprolate - Tricolporate - Scabrate
P $\bar{x}$= 39 µm EQ $\bar{x}$= 30 µm
Note: Colporus frontal view.

Violaceae

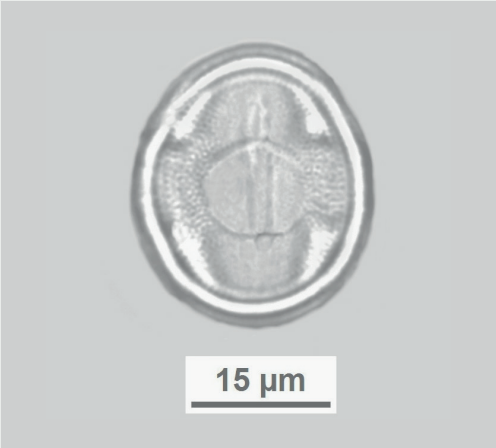


Viola cerasifolia A. St.-Hil.
669 – ICN 2400
Polar view - first plane
Subprolate - Tricolporate - Scabrate
P $\bar{x}$= 39 µm EQ $\bar{x}$= 30 µm

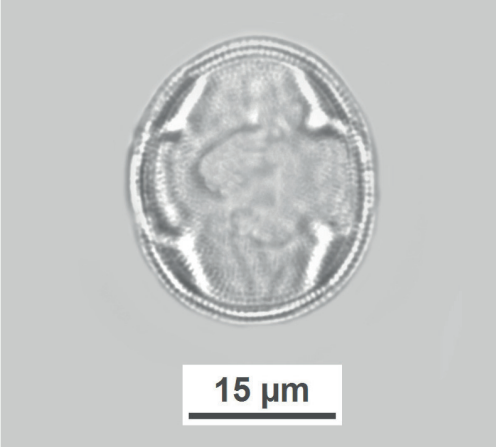


Viola cerasifolia A. St.-Hil.
669 – ICN 2400
Polar view - second plane
Subprolate - Tricolporate - Scabrate
P $\bar{x}$= 39 µm EQ $\bar{x}$= 30 µm

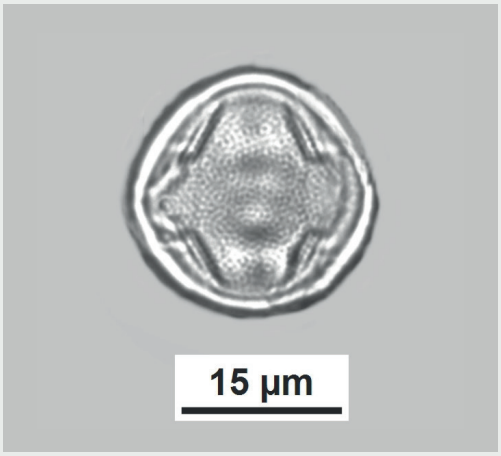
Fabaceae (1. Leguminosae - Papilionoideae)



Adesmia ciliata Vogel
838 – ICN 68248
Equatorial view: first plane
Subprolate to Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 25 µm
Note: Colporus frontal view. Large endoaperture.

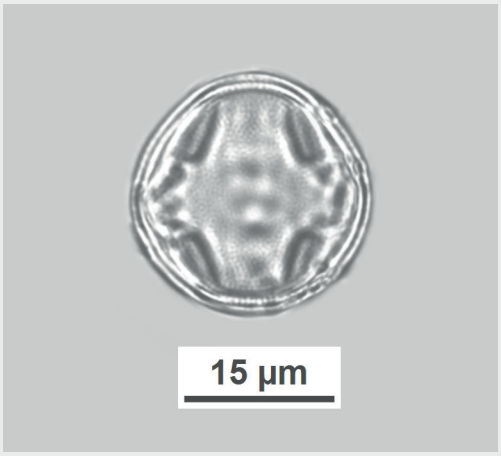


Adesmia ciliata Vogel
838 – ICN 68248
Equatorial view: third plane
Subprolate to Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 25 µm
Note: Colporus frontal view. Large endoaperture.

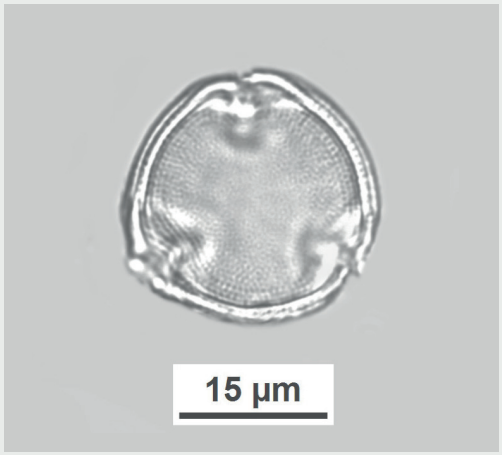


Adesmia ciliata Vogel
838 – ICN 68248
Equatorial view: first plane
Subprolate to Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 25 µm

Fabaceae (1. Leguminosae - Papilionoideae)



Adesmia ciliata Vogel
838 – ICN 68248
Equatorial view: third plane
Subprolate to Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 25 µm

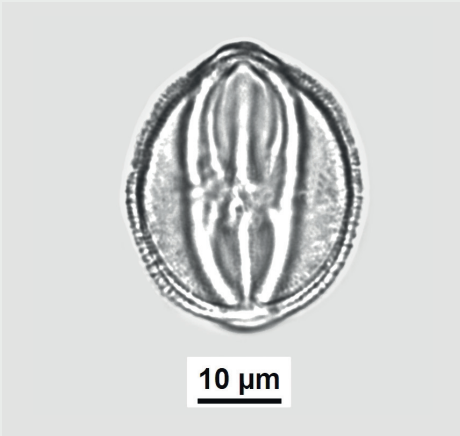


Adesmia ciliata Vogel
838 – ICN 68248
Polar view: third plane
Subprolate to Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 25 µm

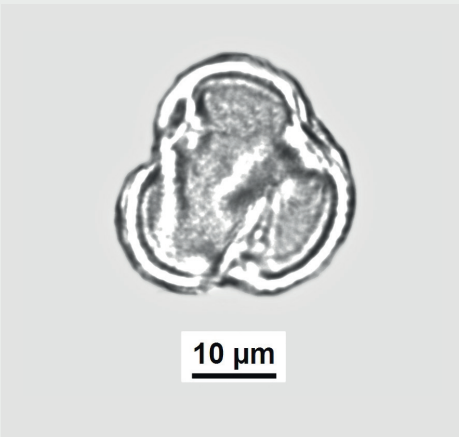
Fabaceae (1. Leguminosae - Papilionoideae)



Ateleia glazioveana Baill.
819 – ICN 44369
Equatorial view: first plane
Subprolate - Tricolporate - Microreticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 26 µm
Note: Colporus frontal view.



Ateleia glazioveana Baill.
819 – ICN 44369
Equatorial view: third plane
Subprolate - Tricolporate - Microreticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 26 µm



Ateleia glazioveana Baill.
819 – ICN 44369
Polar view: second plane
Subprolate - Tricolporate - Microreticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 26 µm

Fabaceae (1. Leguminosae - Papilionoideae)



Camptosema rubicundum Hook. & Arn.
936 – ICN 81769
Equatorial view: first plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 36 µm



Camptosema rubicundum Hook. & Arn.
936 – ICN 81769
Equatorial view: second plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 36 µm



Camptosema rubicundum Hook. & Arn.
936 – ICN 81769
Equatorial view: third plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 36 µm



Camptosema rubicundum Hook. & Arn.
936 – ICN 81769
Polar view: second plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 36 µm

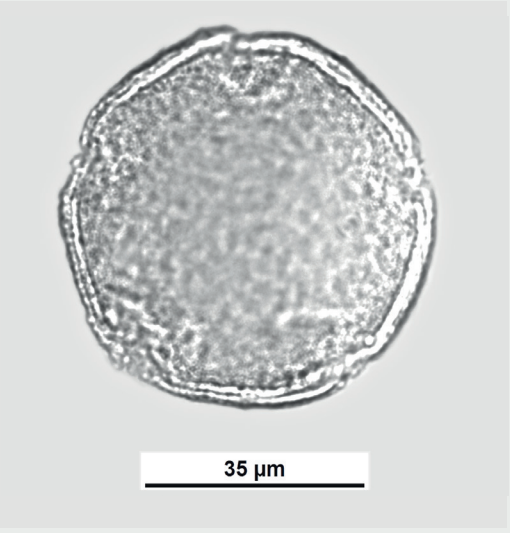
Fabaceae (1. Leguminosae - Papilionoideae)



Clitoria nana Benth.
342 – ICN 44003
Equatorial view: first plane
Suboblate - Stephanocolporoidate - Microreticulate
P $\bar{x}$= 40 µm EQ $\bar{x}$= 50 µm
Note: Aperture frontal view, oblique. Delicate and irregular margin,with indistinct endoaperture (colporoidate).

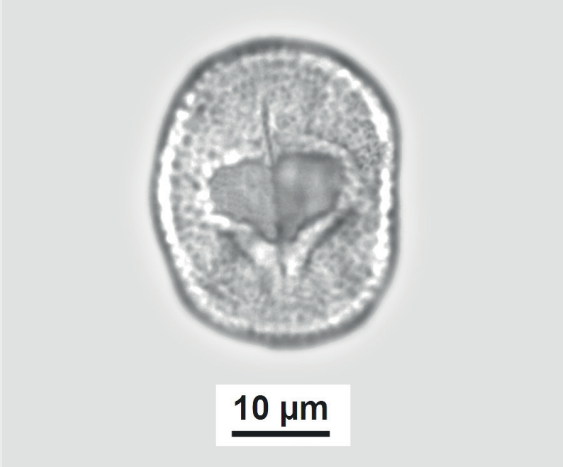


Clitoria nana Benth.
342 – ICN 44003
Polar view: second plane
Suboblate - Stephanocolporoidate - Microreticulate
P $\bar{x}$= 40 µm EQ $\bar{x}$= 50 µm
Note: 5-equatorial apertures.

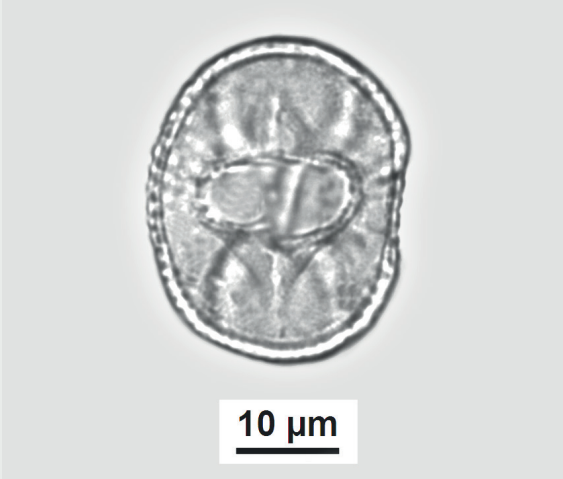


Clitoria nana Benth.
342 – ICN 44003
Polar view: third plane
Suboblate - Stephanocolporoidate - Microreticulate
P $\bar{x}$= 40 µm EQ $\bar{x}$= 50 µm
Note: 5-equatorial apertures.

Fabaceae (1. Leguminosae - Papilionoideae)



Collaea stenophylla (Hook. & Arn.) Benth.
932 – ICN 81591
Equatorial view: first plane
Subprolate - Tricolporate - Microreticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 24 µm
Note: Colporus frontal view. Large endoaperture.

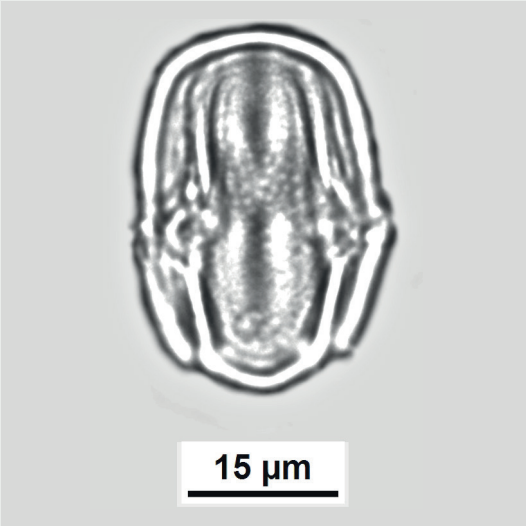


Collaea stenophylla (Hook. & Arn.) Benth.
932 – ICN 81591
Equatorial view: second plane
Subprolate - Tricolporate - Microreticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 24 µm
Note: Colporus frontal view. Large endoaperture.

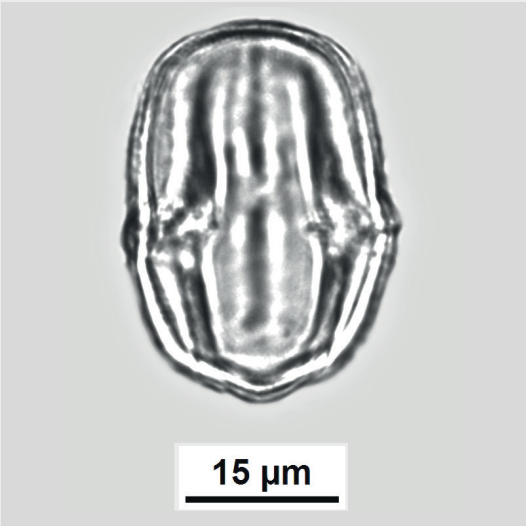


Collaea stenophylla (Hook. & Arn.) Benth.
932 – ICN 81591
Polar view: third plane
Subprolate - Tricolporate - Microreticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 24 µm

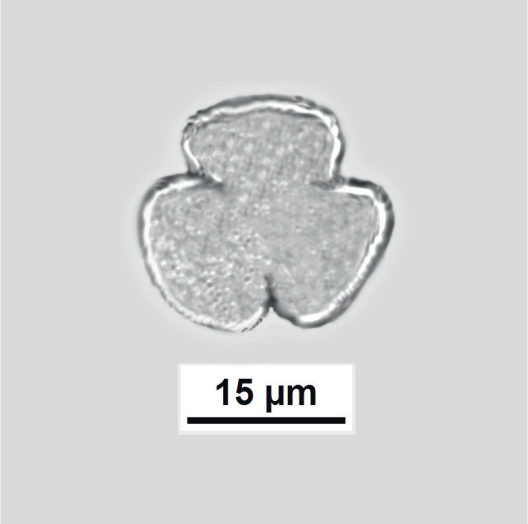
Fabaceae (1. Leguminosae - Papilionoideae)



Crotalaria tweediana Benth.
935 – ICN 81583
Equatorial view: second plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 37 µm EQ $\bar{x}$= 25 µm



Crotalaria tweediana Benth.
935 – ICN 81583
Equatorial view: third plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 37 µm EQ $\bar{x}$= 25 µm



Crotalaria tweediana Benth.
935 – ICN 81583
Polar view: second plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 37 µm EQ $\bar{x}$= 25 µm

Fabaceae (1. Leguminosae - Papilionoideae)



Dalbergia frutescens (Vell.) Britton
678 – ICN 35540
Equatorial view: first plane
Subprolate - Tricolporate - Psilate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 21 µm
Note: Colporus frontal view. Large endoaperture

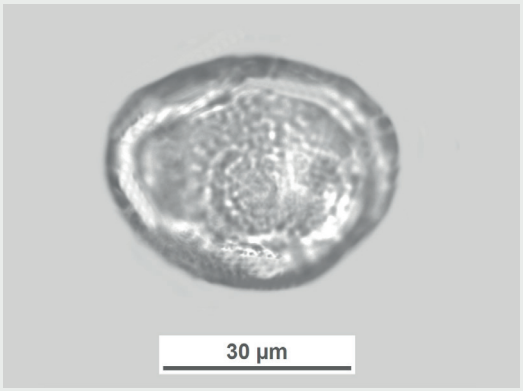


Dalbergia frutescens (Vell.) Britton
678 – ICN 35540
Equatorial view: second plane
Subprolate - Tricolporate - Psilate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 21 µm
Note: Colporus frontal view. Large endoaperture

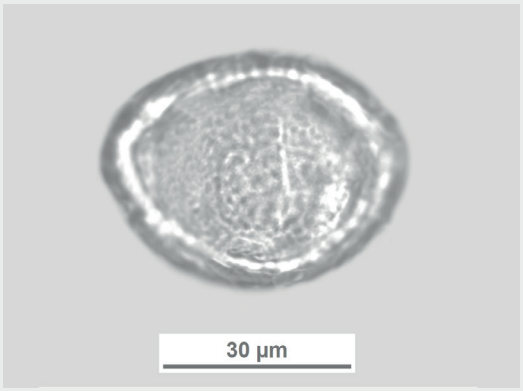


Dalbergia frutescens (Vell.) Britton
678 – ICN 35540
Equatorial view: third plane
Subprolate - Tricolporate - Psilate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 21 µm

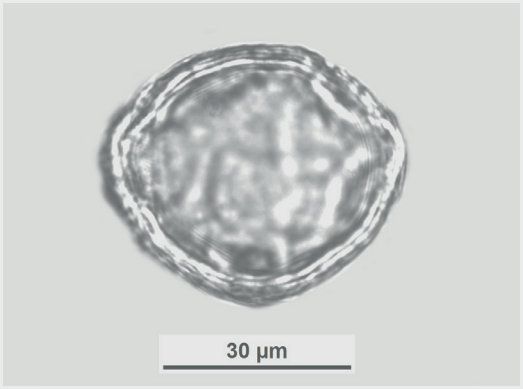
Fabaceae (1. Leguminosae - Papilionoideae)



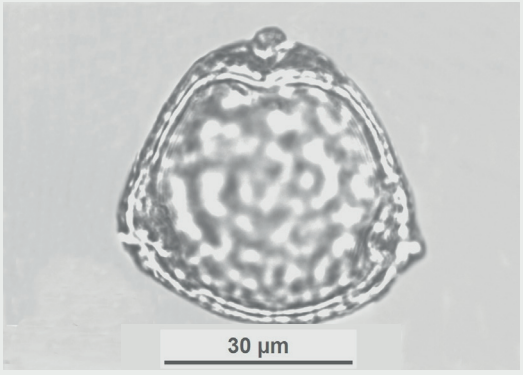
Desmodium adscendens (Sw.) DC.
407 – ICN 16867
Equatorial view: first plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 37 µm EQ $\bar{x}$= 48 µm
Note: Colporus frontal view. Large endoaperture.



Desmodium adscendens (Sw.) DC.
407 – ICN 16867
Equatorial view: second plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 37 µm EQ $\bar{x}$= 48 µm
Note: Colporus frontal view. Large endoaperture.

