

Basal Eudicot Grade

As eudicots, Basal Eudicots have triaperturate pollen (Figure 1) that distinguishes them from the Gymnosperms, Basal Angiosperms, and Monocots. Unlike the core Eudicots, however, the Basal Eudicot Grade retains a poorly differentiated perianth, numerous stamens and sometimes carpels, and floral parts generally free (although with some fusion in the gynoecium in certain taxa). Within the perianth, however, there has been a reduction in number and a tendency, however variable, towards 4's and 5's. Although not species-rich, the lineages that comprise this grade provide a diversity of economically important plants (Table 1).

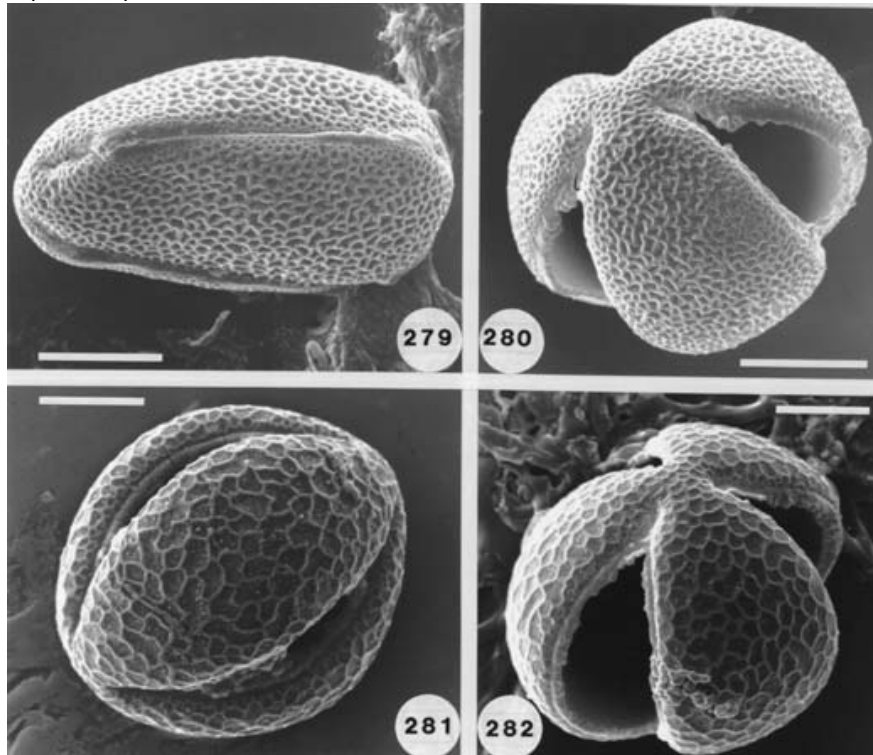


Figure 1. Tricolpate pollen from the mint order, Lamiales (USDA Pollen Lab).

Table 1. Economically important members of the Basal Eudicot Grade (alphabetically by family).

- 1) **Berberidaceae:** *Berberis* includes the widely cultivated (and invasive) Japanese barberry, *Berberis thunbergii*.
- 2) **Buxaceae** includes the widely cultivated *Buxus* (boxwood) and *Pachysandra* (pachysandra)
- 3) **Nelumbonaceae:** *Nelumbo* contains species of water-lotus, which are widely cultivated as aquatic ornaments.
- 4) **Papaveraceae:** *Papaver* is the source of poppy seeds, ornamental poppy flowers, and opiates.
- 5) **Platanaceae:** *Platanus* includes a widely cultivated (street tree) species (American sycamore) and hybrid (London plane).
- 6) **Ranunculaceae** includes many ornamentals, such as monkshood, larkspur, anemone, clematis and buttercups.

I. Basal Eudicot Grade

A. Families to Know on Sight

1. Ranunculaceae – p. 410

Diagnostic Summary: Herbs to vines or woody vines with simple, compound to dissected leaves with sheathing bases with membranous margins; Perianth poorly differentiated, of variable merosity; Stamens many; Pistils several to many, each of a single carpel, often on a convex receptacle.

Generalized Floral Formula: $\text{Ca}^{4-5\text{-many}} \text{Ca}^{4-5\text{-many}} \text{A}^{\text{many}} \underline{\text{G}}^{\text{several-many}}$

2. Papaveraceae – p. 431

Diagnostic Summary: Herbs (shrubs) often with milky or colored sap. Lvs simple to pinnately much dissected with or without sheathing base with membranous margins. Perianth well differentiated between 2 caducous sepals and 4-8 showy petals; Stamens numerous or 6; Pistil one, of 2-many connate carpels and with a short to absent style.

Generalized Floral Formula: $\text{Ca}^{2,\text{caducous}} \text{Co}^{4-8} \text{A}^{\text{many or 6}} \text{G}^{[2\text{-many}],\text{short to absent style}}$

B. Genera to Know (you can write your own key to genera)

Ranunculales

Ranunculaceae – p. 410

1. *Ranunculus* (herbs)

2. *Clematis* (woody vines)

Berberidaceae – p. 408

3. *Berberis* (shrubs)

4. *Podophyllum* (herbs)

Papaveraceae – p. 431

5. *Papaver* (herbs)

6. *Dicentra* (herbs)

Proteales

Platanaceae – p. 437

7. *Platanus* (trees)

Buxales

Buxaceae – p. 438

8. *Pachysandra* (herbs)