FABACEAE (LEGUMINOSAE)

豆科 dou ke

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Trees, shrubs, or herbs, sometimes climbing or decumbent, very often bearing root-nodules that harbor nitrogen-fixing bacteria. Leaves alternate or rarely opposite, pinnate or bipinnate, less often palmately compound or 3-foliolate, seldom 1-foliolate or simple, or modified into narrow phyllodes; petiole present or absent; stipules and stipels present or absent, sometimes stipules developed into spines. Flowers bisexual, rarely unisexual, actinomorphic (Mimosoideae), ± zygomorphic (Caesalpinioideae) to very zygomorphic (Papilionoideae), mostly in racemes, corymbs, spikes, heads, or panicles. Sepals (3–)5(or 6), free or connate into a tube, sometimes bilabiate, rarely reduced or obsolete. Petals (0–)5(or 6), usually isomerous with sepals, seldom fewer or none, imbricate or valvate, distinct and often highly differentiated into papilionaceous corolla: upper petal (standard) outermost, 2 lateral petals (wings) ± parallel with each other, lower 2 innermost petals usually connate by their lower margins and forming a keel. Stamens mostly 10, sometimes fewer or more numerous, distinct or often connate by their filaments to form a closed or open sheath, monadelphous or diadelphous, anther 2-locular, opening lengthwise or by pores, uniform or dimorphic and then alternately basifixed and dorsifixed; pollen simple or compound. Gynoecium nearly always of a solitary carpel (rarely 2 or more distinct carpels); ovary superior, 1-locular or sometimes transversely, rarely longitudinally septate; ovules 1 to numerous, inserted on adaxial suture. Legumes dehiscent by one or both sutures, or indehiscent, sometimes winged, sometimes jointed and breaking up into 1-seeded segments. Seeds without or with very scanty endosperm, sometimes strophiolate.

About 650 genera and ca. 18,000 species: distributed worldwide, woody genera mostly in the S Hemisphere and the tropics, herbaceous genera mostly in temperate regions, very numerous in Mediterranean-climate areas; 29 tribes (three or four introduced), 167 genera (one endemic, 32 or 33 introduced), and 1,673 species (690 endemic, 131–134 introduced) in China.

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Systematic list of tribes and genera

In general, the tribes recognized here and their delimitations follow Lewis, G. P. et al. (eds.). 2005. Legumes of the World. Richmond, U.K.: Royal Botanic Gardens, Kew.

● Indicates endemic genus

1. Cercideae (p. 5)
1. *Cercis*
2. *Bauhinia*

2. Detarieae (p. 22)
3. *Lysidice*
4. *Saraca*
5. *Afzelia*
6. *Hymenaea*
7. *Sindora*
8. *Tamarindus*

3. Cassieae (p. 27)
9. *Zenia*
10. *Cassia*
11. *Senna*
12. *Chamaecrista*

4. Caesalpinieae (p. 35)
13. *Ceratonia*
14. *Gymnocladus*
15. *Gleditsia*
16. *Acrocarpus*
17. *Peltophorum*
18. *Delonix*
19. *Caesalpinia*
20. *Pterolobium*
21. *Haematoxylum*
22. *Parkinsonia*
23. *Erythrophleum*

5. Mimoseae (p. 50)
24. *Parkia*
25. *Adenanthera*
26. *Entada*
27. *Neptunia*
28. *Leucaena*
29. *Mimosa*
30. *Desmanthus*

6. Acacieae (p. 55)
31. *Acacia*

7. Ingeae (p. 60)
32. *Calliandra*
33. *Pithecellobium*
34. *Falcataria*
35. *Albizia*
36. *Enterolobium*
37. *Archidendron*
38. *Samanea*

8. Sophoreae (p. 72)
39. *Bowringia*
40. *Ormosia*
41. *Ammodendron*
42. *Sophora*
43. *Cladrastis*
44. ● *Salweenia*
45. *Maackia*

9. Euchresteae (p. 98)
46. *Euchresta*

10. Thermopsideae (p. 100)
47. *Ammopiptanthus*
48. *Piptanthus*
49. *Thermopsis*

11. Crotalarieae (p. 105)
50. *Crotalaria*
51. *Lotononis*
52. *Rothia*

12. Genisteae (p. 119)
Cultivated only.

13. Amorpheae (p. 120)
53. *Amorpha*

14. Dalbergieae (p. 121)
54. *Dalbergia*
55. *Pterocarpus*

15. Aeschynomeneae (p. 131)
56. *Aeschynomene*
57. *Arachis*
58. *Geissaspis*
59. *Ormocarpum*
60. *Smithia*
61. *Stylosanthes*
62. *Zornia*