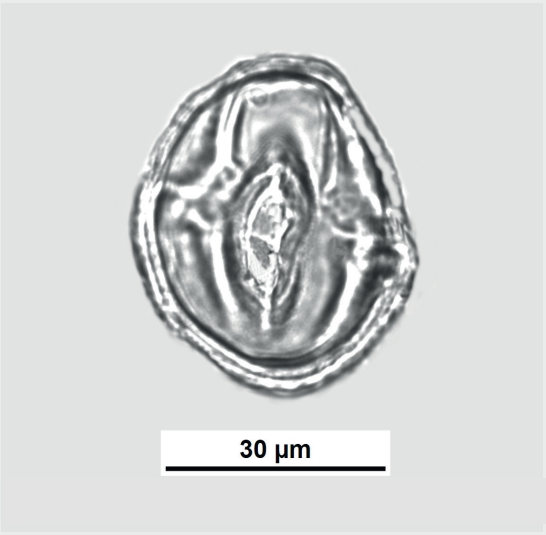


Desmodium adscendens (Sw.) DC.
407 – ICN 16867
Equatorial view: third plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 37 µm EQ $\bar{x}$= 48 µm

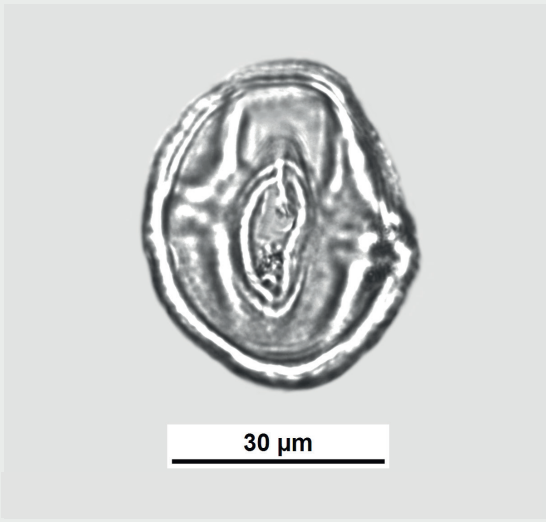


Desmodium adscendens (Sw.) DC.
407 – ICN 16867
Polar view: third plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 37 µm EQ $\bar{x}$= 48 µm

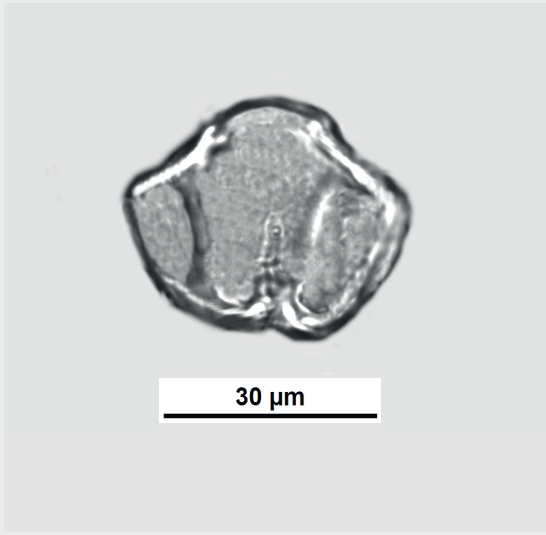
Fabaceae (1. Leguminosae - Papilionoideae)



Desmodium barbatum (L.) Benth.
1030 – ICN 40547
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 36
Note: Colporus frontal view. Large endoaperture.

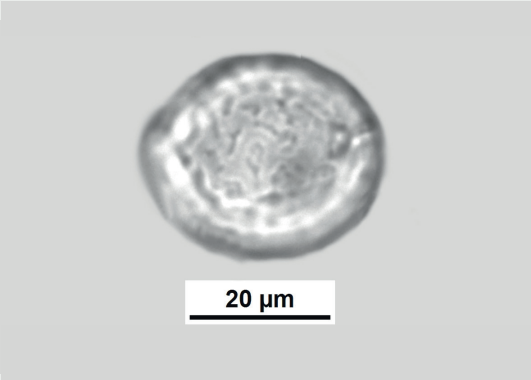


Desmodium barbatum (L.) Benth.
1030 – ICN 40547
Equatorial view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 36
Note: Colporus frontal view. Large endoaperture.

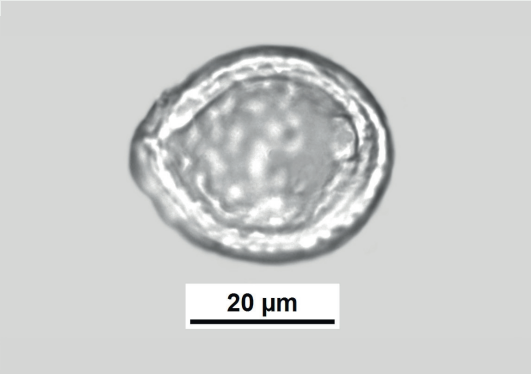


Desmodium barbatum (L.) Benth.
1030 – ICN 40547
Polar view: second plane (oblique)
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 36

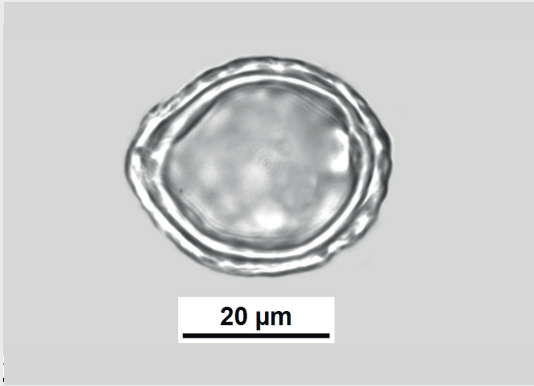
Fabaceae (1. Leguminosae - Papilionoideae)



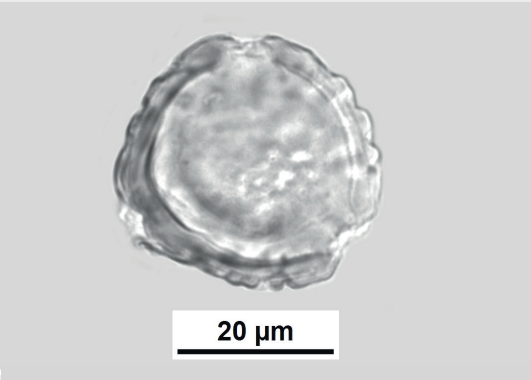
Eriosema tacuaremboense Arechav.
343 – ICN 35468
Equatorial view: first plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 29 µm EQ $\bar{x}$= 34 µm
Note: Colporus frontal view. Coarse and sinuous reticulum.



Eriosema tacuaremboense Arechav.
343 – ICN 35468
Equatorial view: second plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 29 µm EQ $\bar{x}$= 34 µm
Note: Coarse and sinuous reticulum.

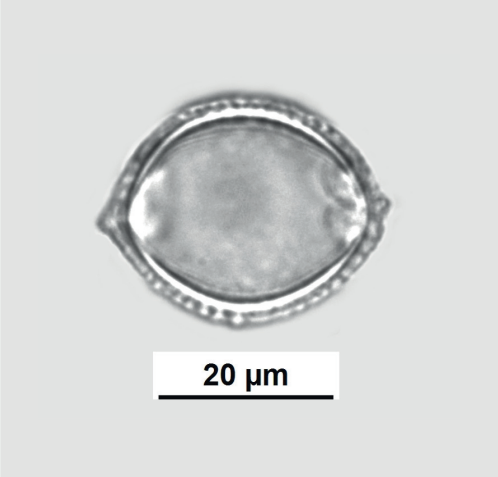


Eriosema tacuaremboense Arechav.
343 – ICN 35468
Equatorial view: third plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 29 µm EQ $\bar{x}$= 34 µm
Note: Coarse and sinuous reticulum.

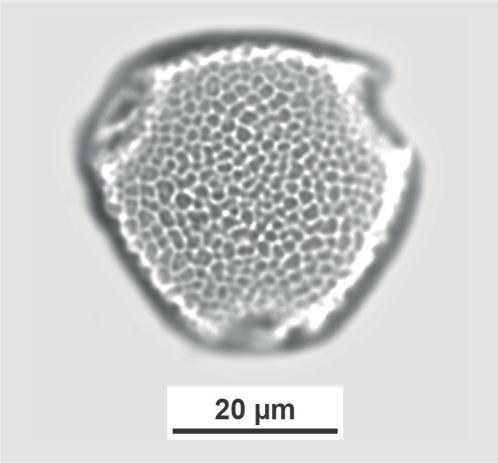


Eriosema tacuaremboense Arechav.
343 – ICN 35468
Polar view: third plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 29 µm EQ $\bar{x}$= 34 µm
Note: Coarse and sinuous reticulum.

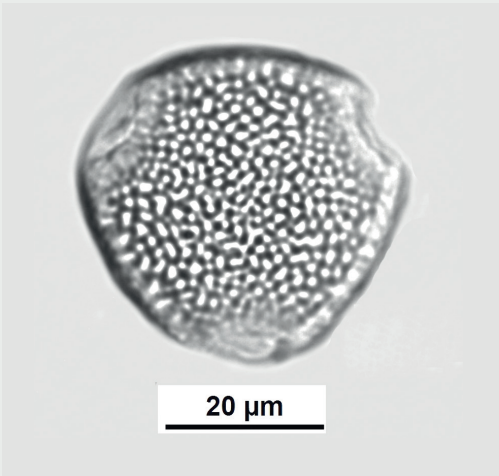
Fabaceae (1. Leguminosae - Papilionoideae)



Erythrina crista-galli L.
43 – ICN 33061
Equatorial view: third plane
Suboblate - Triporate - Reticulate
P $\bar{x}$= 25 µm EQ $\bar{x}$= 33 µm



Erythrina crista-galli L.
43 – ICN 33061
Polar view: first plane
Suboblate - Triporate - Reticulate
P $\bar{x}$= 25 µm EQ $\bar{x}$= 33 µm



Erythrina crista-galli L.
43 – ICN 33061
Polar view: second plane
Suboblate - Triporate - Reticulate
P $\bar{x}$= 25 µm EQ $\bar{x}$= 33 µm

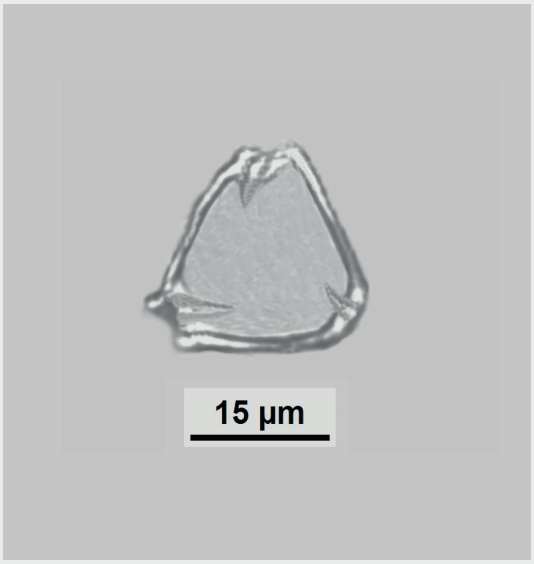
Fabaceae (1. Leguminosae - Papilionoideae)



Indigofera asperifolia Bong. ex Benth.
938 – ICN 81629
Equatorial view: first plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 29 µm
Note: Colporus frontal view. Large endoaperture.



Indigofera asperifolia Bong. ex Benth.
938 – ICN 81629
Equatorial view: second plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 29 µm
Note: Colporus frontal view. Large endoaperture.



Indigofera asperifolia Bong. ex Benth.
938 – ICN 81629
Polar view: first plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 29 µm

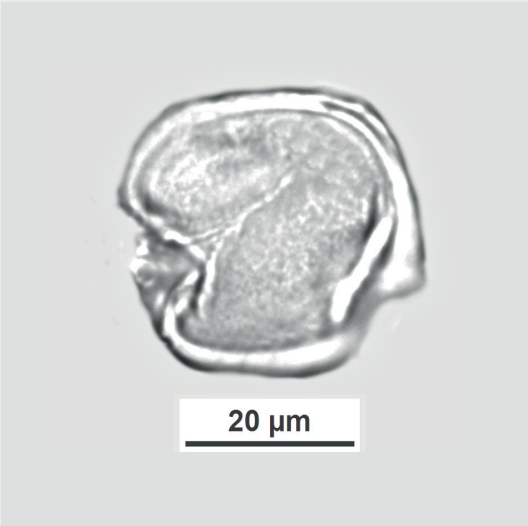
Fabaceae (1. Leguminosae - Papilionoideae)



Indigofera sabulicola Benth.
1031 – ICN 18442
Equatorial view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 41 µm EQ $\bar{x}$= 27 µm
Note: Colporus frontal view. Large endoaperture.

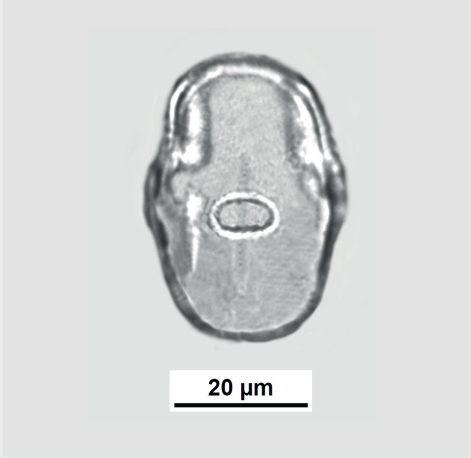


Indigofera sabulicola Benth.
1031 – ICN 18442
Equatorial view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 41 µm EQ $\bar{x}$= 27 µm
Note: Colporus frontal view. Large endoaperture.



Indigofera sabulicola Benth.
1031 – ICN 18442
Polar view: second plane (oblique)
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 41 µm EQ $\bar{x}$= 27 µm

Fabaceae (1. Leguminosae - Papilionoideae)



Lathyrus crassipes Gillies ex Hook. & Arn.
405 – ICN 18521
Equatorial view: first plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 29 µm
Note: Colporus frontal view. Large endoaperture.

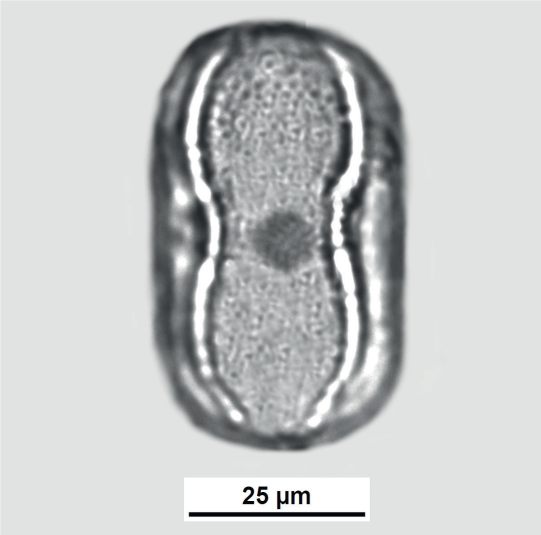


Lathyrus crassipes Gillies ex Hook. & Arn.
405 – ICN 18521
Equatorial view: second plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 29 µm
Note: Colporus frontal view. Large endoaperture.

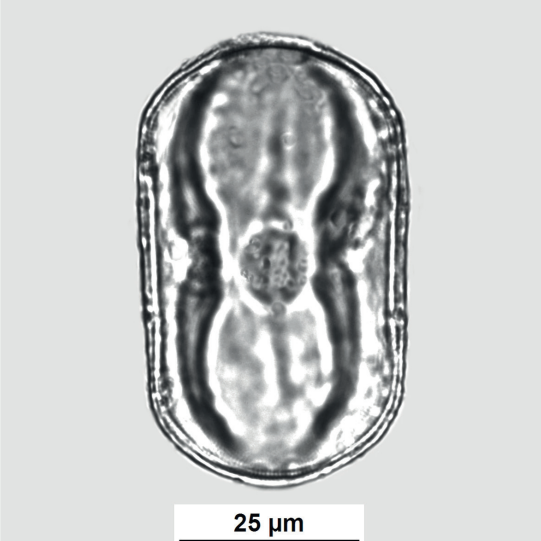


Lathyrus crassipes Gillies ex Hook. & Arn.
405 – ICN 18521
Polar view: third plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 29 µm

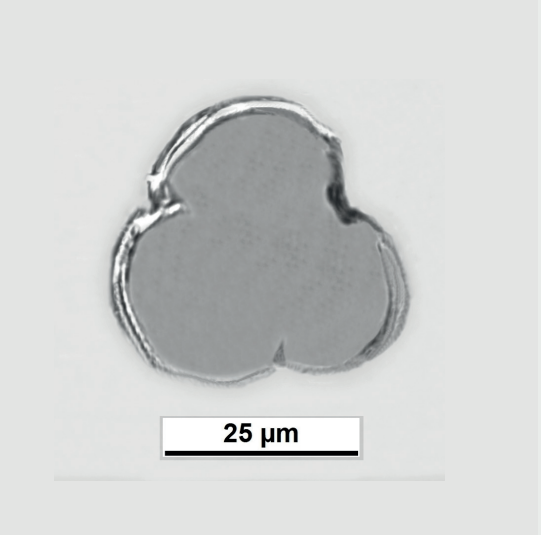
Fabaceae (1. Leguminosae - Papilionoideae)



Lathyrus paranensis Burkart
854 – ICN 68264
Equatorial view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 62 µm EQ $\bar{x}$= 37 µm

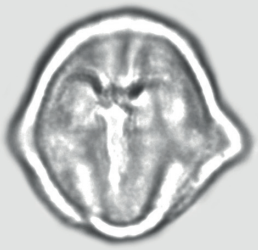


Lathyrus paranensis Burkart
854 – ICN 68264
Equatorial view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 62 µm EQ $\bar{x}$= 37 µm
Note: Colporus frontal view.

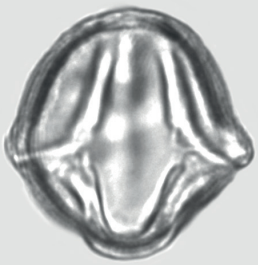


Lathyrus paranensis Burkart
854 – ICN 68264
Polar view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 62 µm EQ $\bar{x}$= 37 µm

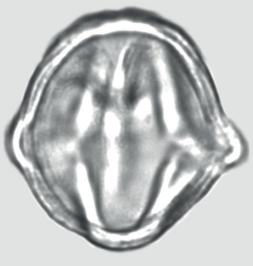
Fabaceae (1. Leguminosae - Papilionoideae)



Lonchocarpus cultratus (Vell.) A.M.G. Azevedo & H.C. Lima
404 – ICN 33866
Equatorial view: first plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 28 µm
Note: Colporus frontal view.

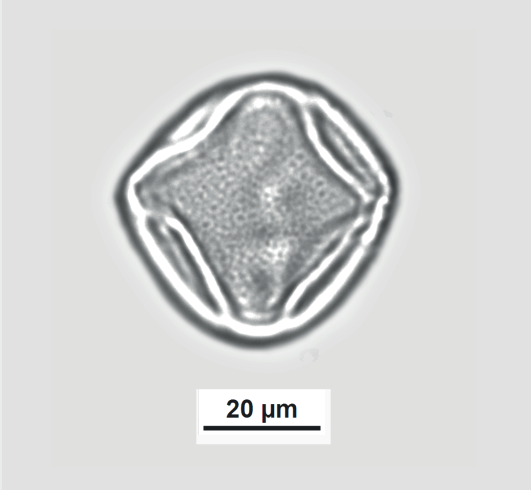


Lonchocarpus cultratus (Vell.) A.M.G. Azevedo & H.C. Lima
404 – ICN 33866
Equatorial view: second plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 28 µm

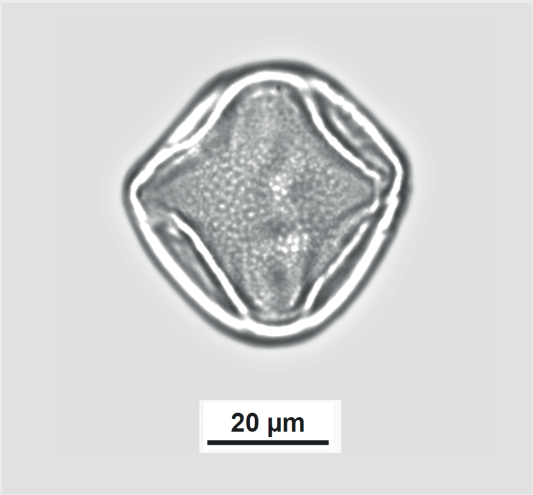


Lonchocarpus cultratus (Vell.) A.M.G. Azevedo & H.C. Lima
404 – ICN 33866
Equatorial view: third plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 28 µm

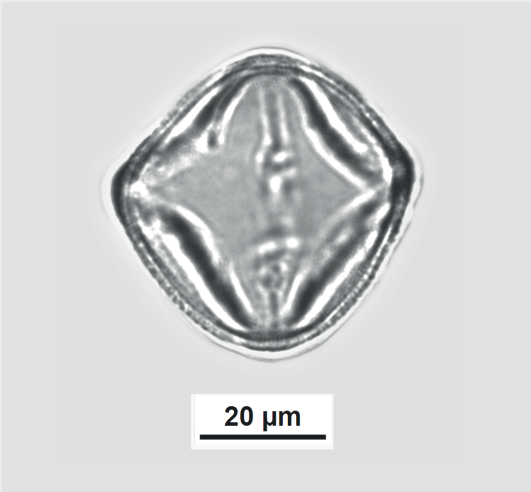
Fabaceae (1. Leguminosae - Papilionoideae)



Lupinus albescens Hook. & Arn.
984 – ICN 46184
Equatorial view: first plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 50 µm



Lupinus albescens Hook. & Arn.
984 – ICN 46184
Equatorial view: second plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 50 µm



Lupinus albescens Hook. & Arn.
984 – ICN 46184
Equatorial view: third plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 50 µm

Fabaceae (1. Leguminosae - Papilionoideae)



Lupinus albescens Hook. & Arn.
984 – ICN 46184
Equatorial view
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 50 µm
Note: Colporus frontal view.



