# MALVACEAE

A. Engler. Syllabus der Pflanzenfamilien. 6 Aufl. Berlin, 1909. 254 S.

**ANGIOSPERMAE**

**DICOTYLEDONEAE**

**ARCHICHLAMYDEAE**

**Malvales**

**Elaeocarpaceae**

**Chlaenaceae**

**Gonystilaceae**

**Tiliaceae**

**Malvaceae**

**Bombacaceae**

**Sterculiaceae**

**Scytopetalaceae**

A. Cronquist - Some realigments in the dicotyledons // Nord. J. Bot. Vol. 3. N. 1. P. 75--85. 1983

A. Cronquist - The evolution and classification of flowering plants. N.Y. 1988

**Magnoliophyta**

**Magnoliopsida - Cronquist, Takhtajan & Zimmermann, 1966.**

**IV. Dilleniidae - Takhtajan ex Reveal & Takhtajan, 1993**

**Malvales - Dumortier, 1829.**

**Elaeocarpaceae - A. L. de Jussieu ex de Candolle, 1824**
**Tiliaceae - A. L. de Jussieu, 1789**
**Sterculiaceae - (de Candolle) Bartling, 1830**
**Bombacaceae - Kunth, 1822**
**Malvaceae - A. L. de Jussieu, 1789**

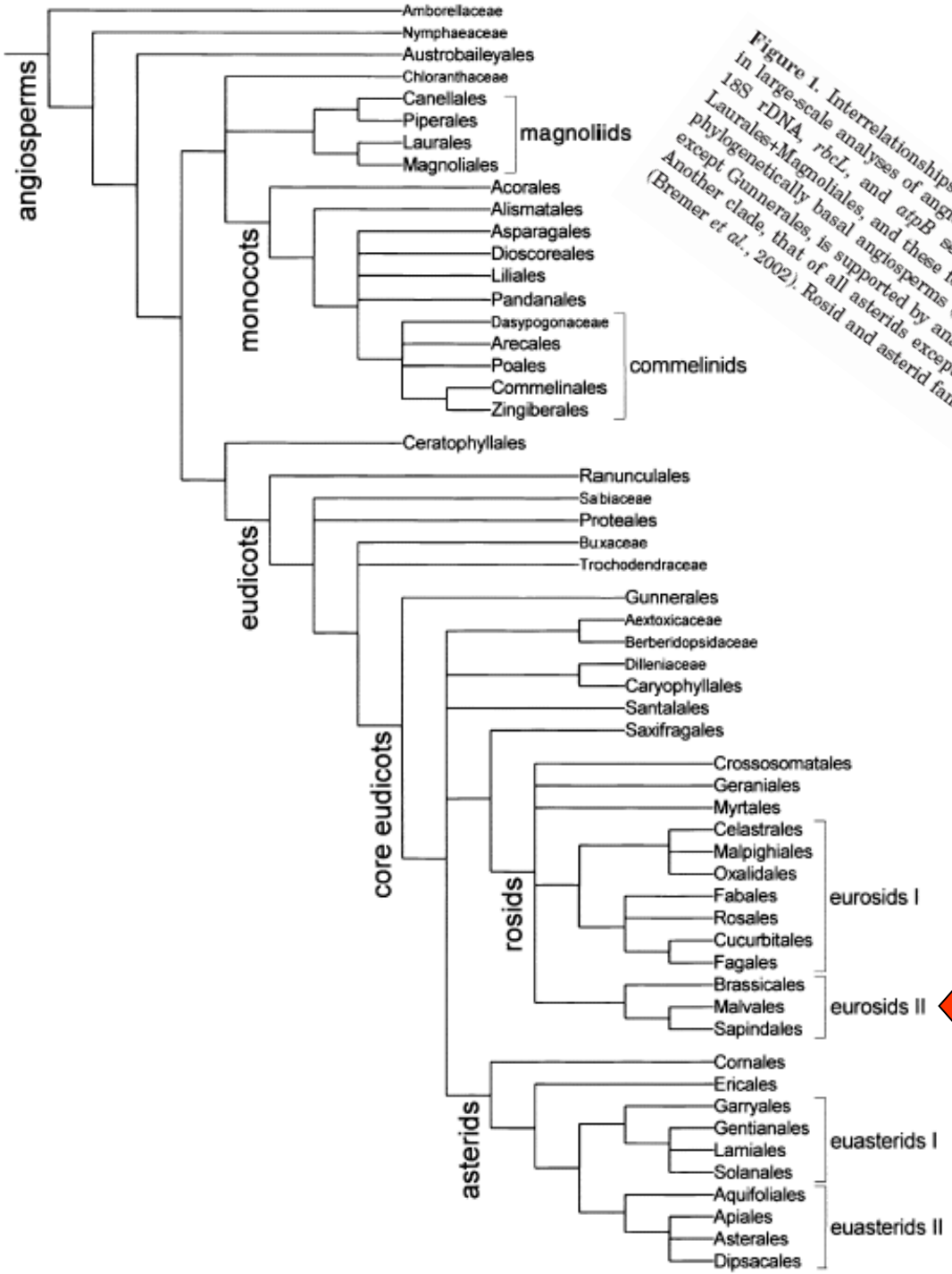



***Figure 1.*** Interrelationships of the orders and some families supported by jackknife or bootstrap frequencies above 50% in large-scale analyses of angiosperms. All except five of the clades are supported by the Soltis *et al.* (2000) analysis of 18S rDNA, *rbcL*, and *atpB* sequences from a wide sample of angiosperms. Three clades, Canellales+Piperales, Laurales+Magnoliales, and these four orders together, are supported by analyses of several different gene sequences of phylogenetically basal angiosperms (Qiu *et al.*, 1999; Graham & Olmstead, 2000). One clade, that of all core eudicots except Gunnerales, is supported by analysis of *rbcL* sequences from a wide sample of eudicots (Savolainen *et al.*, 2000). Another clade, that of all asterids except Cornales, is supported by a six-marker analysis of a wide sample of asterids (Bremer *et al.*, 2002). Rosid and asterid families not classified to order are not shown.

