How Flowers Make Seeds: Part I
POLLINATION

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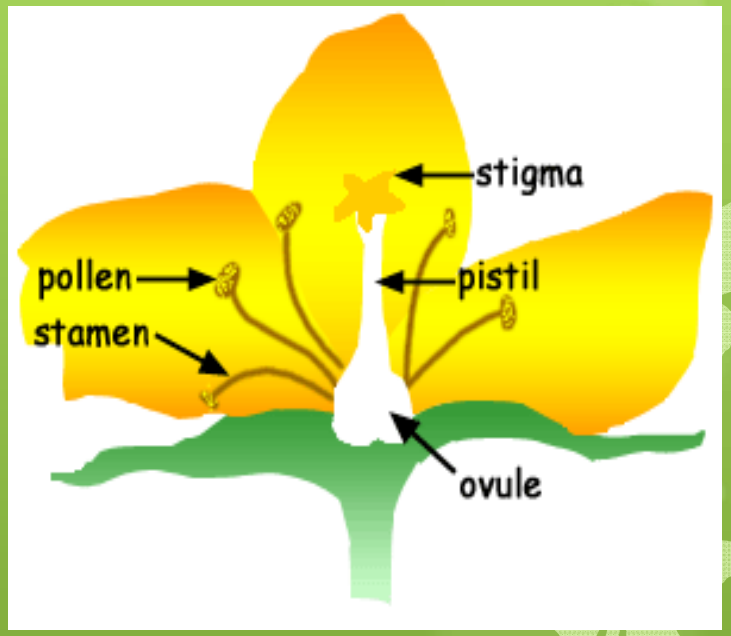
What is Pollen?

Tiny pollen grains are formed on a part of the flower called **stamens** and are needed to make a seed.

What is Pollination?

- **Pollination** is the first step in the seed-making process. In this step, pollen is moved to where it is needed.

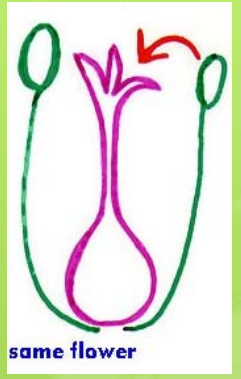
- Pollen grains on the **anther** of the **stamen** need to land on the **stigma** of the **pistil.**



Pollination

- When pollen is transferred to the stigma of the same plant it is called **self-pollination**.
- When pollen is transferred to the stigma of a different plant it is called **cross-pollination**.
- Usually plants rely on animals or the wind to pollinate them.