Lupinus albescens Hook. & Arn.
984 – ICN 46184
Polar view: first plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 50 µm

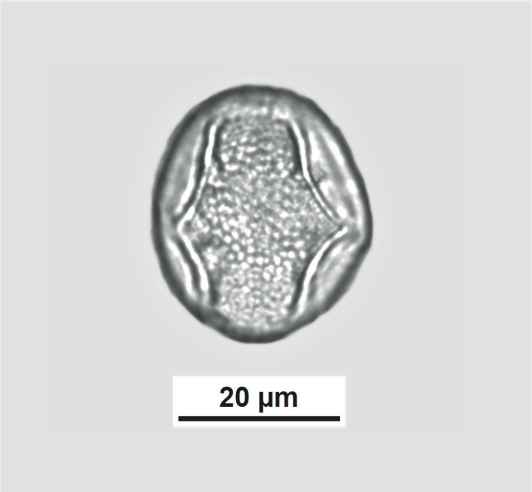


Lupinus albescens Hook. & Arn.
984 – ICN 46184
Polarl view: second plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 48 µm EQ $\bar{x}$= 50 µm

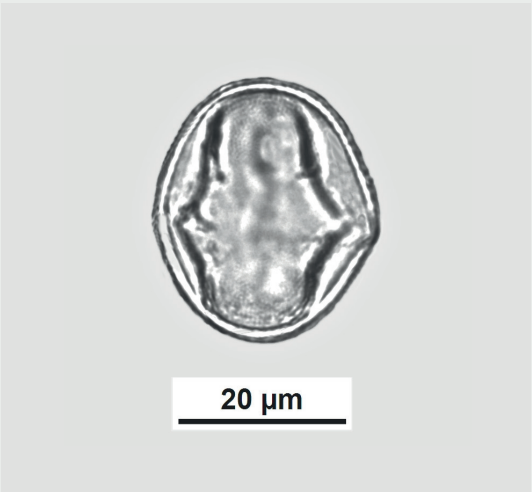
Fabaceae (1. Leguminosae - Papilionoideae)



Lupinus bracteolaris Desr.
403 – ICN 14442
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 26 µm

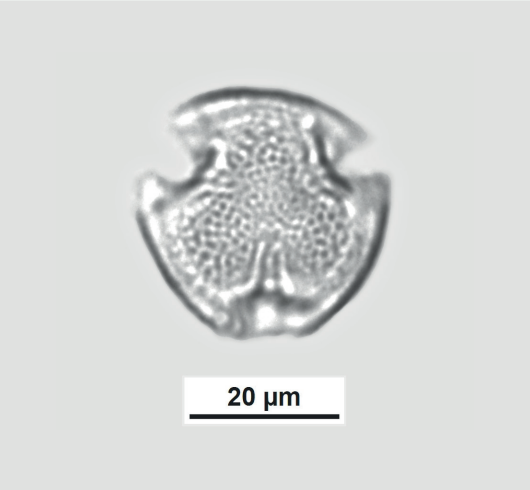


Lupinus bracteolaris Desr.
403 – ICN 14442
Equatorial view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 26 µm

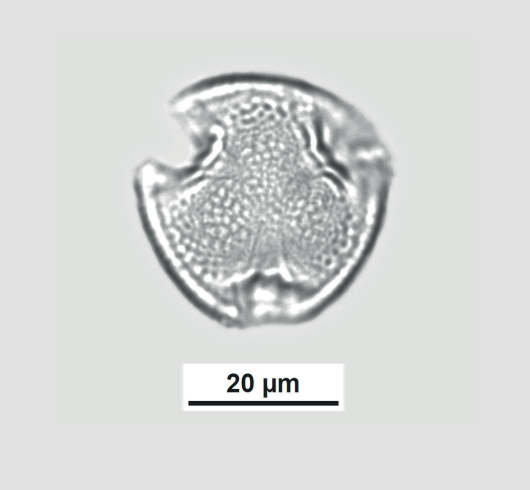


Lupinus bracteolaris Desr.
403 – ICN 14442
Equatorial view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 26 µm

Fabaceae (1. Leguminosae - Papilionoideae)



Lupinus bracteolaris Desr.
403 – ICN 14442
Polar view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 26 µm



Lupinus bracteolaris Desr.
403 – ICN 14442
Polar view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 26 µm

Fabaceae (1. Leguminosae - Papilionoideae)



Lupinus gibertianus C.P. Sm.
999 – ICN 5869
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm

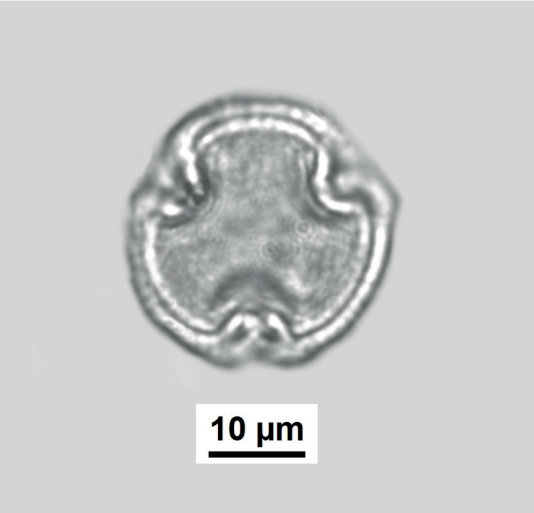


Lupinus gibertianus C.P. Sm.
999 – ICN 5869
Equatorial view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm



Lupinus gibertianus C.P. Sm.
999 – ICN 5869
Equatorial view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm

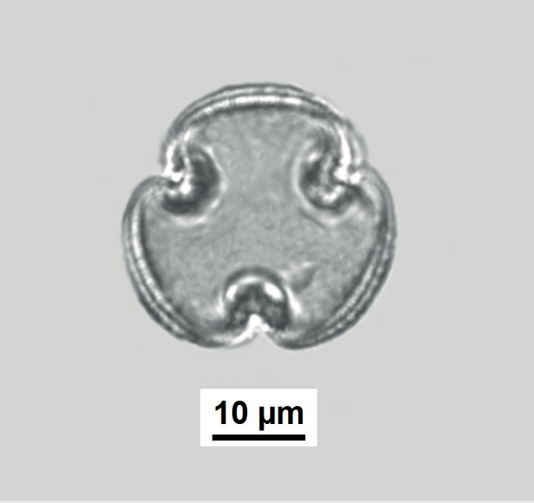
Fabaceae (1. Leguminosae - Papilionoideae)



Lupinus gibertianus C.P. Sm.
999 – ICN 5869
Polar view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm

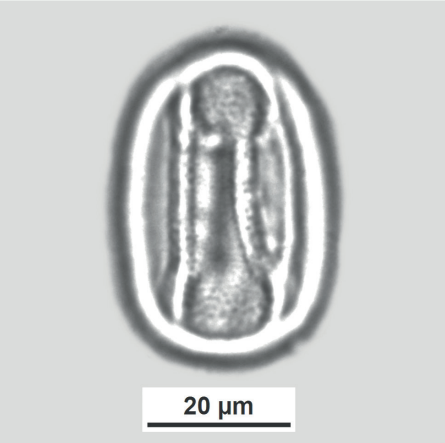


Lupinus gibertianus C.P. Sm.
999 – ICN 5869
Polar view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm

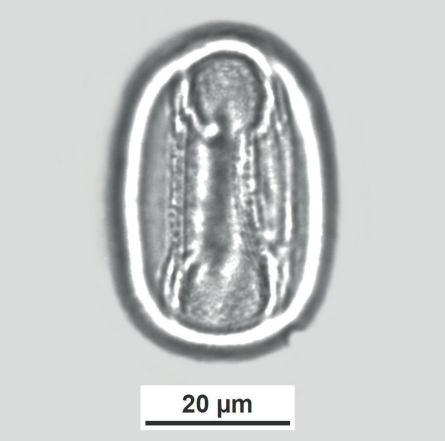


Lupinus gibertianus C.P. Sm.
999 – ICN 5869
Polar view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 27 µm

Fabaceae (1. Leguminosae - Papilionoideae)



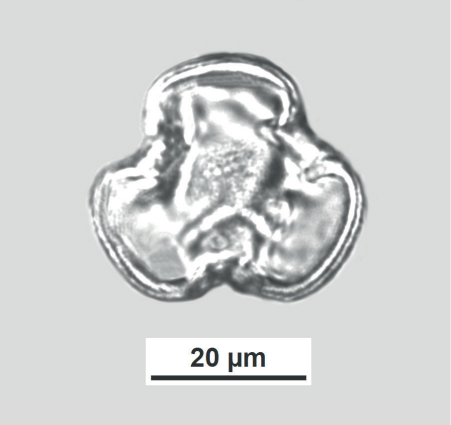
Lupinus guaraniticus (Hassl.) C.P. Sm.
990 – ICN 35508
Equatorial view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 30 µm



Lupinus guaraniticus (Hassl.) C.P. Sm.
990 – ICN 35508
Equatorial view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 30 µm



Lupinus guaraniticus (Hassl.) C.P. Sm.
990 – ICN 35508
Equatorial view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 30 µm



Lupinus guaraniticus (Hassl.) C.P. Sm.
990 – ICN 35508
Polar view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 44 µm EQ $\bar{x}$= 30 µm

Fabaceae (1. Leguminosae - Papilionoideae)



Lupinus multiflorus Desr.
986 – ICN 34017
Equatorial view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 34 µm EQ $\bar{x}$= 24 µm

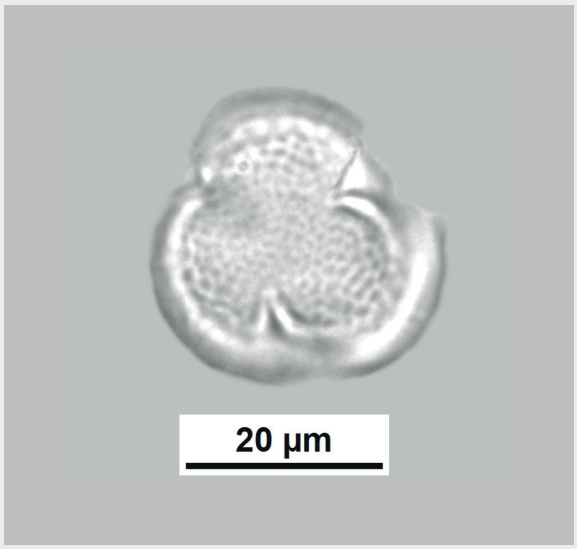


Lupinus multiflorus Desr.
986 – ICN 34017
Equatorial view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 34 µm EQ $\bar{x}$= 24 µm

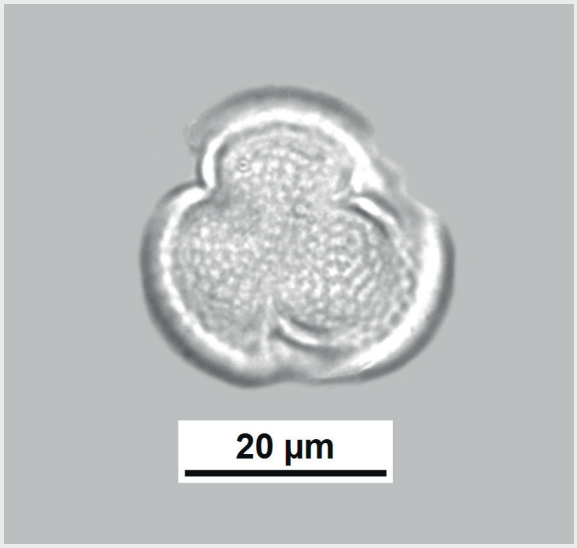


Lupinus multiflorus Desr.
986 – ICN 34017
Equatorial view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 34 µm EQ $\bar{x}$= 24 µm

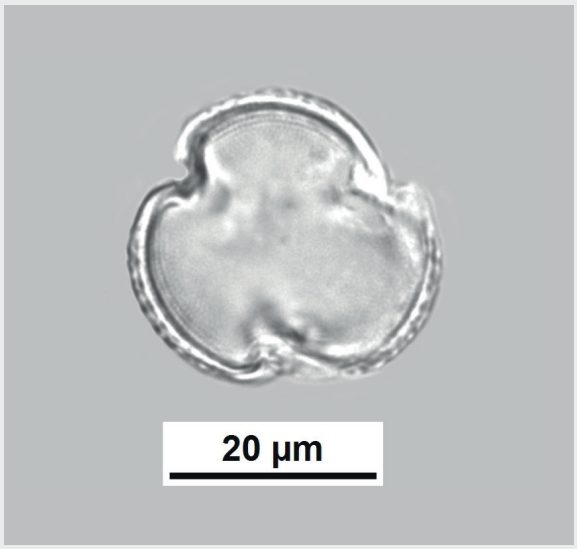
Fabaceae (1. Leguminosae - Papilionoideae)



Lupinus multiflorus Desr.
986 – ICN 34017
Polar view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 34 µm EQ $\bar{x}$= 24 µm

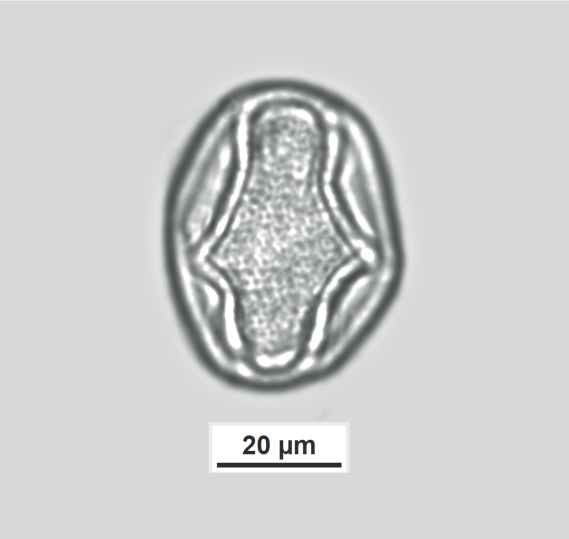


Lupinus multiflorus Desr.
986 – ICN 34017
Polar view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 34 µm EQ $\bar{x}$= 24 µm

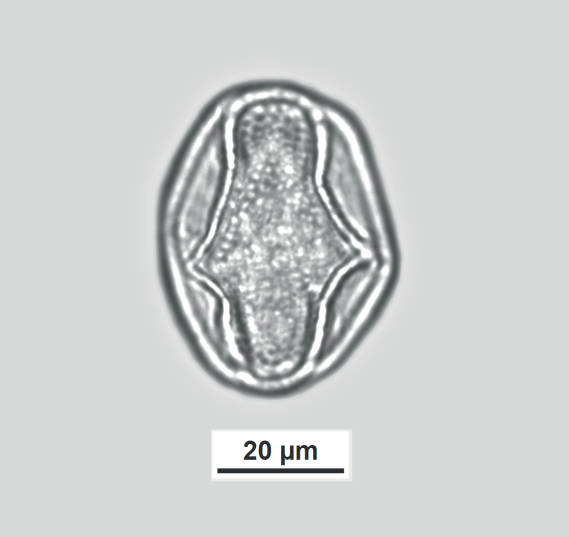


Lupinus multiflorus Desr.
986 – ICN 34017
Polar view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 34 µm EQ $\bar{x}$= 24 µm

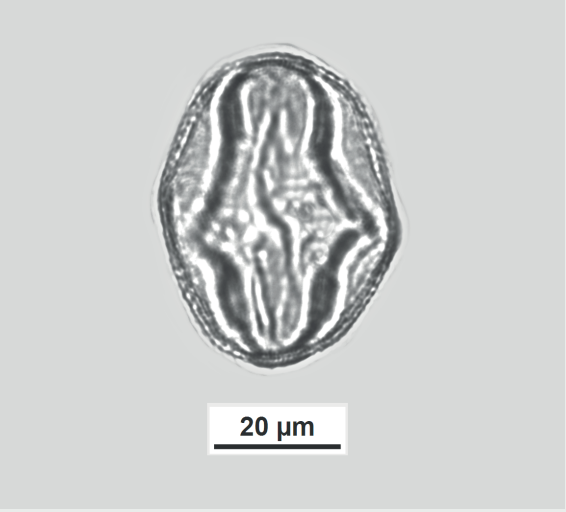
Fabaceae (1. Leguminosae - Papilionoideae)



Lupinus reitzii Burkart ex M. Pinheiro & Miotto
830 – ICN 20861
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
P $\overline{x}$= 52 µm EQ $\overline{x}$= 40 µm



Lupinus reitzii Burkart ex M. Pinheiro & Miotto
830 – ICN 20861
Equatorial view: second plane
Subprolate - Tricolporate - Reticulate
P $\overline{x}$= 52 µm EQ $\overline{x}$= 40 µm

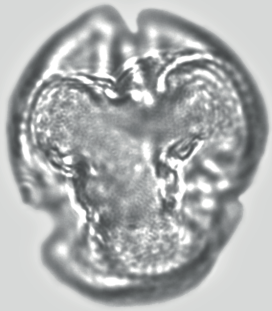


Lupinus reitzii Burkart ex M. Pinheiro & Miotto
830 – ICN 20861
Equatorial view: third plane
Subprolate - Tricolporate - Reticulate
P $\overline{x}$= 52 µm EQ $\overline{x}$= 40 µm

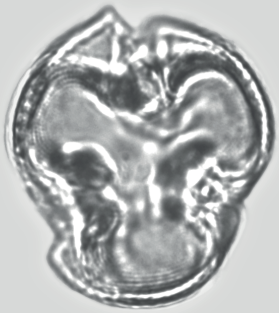
Fabaceae (1. Leguminosae - Papilionoideae)



Lupinus reitzii Burkart ex M. Pinheiro & Miotto
830 – ICN 20861
Equatorial view
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 52 µm EQ $\bar{x}$= 40 µm
Note: Colporus frontal view.



