# PLANT REPRODUCTION
## Year 5

## SEQUENCING ACTIVITY: PLANT LIFE CYCLE

Cut out the boxes below and see if you can organise the statements into the correct order.

| | |
|---|---|
| The plant starts to grow - the stem grows up and leaves unfold. | Seeds are scattered away from the parent plant by animals, wind, water or by self-dispersal. |
| Insects carry pollen with them to the next flower they visit. | As insects collect nectar from the flower, pollen brushes onto their legs and bodies. |
| Some of the seeds that have been dispersed start to germinate.....and so the cycle begins again. | Pollen travels to the female part of the flower where seeds are made. |
| The male part of the flower produces pollen. | A seed is planted or falls in the soil. |
| A flower bud forms and the flower opens up. | Brightly coloured petals and the scent of the flower attract insects. |
| With water and a suitable temperature the seed swells and begins to make a new plant. | Seeds form in the female part of the flower. |

Can you organise these statements in the correct order so that they explain the life cycle of plant growth?

**Planting**

Maybe you can plant a bean, pea or sunflower seed so you can follow the whole lifecycle of a flowering plant.

Ensure that there are ideal conditions for germination and growth.

You may choose to begin indoors and then move the plants outside when growth is Established.

You could measure the growth of your plant and record it's height and changes in appearance on an observation chart.

PLANT GROWTH OBSERVATION TABLE

Plant type: Date of planting:

| Date | Description | Drawing | Height |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Reproducing is vital for all living things .**
**If a species does not reproduce, it cannot survive and will become extinct.**

## HOW DO PLANTS REPRODUCE?

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# Life Cycle of a Plant

**Germination**

With water and a suitable temperature the seed swells and begins to make a new plant

**Plant Growth**

Stem grows up, leaves unfold, flower bud forms and opens

**Pollination**

Insects attracted to the flower transport pollen, or the wind blows pollen between plants