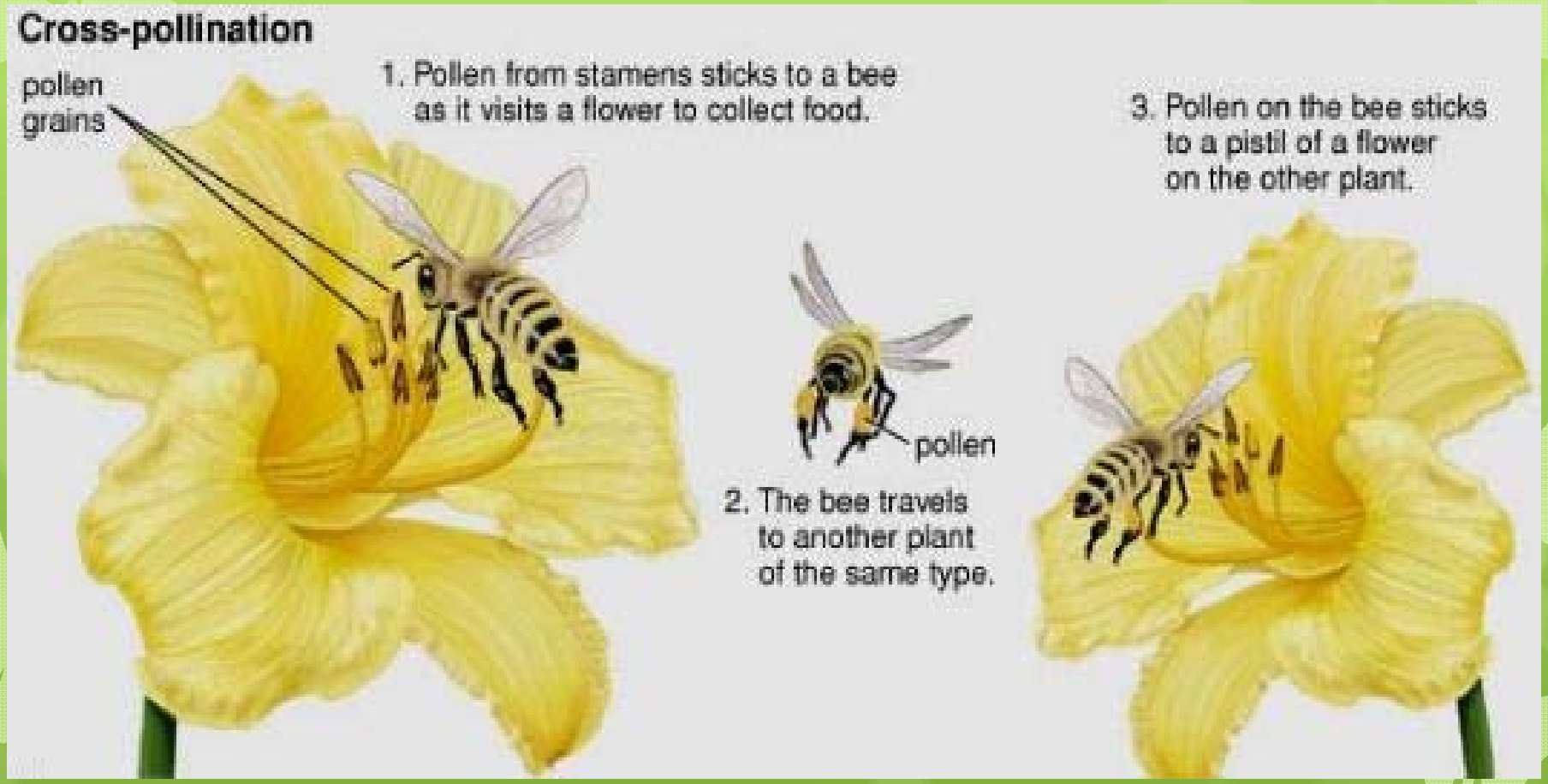
**How would indoor Tower Garden flowers get pollinated?*



Pollination by Insects

- Flowers pollinated by insects are *colored* and *scented*. Why do you think that is so?
- When **pollinators** suck up nectar in the pistil, they brush against the **anthers** and get pollen on their bodies.
- When they land on a flower, the pollen rubs off their bodies onto the **stigma** of the **pistil**.

Pollination by Insects



Other Pollinators

Pollination by Wind

Wind-pollinated flowers usually have *small petals*, *dull colors,* and *no scent*.

Why do you think this is so?

Their anthers usually hang out of the flowers so that the pollen grains can be blown by the wind more easily and have a higher chance of landing on a distant, *large, feathery stigma*.

Why do the stigmas of wind-pollinated flowers look this way?

Artificial Pollination in Tower Garden Cucumbers

- When plants are grown indoors without wind or animal pollinators, the flowers need help to move pollen.

- A person needs to transfer the pollen from the anthers onto the stigma of the female flower.

Artificial Pollination in Tower Garden Cucumbers

Cucumber plants produce two kinds of flowers.

One kind of flower produces pollen (male). The other kind has a pistil (female) and produces fruit and seeds.

Look behind the blossom to see if there is a miniature cucumber. If so, that is the flower with the stigma and pistil.

Artificial Pollination

Cucumber flower being pollinated by hand

Artificial Pollination in Tower Garden Cucumbers

- Use a small Q-tip to collect pollen from several anthers on the stamens of male flowers.
- Brush pollen onto the stigmas of the flowers with the miniature cucumbers.
- Watch the size of the little cucumber for a week after you pollinate the flower.

What do you think will happen?

Artificial Pollination in Tower Garden Cucumbers

Artificial Pollination in Tower Garden Tomatoes

Tomato flowers produce both pollen and a pistil on the same flower.