**EUROSIDS II**
Tapisciaceae (Pax) Takht. (1987)

**Brassicales Bromhead (1838)**

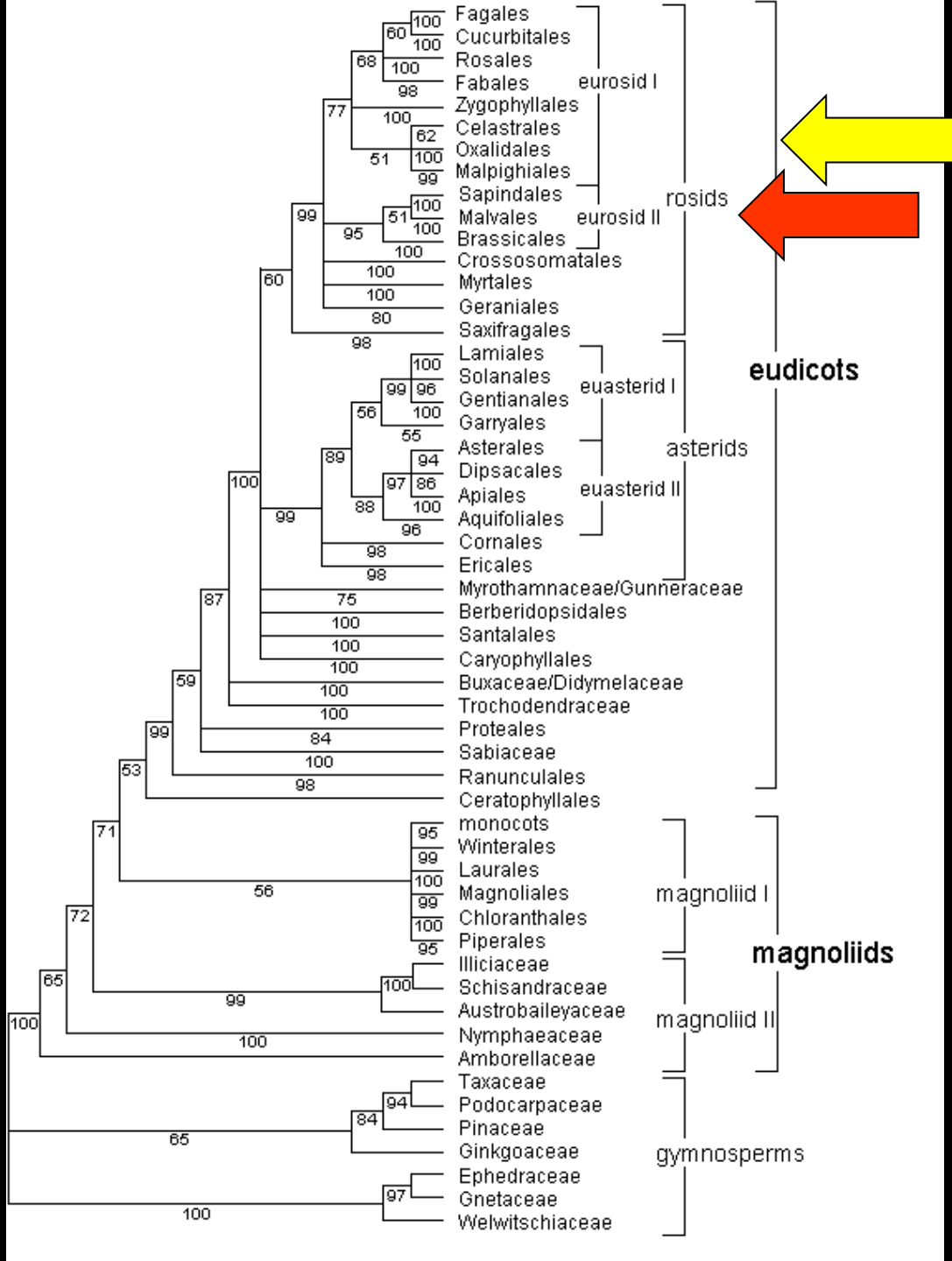
Akaniaceae Stapf (1912), nom. cons.
[+Bretschneideraceae Engl. & Gilg (1924), nom. cons.]
Bataceae Perleb (1838), nom. cons.
Brassicaceae Burnett (1835), nom. cons.
Caricaceae Dumort. (1829), nom. cons.
Emblingiaceae Airy Shaw (1964)
Gyrostemonaceae Endl. (1841), nom. cons.
Koeberliniaceae Engl. (1895), nom. cons.
Limnanthaceae R.Br. (1833), nom. cons.
Moringaceae Martynov (1820), nom. cons.
Pentadiplandraceae Hutch. & Dalziel (1928)
Resedaceae Bercht. & J.Presl (1820), nom. cons.
Salvadoraceae Lindl. (1836), nom. cons.
Setchellanthaceae Iltis (1999)
Tovariaceae Pax (1891), nom. cons.
Tropaeolaceae Bercht. & J.Presl (1820), nom. cons.

**Malvales Dumort. (1829)**

§Bixaceae Kunth (1822), nom. cons.
[+Diegodendraceae Capuron (1964)]
[+Cochlospermaceae Planch. (1847), nom. cons.]
Cistaceae Juss. (1789), nom. cons.
Dipterocarpaceae Blume (1825), nom. cons.
Malvaceae Juss. (1789), nom. cons.
Muntingiaceae C.Bayer, M.W.Chase & M.F.Fay (1998)
Neuradaceae Link (1831), nom. cons.
Sarcolaenaceae Caruel (1881), nom. cons.
Sphaerosepalaceae (Warb.) Tiegh. ex Bullock (1959)
§Thymelaeaceae Juss. (1789), nom. cons.

**Sapindales Dumort. (1829)**

Anacardiaceae R.Br. (1818), nom. cons.
Biebersteiniaceae Endl. (1841)
Burseraceae Kunth (1824), nom. cons.
Kirkiaceae (Engl.) Takht. (1967)
Meliaceae Juss. (1789), nom. cons.
§Nitrariaceae Bercht. & J.Presl (1820), nom. cons.
[+Peganaceae (Engl.) Tieghm. ex Takht. (1987)]
[+Tetradiclidaceae (Engl.) Takht. (1986)]
Rutaceae Juss. (1789), nom. cons.
Sapindaceae Juss. (1789), nom. cons.
Simaroubaceae DC. (1811), nom. cons.