Lupinus reitzii Burkart ex M. Pinheiro & Miotto
830 – ICN 20861
Polar view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 52 µm EQ $\bar{x}$= 40 µm



Lupinus reitzii Burkart ex M. Pinheiro & Miotto
830 – ICN 20861
Polar view: third plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 52 µm EQ $\bar{x}$= 40 µm

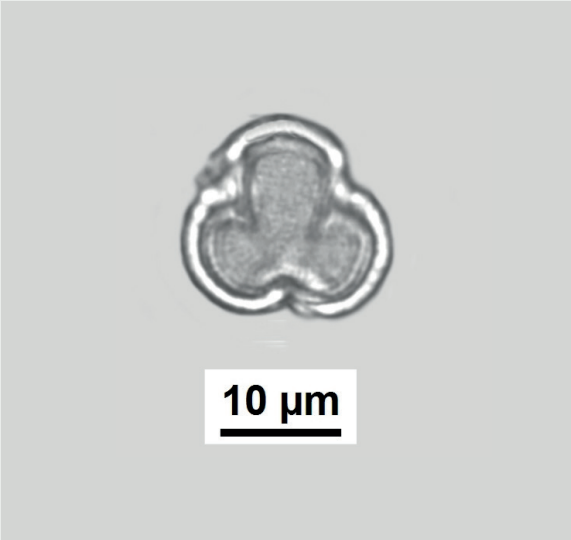
Fabaceae (1. Leguminosae - Papilionoideae)



Machaerium hirtum (Vell.) Stellfeld
402 – ICN 48227
Equatorial view: second plane
Subprolate - Tricolporate - Microreticulate
P $\bar{x}$= 26 µm EQ $\bar{x}$= 20 µm



Machaerium hirtum (Vell.) Stellfeld
402 – ICN 48227
Equatorial view: third plane
Subprolate - Tricolporate - Microreticulate
P $\bar{x}$= 26 µm EQ $\bar{x}$= 20 µm



Machaerium hirtum (Vell.) Stellfeld
402 – ICN 48227
Polar view: second plane
Subprolate - Tricolporate - Microreticulate
P $\bar{x}$= 26 µm EQ $\bar{x}$= 20 µm

Fabaceae (1. Leguminosae - Papilionoideae)



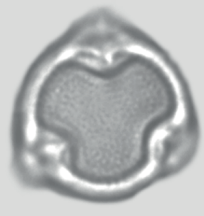
Machaerium paraguariense Hassl.
959 – ICN 44102
Equatorial view: first plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 22 µm EQ $\bar{x}$= 16 µm



Machaerium paraguariense Hassl.
959 – ICN 44102
Equatorial view: second plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 22 µm EQ $\bar{x}$= 16 µm



Machaerium paraguariense Hassl.
959 – ICN 44102
Equatorial view
Prolate - Tricolporate - Psilate
P $\bar{x}$= 22 µm EQ $\bar{x}$= 16 µm
Note: Colporus frontal view. Large endoaperture.



Machaerium paraguariense Hassl.
959 – ICN 44102
Polar view: first plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 22 µm EQ $\bar{x}$= 16 µm

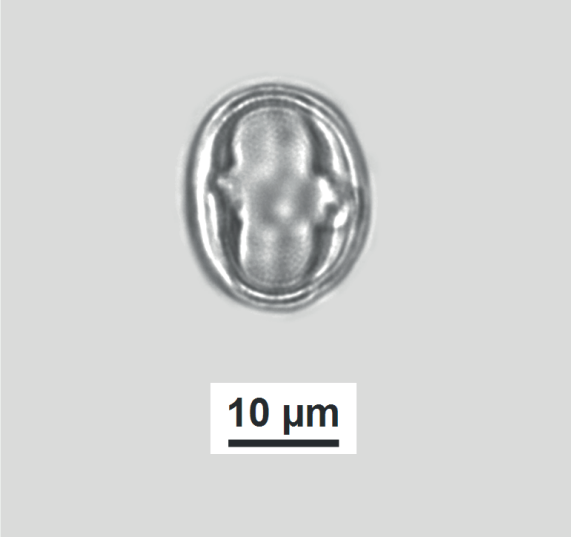
Fabaceae (1. Leguminosae - Papilionoideae)



Machaerium stipitatum (DC.) Vogel
985 – ICN 35898
Equatorial view: first plane
Subprolate - Tricolporate - Psilate
P $\bar{x}$= 20 µm EQ $\bar{x}$= 16 µm

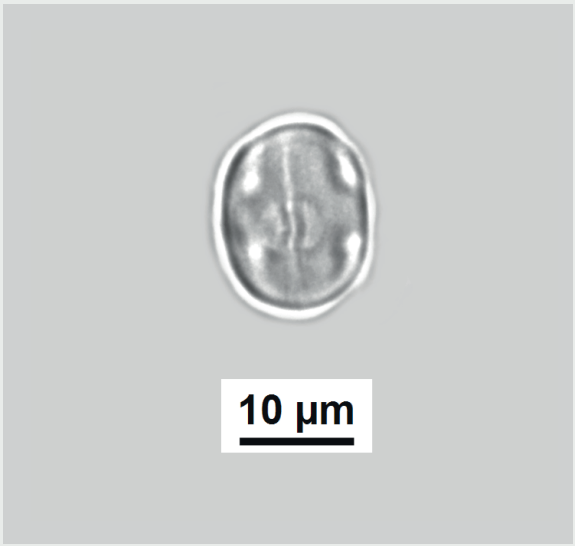


Machaerium stipitatum (DC.) Vogel
985 – ICN 35898
Equatorial view: second plane
Subprolate - Tricolporate - Psilate
P $\bar{x}$= 20 µm EQ $\bar{x}$= 16 µm

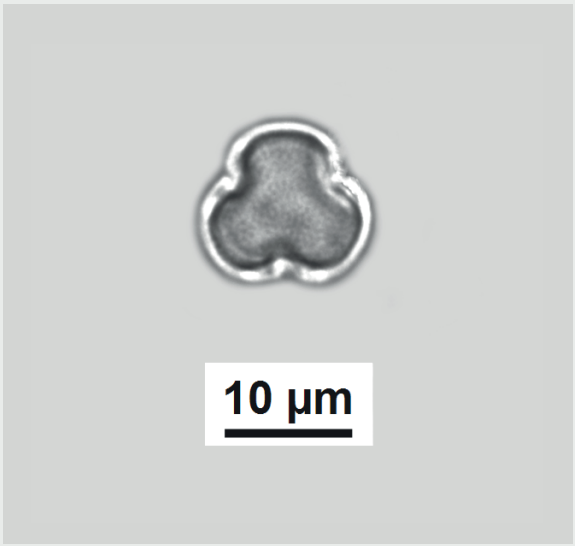


Machaerium stipitatum (DC.) Vogel
985 – ICN 35898
Equatorial view: third plane
Subprolate - Tricolporate - Psilate
P $\bar{x}$= 20 µm EQ $\bar{x}$= 16 µm

Fabaceae (1. Leguminosae - Papilionoideae)



Machaerium stipitatum (DC.) Vogel
985 – ICN 35898
Equatorial view
Subprolate - Tricolporate - Psilate
P $\bar{x}$= 20 µm EQ $\bar{x}$= 16 µm
Note: Colporus frontal view. Large endoaperture.

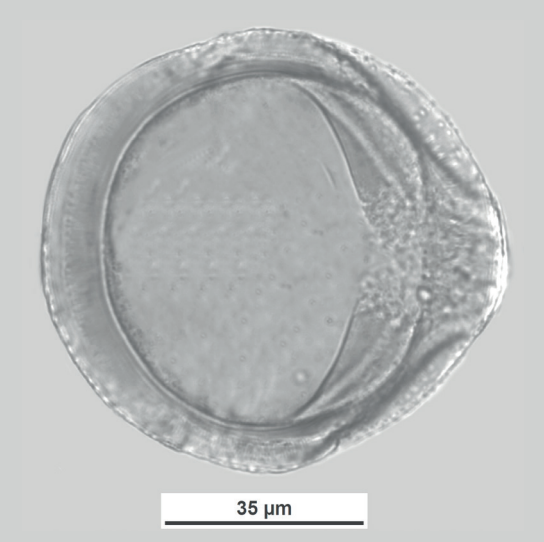


Machaerium stipitatum (DC.) Vogel
985 – ICN 35898
Polar view: second plane
Subprolate - Tricolporate - Psilate
P $\bar{x}$= 20 µm EQ $\bar{x}$= 16 µm

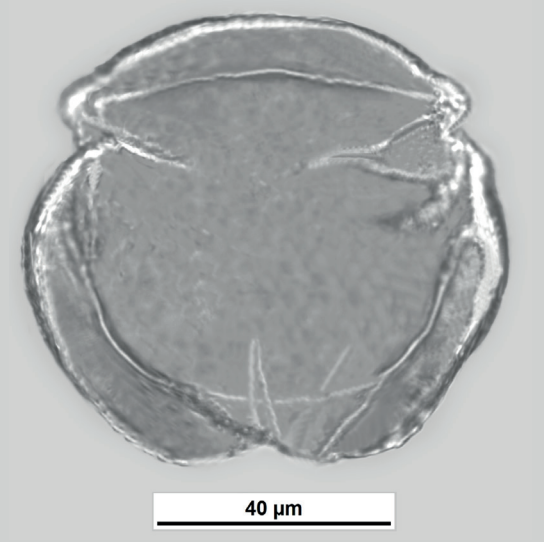
Fabaceae (1. Leguminosae - Papilionoideae)



Macropsychanthus violaceus (Mart. ex Benth.)
L.P. Queiroz & Snak
408 – ICN 2694
Equatorial view: first plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 78 µm EQ $\bar{x}$= 82 µm
Note: Colporus frontal view. Large endoaperture.

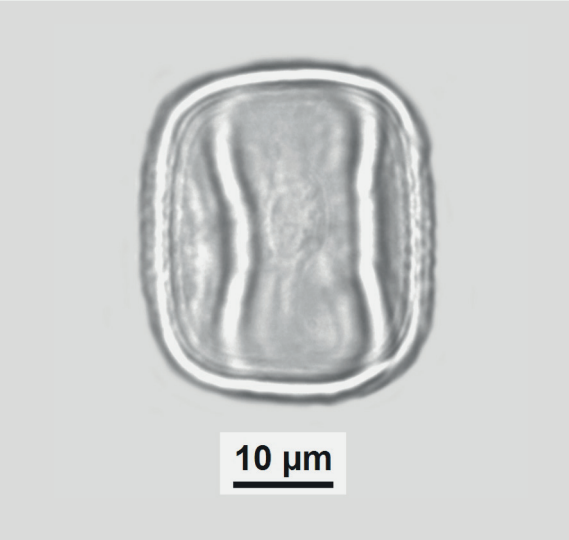


Macropsychanthus violaceus (Mart. ex Benth.)
L.P. Queiroz & Snak
408 – ICN 2694
Equatorial view: third plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 78 µm EQ $\bar{x}$= 82 µm
Note: Very thick exine.



Macropsychanthus violaceus (Mart. ex Benth.)
L.P. Queiroz & Snak
408 – ICN 2694
Polar view: third plane
Spheroidal - Tricolporate - Reticulate
P $\bar{x}$= 78 µm EQ $\bar{x}$= 82 µm
Note: Very thick exine.

Fabaceae (1. Leguminosae - Papilionoideae)



Macroptilium erythroloma (Mart. ex Benth.) Urb.
960 – ICN 14439
Equatorial view: first plane
Subprolate - Tricolporate - Scabrate
P $\bar{x}$= 33 µm EQ $\bar{x}$= 28 µm
Note: Colporus frontal view.

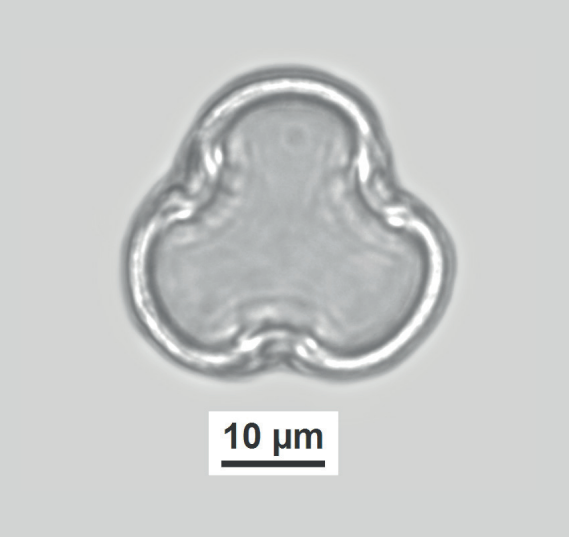


Macroptilium erythroloma (Mart. ex Benth.) Urb.
960 – ICN 14439
Equatorial view: second plane
Subprolate - Tricolporate - Scabrate
P $\bar{x}$= 33 µm EQ $\bar{x}$= 28 µm
Note: Colporus frontal view.

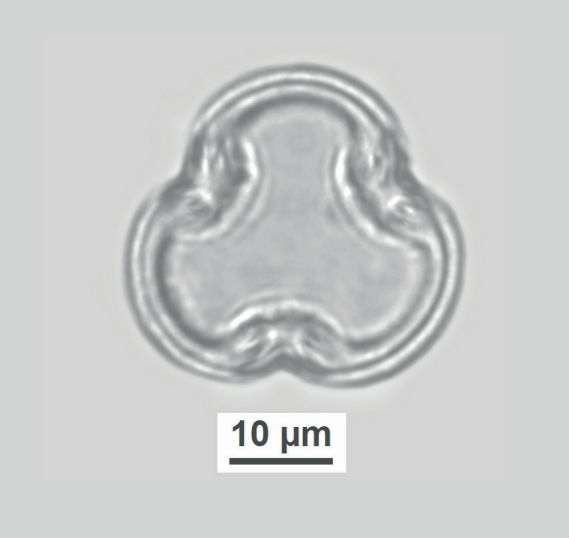


Macroptilium erythroloma (Mart. ex Benth.) Urb.
960 – ICN 14439
Equatorial view: third plane
Subprolate - Tricolporate - Scabrate
P $\bar{x}$= 33 µm EQ $\bar{x}$= 28 µm
Note: Colporus frontal view.

Fabaceae (1. Leguminosae - Papilionoideae)

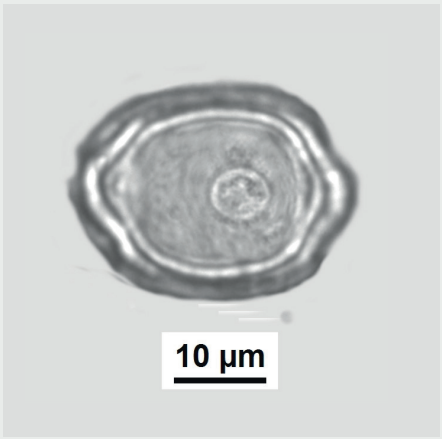


Macroptilium erythroloma (Mart. ex Benth.) Urb.
960 – ICN 14439
Polar view: second plane
Subprolate - Tricolporate - Scabrate
P $\bar{x}$= 33 µm EQ $\bar{x}$= 28 µm

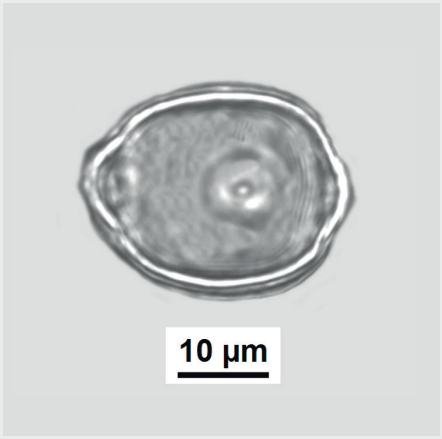


Macroptilium erythroloma (Mart. ex Benth.) Urb.
960 – ICN 14439
Polar view: third plane
Subprolate - Tricolporate - Scabrate
P $\bar{x}$= 33 µm EQ $\bar{x}$= 28 µm

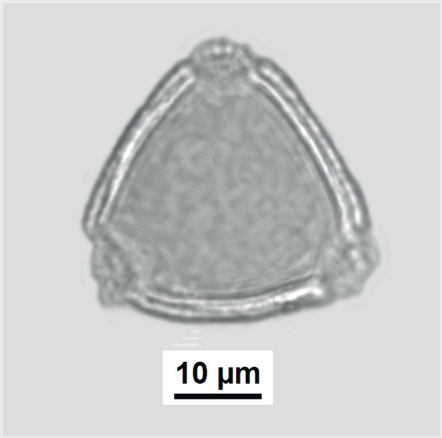
Fabaceae (1. Leguminosae - Papilionoideae)



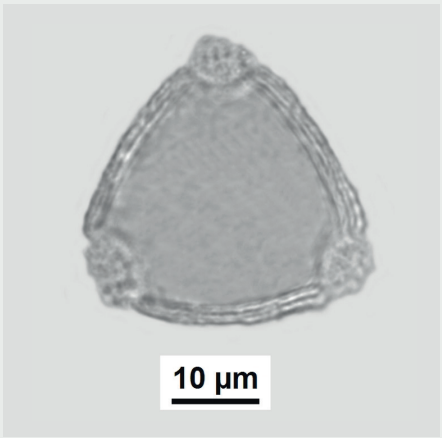
Macroptilium prostratum (Benth.) Urb.
963 – ICN 43111
Equatorial view: second plane
Suboblate - Tricolporate - Psilate
P $\bar{x}$= 24 µm EQ $\bar{x}$= 28 µm
Note: Colporus frontal view. Large endoaperture.



Macroptilium prostratum (Benth.) Urb.
963 – ICN 43111
Equatorial view: third plane
Suboblate - Tricolporate - Psilate
P $\bar{x}$= 24 µm EQ $\bar{x}$= 28 µm



Macroptilium prostratum (Benth.) Urb.
963 – ICN 43111
Polar view: first plane
Suboblate - Tricolporate - Psilate
P $\bar{x}$= 24 µm EQ $\bar{x}$= 28 µm



Macroptilium prostratum (Benth.) Urb.
963 – ICN 43111
Polar view: second plane
Suboblate - Tricolporate - Psilate
P $\bar{x}$= 24 µm EQ $\bar{x}$= 28 µm

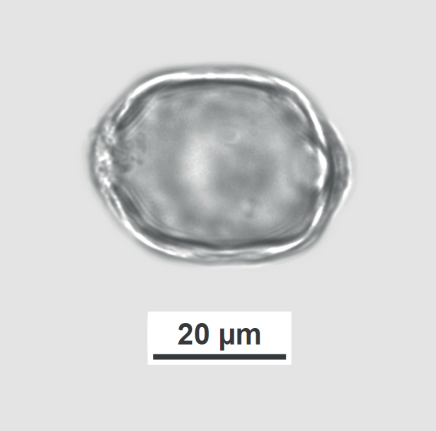
Fabaceae (1. Leguminosae - Papilionoideae)



Macroptilium psammodes (Lindm.) S.I. Drewes & R.A. Palacios
961 – ICN 014787
Equatorial view: first plane
Suboblate - Tricolporate - Verrucate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 40 µm

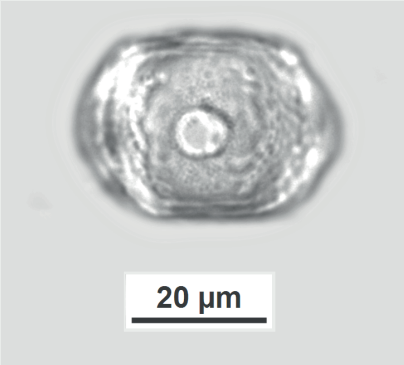


Macroptilium psammodes (Lindm.) S.I. Drewes & R.A. Palacios
961 – ICN 014787
Equatorial view: second plane
Suboblate - Tricolporate - Verrucate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 40 µm

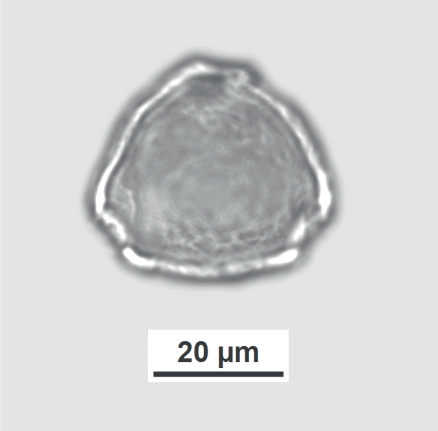


Macroptilium psammodes (Lindm.) S.I. Drewes & R.A. Palacios
961 – ICN 014787
Equatorial view: third plane
Suboblate - Tricolporate - Verrucate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 40 µm

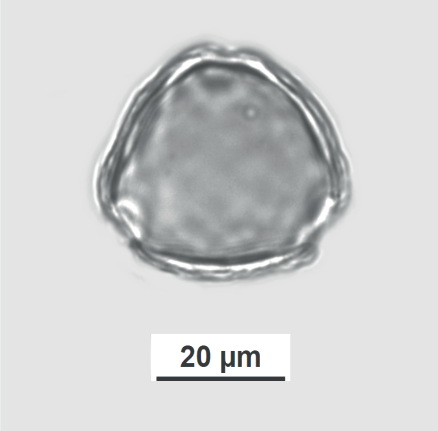
Fabaceae (1. Leguminosae - Papilionoideae)



Macroptilium psammodes (Lindm.) S.I. Drewes & R.A. Palacios
961 – ICN 014787
Equatorial view
Suboblate - Tricolporate - Verrucate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 40 µm
Note: Colporus frontal view. Large endoaperture.