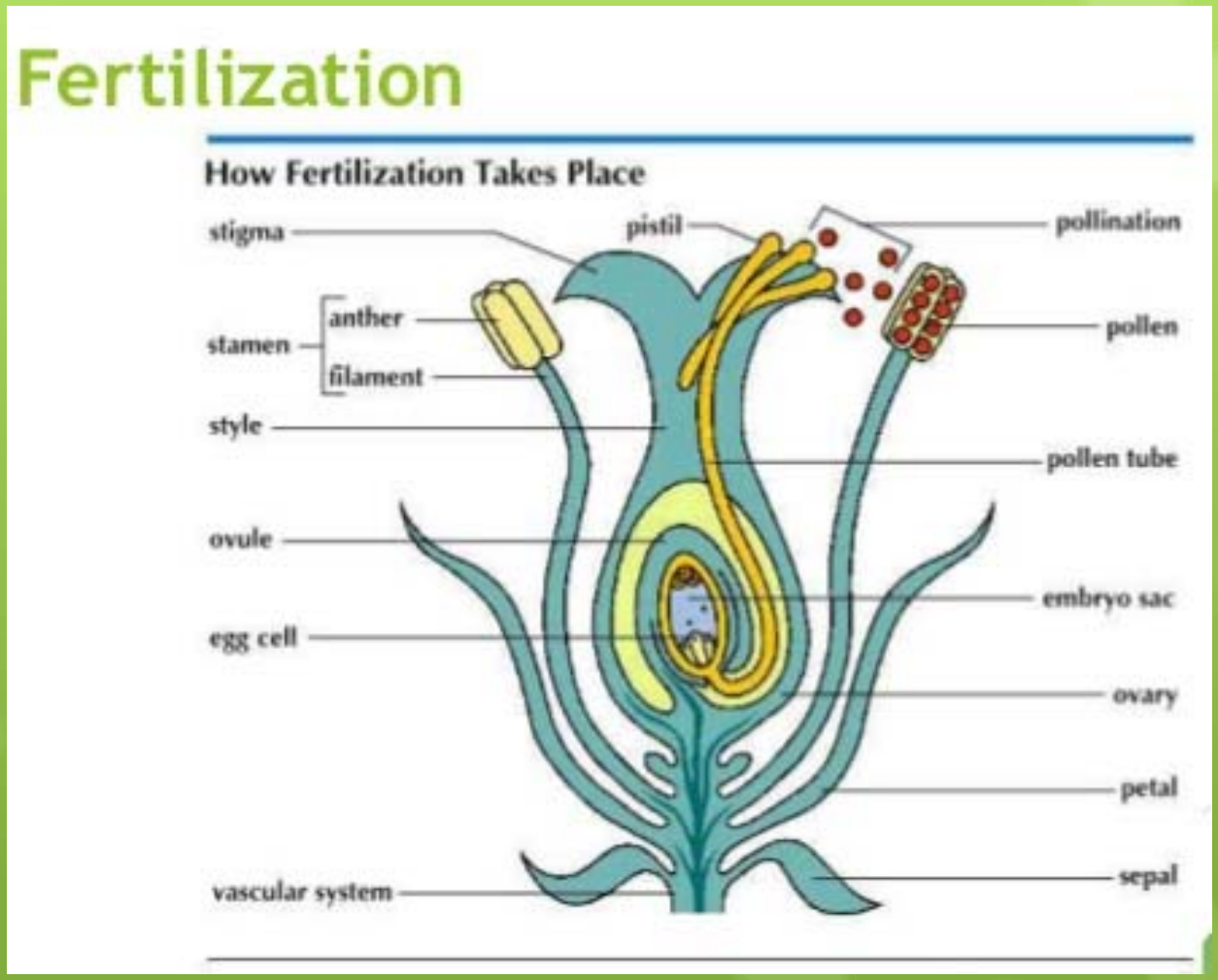
But the pollen is held in a little cage, and without pollinators, a person is needed to help release it.

Artificial Pollination in Tower Garden Tomatoes

- So, to pollinate tomatoes, just shake the plants … gently.
- *Where do you hope the pollen will land?*
- *What will you be able to observe in the next few weeks if you were successful?*

Artificial Pollination in Tower Garden Tomatoes

What happens after Pollination?



Pollination: Terms and Definitions

- **pollination:** pollen grains on the anther of the stamen land on the stigma of the pistil
- **cross-pollination:** when pollen is transferred to the stigma of another plant
- **self-pollination:** when pollen is transferred to the stigma of the same plant
- **pollen:** microscopic grains that are needed to make seeds are formed on a part of the flower called stamens
- **pollinators:** animals such as bees, wasps, flies, butterflies, bats, and birds that move pollen from anthers to stigmas. Wind also helps pollinate flowers.
- **stamen:** male flower part that contains an anther with pollen
- **anther:** part of the stamen that holds pollen
- **pistil:** female flower part with a stigma on top and an ovary on bottom where seeds are formed
- **stigma:** sticky top part of pistil where the pollen from the anthers must land in the seed-making process