16. Indigofereae (p. 137)
63. *Indigofera*
64. *Cyamopsis*

17. Millettieae (p. 165)
65. *Derris*
66. *Paraderris*
67. *Aganope*
68. *Antheroporum*
69. *Afgekia*
70. *Sarcodum*
71. *Fordia*
72. *Millettia*
73. *Callerya*
74. *Pongamia*
75. *Wisteria*
76. *Craspedolobium*
77. *Tephrosia*

18. Abreae (p. 194)
78. *Abrus*

19. Phaseoleae (p. 196)
79. *Canavalia*
80. *Galactia*
81. *Ophrestia*
82. *Clitoria*
83. *Centrosema*
84. *Apios*
85. *Cochlianthus*
86. *Shuteria*
87. *Mastersia*
88. *Mucuna*
89. *Spatholobus*
90. *Butea*
91. *Rhynchosia*
92. *Eriosema*
93. *Dunbaria*
94. *Cajanus*
95. *Flemingia*
96. *Erythrina*
97. *Dysolobium*
98. *Psophocarpus*
99. *Calopogonium*
100. *Pachyrhizus*
101. *Teyleria*
102. *Dumasia*
103. *Pueraria*
104. *Nogra*
105. *Sinodolichos*
106. *Amphicarpaea*
107. *Teramnus*
108. *Glycine*
109. *Phylacium*
110. *Lablab*
111. *Dolichos*
112. *Macrotyloma*
113. *Vigna*
114. *Macroptilium*
115. *Phaseolus*

20. Desmodieae (p. 262)
116. *Trifidacanthus*
117. *Dendrolobium*
118. *Phyllodium*
119. *Aphyllodium*
120. *Ohwia*
121. *Desmodium*
122. *Hylodesmum*
123. *Codoriocalyx*
124. *Pycnospora*
125. *Tadehagi*
126. *Mecopus*
127. *Uraria*
128. *Urariopsis*
129. *Christia*
130. *Alysicarpus*
131. *Campylotropis*
132. *Lespedeza*
133. *Kummerowia*

21. Psoraleeae (p. 312)
134. *Cullen*

22. Sesbanieae (p. 313)
135. *Sesbania*

23. Loteae (p. 316)
136. *Lotus*

24. Robinieae (p. 320)
137. *Robinia*

25. Galegeae (p. 322)
138. *Phyllolobium*
139. *Astragalus*
140. *Oxytropis*
141. *Chesneya*
142. *Chesniella*
143. *Colutea*
144. *Sphaerophysa*
145. *Eremosparton*
146. *Gueldenstaedtia*
147. *Tibetia*
148. *Glycyrrhiza*

26. Hedysareae (p. 512)
149. *Corethrodendron*
150. *Hedysarum*
151. *Onobrychis*
152. *Eversmannia*
153. *Alhagi*
154. *Calophaca*
155. *Caragana*
156. *Halimodendron*

27. Cicereae (p. 546)
157. *Cicer*

28. Trifolieae (p. 547)
158. *Ononis*
159. *Trifolium*
160. *Parochetus*
161. *Melilotus*
162. *Medicago*
163. *Trigonella*

29. Fabeae (p. 560)
164. *Vicia*
165. *Lathyrus*
166. *Lens*
167. *Pisum*

Wu Te-lin, Chen Pang-yu, Wei Chao-fen, Chen Te-chao, Hu Chia-chi, Cheng Hsi-chang & Li Lin-chu. 1988. Leguminosae (1). *In:* Chen Te-chao, ed., Fl. Reipubl. Popularis Sin. 39: 1–233; Chen Techao, Chen Pangyu, Fang Yunyi, Zheng Chaozong, Chang Rohwei, Ding Chensen, Li Jiaolan, Ma Chiyun & Wei Zhi. 1994. Leguminosae (2). *In:* Wei Zhi, ed., Fl. Reipubl. Popularis Sin. 40: 1–362; Yang Yenchin, Huang Puhua, Fu Peiyun, Li Jiyun, Chen Youan, Lee Shukang, Chang Benneng, Wei Yuetsung, Huang Deai, Wei Chaofen, Wu Telin & Wei Siqi. 1995. Leguminosae (3). *In:* Lee Shukang, ed., Fl. Reipubl. Popularis Sin. 41: 1–405; Fu Kuntsun, Chang Chenwan, He Shanbow, Ho Yechi, Ding Chensen, Liou Yingxen & Li Peichun. 1993. Leguminosae (4). *In:* Fu Kuntsun, ed., Fl. Reipubl. Popularis Sin. 42(1): 1–384; Zhang Zhenwan, Xu Langran, Wei Zhi, Wei Siqi, Huang Yizhi, Xia Zhendai, Cui Hongbin, Li Peiqiong, Li Jiaolan, Yang Chunyu, Wen Hequn & Huang Deai. 1998. Leguminosae (5). *In:* Cui Hongbin, ed., Fl. Reipubl. Popularis Sin. 42(2): 1–467.