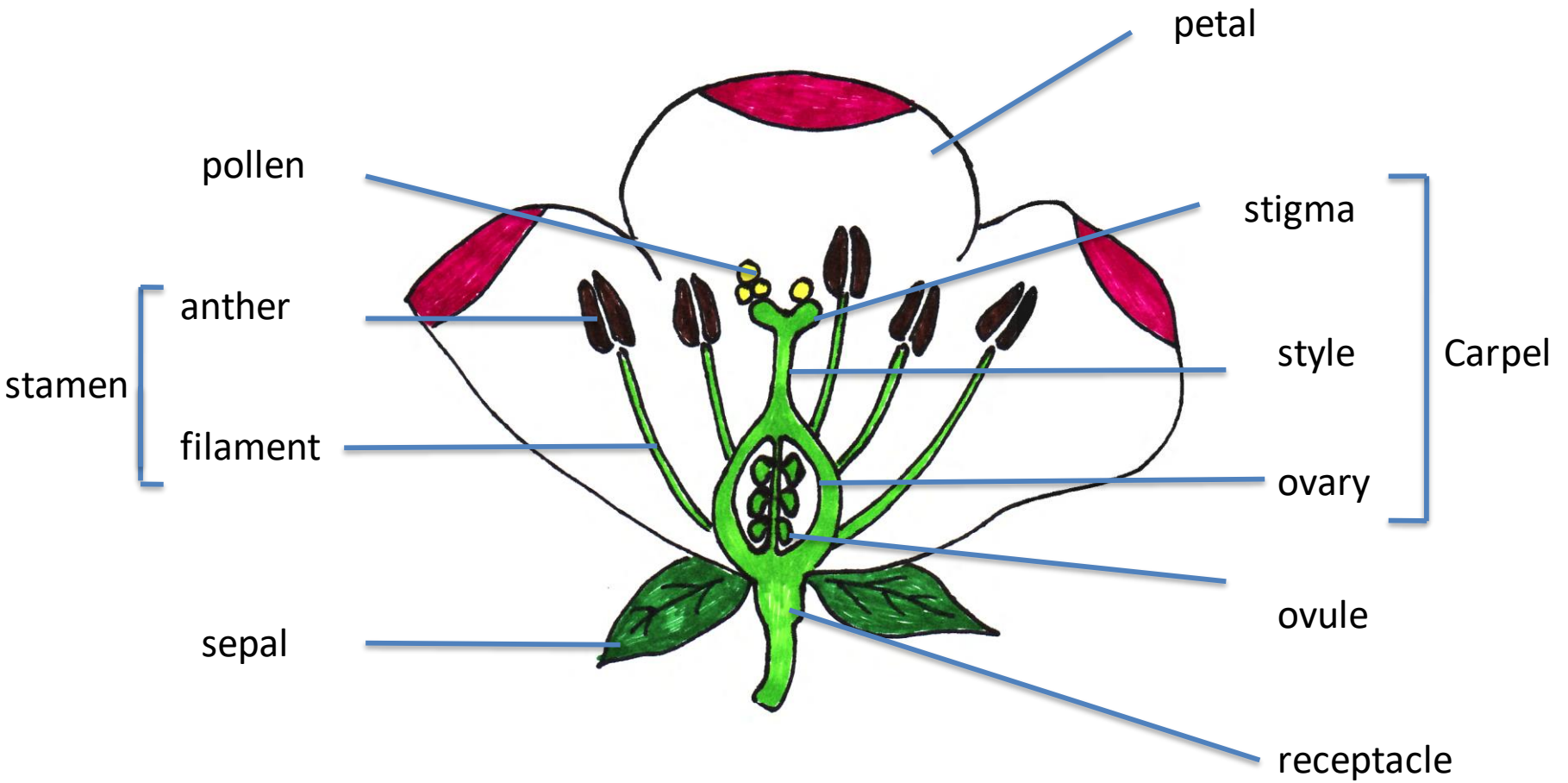
**Fertilisation**

seeds form when pollen from the male part of one flower reaches the female parts of another flower

**Seed Dispersal**

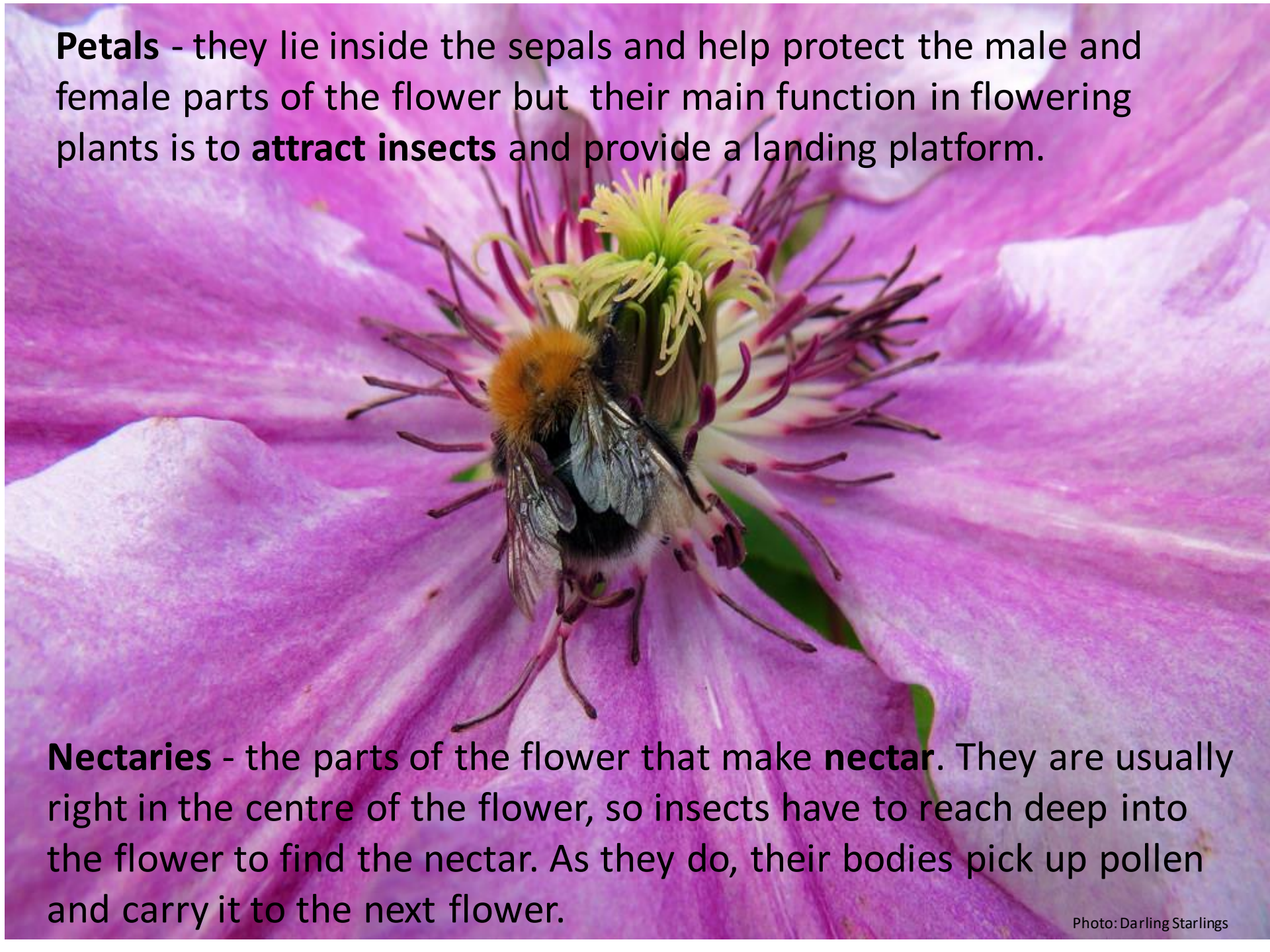
Seeds are scattered away from the parent plant