Macroptilium psammodes (Lindm.) S.I. Drewes & R.A. Palacios
961 – ICN 014787
Polar view: first plane
Suboblate - Tricolporate - Verrucate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 40 µm

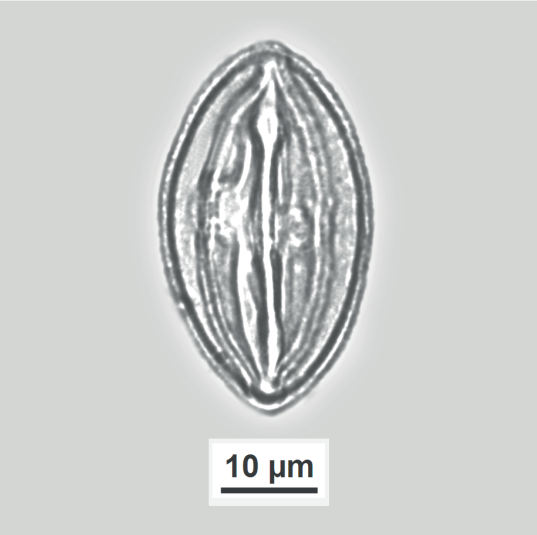


Macroptilium psammodes (Lindm.) S.I. Drewes & R.A. Palacios
961 – ICN 014787
Polar view: second plane
Suboblate - Tricolporate - Verrucate
P $\bar{x}$= 30 µm EQ $\bar{x}$= 40 µm

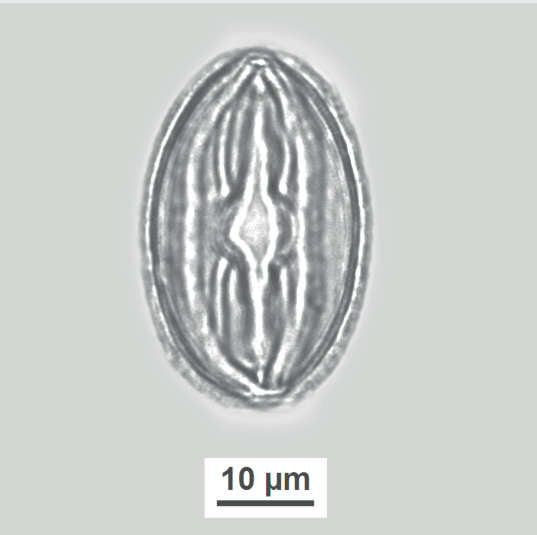
Fabaceae (1. Leguminosae - Papilionoideae)



Myrocarpus frondosus Allemão
44 – ICN 14520
Equatorial view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 22 µm

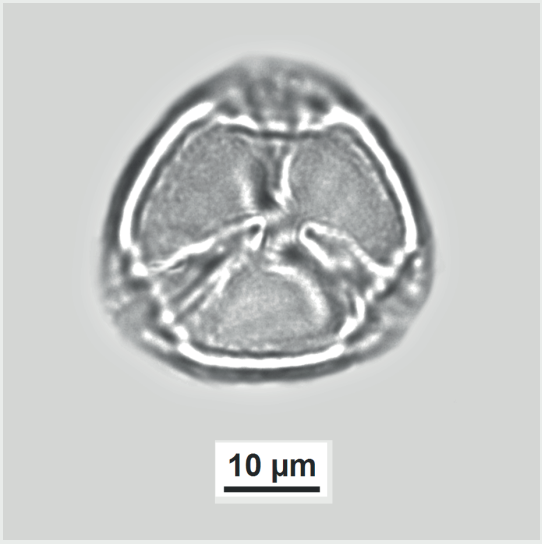


Myrocarpus frondosus Allemão
44 – ICN 14520
Equatorial view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 22 µm

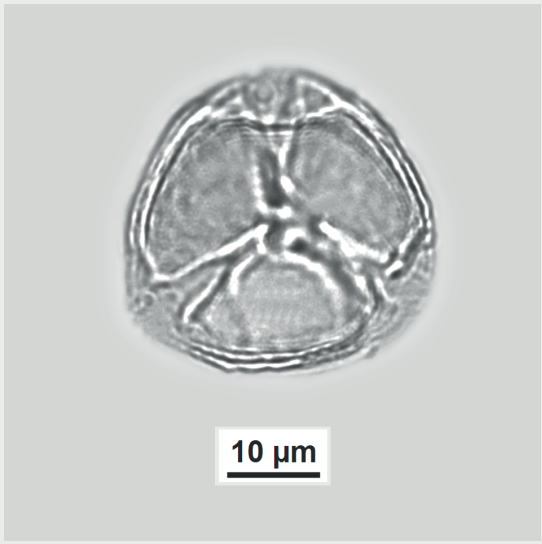


Myrocarpus frondosus Allemão
44 – ICN 14520
Equatorial view
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 22 µm
Note: Colporus frontal view.

Fabaceae (1. Leguminosae - Papilionoideae)

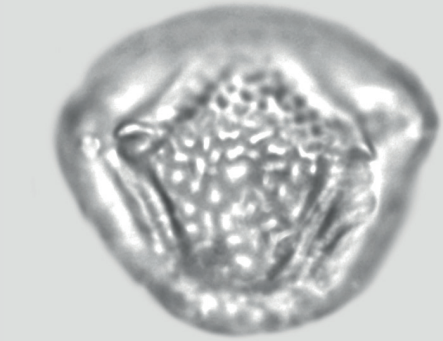


Myrocarpus frondosus Allemão
44 – ICN 14520
Polar view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 22 µm

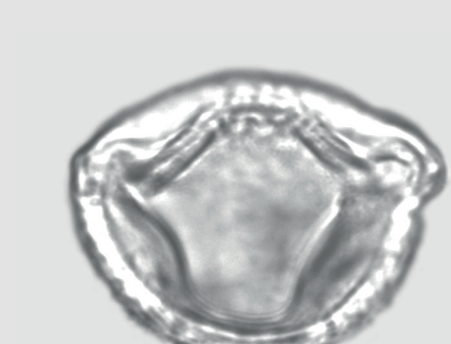


Myrocarpus frondosus Allemão
44 – ICN 14520
Polar view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 22 µm

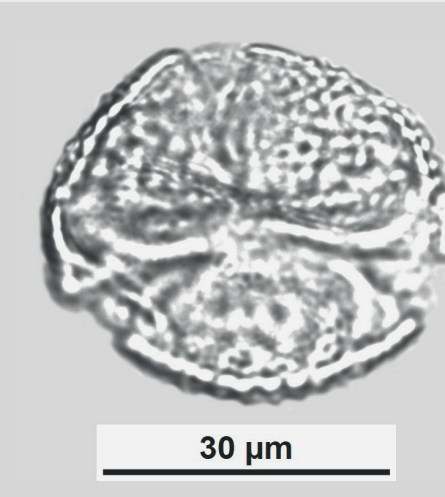
Fabaceae (1. Leguminosae - Papilionoideae)



Nanogalactia heterophylla (Gillies ex Hook.) L.P. Queiroz
406 – ICN 46550
Equatorial view: second plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 37 µm

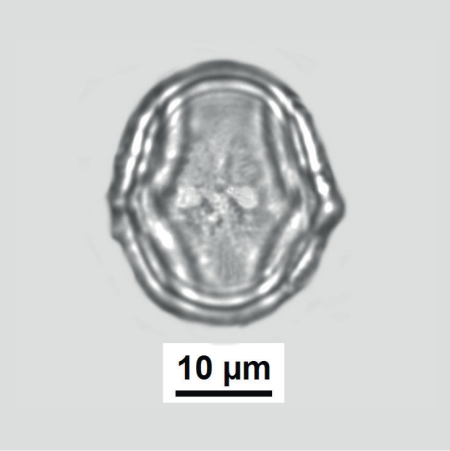


Nanogalactia heterophylla (Gillies ex Hook.) L.P. Queiroz
406 – ICN 46550
Equatorial view: third plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 37 µm

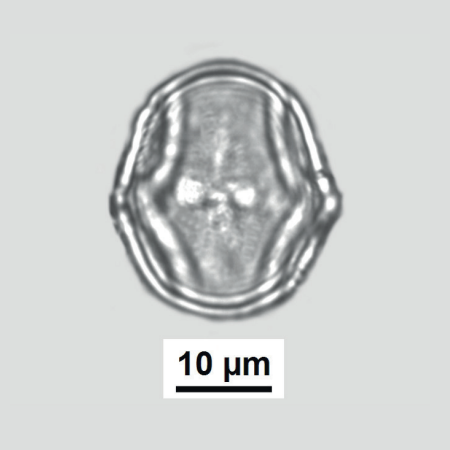


Nanogalactia heterophylla (Gillies ex Hook.) L.P. Queiroz
406 – ICN 46550
Polar view: first plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 32 µm EQ $\bar{x}$= 37 µm

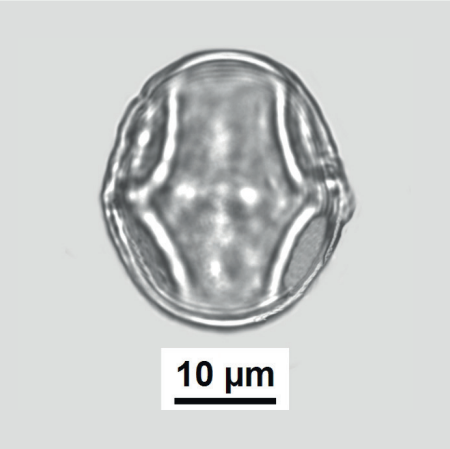
Fabaceae (1. Leguminosae - Papilionoideae)



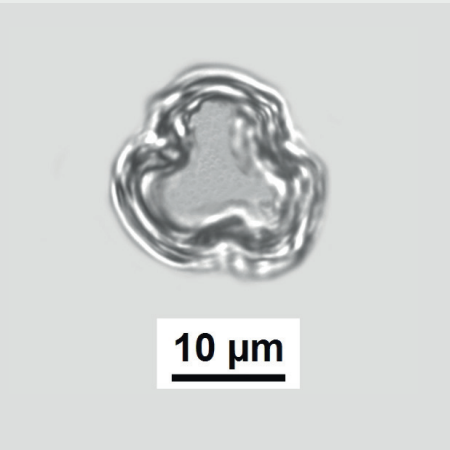
Ornithopus micranthus (Benth.) Arechav.
401 – ICN 50622
Equatorial view: first plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 25 µm
Note: Colporus frontal view.



Ornithopus micranthus (Benth.) Arechav.
401 – ICN 50622
Equatorial view: second plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 25 µm
Note: Colporus frontal view.

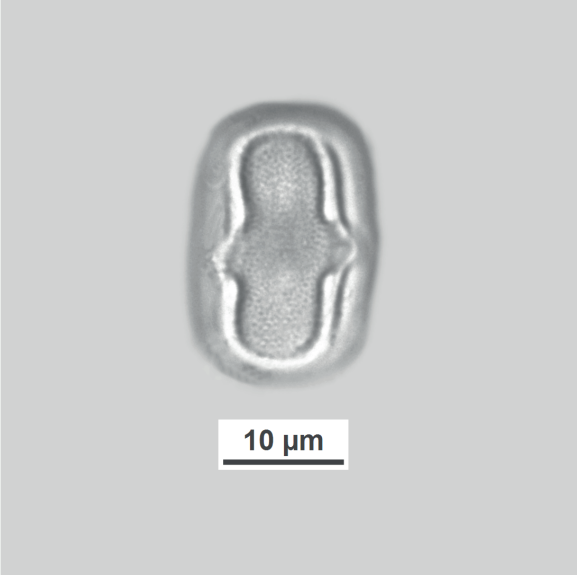


Ornithopus micranthus (Benth.) Arechav.
401 – ICN 50622
Equatorial view: third plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 25 µm

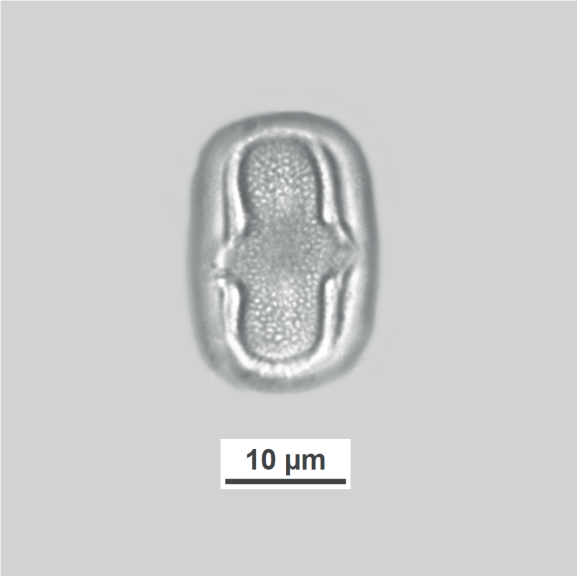


Ornithopus micranthus (Benth.) Arechav.
401 – ICN 50622
Polar view: third plane
Spheroidal - Tricolporate - Psilate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 25 µm

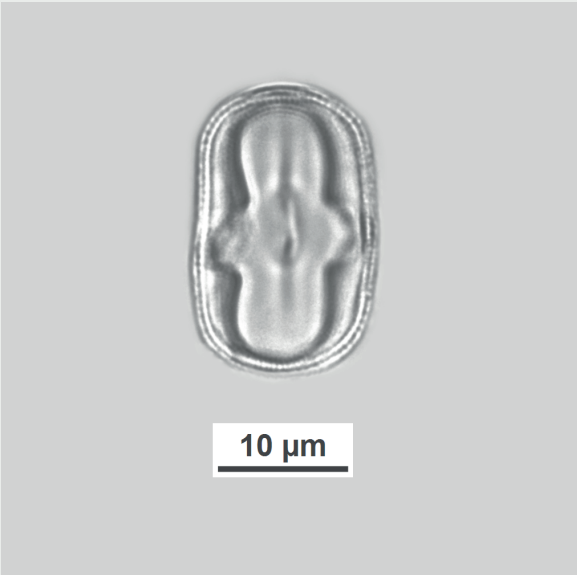
Fabaceae (1. Leguminosae - Papilionoideae)



Poiretia latifolia Vogel
400 – ICN 473
Equatorial view: first plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 13 µm

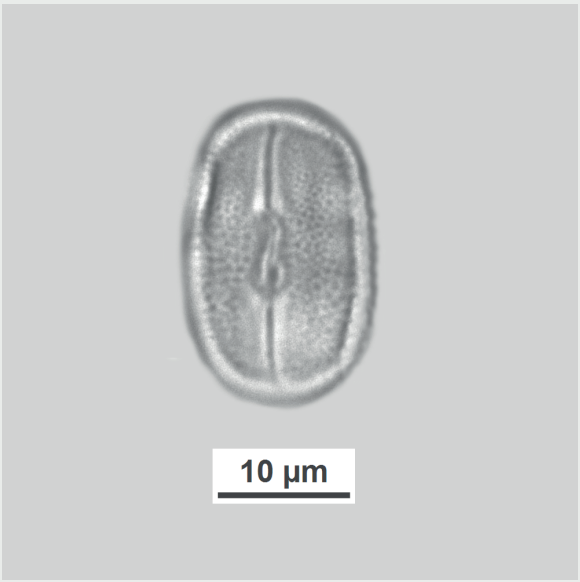


Poiretia latifolia Vogel
400 – ICN 473
Equatorial view: second plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 13 µm

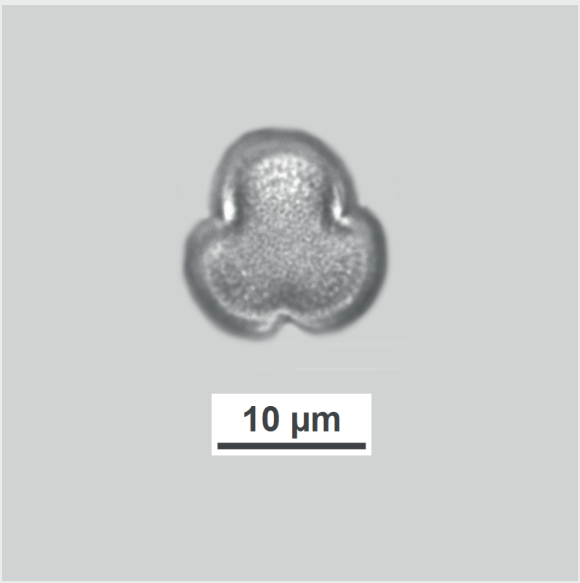


Poiretia latifolia Vogel
400 – ICN 473
Equatorial view: third plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 13 µm

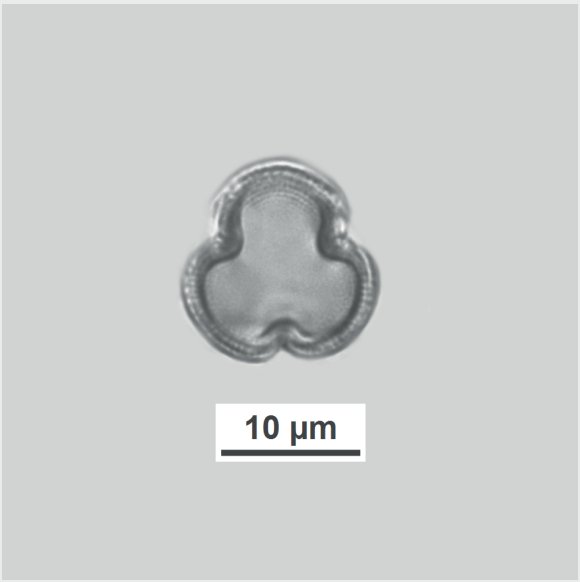
Fabaceae (1. Leguminosae - Papilionoideae)



Poiretia latifolia Vogel
400 – ICN 473
Equatorial view
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 13 µm
Note: Colporus frontal view.