Fagales
Cucurbitales
Rosales
Fabales
eurosid I
Zygophyllales
Celastrales
Oxalidales
Malpighiales
Sapindales
Malvales
eurosid II
Brassicales
rosids
Crossosomatales
Myrtales
Geraniales
Saxifragales
Lamiales
Solanales
Gentianales
Garryales
euasterid I
Asterales
Dipsacales
Apiales
Aquifoliales
euasterid II
asterids
Cornales
Ericales
Myrothamnaceae/Gunneraceae
Berberidopsidales
Santalales
Caryophyllales
Buxaceae/Didymelaceae
Trochodendraceae
Proteales
Sabiaceae
Ranunculales
Ceratophyllales
eudicots
monocots
Winterales
Laurales
Magnoliales
Chloranthales
Piperales
magnoliid I
Illiciaceae
Schisandraceae
Austrobaileyaceae
Nymphaeaceae
Amborellaceae
magnoliid II
magnoliids
Taxaceae
Podocarpaceae
Pinaceae
Ginkgoaceae
Ephedraceae
Gnetaceae
Welwitschiaceae
gymnosperms
Elaeocarpaceae

# A.P.G. II

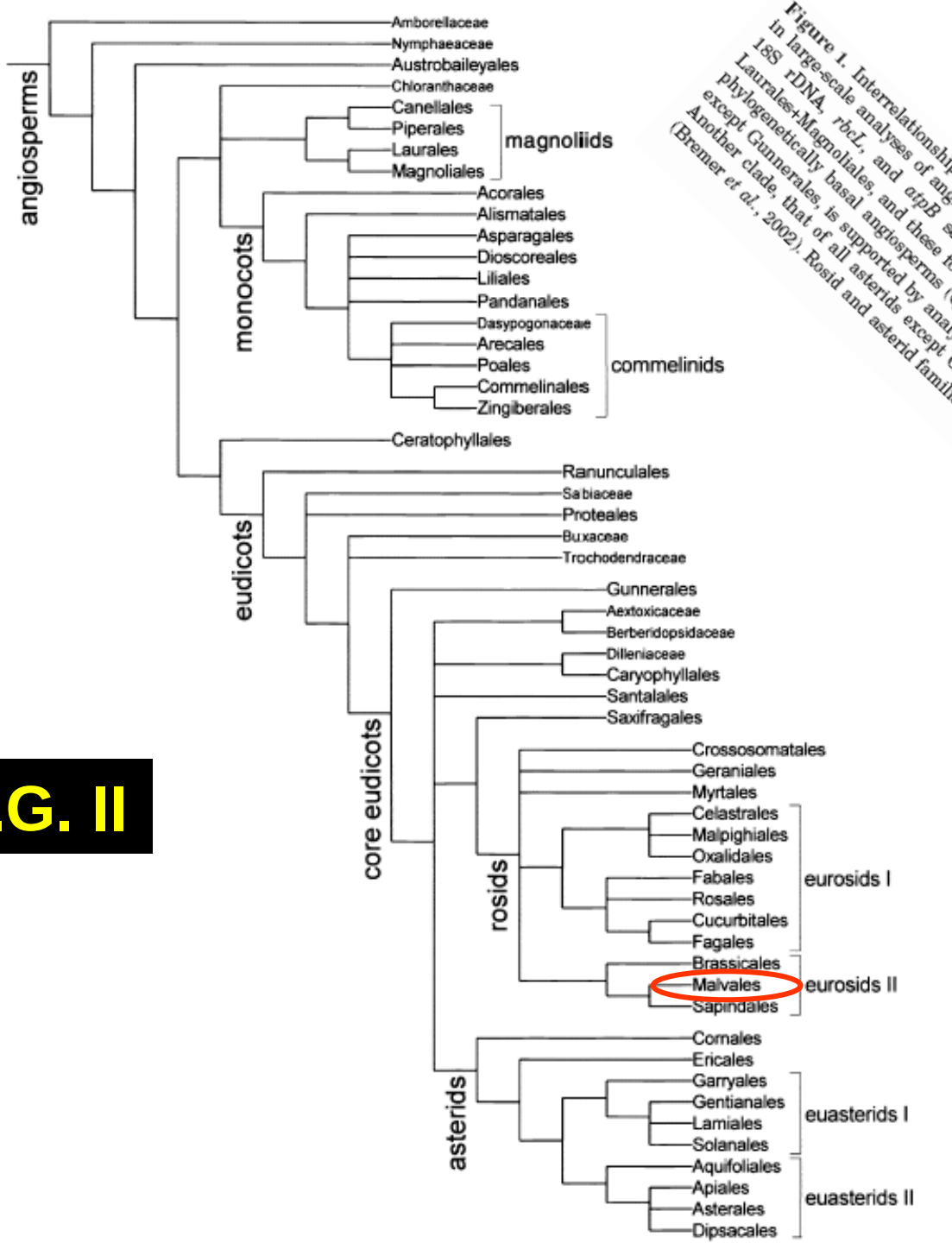



**Figure 1.** Interrelationships of the orders and some families supported by jackknife or bootstrap frequencies above 50% in large-scale analyses of angiosperms. All except five of the clades are supported by the Soltis *et al.* (2000) analysis of 18S rDNA, *rbcL*, and *atpB* sequences from a wide sample of angiosperms. Three clades, Canellales+Piperales, Laurales+Magnoliales, and these four orders together, are supported by analyses of several different gene sequences of phylogenetically basal angiosperms (Qiu *et al.*, 1999; Graham & Olmstead, 2000). One clade, that of all core eudicots except Gunnerales, is supported by analysis of *rbcL* sequences from a wide sample of eudicots (Savolainen *et al.*, 2000). Another clade, that of all asterids except Cornales, is supported by a six-marker analysis of a wide sample of asterids (Bremer *et al.*, 2002). Rosid and asterid families not classified to order are not shown.


