

An outline of the superorders of angiosperms in the Cronquist System

(keeping in mind that Cronquist treated them as subclasses)

[with overgeneralized descriptions and some example genera]

"Hyperorder" Dicotyledoneae: Dicots are basically woody. Their "norm" is to have complete, perfect, regular, epigynous flowers with definite, clearly differentiated whorls of floral organs in 1 or 2 sets of 4 or 5 (often fewer in the gynoecium), with the perianth and androecium of separate organs but with a syncarpous gynoecium having axile placentation. The stamens typically have distinct, thread-like filaments. The pollen grains are usually triaperturate or triaperturate-derived with elongate apertures and the exine is columellar. The ovules are basically bitegmic and crassinucellate and there is usually endosperm evident in the seeds. Typical exceptions to these generalities and other special features of the superorders are noted below. All of the superorders are more variable than these synopses imply, with many exceptions to the characters listed.

Magnolianaes: Flowers frequently with a 3-merous perianth, usually with numerous centripetal stamens (which are sometimes laminar or ribbon shaped and may grade into the petals), typically apocarpous; pollen grains often uniaperturate or uniaperturate-derived; benzyloquinoline or aporphine alkaloids are common. 8 orders, 39 families, and ca. 12,000 spp.: *Asimina*, *Drimys*, *Liriodendron*, *Magnolia*, *Sassafras*, *Tetracentron*

Hamamelidanaes: Flowers often borne in catkins, more or less strongly reduced and often unisexual, the perianth poorly developed or absent; pollen grains often porate and with a granular exine; usually with tannins. 11 orders, 24 families, ca. 3400 spp.: *Alnus*, *Betula*, *Carpinus*, *Castanea*, *Casuarina*, *Celtis*, *Fagus*, *Juglans*, *Liquidambar*, *Morus*, *Ostrya*, *Platanus*, *Quercus*, *Ulmus*

Caryophyllanaes: The few woody groups with anomalous secondary growth; stamens usually centrifugal in the few cases where numerous; placentation typically free-central or basal, the endosperm of the seeds usually replaced by perisperm; sieve-tubes of the phloem with a unique type of P-plastid; most with betalains. 3 orders, 14 families, ca. 11,000 spp.: *Bougainvillea*, *Carnegieia*, *Opuntia*, *Phytolacca*, *Plumbago*

Dilleniaanaes: Some groups herbaceous; stamens commonly numerous and centrifugal; carpels often 3; placentation often parietal; ovules often tenuinucellar; many with mustard-oils or iridoid compounds or tannins. 13 orders, 78 families, ca. 25,000 spp.: *Diospyros*, *Oxydendrum*, *Populus*, *Salix*, *Tilia*

Rosanaes: Some groups herbaceous; stamens sometimes numerous and then usually centripetal; often with tannins and sometimes with iridoid compounds. 18 orders, 114 families, ca. 58,000 spp.: *Acer*, *Aesculus*, *Cornus*, *Crataegus*, *Elaeagnus*, *Gleditschia*, *Prunus*, *Robinia*, *Sorbus*

Asteranaes: Many groups strictly herbaceous; flowers sympetalous and often also synsepalous, frequently epigynous; stamens in one whorl and commonly fewer than the corolla lobes; carpels usually 2; ovules typically unitegmic and tenuinucellar; often with iridoid compounds or various other sorts of repellants, such as polyacetylenes or terpenoids. 11 orders, 49 families, ca. 60,000 spp.: *Catalpa*, *Cephalanthus*, *Datura*, *Fraxinus*, *Viburnum*

"Hyperorder" Monocotyledoneae: Most monocots are herbaceous. The flowers are usually 3-merous throughout, but only the androecium commonly has 2 whorls. The calyx and corolla are

often similar in appearance. The gynoecium is usually syncarpous. The pollen grains are uniaperturate or uniaperturate-derived. Many features and their variations parallel those of the dicots.

Alismanae: Typically aquatic and apocarpous; seeds mostly without endosperm. 4 orders, 16 families, ca. 500 spp.: *Butomus*, *Elodea*, *Potamogeton*, *Sagittaria*, *Triglochin*, *Vallisneria*, *Zostera*

Arecanae: Commonly woody but without significant secondary growth; many with compound leaves; flowers typically small and inconspicuous, often borne in a spadix and usually subtended by one or more spathes; endosperm commonly oily. 4 orders, 5 families, ca. 5600 spp.: *Arisaema*, *Carludovica*, *Chamaedorea*, *Cocos*, *Monstera*, *Pandanus*

Commelinanae: Most wind-pollinated and with reduced, apetalous flowers in highly bracteate spicate inflorescences; endosperm starchy and commonly mealy. 7 orders, 16 families, ca. 15,000 spp.: *Bambusa*, *Carex*, *Juncus*, *Panicum*, *Sparganium*, *Tradescantia*, *Typha*

Zingiberanae: Sometimes arborescent with pseudostems; flowers often irregular and epigynous, commonly with showy bracts as well as a perianth with well-differentiated sepals and petals; endosperm typically starchy and mealy. 2 orders, 9 families, ca. 3800 spp.: *Ananas*, *Canna*, *Costus*, *Musa*, *Strelitzia*

Lilianae: Flowers sometimes irregular and more commonly epigynous, the sepals usually petaloid, even when they don't resemble the petals; endosperm usually hemicellulosic and hard. 2 orders, 19 families, ca. 25,000 spp.: *Agave*, *Asparagus*, *Cordyline*, *Cypripedium*, *Dioscorea*, *Smilax*, *Yucca*