



# Cactaceae

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# Simple Definition



- Perennial shrubs or trees, with leaf spines arising from specialized axillary meristems termed areoles and photosynthetic stems





# Classification

- Order Caryophyllales
- Over 176 genera and 1750 species
- Four subfamilies
  - Pereskioideae (2 genera)
  - **Opuntioideae (15 genera)**
  - Maihuenioideae (1 genus)
  - **Cactoideae (the rest)**

# Habitat



- Native to Americas (one exception)
- Adapted to dry, arid conditions
- Inhabit diverse regions, from coastal plains to high mountains





# Growth Habit

- All shapes and sizes
  - Arborescent (tree)
  - Columnar
  - Globular
  - Climbing
- Tallest free-standing over 60 feet
- Smallest 1 cm





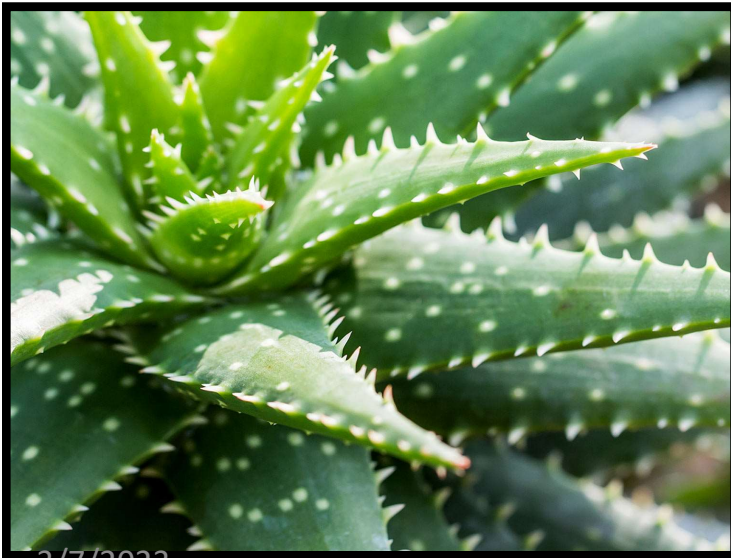


# Succulent or Cactus?

- Succulents are plants with thickened, fleshy parts to store water
- Succulent not a taxonomic category
- Cacti are succulents; not all succulents are cacti



# Which is the Cactus?



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# Structure



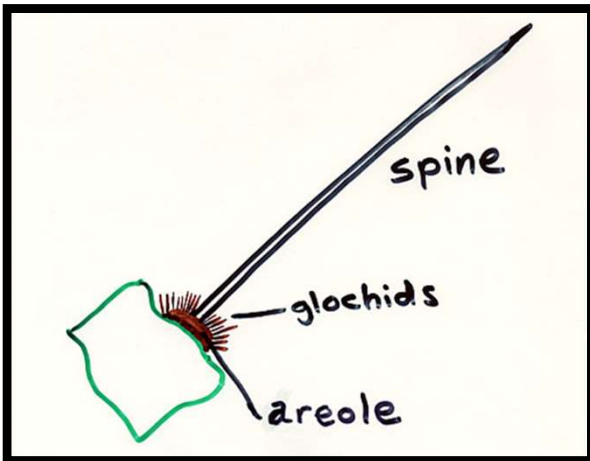
- Leaves
  - Great majority have none
  - When present, alternate
- Stems
  - Mostly leafless
  - Spiny
  - Succulent
  - Often ribbed or fluted
  - Contain chlorophyll and have stomata



# Structure



- Areoles
  - Unique to cacti
  - Highly modified axillary buds or shoots
  - Appear as woolly, hairy areas on stems
  - Spines and flowers emerge from



# Structure



- Spines
  - Produced from areoles
  - Vary greatly in number, color, size, shape
  - Technically, modified leaves
    - Prickles – sharp parts on epidermis
    - Thorns – modified stems or branches



# Structure

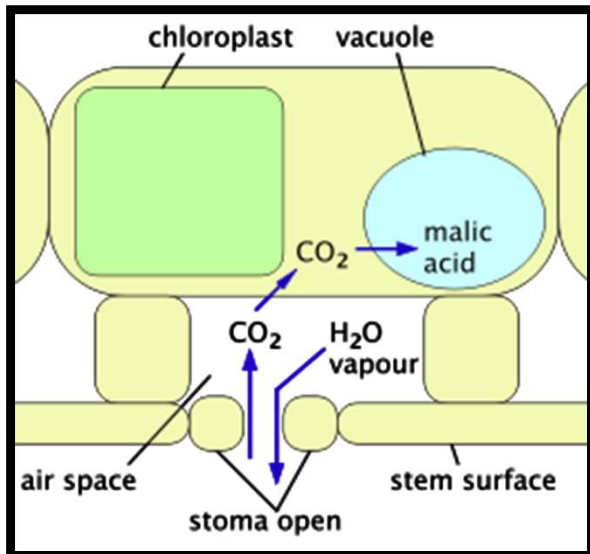
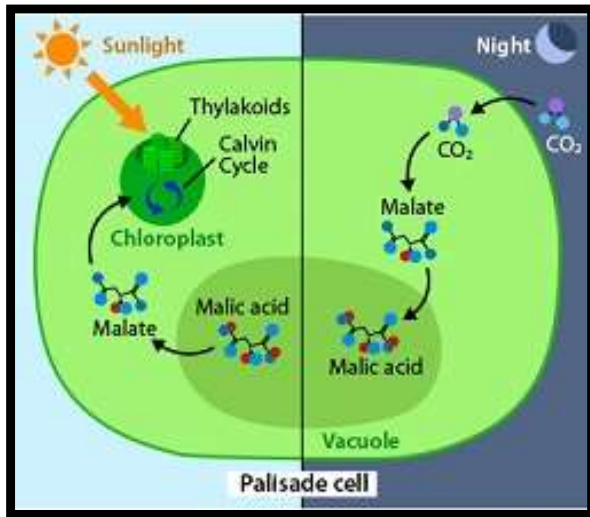


- Flowers/Fruit
  - Flowers mostly bisexual
  - Actinomorphic (radial)
  - Vary Greatly
- Roots
  - Generally fine, close to surface
  - Some taproots
  - Adventitious in epiphytes



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# Photosynthesis



- Crassulacean Acid Metabolism (CAM)
- Stomata open at night to collect carbon dioxide
- Stored/converted until daylight
- Photosynthesis during the day
- Other plants as well – orchids, pineapple



# Uses



- Ornamental
- Food – fruit, pads
- Herbal medicine
- Security/structural
- Psychoactive – peyote and San Pedro cactus





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