**Figure 1.** Interrelationships of the APG III orders and some families supported by jackknife/bootstrap

2009

# APG IV (2016)

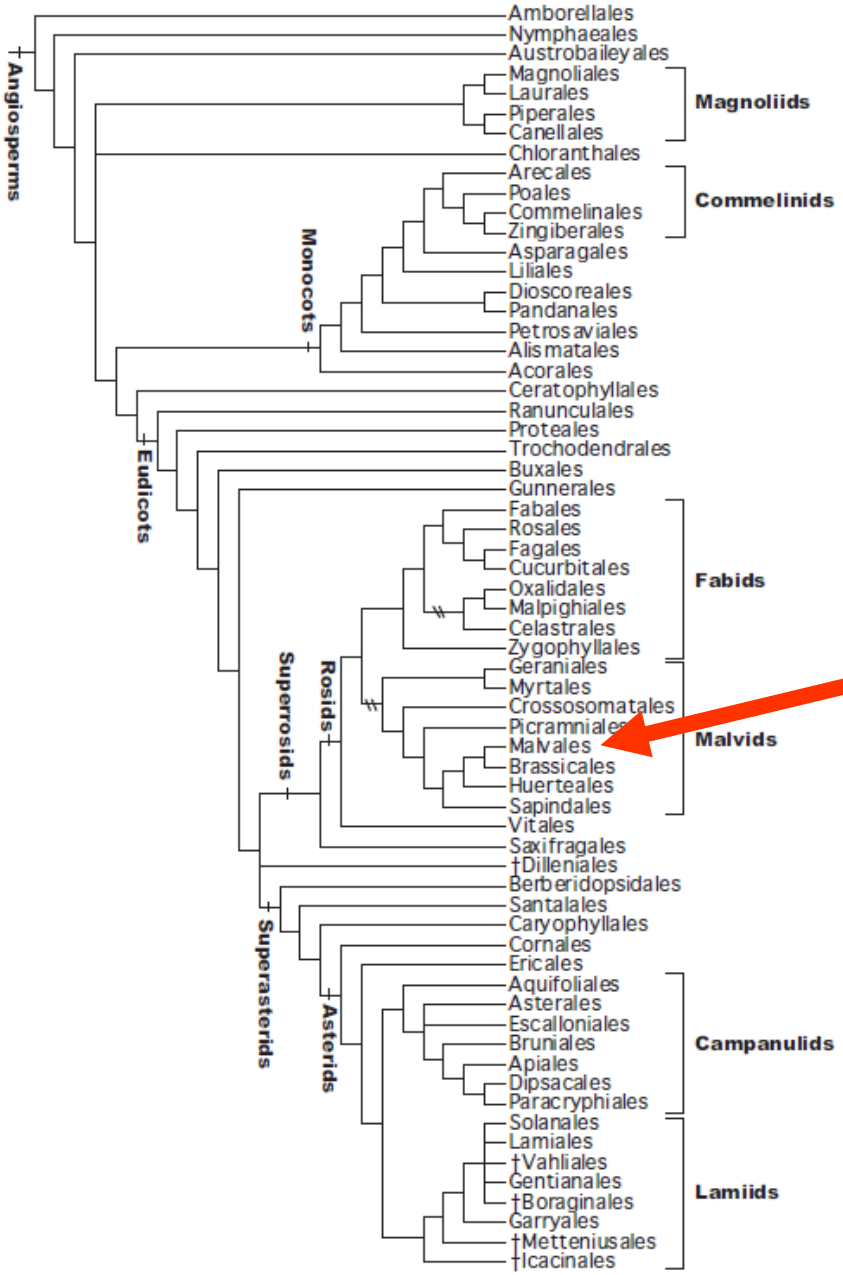
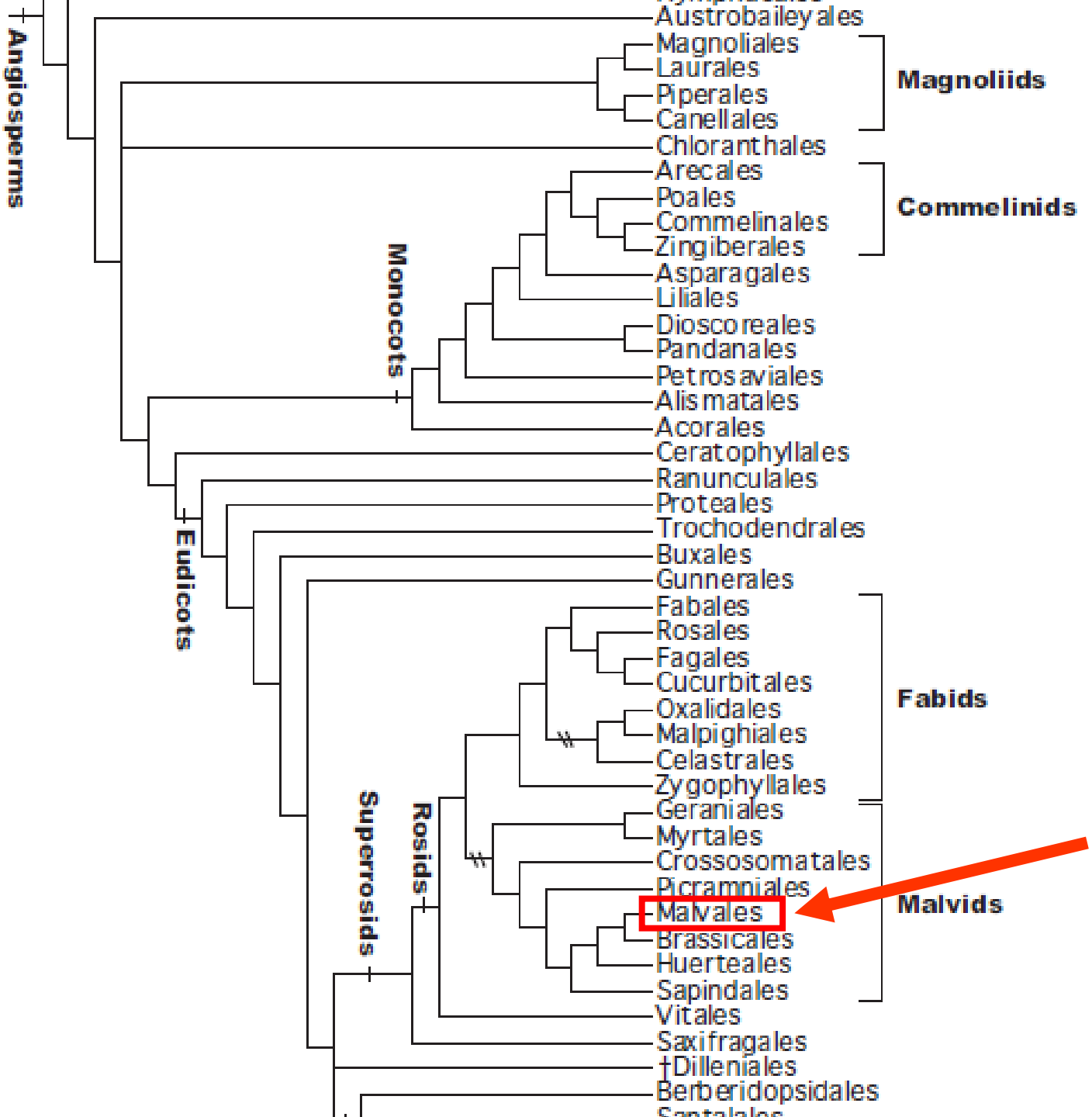



**Figure 1.** Interrelationships of the APG IV orders and some families supported by jackknife/bootstrap percentages >50 or Bayesian posterior probabilities >0.95 in large-scale analyses of angiosperms. See text for literature supporting these relationships. The alternative placements representing incongruence between nuclear/mitochondrial and plastid results for the Celastrales/Oxalidales/Malpighiales (COM) clade are indicated by slash marks (\\). †Orders newly recognized in APG.

