



# Outline

## Questions and answers

### Compositae, Aster family

Description

Classification and representatives

### Labiatae—mint family





What is a main character of Compositae? (List only one)

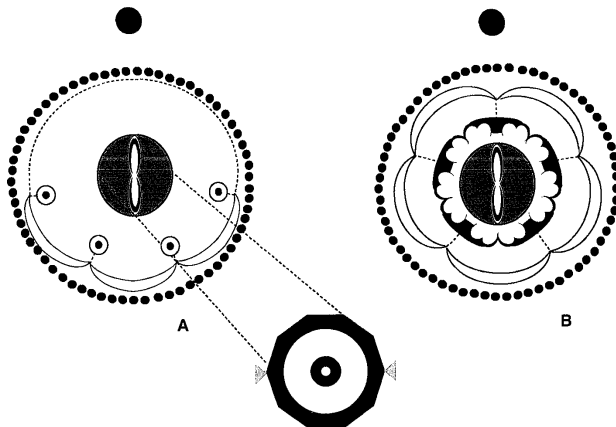
## Previous final question: the answer

What is a main character of Compositae? (List only one)

- ▶ Head which is pseudanthium
- ▶ Pappus



# Compositae flower



\* $K_{\infty}C_{(5)}A_{(5)}\overline{G_{(2)}}$  (tubular flower) or  $\uparrow K_{\infty}C_{(3\vee 5)}A_{(5)}\overline{G_{(2)}}$  (ligulate flower)



## Tubular and ligulate flowers in *Matricaria* sp. (chamomile)



# Classification and representatives of Compositae

Oil plants, vegetables, ornamentals and medicinal plants distributed in 12 (!) subfamilies, most important are three subfamilies:

- ▶ Mutisioideae: bilabiate + ray flowers
  - ▶ *Gerbera*—gerbera, South Africa

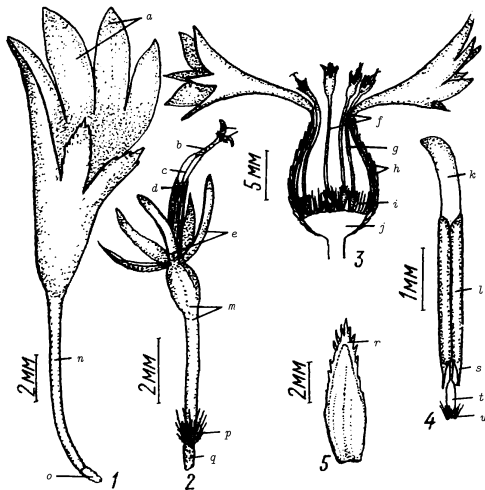
## *Gerbera* with bilabiate disk flowers



## Carduoideae

- ▶ Carduoideae: deeply lobed disk flowers; stems spiny; leaves dissected
  - ▶ *Centaurea*—knapweed
  - ▶ *Cynara*—artichoke
  - ▶ *Carthamus*—safflower
  - ▶ *Carduus*—thistle; pappus without branches
  - ▶ *Cirsium*—thistle; pappus hairs branched

# Knapweed



## *Cynara cardunculus* (artichoke)



## *Carthamus tinctorius* (safflower)

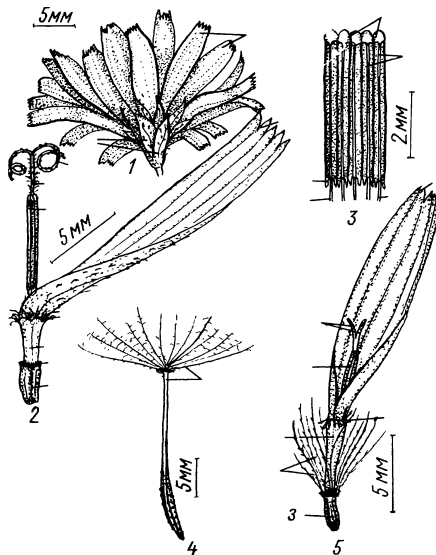


## Cichorioideae

- ▶ Cichorioideae: mostly disk and/or 5-toothed ligulate flowers + laticifers with latex (milky sap)
  - ▶ *Taraxacum*—dandelion
  - ▶ *Lactuca*—lettuce
  - ▶ *Crepis*—hawkbeard
  - ▶ *Lygodesmia*—skeleton weed
  - ▶ *Sonchus*—sow thistle
  - ▶ *Hieracium*—hawkweed
  - ▶ *Cichorium*—chicory



# Chicory



# Asteroidae

- ▶ Asteroidae: tubular + 3-toothed ligulate flowers
  - ▶ Astereae: pappus consists of bristles; leaves entire
    - ▶ *Aster*—aster, divided now into *Eurybia*, *Oreostemma*, *Symphyotrichum*, etc.
    - ▶ *Erigeron*—fleabane
    - ▶ *Solidago*—goldenrod