# The Parts of a Flower




This diagram shows the different parts of a flower. Flowers have **male** and **female** parts inside them. Each has a unique job to do (function). In different species the number, shape and size of each part of a flower may be different. To reproduce, pollen from one flower must first be transferred to another flower, either by insects or the wind.


A lily's flower has clear reproductive organs
Photo: USFWS: Pacific Region



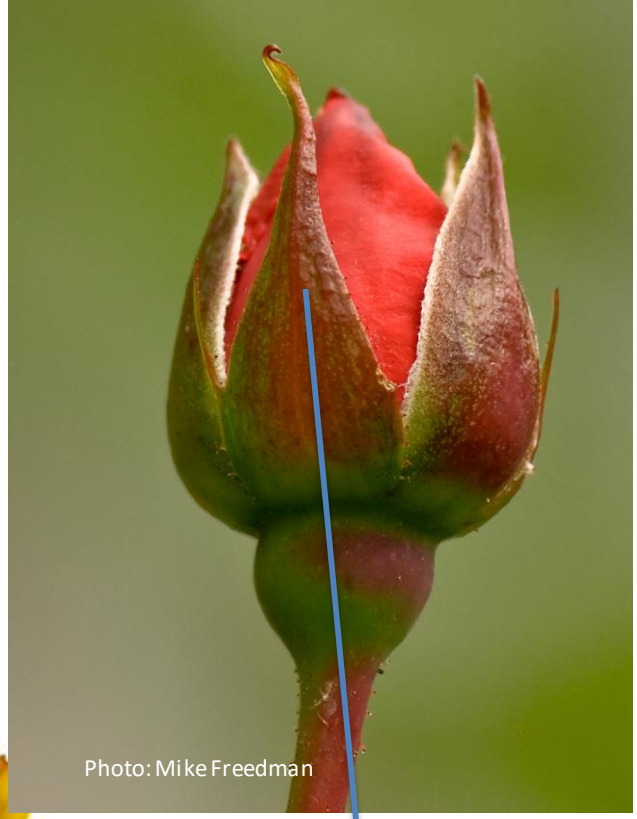
**Petals** - they lie inside the sepals and help protect the male and female parts of the flower but their main function in flowering plants is to **attract insects** and provide a landing platform.

**Nectaries** - the parts of the flower that make **nectar**. They are usually right in the centre of the flower, so insects have to reach deep into the flower to find the nectar. As they do, their bodies pick up pollen and carry it to the next flower.