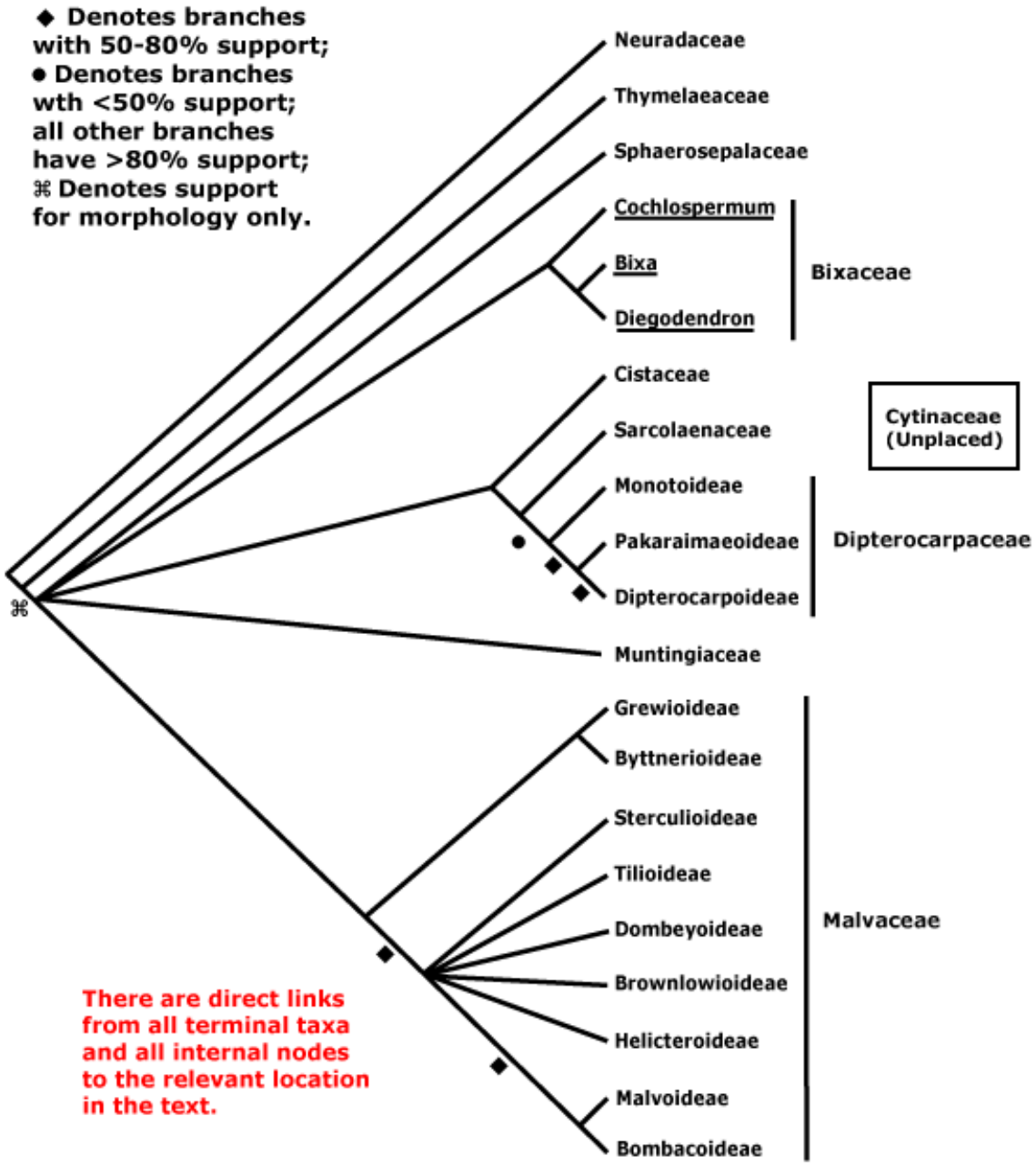

Angiosperms
Austrobaileyales
Magnoliales
Laurales
Piperales
Canellales
Magnoliids
Chloranthales
Arecales
Poales
Commelinales
Zingiberales
Commelinids
Monocots
Asparagales
Liliales
Dioscoreales
Pandanales
Petrosaviales
Alismatales
Acorales
Ceratophyllales
Ranunculales
Proteales
Trochodendrales
Buxales
Gunnerales
Eudicots
Fabales
Rosales
Fagales
Cucurbitales
Oxalidales
Malpighiales
Celastrales
Zygophyllales
Fabids
Geraniales
Myrtales
Crossosomatales
Picramniales
Malvales
Brassicales
Huerteales
Sapindales
Malvids
Rosids
Superrosids
Vitales
Saxifragales
†Dilleniales
Berberidopsidales

# APG IV (2016)

Malvales Dumort. (1829)

§Bixaceae - Kunth (1822), nom. cons.
[+Diegodendraceae Capuron (1964)]
[+Cochlospermaceae Planch. (1847), nom. cons.]
Cistaceae - Juss. (1789), nom. cons.
Dipterocarpaceae - Blume (1825), nom. cons.
Malvaceae - Juss. (1789), nom. cons.
Muntingiaceae - C.Bayer, M.W.Chase & M.F.Fay (1998)
Neuradaceae - Link (1831), nom. cons.
Sarcolaenaceae - Caruel (1881), nom. cons.
Sphaerosepalaceae - (Warb.) Tiegh. ex Bullock (1959)
§Thymelaeaceae - Juss. (1789), nom. cons.

MALVALES


◆ Denotes branches with 50-80% support;
● Denotes branches wth <50% support; all other branches have >80% support;
⌘ Denotes support for morphology only.
Neuradaceae
Thymelaeaceae
Sphaerosepalaceae
Cochlospermum
Bixa
Diegodendron
Bixaceae
Cistaceae
Sarcolaenaceae
Cytinaceae (Unplaced)
Monotoideae
Pakaraimaeoideae
Dipterocarpoideae
Dipterocarpaceae
Muntingiaceae
Grewioideae
Byttnerioideae
Sterculioideae
Tilioideae
Dombeyoideae
Brownlowioideae
Helicteroideae
Malvoideae
Bombacoideae
Malvaceae
There are direct links from all terminal taxa and all internal nodes to the relevant location in the text.