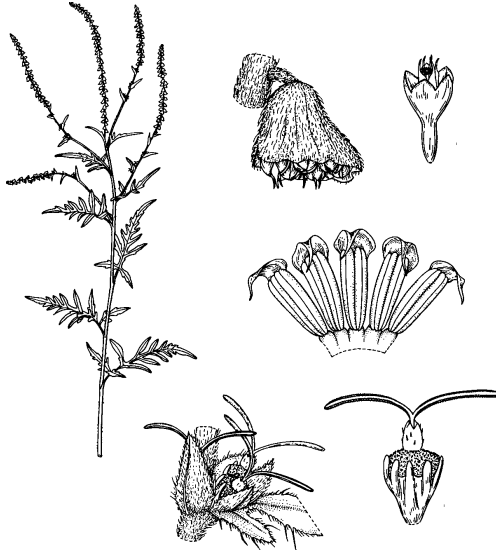
- ▶ **Asteroideae**
  - ▶ **Anthemidae**: alternate, pinnate leaves; membranaceous involucre bracts; disk + ray; pappus often absent
    - ▶ *Artemisia*—sagebrush
    - ▶ *Achillea*—yarrow
    - ▶ *Chrysanthemum*—chrysanthemum



# Asteroideae

- ▶ Asteroideae
  - ▶ Heliantheae (2.5k species!): mostly opposite leaves; disk + ray flowers; pappus from scales, sometimes absent
    - ▶ *Helianthus*—sunflower
    - ▶ *Tagetes*—marigold and lots of other ornamentals
    - ▶ *Ambrosia*—ragweed
    - ▶ *Bidens*—bur-marigold
    - and many, many others

# Ragweed



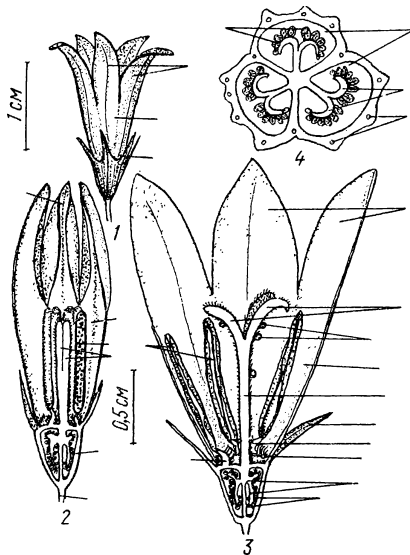
## *Tagetes patula* (marigold)







# Bellflower

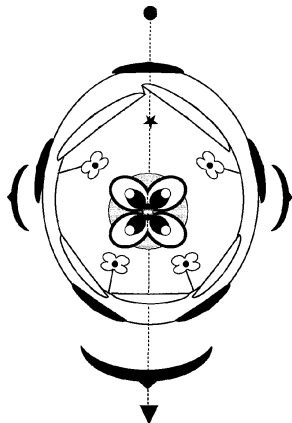




## Morphology of Labiatae

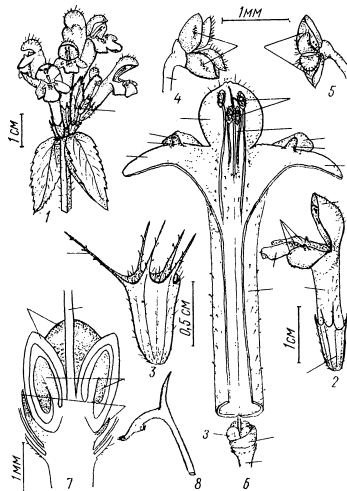
- ▶ Aromatic, often hairy, herbs or shrubs; epidermal glands contain ethereal oils; plants also contain iridoid compounds
- ▶ Young stems are typically quadrangular; leaves opposite, without stipules, simple, with pterodromous venation
- ▶ Flowers in axillary inflorescences, zygomorphic (monosymmetric)
- ▶ Calyx tubular, petals also fused, with two upper and one lower petals bigger than others, stamens in two pairs, attached to corolla
- ▶ Pistil with two carpels, but each carpel is secondary divided
- ▶ Fruit is schizocarp of four half-carpellary nutlets, seeds with little endosperm

# Labiatae flower



$$\uparrow K_{(5)} [C_{(1,2,2)} A_{2,2}] \underline{G_{(2 \times 2)}}$$

## *Galeopsis* (hemp nettle) flower





## Final question (2 points)

How Compositae (Aster family) differs from Campanulaceae (bellflower family)?





## For Further Reading



O. A. Stevens.

*Handbook of North Dakota plants.* 3rd edition.

NDSU, 1963.

*Bellflower, Lobelia and Aster families. P. 264–299.*