I. Asterids Part 3

A. Families to Know on Sight

1. Ericaceae (heaths, blueberries, rhododendrons)

   **Diagnotistic Summary:** Evergreen or semievergreen shrubs (herbs or small trees) with funnelform or urceolate corollas and 10 stamens with poricidal anthers.

   Generalized Flora Formula:
   
   \[
   \text{fl regular or irregular: } \text{Ca}^{[5]} \text{ Co}^{[5]} , \text{funnelform or urceolate A }^{10} , \text{poricidal, barely epipetalous } G^{[5]} , \text{capsule or } G^{[5]}, \text{berry}
   \]

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

- **Ericaceae** – p. 733
  1) *Rhododendron* (shrubs)
  2) *Kalmia* (shrubs)
  3) *Vaccinium* (shrubs)
- **Aquifoliaceae** – p. 850
  4) *Ilex* (shrubs and trees)

C. Economic Botany

- *Apiaceae* is the source many herbs and vegetables such as carrots (*Daucos*), celery (*Apium*) and fennel (*Foeniculum*), cilantro & coriander (*Coriandrum*), cumin (*Cuminum*), dill (*Anthem*), parsley (*Petroselinum*), and caraway (*Carum*). Paradoxically, it is also the source of poison-hemlock (*Conium*), the plant used to execute Socrates.
- *Araliaceae* is the source of English-ivy (*Hedera*) and ginseng (*Panax*).
- *Aquifoliaceae* are the source of hollies and the Souther American stimulating beverage yerba mate (*Ilex*).
- *Ericaceae* are the source of blueberries and cranberries (*Vaccinium*), rhododendrons and azaleas (*Rhododendron*), our state flower the mountain-laurel (*Kalmia*), and numerous other ornamentals such as pieris (*Pieris*).

II. Caryophyllids

The caryophyllids comprise of clade closely related to the stterids but which lacks the typical combination of core asterid characters of 5 fused petals, 5 or fewer epipetalous stamens, and 2 fused carpels. Most caryophyllids are herbs and there are quite a number of succulents. One chemical character present in some (but not all) caryophyllids is the production of betalain pigment, a putative derivation from the more normal anthocyanin pigments. Betalains give beets and the flesh of poke and prickly-pear berries their rich, saturated red-purple color.

A. Families to Know on Sight

1. Polygonaceae (Buckwheat & Smartweed Family)
**Diagnostic Summary:** Herbs or vines (shrubs to small trees) with simple lvs and ocrea (singular form: ocrea); nodes swollen, stems jointed in appearance; Fls small, fruit a trigonal or lens-shaped nut or achene surrounded by persistent perianth.

**Generalized Flora Formula:** \( \text{fl regular: } Ca^{[4-5]} \text{ or } [3+3] A^{3-9} G^{[2-3]}, \text{lenticular or trigonal nut or achene enveloped by persistent Ca} \)

2. Cactaceae (Cactus Family)

**Diagnostic Summary:** Stem-succulent herbs to shrubs lacking lvs with expanded blades; axillary buds (areoles) with clustered spines; Fls large, showy, with many spirally arranged petals, many stamens, and inferior ovary with areoles on the surface.

**Generalized Flora Formula:** \( \text{fl regular or irregular: } Ca^0 Co^\text{many}, \text{spiral } A^\text{many} G^{[\text{many}]} \)

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

**Cactaceae – p. 482**

1) *Cereus sensu lato* (herbs to shrubs)
2) *Schlumbergera* (herbs to shrubs)
3) *Opuntia* (herbs to shrubs)

**Phytolaccaceae – p. 481**

4) *Phytolacca* (herbs to subshrubs)

**Polygonaceae – p. 440**

5) *Persicaria* (herbs)
6) *Rumex* (herbs)

C. Economic Botany

- Cactaceae are of tremendous horticultural import, since virtually all of the 1600 cactus species are cultivated as ornamentals somewhere in the world. Edible fruits and stems from the prickly-pear cactus (*Opuntia*), edible fruits from the dragon fruit cactus (*Hylocereus*).
- Polygonaceae is the source of buckwheat grain (*Fagopyrum*) and rhubarb (*Rheum*). Mile-a-minute vine (*Persicaria perfoliata*) is an invasive weed in North America which has had great environmental damage and is expensive to manage (eradicate) on natural lands.