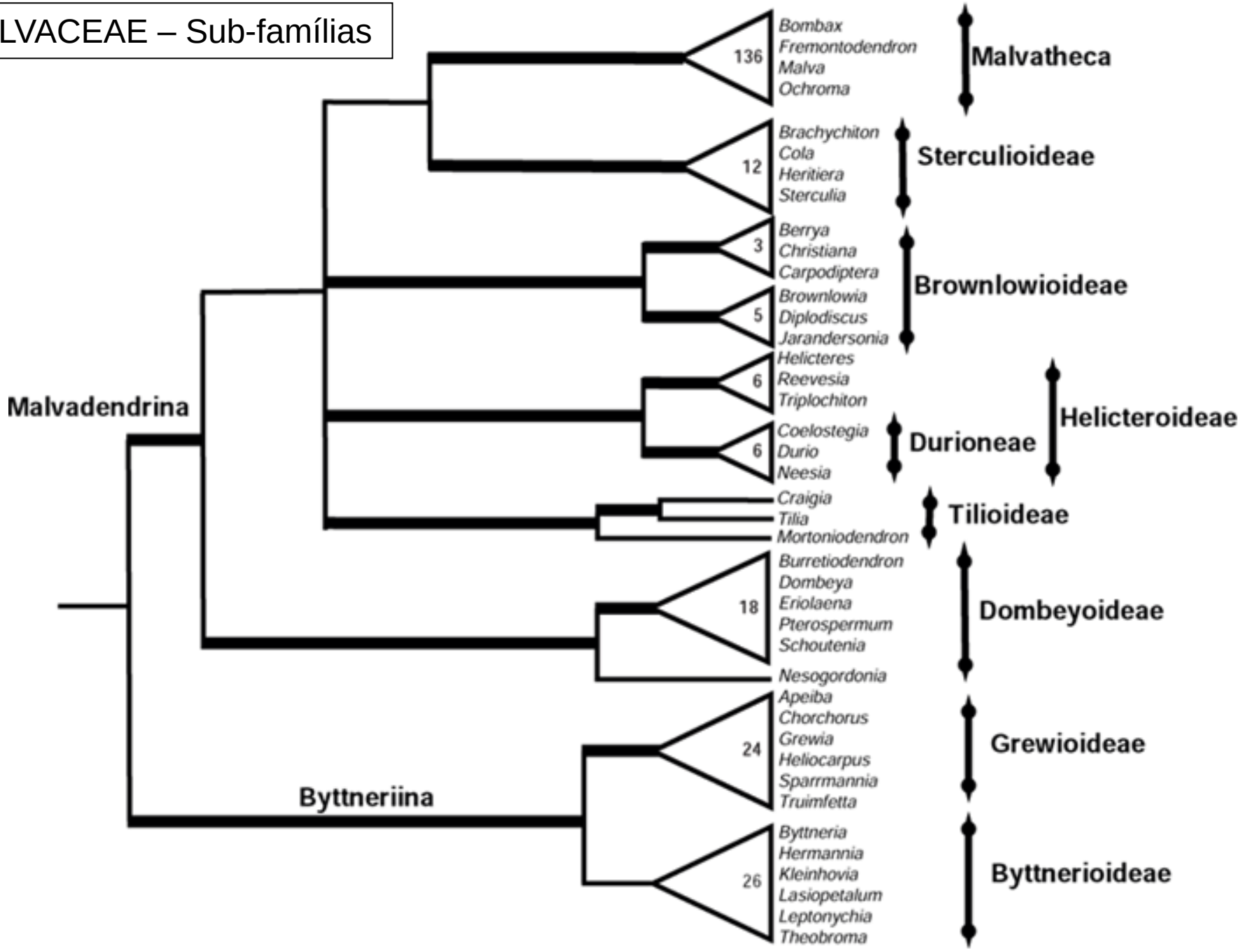
## Malvaceae senso amplo

O senso *APG de Malvaceae, essa família* corresponde às 4 famílias tradicionais Malvaceae, Bombacaceae, Sterculiaceae e Tiliaceae. Isso já é consenso ("núcleo Malvales“). Somente a inclusão de alguns gêneros é questionável.

Sub-familias:

***Malvoideae***
***Bombacoideae***
***Sterculioideae***
***Dombeyoideae***
***Tilioideae***
***Brownlowioideae***
***Helicterioideae***
***Grewioideae***
***Byttnerioideae***

MALVACEAE – Sub-famílias



## Malvaceae Senso Amplo - Características principais:

-Aproximadamente 250 gêneros (Brasil 70) e aproximadamente 4.000 espécies (Br 750)

-Árvores, arbustos, lianas (trepadeiras) e ervas

-Caracterizam pela presença de **pêlos estrelados** e seiva mucilaginosa

-Folhas **alternas**, **simples**, freqüentemente palmatinérvia e lobada, **com estípulas**

-Flor monóclina (bissexual) ou funcionalmente unisexual, geralmente actinomorfa, comum a presença de brácteas conspícuas que dão forma a um **epicálice**.

-O perianto (cálice e corola) geralmente 5 - **pentâmera**

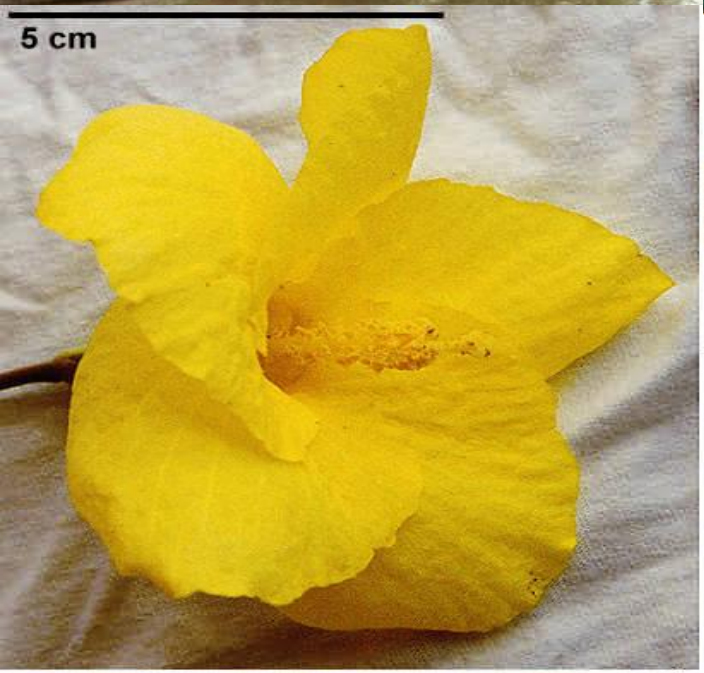
-Sépalas livres ou conadas na base, valvares. **Pétalas** geralmente **livres** (às vezes faltando), imbricadas, são freqüentemente adnadas (soldadas frouxamente) ao androceu.

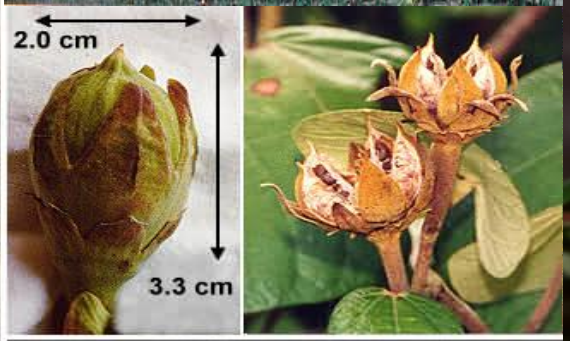
-O androceu consiste **5 - muitos estames**, comumente **monadelfos**, com os filetes livres no ápice, às vezes livres ou em feixes (poliadelfos). Anteras **mono ou bitecas**, as vezes com estaminódios.

