Today we will continue looking at the Core Asterids. We will be looking at another family in the Asterales (Campanulaceae – this order also includes the Asteraceae). Note that both the Campanulaceae and Asteraceae possess the unique trait of secondary pollen presentation by the stigma. This lab will mainly focus on families in the Lamiales (Oleaceae, Gesneriaceae, Acanthaceae, Verbenaceae, Lamiaceae, Scrophulariaceae, Plantaginaceae, and Orobancheaceae). Remember, the Core Asterids have stamens that equal the petal number (1 reduced or sterile in many), a sympetalous corolla, and epipetalous stamens (features which are also present in some members of the Ericales).

**Campanulaceae** – Bellflower Family, including Lobeliaceae (Lobelia Family)
- Mostly herbaceous, **typically with milky sap**; leaves generally alternate and entire, rarely lobed; stipules absent; **flowers radial to bilateral, bisexual, with hypanthium**; sepals 5, connate; **petals 5, fused, bell-shaped to tubular when radial, 2- or even 1-lipped with an adaxial slit when bilateral** (lobes not overlapping); stamens typically 5, **attached to disk at the apex of the ovary, anthers compressed or fused around style** (for secondary pollen presentation); ovary usually inferior, carpels 2-5 fused, style grows through anther ring to present pollen, **often with specialized hairs for this purpose**, stigma has as many lobes as carpels; fruit a capsule or berry.
  - *Campanula*, *Centropogon*, *Lobelia*

**Oleaceae** – Olive Family, 29 genera, 600 spp.
- Trees, shrubs, or vines; leaves typically opposite, simple or pinnately compound; stipules lacking; peltate scales sometimes present; inflorescence determinate or flowers solitary; flowers bisexual (rarely unisexual); **sepals 4, fused; petals 4 (sometimes more) fused**, often folded inward; **stamens 2, epipetalous**; carpels 2 fused, ovary superior; nectaries in the form of a nectar disk often present; fruit a drupe, capsule, samara, or otherwise.
  - *Forestiera*, *Jasminum* (leaves are alternate in some species)
  - *Olea*, *Osmanthus*

**Acanthaceae** – Acanthus Family, 256 genera, 2770 spp.
- Primarily shrubs and herbs; leaves opposite and decussate (sometimes alternate); stipules absent; flowers bisexual and bilateral, **subtended or sometimes enclosed by one or more large, colorful bracts**; sepals 4-5; **petals 4-5, fused into a tube and bilabiate**; stamens 4 (2 long, 2 short) or just 2 in number, epipetalous, **anthers usually asymmetrical**, staminodes sometimes present; ovary: superior composed of 2 fused carpels, a single style present but may be forked with two long stigmas; fruit a capsule which often has hook-like outgrowths.
  - *Acanthus*, *Justicia*, *Mackaya*
Lamiaceae (Labiatae) – Mint Family, 260 genera, 6970 spp.
   Primarily herbs or shrubs, generally aromatic; leaves simple (occasionally pinnately compound), opposite and decussate, often with glandular hairs; stems four-angled in cross-section; stipules absent; inflorescence with indeterminate main axis and determinate lateral branches; flowers bisexual and bilateral, usually strongly bilabiate; sepals 4-5, fused; petals 4-5, fused; stamens 4 (2 long, 2 short) or just 2, epipetalous; ovary superior, 2 fused carpels (four locules) most with a gynobasic style; nectaries commonly present; fruit a nutlet or a drupe.
   Lavandula
   Mentha
   Nepeta
   Rosmarinus
   Salvia
   Teucrium
   Thymus

Plantaginaceae – Snapdragon/Plantain Family, 113 genera, 1800 spp.
   Herbs or rarely shrubs; leaf structure and insertion variable; stipules lacking; leaf bases or petioles sometimes sheathing the stem; flowers bisexual and bilateral (radial in Plantago), sepals 4 or 5, fused; petals 5 (occasionally appearing to be 4 due to fusion), fused, corolla bilabiate; stamens typically four (2 long, 2 short), epipetalous, anther sagittate, locules distinct, staminodes (formed from the 5th stamen) occasional; superior ovary composed of two fused carpels; a single style present, stigma 2-lobed; nectar disk common; fruit a capsule.
   Antirrhinum
   Isoplexis
   Penstemon
   Plantago