Poiretia latifolia Vogel
400 – ICN 473
Polar view: second plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 13 µm

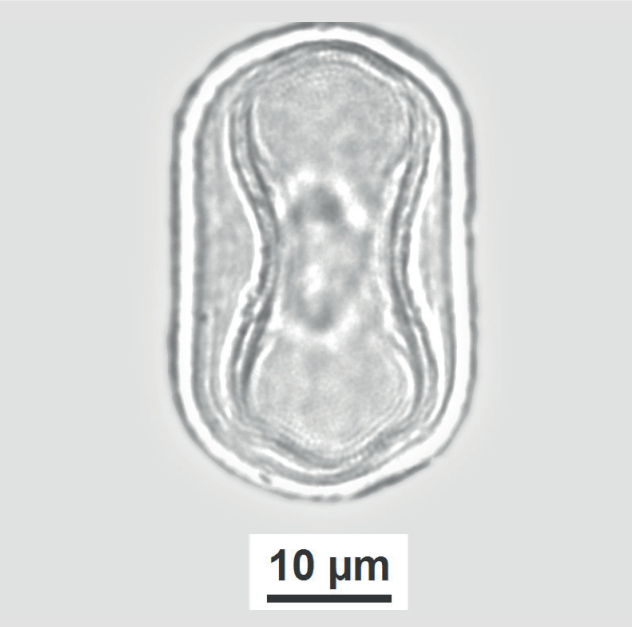


Poiretia latifolia Vogel
400 – ICN 473
Polar view: third plane
Prolate - Tricolporate - Microreticulate
P $\bar{x}$= 21 µm EQ $\bar{x}$= 13 µm

Fabaceae (1. Leguminosae - Papilionoideae)

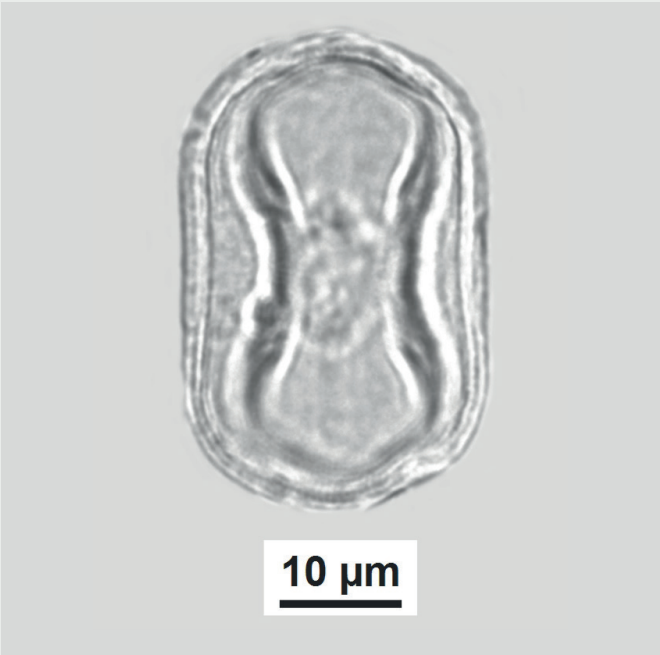


Poiretia tetraphylla (Poir.) Burkart
974 – ICN 34094
Equatorial view: first plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 24 µm



Poiretia tetraphylla (Poir.) Burkart
974 – ICN 34094
Equatorial view: second plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 24 µm

Fabaceae (1. Leguminosae - Papilionoideae)

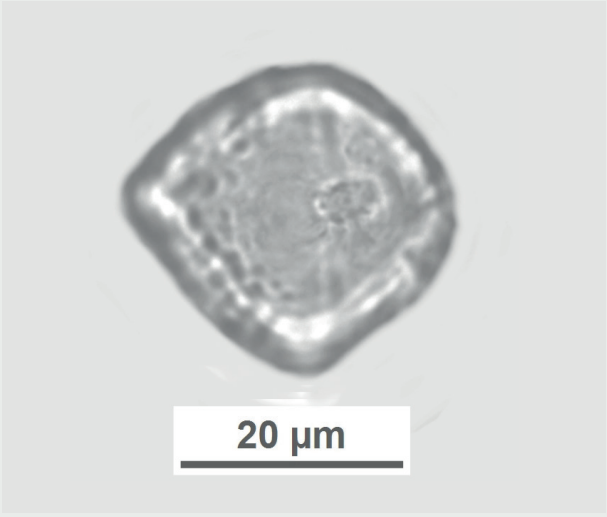


Poiretia tetraphylla (Poir.) Burkart
974 – ICN 34094
Equatorial view: third plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 24 µm

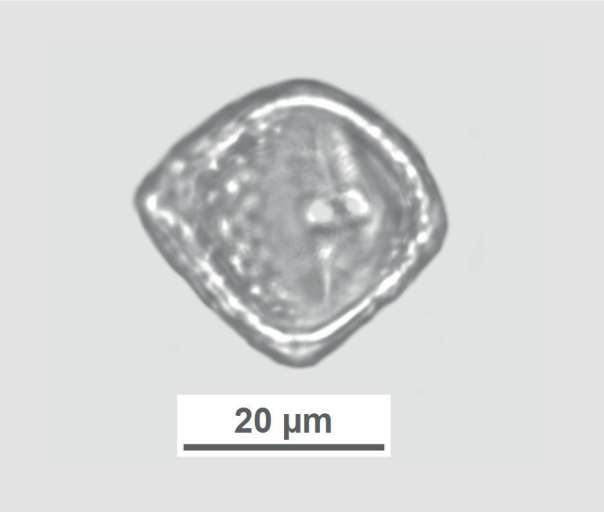


Poiretia tetraphylla (Poir.) Burkart
974 – ICN 34094
Polar view: first plane
Prolate - Tricolporate - Psilate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 24 µm

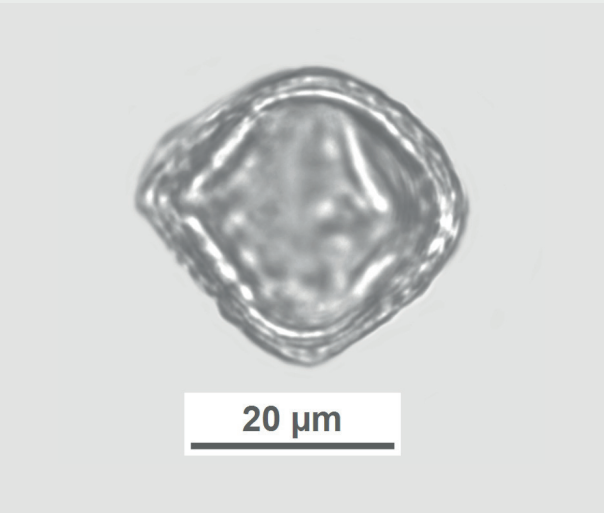
Fabaceae (1. Leguminosae - Papilionoideae)



Rhynchosia corylifolia Mart. ex Benth.
813 – ICN 7269
Equatorial view: first plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 34 µm
Note: Colporus frontal view (oblique).

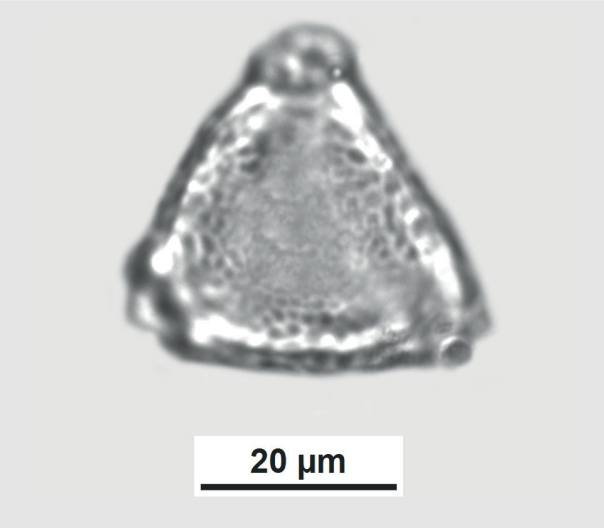


Rhynchosia corylifolia Mart. ex Benth.
813 – ICN 7269
Equatorial view: second plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 34 µm

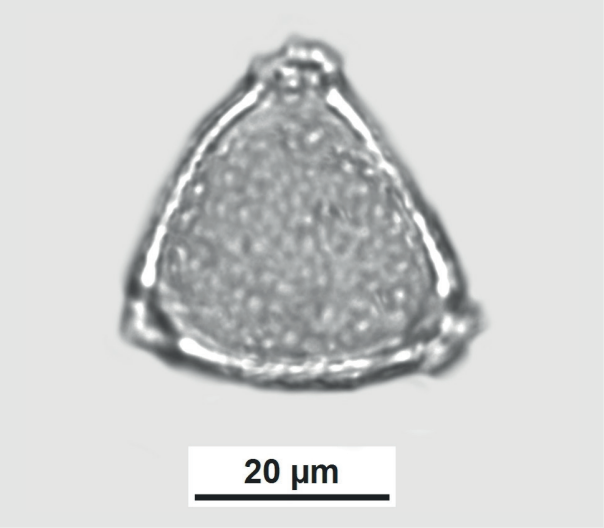


Rhynchosia corylifolia Mart. ex Benth.
813 – ICN 7269
Equatorial view: third plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 34 µm

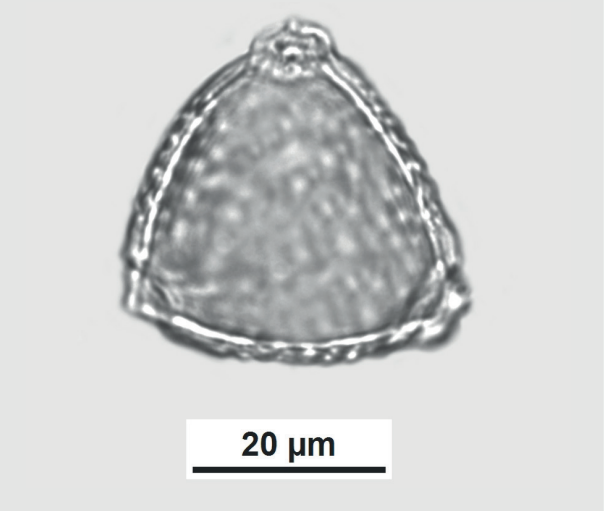
Fabaceae (1. Leguminosae - Papilionoideae)



Rhynchosia corylifolia Mart. ex Benth.
813 – ICN 7269
Polar view: first plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 34 µm

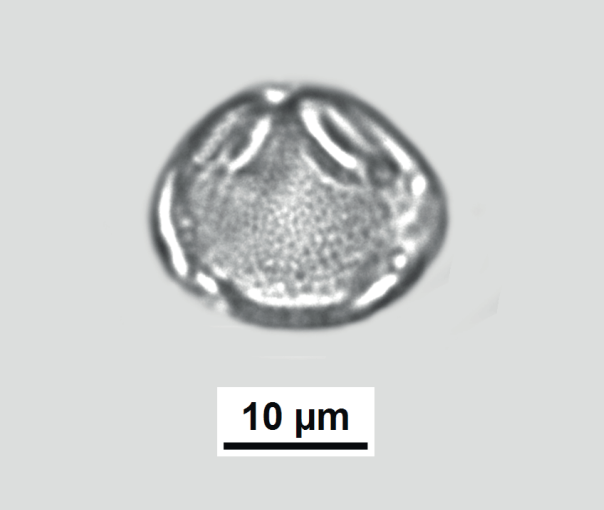


Rhynchosia corylifolia Mart. ex Benth.
813 – ICN 7269
Polar view: second plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 34 µm

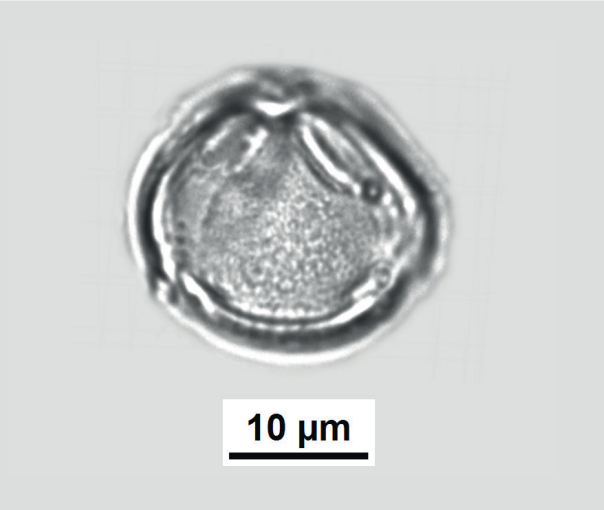


Rhynchosia corylifolia Mart. ex Benth.
813 – ICN 7269
Polar view: third plane
Suboblate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 34 µm

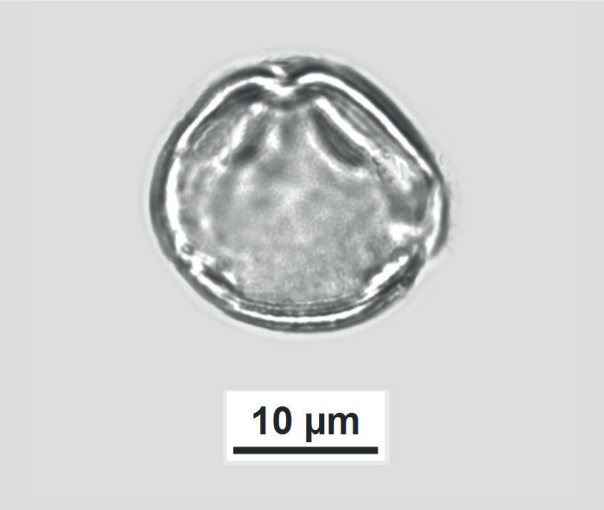
Fabaceae (1. Leguminosae - Papilionoideae)



Sesbania punicea (Cav.) Benth.
97 – ICN 49737
Equatorial view: first plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 19 µm EQ $\bar{x}$= 21 µm

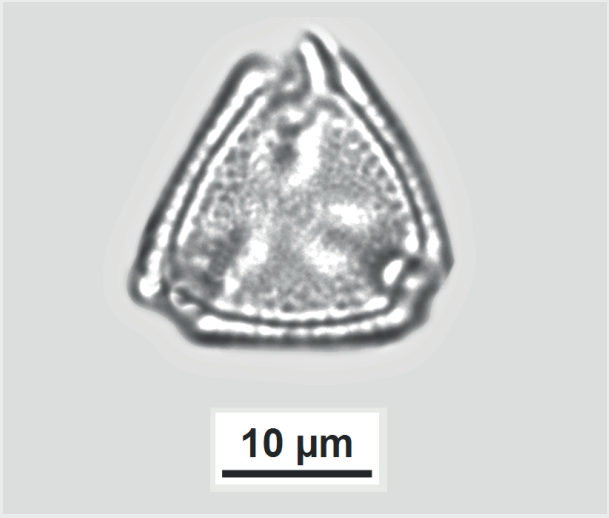


Sesbania punicea (Cav.) Benth.
97 – ICN 49737
Equatorial view: second plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 19 µm EQ $\bar{x}$= 21 µm

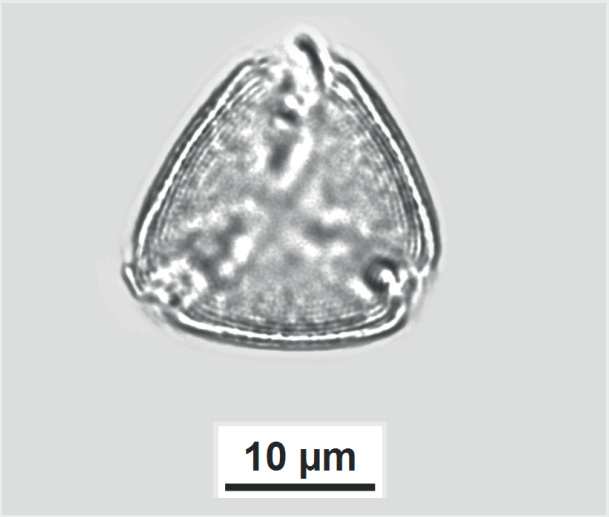


Sesbania punicea (Cav.) Benth.
97 – ICN 49737
Equatorial view: third plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 19 µm EQ $\bar{x}$= 21 µm

Fabaceae (1. Leguminosae - Papilionoideae)

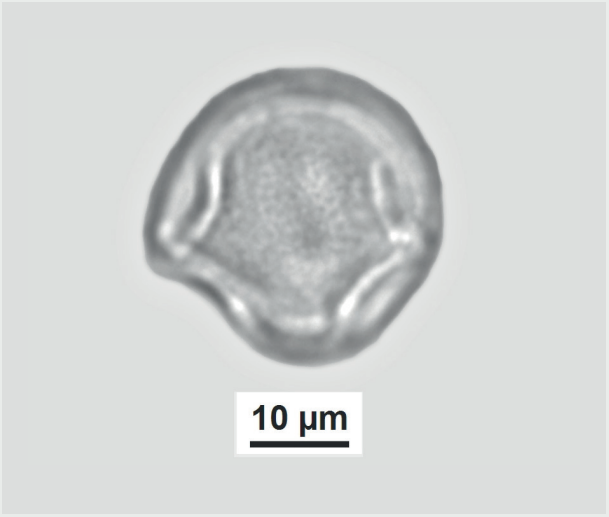


Sesbania punicea (Cav.) Benth.
97 – ICN 49737
Polar view: first plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 19 µm EQ $\bar{x}$= 21 µm

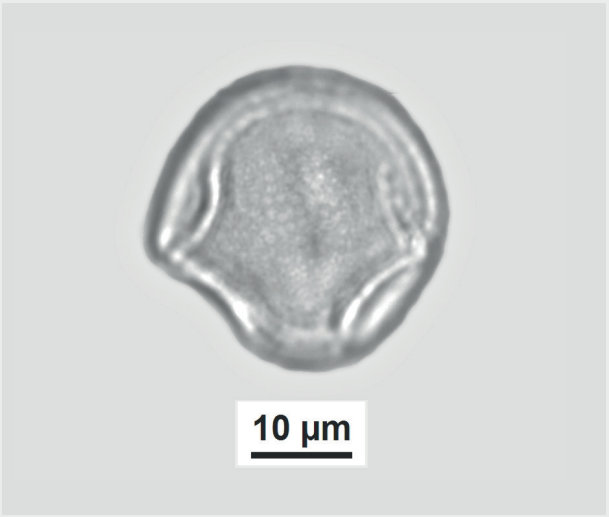


Sesbania punicea (Cav.) Benth.
97 – ICN 49737
Polar view: second plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 19 µm EQ $\bar{x}$= 21 µm

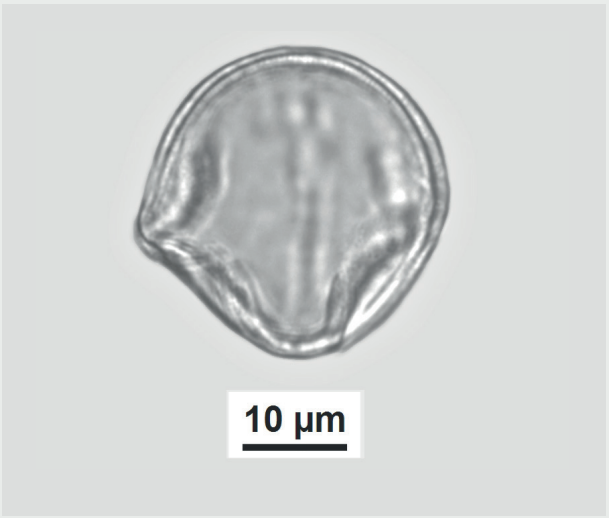
Fabaceae (1. Leguminosae - Papilionoideae)