-Gineceu de **ovário súpero**, gamocarpelar, com **2 - muitos carpelos**, com estiletes e estigmas livres ou **unidos** parcialmente, em número igual ao de carpelos, número de lóculos igual ao de carpelos, com **1-muitos óvulos** de placentação axilar.

-**Fruto muito variado**, mas geralmente uma cápsula loculicida, mas pode ser esquizocápico, drupa, baga ou sâmara.

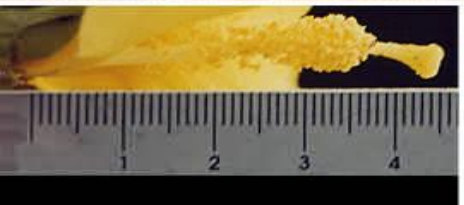
*Hibiscus tiliaceus* L.

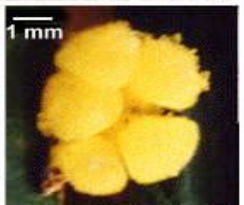


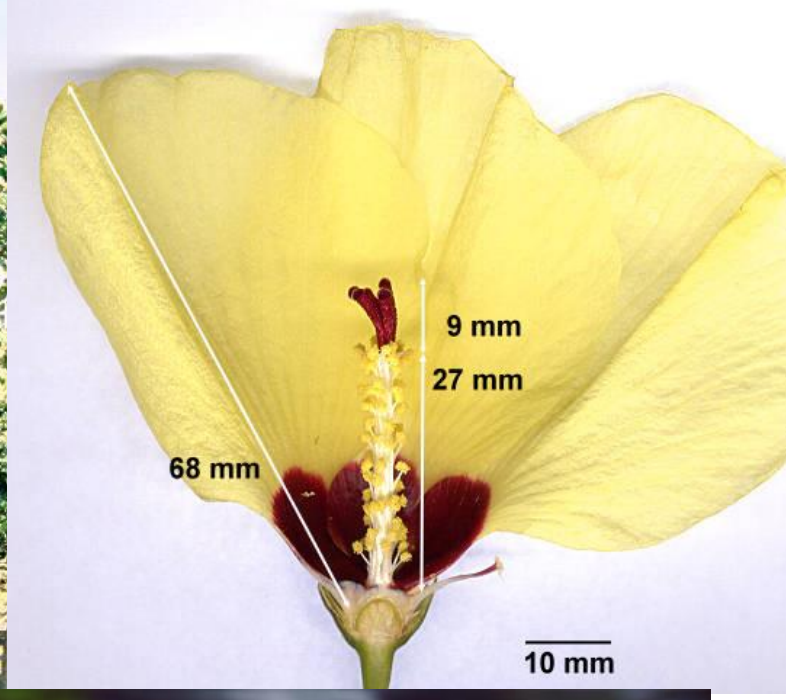



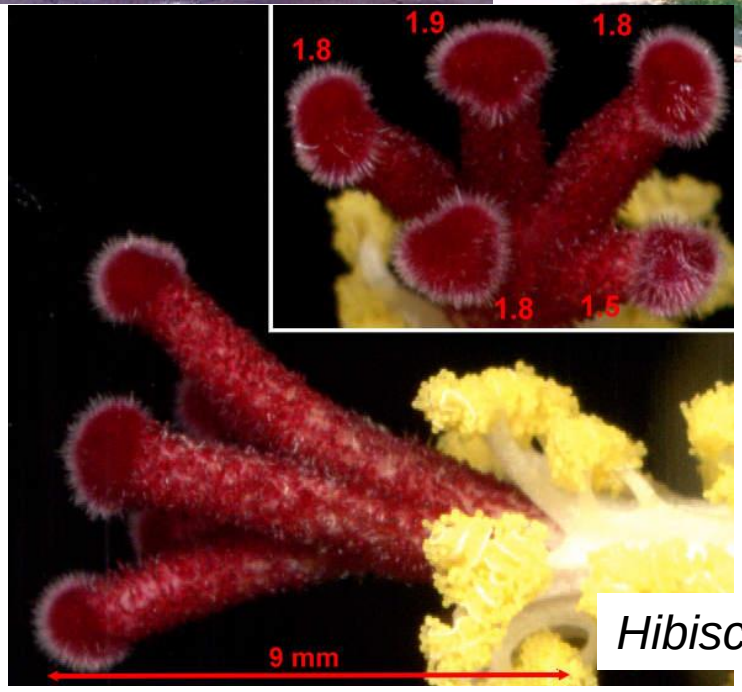








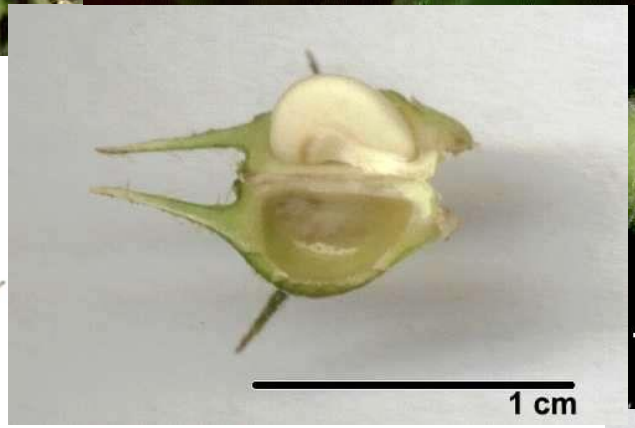




*Hibiscus tiliaceus* L.


*Gossypium hirsutum L.  Algodão*


Mericarpos


Mericarpo seco




Mericarpo aberto


*Pavonia communis* St. Hil.

Cleistogamia

**Usos econômicos de Malvaceae**

**Fibra** : A mais importante é **o algodão- 4 spp de** *Gossypium: Gossypium arboreum (de árvore),G. herbaceum, G. hirsutum e G. barbadense*

**Juta** é extraída de *Corchorus capsularis* and *C. olitorius*- India e Bangladesh

Os pelos das sementes de Bombacoideae, particularmente C*eiba (paineiras) e de Bombax s*ão usadas como **têxteis também**.