Key to tribes

1a. Flowers actinomorphic, petals valvate in bud, free or united; anthers sometimes with a deciduous gland at apex (subfam. Mimosoideae).
2a. Stamens 10 or fewer ..... 5. Mimoseae (p. 50)
2b. Stamens numerous, usually more than 10.
3a. Filaments free or only connate at base ..... 6. Acacieae (p. 55)
3b. Filaments connate into a tube ..... 7. Ingeae (p. 60)
1b. Flowers ± zygomorphic, petals imbricate in bud.
4a. Flowers slightly zygomorphic; corolla not papilionaceous, uppermost petal overlapped on each side by adjacent lateral petals (when these present); stamens with usually free filaments (subfam. Caesalpinioideae).
5a. Leaves simple, entire or 2-lobed, sometimes divided and 2-foliolate, palmately nerved ..... 1. Cercideae (p. 5)
5b. Leaves once pinnate or bipinnate, pinnately nerved.
6a. Leaves usually bipinnate, if once pinnate (*Ceratonia*) then petals absent, leaflets 2–4 pairs ..... 4. Caesalpinieae (p. 35)
6b. Leaves once pinnate.
7a. Anthers dorsifixed, opening by lateral slits ..... 2. Detarieae (p. 22)
7b. Anthers basifixed, rarely dorsifixed, opening by apical pores or lateral slits ..... 3. Cassieae (p. 27)
4b. Flowers strongly zygomorphic (very rarely actinomorphic); corolla papilionaceous, standard outside wings, keel basally connate; stamens diadelphous (9+1) or monadelphous, rarely free (subfam. Papilionoideae [Faboideae]).
8a. Filaments all free or connate only at base, anthers uniform.
9a. Leaves imparipinnate (simple leaf only in *Bowringia callicarpa* and *Ormosia simplicifolia*); stipules small or absent, stipels present or absent; calyx usually subequally 5-dentate; trees, shrubs, or vines, rarely herbs ..... 8. Sophoreae (p. 72)
9b. Leaves palmately 3-foliolate (rarely 1-foliolate in *Ammopiptanthus mongolicus*); stipules usually united with petioles or amplexicaul, stipels absent; calyx usually deeply 5-lobed; shrubs or herbs ..... 10. Thermopsideae (p. 100)
8b. Filaments partly or almost wholly united to one another, either monadelphous in a closed tube, or diadelphous, in latter case vexillary (adaxial) filament often free or partly free from remainder, anthers uniform or dimorphic.
10a. Anthers dimorphic, alternately dorsifixed and basifixed, either all equal or alternately longer and shorter.
11a. Upper part of filaments swollen or expanded; perennial shrublets, often spiny and glandular ..... 28. Trifolieae (*Ononis*; p. 547)
11b. Upper part of filaments neither swollen nor expanded.
12a. Legumes transversely septate and breaking up into 1-seeded joints (sometimes fruit reduced to 1 joint or maturing underground, subtorulose, but not jointed) ..... 15. Aeschynomeneae (p. 131)
12b. Legumes not transversely septate, or if so then not breaking up into separate joints.
13a. Filaments all connate into a closed tube ..... 12. Genisteae (p. 119)
13b. Filaments connate into a sheath split above or vexillary filament free, remainder connate.
14a. Climbing plants; legumes thick, often clothed with stinging hairs ..... 19. Phaseoleae (*Mucuna*; p. 196)
14b. Erect plants; legumes turgid or inflated.
15a. Leaves imparipinnate; leaflets (3–)5–17 ..... 25. Galegeae (*Glycyrrhiza*; p. 322)
15b. Leaves digitately 3-foliolate, sometimes simple or 1-foliolate ..... 11. Crotalarieae (p. 105)
10b. Anthers uniform in size and shape or nearly so, or 5 sterile (*Teramnus*), not alternately basifixed and dorsifixed, also not alternately longer and shorter.
16a. Free upper part of all or half of filaments dilated or expanded upward.
17a. Leaves with white glandular hairs on both sides ..... 27. Cicereae (p. 546)
17b. Leaves without white glandular hairs on both sides.