Sesbania virgata (Cav.) Poir.
399 – ICN 18434
Equatorial view: first plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 30 µm

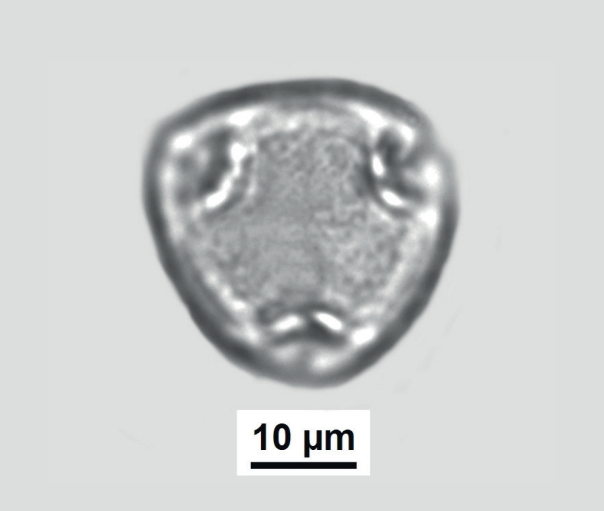


Sesbania virgata (Cav.) Poir.
399 – ICN 18434
Equatorial view: second plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 30 µm

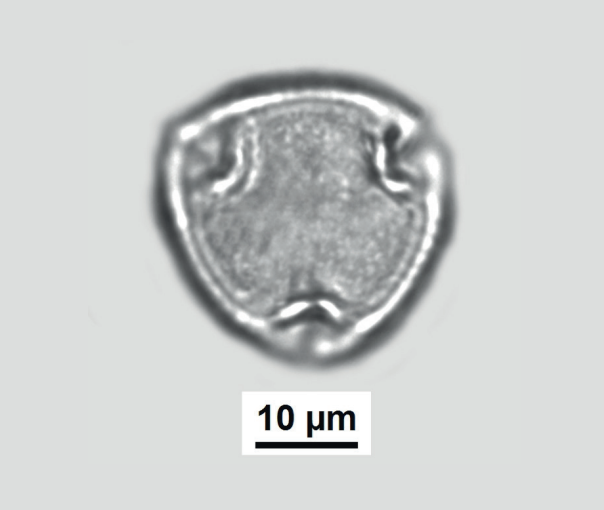


Sesbania virgata (Cav.) Poir.
399 – ICN 18434
Equatorial view: third plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 30 µm

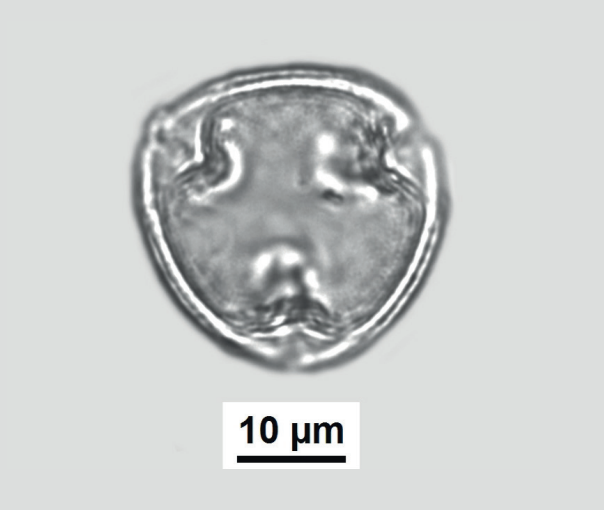
Fabaceae (1. Leguminosae - Papilionoideae)



Sesbania virgata (Cav.) Poir.
399 – ICN 18434
Polar view: first plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 30 µm



Sesbania virgata (Cav.) Poir.
399 – ICN 18434
Polar view: second plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 30 µm



Sesbania virgata (Cav.) Poir.
399 – ICN 18434
Polar view: third plane
Spheroidal - Tricolporate - Microreticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 30 µm

Fabaceae (1. Leguminosae - Papilionoideae)



Stylosanthes montevidensis Vogel
980 – ICN 14822
Equatorial view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 17 µm

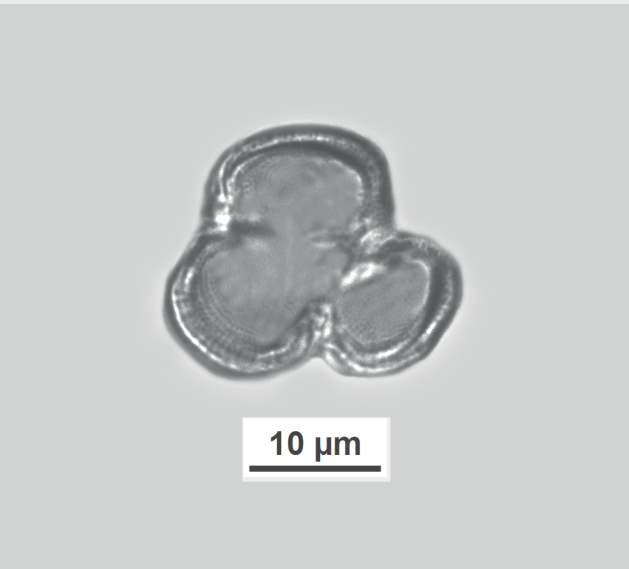


Stylosanthes montevidensis Vogel
980 – ICN 14822
Equatorial view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 17 µm

Fabaceae (1. Leguminosae - Papilionoideae)



Stylosanthes montevidensis Vogel
980 – ICN 14822
Equatorial view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 17 µm
Note: Colporus frontal view.



Stylosanthes montevidensis Vogel
980 – ICN 14822
Polar view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 28 µm EQ $\bar{x}$= 17 µm

Fabaceae (1. Leguminosae - Papilionoideae)



Tephrosia adunca Benth
942 – ICN 35769
Equatorial view: first plane
Prolate - Stephanocolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 24 µm
Note: Colpori united at the equator.



Tephrosia adunca Benth
942 – ICN 35769
Equatorial view: second plane
Prolate - Stephanocolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 24 µm
Note: Colpori united at the equator.



Tephrosia adunca Benth
942 – ICN 35769
Equatorial view: third plane
Prolate - Stephanocolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 24 µm
Note: Colpori united at the equator.

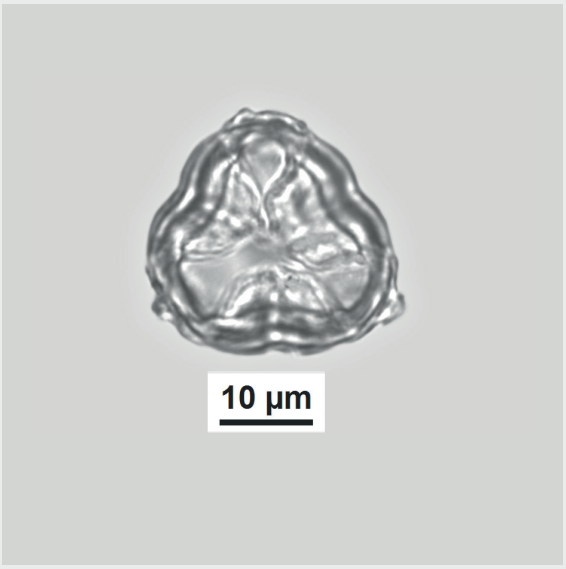
Fabaceae (1. Leguminosae - Papilionoideae)



Tephrosia adunca Benth
942 – ICN 35769
Equatorial view: first plane
Prolate - Stephanocolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 24 µm
Note: Colporus frontal view. Large endoaperture. Colpori united at the equator.

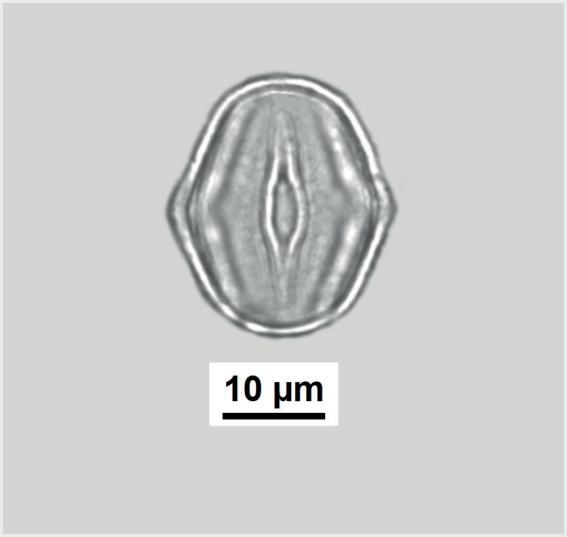


Tephrosia adunca Benth
942 – ICN 35769
Equatorial view: second plane
Prolate - Stephanocolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 24 µm
Note: Colporus frontal view. Large endoaperture. Colpori united at the equator.

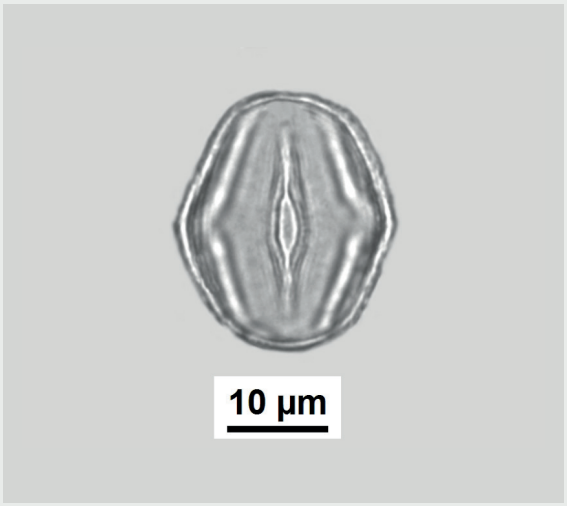


Tephrosia adunca Benth
942 – ICN 35769
Polar view: first plane
Prolate - Stephanocolporate - Reticulate
P $\bar{x}$= 38 µm EQ $\bar{x}$= 24 µm
Note: Colpori united at the equator.

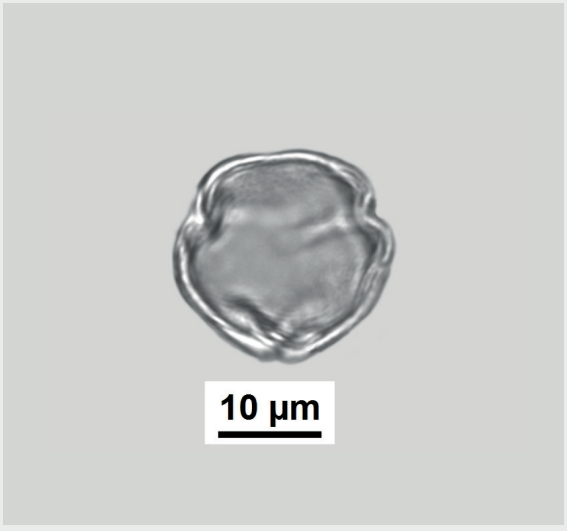
Fabaceae (1. Leguminosae - Papilionoideae)



Trifolium polymorphum Poir.
391 – ICN 29332
Equatorial view: first plane
Subprolate - Tricolporate - Microreticulate
P $\bar{x}$= 26 µm EQ $\bar{x}$= 22 µm
Note: Colporus frontal view.

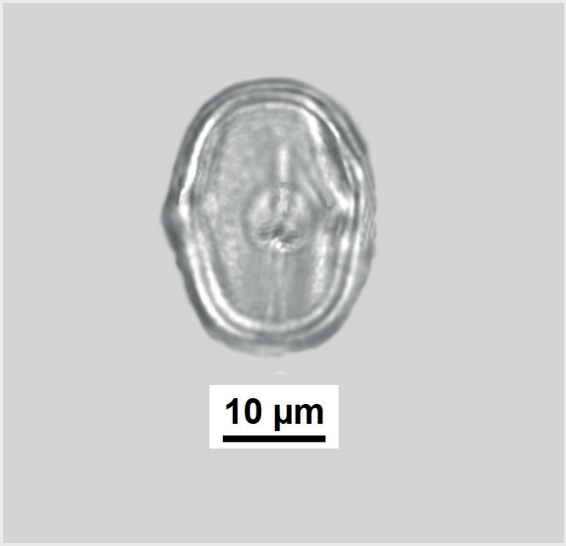


Trifolium polymorphum Poir.
391 – ICN 29332
Equatorial view: second plane
Subprolate - Tricolporate - Microreticulate
P $\bar{x}$= 26 µm EQ $\bar{x}$= 22 µm
Note: Colporus frontal view.

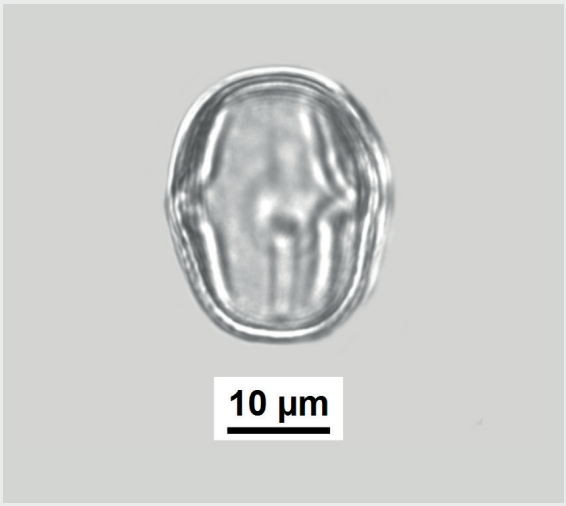


Trifolium polymorphum Poir.
391 – ICN 29332
Polar view: second plane
Subprolate - Tricolporate - Microreticulate
P $\bar{x}$= 26 µm EQ $\bar{x}$= 22 µm

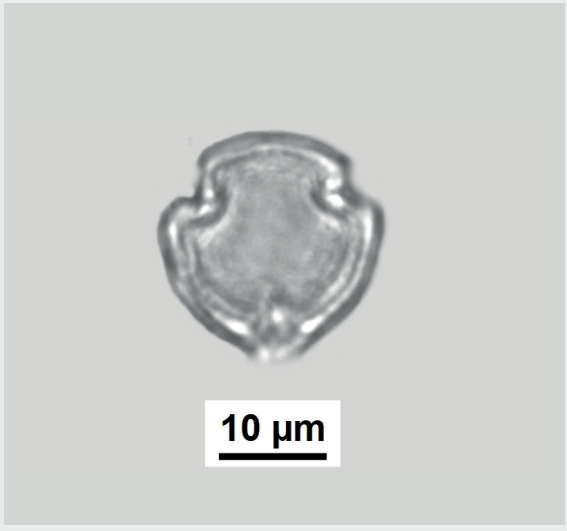
Fabaceae (1. Leguminosae - Papilionoideae)



Trifolium riograndense Burkart
944 – ICN 63214
Equatorial view: first plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 26 µm EQ $\bar{x}$= 20 µm
Note: Colporus frontal view. Large endoaperture.



Trifolium riograndense Burkart
944 – ICN 63214
Equatorial view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 26 µm EQ $\bar{x}$= 20 µm



Trifolium riograndense Burkart
944 – ICN 63214
Polar view: second plane
Subprolate - Tricolporate - Reticulate
P $\bar{x}$= 26 µm EQ $\bar{x}$= 20 µm

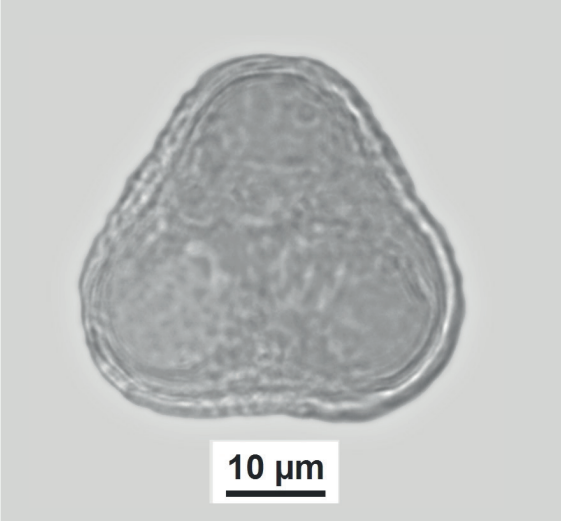
Fabaceae (1. Leguminosae - Papilionoideae)



Vicia graminea var. *nigricarpa* N.R. Bastos & Miotto
950 – ICN 65535
Equatorial view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 45 µm EQ $\bar{x}$= 27 µm
Note: Colporus frontal view.



Vicia graminea var. *nigricarpa* N.R. Bastos & Miotto
950 – ICN 65535
Equatorial view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 45 µm EQ $\bar{x}$= 27 µm

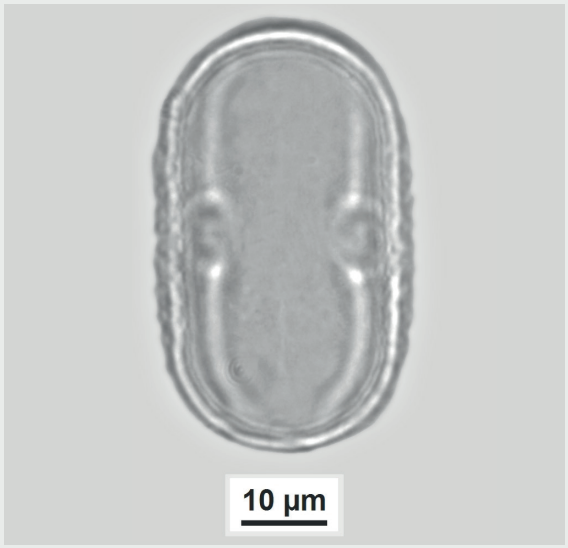


Vicia graminea var. *nigricarpa* N.R. Bastos & Miotto
950 – ICN 65535
Polar view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 45 µm EQ $\bar{x}$= 27 µm

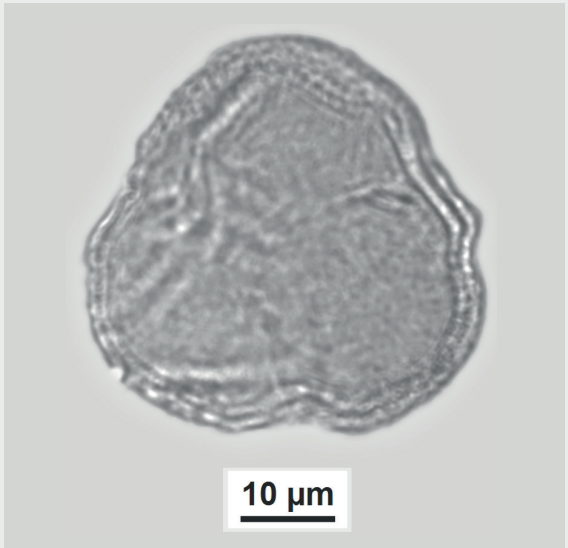
Fabaceae (1. Leguminosae - Papilionoideae)



Vicia macrograminea Burkart
954 – ICN 50697
Equatorial view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 50 µm EQ $\bar{x}$= 29 µm
Note: Colporus frontal view.