**Alimento -** cacau (*Theobroma cacao), cupuaçu (Theobroma grandiflorum), quiabo (Abelmoschus esculentus), etc*

**Madeira** : Balsa (*Ochroma pyramidale), Samaúma (Ceiba pentandra), Açoita Cavalo ( Luehea divaricata) etc.*

**Medicinal** : muscilagem - marsh-mallow **(***Althaea officinalis)*

**Ornamentais:** hibiscus, sininho, lanterninha etc

**Invasoras de culturas** : guanxumas

*Abutilon sp*

*Abutilon spp*

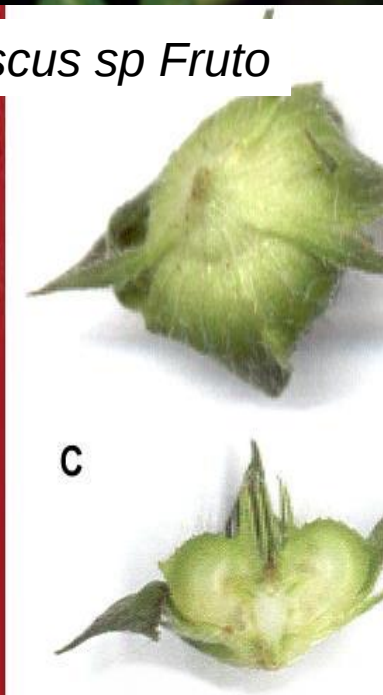
*Pavonia humifusa* St.Hil.

*Pavonia nemoralis St.Hil. & Naudin*

*Sida rhombifolia - Guanxuma*

*Malva sp*


*Malvaviscus sp Fruto*



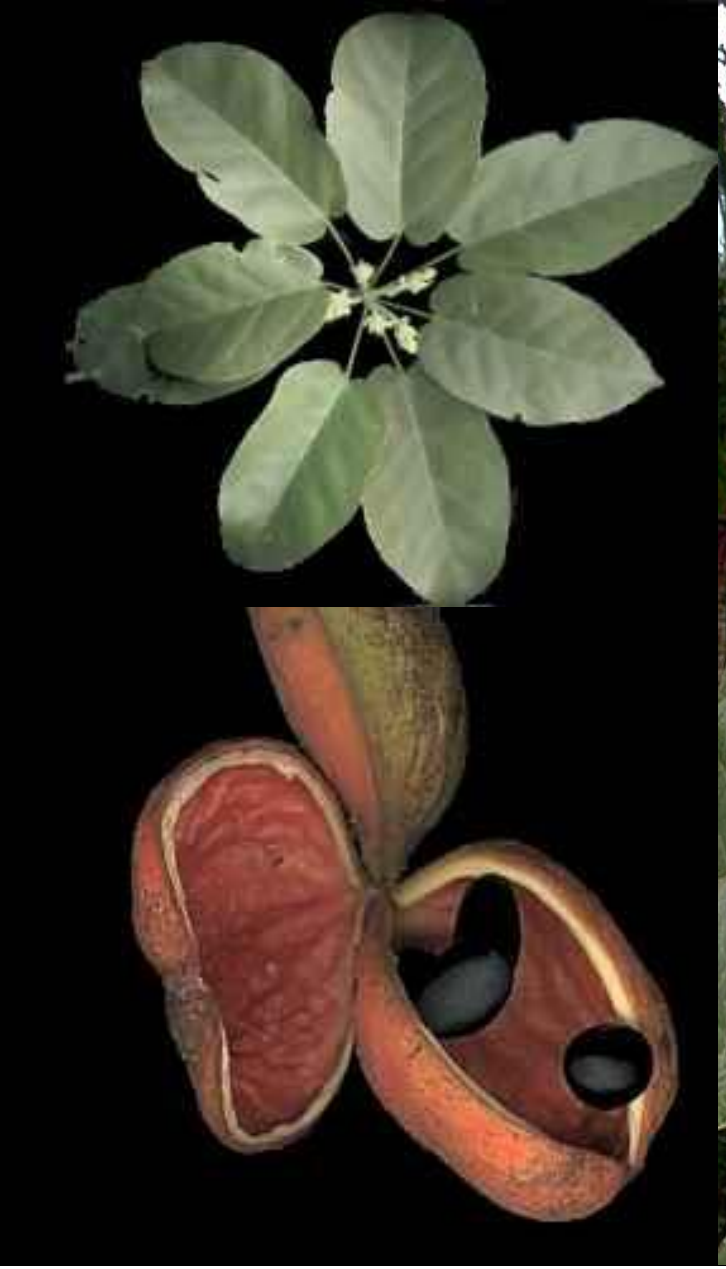
*Hibiscus rosa sinensis* L.

*Bombax ceiba – Paineira vermelha*


*Ceiba pentandra – Samaúma*

*Ceiba speciosa- Paineira*

*Paquira aquatica - Monguba*



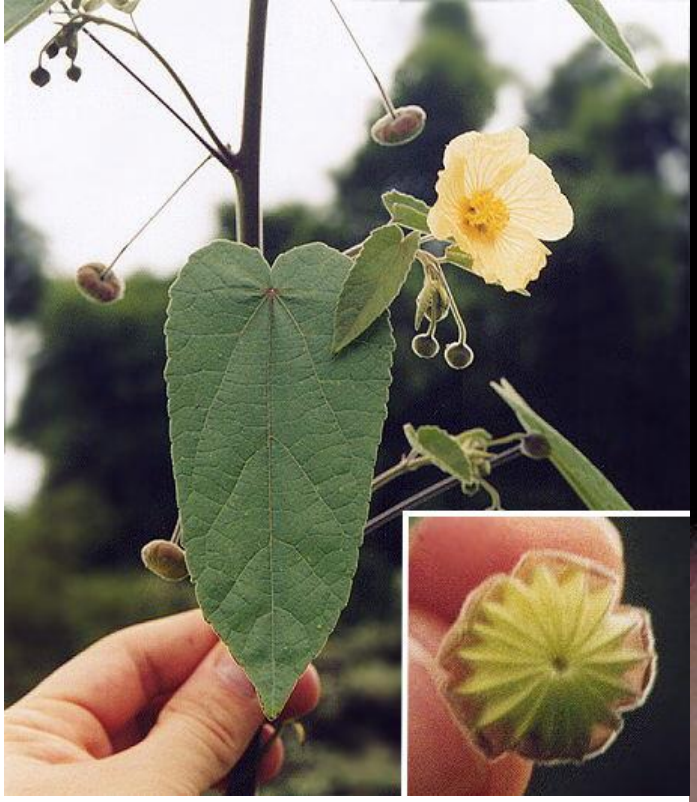



*Sterculia chicha* - Chicha

*Ochroma pyramidale- Pau de Balsa*

*Helicteres isora - sacarrolha*

*Luehea grandiflora – açoita cavalo*



Gaya sp


*Guazuma ulmifolia - Mutambo*

*Theobroma cacao Cacau*

Cola acuminata- Noz de cola