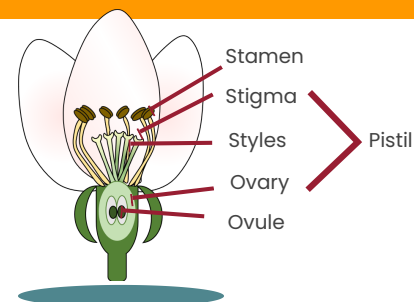




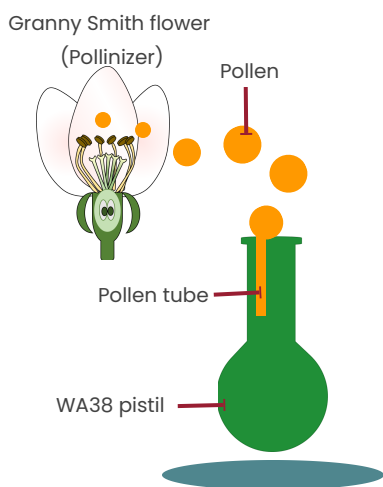
Key points about floral biology, pollination and fruit set in WA38

1. Floral Biology

- In general, there are 6 blossoms per bud: a king flower (central) surrounded by 5 Lateral flowers. **WA38 King flowers bloom 48-72 hours earlier than lateral flowers.**
- In 2020, WA38 king flowers bloom starts by the third week of April (Rock Island, Wenatchee).



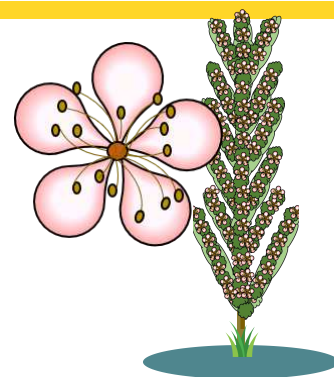
2. Pollination (results from 2019 study)



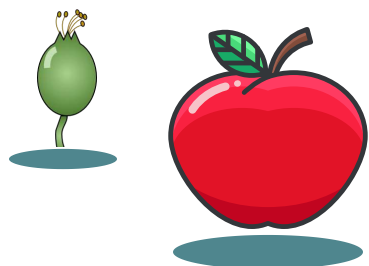
- Apple flower requires cross-pollination from two different compatible cultivars to set fruit.
- Effective pollination period (EPP)** is the time window when a pollination results into a successful flower fertilization and fruit set. **In WA38, preliminary data shows an EPP of 2 days for king flowers.**
- EPP is influenced by stigmatic receptivity, pollen tube growth and ovule longevity.
- Stigmatic receptivity** is the time when stigma is receptive (sticky) and support adhesion of the pollen grain and the subsequent pollen germination. **The stigmatic receptivity in WA38 was 9 days.**
- Pollen tube growth rate** is the length of time for a pollen tube to grow and reach the ovule. **In WA38, Granny Smith pollen tubes reach the ovules 7 days after pollination.**
- Ovule longevity** is the duration of ovule's viability. **In WA38, ovule longevity started to declined after 9 days.**
- Overall, it was found that the first 2 days after the flower opens (anthesis) are critical for a successful pollination in WA38.

3. Pollinizer

- Is a tree with pollen that is compatible with a commercially interesting apple cultivar (in this case WA38), and therefore, used as a source of pollen.
- A good pollinizer has a fast pollen tube growth rate inside WA38 flower and good fruit set.
- Effective pollinizers evaluated for WA38 are Snowdrift, Indian Summer, Granny Smith, and Everest.** Snowdrift pollen tube growth was faster in 2019, but there were no difference in pollinizers in 2020.



4. Fruit Development and Quality.



- WA38 is a self-thinning variety**, meaning it will only retain 1-2 fruits per cluster.
- Flower and fruitlet drop occurred from 3 days to 8 weeks after bloom.**
- Fruit quality is **not affected by the pollen source** (pollinizers mentioned above).
- Good size and shape fruit was correlated with 9-10 seeds per apple.
- WA38 king fruit tends to be more spherical, heavier and numerous in seeds than the lateral fruit.**

Source: Serra, S., and Musacchi, E. (2021). Pollination, Flower Biology and Fruit Development in 'WA38' apples. Final Project Report. <https://treefruitresearch.org/report/pollination-flower-biology-and-fruit-development-in-wa38-apples/>