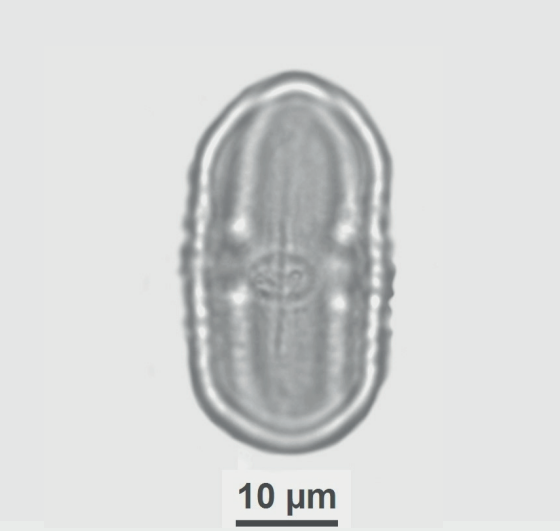


Vicia macrograminea Burkart
954 – ICN 50697
Equatorial view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 50 µm EQ $\bar{x}$= 29 µm

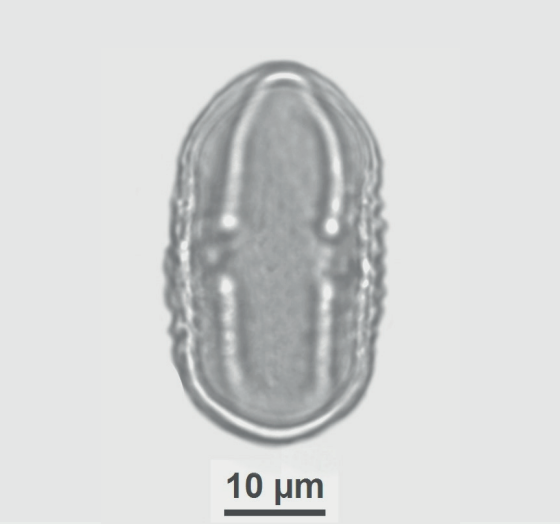


Vicia macrograminea Burkart
954 – ICN 50697
Polar view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 50 µm EQ $\bar{x}$= 29 µm

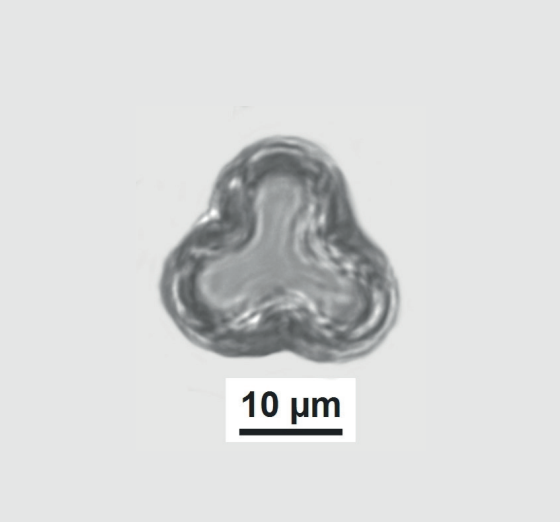
Fabaceae (1. Leguminosae - Papilionoideae)



Vicia nana Vogel
953 – ICN 14763
Equatorial view: first plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 39 µm EQ $\bar{x}$= 22 µm
Note: colporus frontal view.

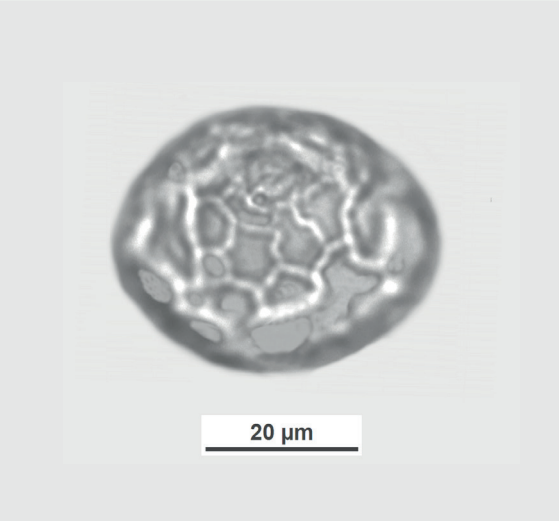


Vicia nana Vogel
953 – ICN 14763
Equatorial view: second plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 39 µm EQ $\bar{x}$= 22 µm

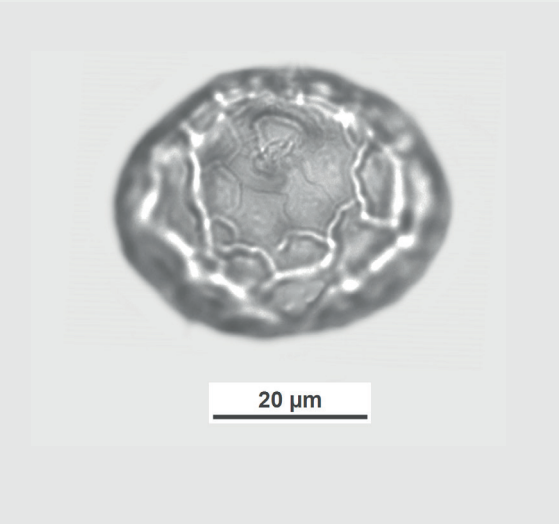


Vicia nana Vogel
953 – ICN 14763
Polar view: third plane
Prolate - Tricolporate - Reticulate
P $\bar{x}$= 39 µm EQ $\bar{x}$= 22 µm

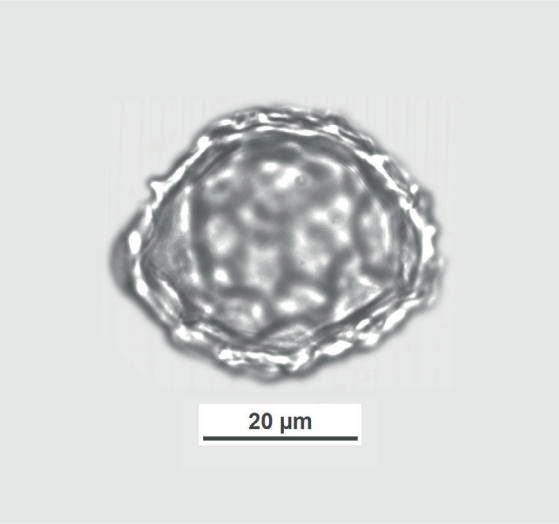
Fabaceae (1. Leguminosae - Papilionoideae)



Vigna luteola (Jacq.) Benth.
1029 – ICN 4564
Equatorial view: first plane (oblique)
Suboblate - Tricolpoidorate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 42 µm
Note: Coarse reticulum.

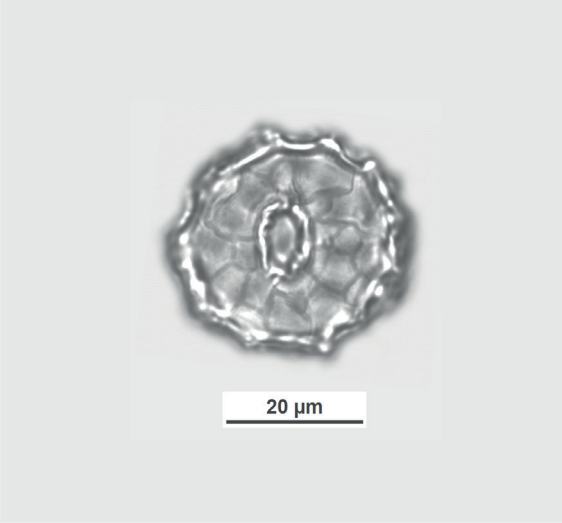


Vigna luteola (Jacq.) Benth.
1029 – ICN 4564
Equatorial view: second plane (oblique)
Suboblate - Tricolpoidorate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 42 µm
Note: Coarse reticulum.

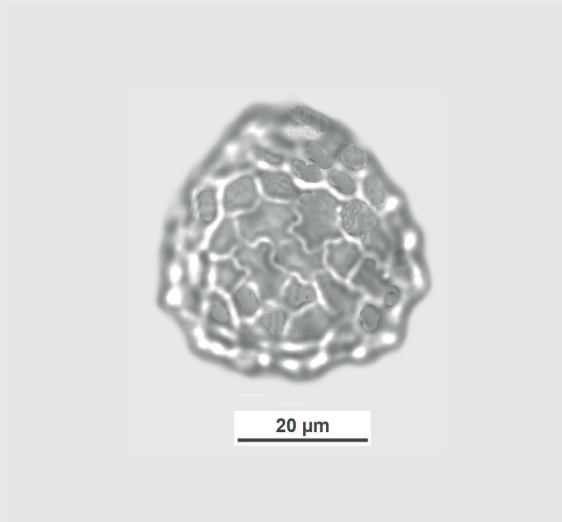


Vigna luteola (Jacq.) Benth.
1029 – ICN 4564
Equatorial view: third plane (oblique)
Suboblate - Tricolpoidorate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 42 µm
Note: Coarse reticulum.

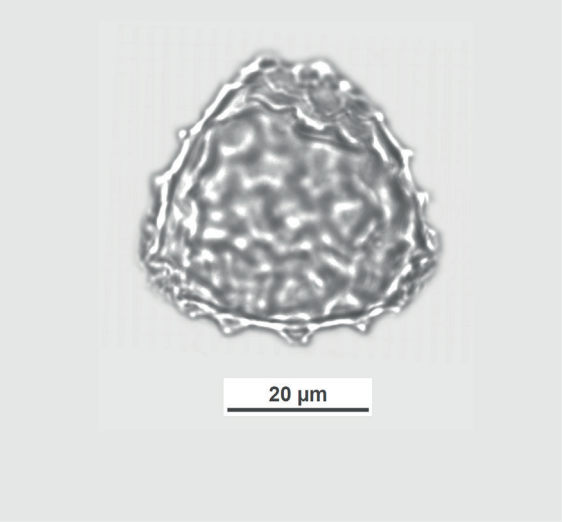
Fabaceae (1. Leguminosae - Papilionoideae)



Vigna luteola (Jacq.) Benth.
1029 – ICN 4564
Equatorial view: first plane
Suboblate - Tricolpoidorate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 42 µm
Note: Coarse reticulum. Aperture frontal view, with oriferous colpoid (colpoidorate, Erdtman 1952). Large endoaperture.



Vigna luteola (Jacq.) Benth.
1029 – ICN 4564
Polar view: first plane
Suboblate - Tricolpoidorate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 42 µm
Note: Coarse reticulum. Large endoapertures.



Vigna luteola (Jacq.) Benth.
1029 – ICN 4564
Polar view: second plane
Suboblate - Tricolpoidorate - Reticulate
P $\bar{x}$= 35 µm EQ $\bar{x}$= 42 µm
Note: Coarse reticulum. Large endoapertures.

References

Berglund BE, 1986. Handbook of Holocene palaeoecology and palaeohydrology. New York, John Wiley & Sons.

Birks HJB, Birks HH. 1980. Quaternary palaeoecology. London, Edward Arnold.

Birks HJB, Gordon, AD. 1985. Numerical methods in Quaternary pollen analysis. New York, Academic Press.

Byng JW, Chase MW, Christenhusz MJM, *et al.* 2016. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. *Botanical Journal of the Linnean Society* 181(1): 1-20.

Cole TCH, Hilger HH, Stevens PF. 2017. Angiosperm Phylogeny Poster (APP) – Flowering plant Systematics. https://www.researchgate.net/publication/305688861

Cordeiro SH, Lorscheitter ML. 1994. Palynology of Lagoa dos Patos sediments, Rio Grande do Sul, Brazil. *Journal of Paleolimnology* 10: 35-42.

Erdtman G. 1952. Pollen morphology and plant taxonomy. First published. Uppsala, Almqvist & Wiksells.

Faegri K, Iversen J. 1975. Textbook of pollen analysis, 3rd edition. New York, Hafner Press.

Leal MG, Lorscheitter ML. 2007. Plant succession in a forest on the lower northeast slope of Serra Geral, Rio Grande do Sul, and Holocene palaeoenvironments, Southern Brazil. *Acta Botanica Brasilica* 21: 1-10.

Ledru MP, Salgado-Labouriau ML, Lorscheitter, ML. 1998. Vegetation dynamics in southern and central Brazil during the last 10,000 yr B.P. *Review of Palaeobotany and Palynology* 99: 131-142.

Leonhardt A, Lorscheitter ML. 2010. The last 25,000 years in the Eastern Plateau of Southern Brazil according to Alpes de São Francisco record. *Journal of South American Earth Sciences* 29: 454-463.

Lorscheitter ML. 1983. Evidence of sea oscillation of the Late Quaternary in Rio Grande do Sul, Brazil, provided by palynologycal studies. Q*uaternary of South America and Antarctic Peninsula* 1(1): 53-60.

Lorscheitter ML. 1992. Pollen registers of the South and Southeast regions of Brazil during the last 40,000 years. *Série Geoquímica Ambiental* 1(1): 55-61.

Lorscheitter ML. 1997. Paleoambientes do Sul do Brasil no Quaternário através da palinologia: revisão dos resultados obtidos. *Revista Universidade de Guarulhos Geociências* II (número especial): 197-199.

Lorscheitter ML. 2003. Contribution to the Holocene history of Atlantic rain forest in the Rio Grande do Sul state, Southern Brazil. *Revista del Museo Argentino de Ciencias Naturales* 5: 261-271.

Lorscheitter ML, Dillenburg SR. 1998. Holocene paleoenvironments of the Northern Coastal Plain of Rio Grande do Sul, Brazil, reconstructed from palynology of Tramandai Lagoon sediments. *Quaternary of South America and Antarctic Peninsula* 11: 75-99.

Lorscheitter ML, Romero EJ. 1985. Palynology of Quaternary sediments of the Core T15, Rio Grande Cone, South Atlantic, Brazil. *Quaternary of South America and Antarctic Peninsula* 3: 55-92.

Lorscheitter ML, Santos RP. 2023. Catalog of angiosperm pollen grains from the Rio Grande do Sul flora, southern Brazil. (Vol. 1, ANA GRADE and MAGNOLIIDS). Porto Alegre. Authors' edition. ISBN 9786500747942. https://lume.ufrgs.br/bitstream/handle/10183/263180/001174865.pdf

Lorscheitter ML, Santos RP. 2024a. Catalog of angiosperm pollen grains from the Rio Grande do Sul flora, southern Brazil (Vol. 2, MONOCOTS). Porto Alegre, Authors' edition. ISBN 9786500951943. https://lume.ufrgs.br/bitstream/handle/10183/274430/001198550.pdf

Lorscheitter ML, Santos RP. 2024b. Catalog of angiosperm pollen grains from the Rio Grande do Sul flora, southern Brazil (Vol. 3, EUDICOTS PART 1). Porto Alegre, Authors' edition. ISBN 9786501257242. https://lume.ufrgs.br/bitstream/handle/10183/282351/001218229.pdf

Masetto E, Lorscheitter, ML. 2019. Vegetation dynamics during the last 7500 years on the extreme Southern Brazilian Coastal Plain. *Quaternary International* 524: 48-56.

Miotto STS, Bortoluzzi RLC, Iganci JRV, Silveira FS. 2022. Leguminosae - Papilionoideae do Rio Grande do Sul, Brasil. Porto Alegre, Orgs. Sílvia Terezinha Sfoggia Miotto – [*et al*.]. ISBN 9786559731428. https://lume.ufrgs.br/bitstream/handle/10183/264080/001176393.pdf

Missouri Botanical Garden (MOBOT) nomenclature. 2025. https://www.tropicos.org. 29 AGO. 2025.

Neves PCP, Lorscheitter ML. 1995. Upper Quaternary palaeoenvironments in the Northern Coastal Plain of Rio Grande do Sul, Brazil. *Quaternary of South America and Antarctic Peninsula* 9: 39-67.

Punt W, Hoen PP, Blackmore S, Nilsson S, Thomas A LE. 2007. Glossary of pollen and spore terminology. *Review of Palaeobotany and Palynology* 143: 1-81.

Roth L, Lorscheitter ML. 1993. Palynology of a bog in Parque Nacional de Aparados da Serra, East Plateau of Rio Grande Sul, Brazil. *Quaternary of South America and Antarctic Peninsula* 8: 39-69.

Roth L, Lorscheitter ML, Masetto E. 2021. Paleoenvironments of the las 24,000 years on the extreme Northern Rio Grande do Sul Coastal Plain, Southern Brazil. *Quaternary International* 571: 117-126.

Salgado-Labouriau ML.1973. Contribuição à palinologia dos Cerrados. Rio de Janeiro, Academia Brasileira de Ciências.

Scherer C, Lorscheitter ML. 2014. Vegetation dynamics in the Southern Brazilian highlands during the last millennia and the role of bogs in Araucaria Forest formation. *Quaternary International* 325: 3-12.

Spalding BBC, Lorscheitter ML. 2015. Dry and humid phases in the highlands of Southern Brazil during the last 34,000 years, and their influence on the paleoenvironments of the region. *Quaternary International* 377: 102-111.

Walker JW. 1976. Evolutionary significance of the exine in the pollen of primitive angiosperms. Edited by Ferguson JK, Muller J. (*Linnean Society Symposium Series* 1, 1976). p. 251-308.

Walker JW, Doyle JA. 1975. The bases of angiosperm phylogeny: palynology. *Annals of the Missouri Botanical Garden* 62(3): 664-723.

Index

FABALES
Fabaceae (1. Leguminosae - Papilionoideae)
Adesmia ciliata 30, 31
Ateleia glazioveana 32
Camptosema rubicundum 33
Clitoria nana 34
Collaea stenophylla 35
Crotalaria tweediana 36
Dalbergia frutescens 37
Desmodium adscendens 38
Desmodium barbatum 39
Eriosema tacuaremboense 40
Erythrina crista-galli 41
Indigofera asperifolia 42
Indigofera sabulicola 43
Lathyrus crassipes 44
Lathyrus paranensis 45
Lonchocarpus cultratus 46
Lupinus albescens 47, 48
Lupinus bracteolaris 49, 50
Lupinus gibertianus 51, 52
Lupinus guaraniticus 53
Lupinus multiflorus 54, 55
Lupinus reitzii 56, 57
Machaerium hirtum 58
Machaerium paraguariense 59
Machaerium stipitatum 60, 61
Macropsychanthus violaceus 62
Macroptilium erythroloma 63, 64
Macroptilium prostratum 65
Macroptilium psammodes 66, 67
Myrocarpus frondosus 68, 69
Nanogalactia heterophylla 70
Ornithopus micranthus 71
Poiretia latifolia 72, 73
Poiretia tetraphylla 74, 75
Rhynchosia corylifolia 76, 77

FABALES (Cont.)
Fabaceae (1. Leguminosae - Papilionoideae)
Sesbania punicea 78, 79
Sesbania virgata 80 , 81
Stylosanthes montevidensis 82, 83
Tephrosia adunca 84, 85
Trifolium polymorphum 86
Trifolium riograndense 87
Vicia graminea var. *nigricarpa* 88
Vicia macrograminea 89
Vicia nana 90
Vigna luteola 91, 92

MALPIGHIALES
Malpighiaceae
Byrsonima niedenzuiana 5, 6
Dicella nucifera 7
Galphimia australis 8, 9
Heteropterys aenea 10
Janusia guaranitica 11
Mascagnia divaricata 12
Peixotoa catarinensis 13
Stigmaphyllon ciliatum 14
Tetrapterys mollis 15
Ochnaceae
Ouratea parviflora 16, 17
Passifloraceae
Passiflora caerulea 18
Passiflora edulis 19
Phyllanthaceae
Phyllanthus ramillosus 20
Phyllanthus sellowianus 21
Violaceae
Anchietea salutaris 22, 23
Hybanthus bicolor 24, 25
Hybanthus parviflorus 26, 27
Viola cerasifolia 28, 29