18a. Stipules glandlike; leaflets 5–17(–25), entire, nerves not running into margin ..... 23. Loteae (p. 316)
18b. Stipules not glandlike; leaflets 3, usually toothed, lateral nerves extended to teeth or margin ..... 28. Trifolieae (p. 547)
16b. Free upper part of filaments ± filiform, not dilated upward.
19a. Legumes breaking up into 1-seeded segments when ripe.
20a. Leaves with stipels ..... 20. Desmodieae (p. 262)
20b. Leaves without stipels.
21a. Keel petals often obliquely truncate at apex; wings short or very small, rarely equaling keel petals ..... 26. Hedysareae (p. 512)
21b. Keel petals obtuse or beaked, incurved; wings often transversely plicate ..... 15. Aeschynomeneae (p. 131)
19b. Legumes not breaking up into separate segments when mature; seeds 1 to several.
22a. Plants with indumentum composed mainly of T-shaped hairs.
23a. Legumes with septa between seeds, but not jointed; anthers tipped by a gland or apiculate ..... 16. Indigofereae (p. 137)
23b. Legumes without septa between seeds; anthers not tipped by a gland or apiculate ..... 25. Galegeae (*Astragalus*; p. 322)
22b. Plants glabrous or without indumentum composed of T-shaped hairs.
24a. Stamens monadelphous and filaments partly connate into a single ± closed tube, sometimes adaxial filament free at base but connate higher up with remainder.
25a. Legumes indehiscent, suborbicular or circinate, 1- or 2-seeded; annual or perennial herbs ..... 26. Hedysareae (*Onobrychis*; p. 512)
25b. Legumes dehiscent, not suborbicular.
26a. Trees, lianas, or shrubs, sometimes climbing; stipules not sagittate or absent ..... 17. Millettieae (p. 165)
26b. Herbs; stipules sagittate ..... 25. Galegeae (*Galega*; p. 322)
24b. Stamens diadelphous, mostly vexillary filament free or partly adnate to remainder, or if monadelphous then free at upper part or top.
27a. Leaves pinnately or digitately 3-foliolate, sometimes 1-foliolate (*Tadehagi*, *Alysicarpus*) or primitively simple (*Indigofera*).
28a. Leaves gland-dotted or pellucid punctate below.
29a. Legumes dehiscent, 1- to several seeded; leaves 3-foliolate or simple (*Flemingia*) ..... 19. Phaseoleae (Cajaninae; p. 196)
29b. Legumes indehiscent, 1-seeded; leaves simple ..... 21. Psoraleeae (p. 312)
28b. Leaves neither gland-dotted nor pellucid punctate below.
30a. Legumes drupelike, fragile ..... 9. Euchresteae (p. 98)
30b. Legumes not drupelike and fragile, plano-compressed.
31a. Leaves ± toothed ..... 28. Trifolieae (p. 547)
31b. Leaves entire.
32a. Legumes jointed ..... 20. Desmodieae (p. 262)
32b. Legumes not jointed ..... 19. Phaseoleae (p. 196)
27b. Leaves pinnate; leaflets generally numerous, rarely (1 or)2 pairs.
33a. Leaves gland-dotted; corolla with keel ..... 13. Amorpheae (p. 120)
33b. Leaves not gland-dotted; corolla regular.
34a. Legumes indehiscent; stipels absent; leaves imparipinnate ..... 14. Dalbergieae (p. 121)
34b. Legumes dehiscent, sometimes only so at apex.
35a. Rachis of leaves ending in a tendril or bristle.
36a. Stamens 10; flowers solitary, fasciculate or racemose in leaf axils; claw of standard free from staminal sheath ..... 29. Fabeae (p. 560)
36b. Stamens 9; flowers in terminal or subterminal racemes; claw of standard ± adnate to staminal sheath ..... 18. Abreae (p. 194)
35b. Rachis of leaves not ending in a tendril or bristle.
37a. Legumes inflated and bladderlike, sometimes dehiscent only at apex ..... 25. Galegeae (p. 322)
37b. Legumes compressed.
38a. Flowers in terminal or leaf-opposed racemes, rarely axillary ..... 17. Millettieae (p. 165)
38b. Flowers solitary, fasciculate, or in axillary racemes.
39a. Leaves imparipinnate; leaflets 2–12 pairs ..... 24. Robinieae (p. 320)
39b. Leaves paripinnate; leaflets 10–30 pairs ..... 22. Sesbanieae (p. 313)