Photo: Darling Starlings

# The sepals

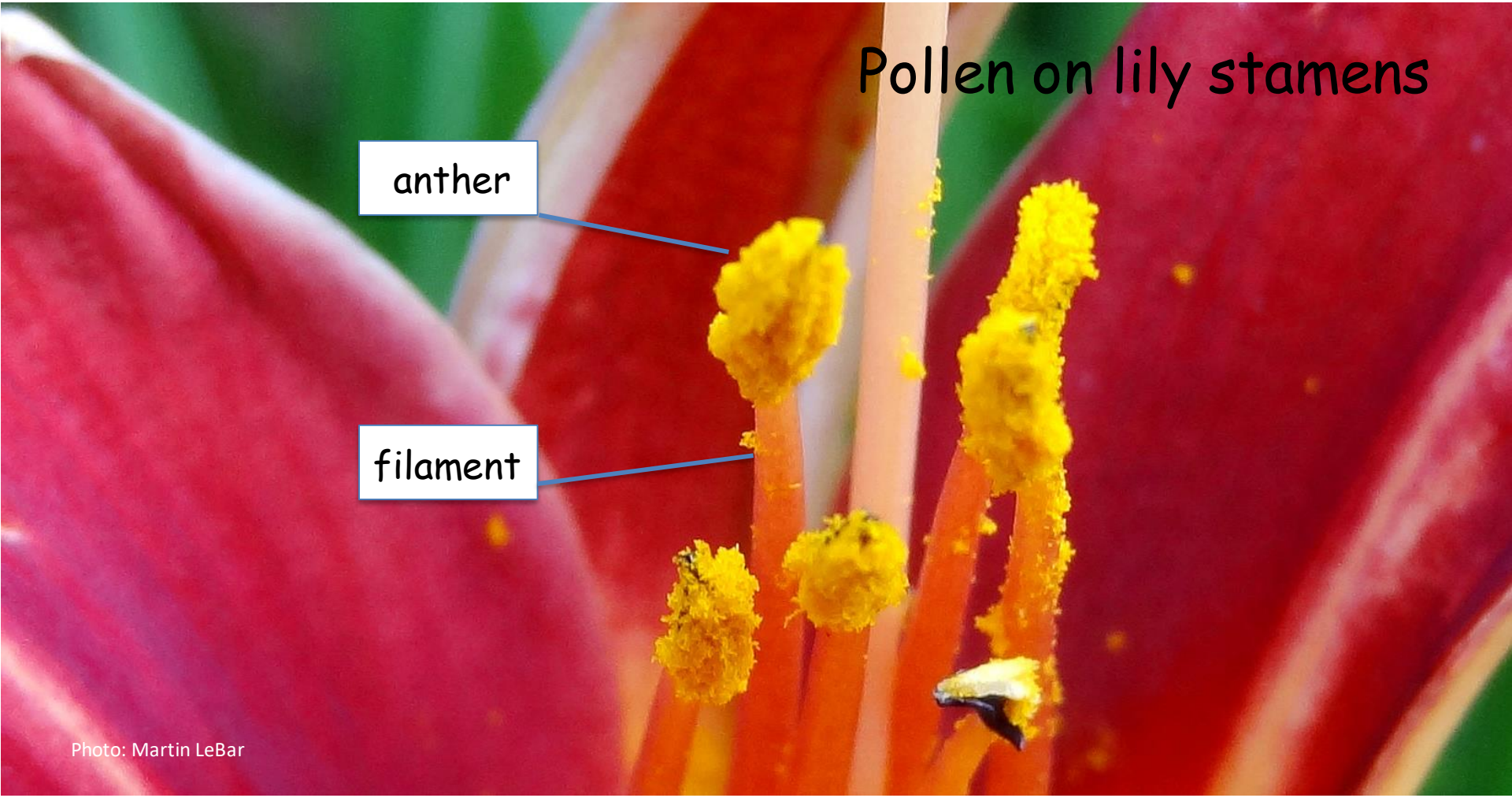
**Sepal** - special type of leaves that form a ring around the petals. Their job is to **protect the flower** whilst it is still a bud. When the flower opens, you can still see the sepals behind the petals.




**Stamen - the male part of the flower**. Its job is to **make pollen** ; it has 2 parts:

**Anther** - releases pollen onto insects entering the flowers.

**Filament** - thin stalk that holds up anther.



**Carpel** - the female part of the flower has 3 parts:
**Stigma** - covered in a sticky substance that catches grains of pollen.
**Style** - stalk that raises stigma away from the plant to stop it fertilising itself.
**Ovary** - where seeds are made.

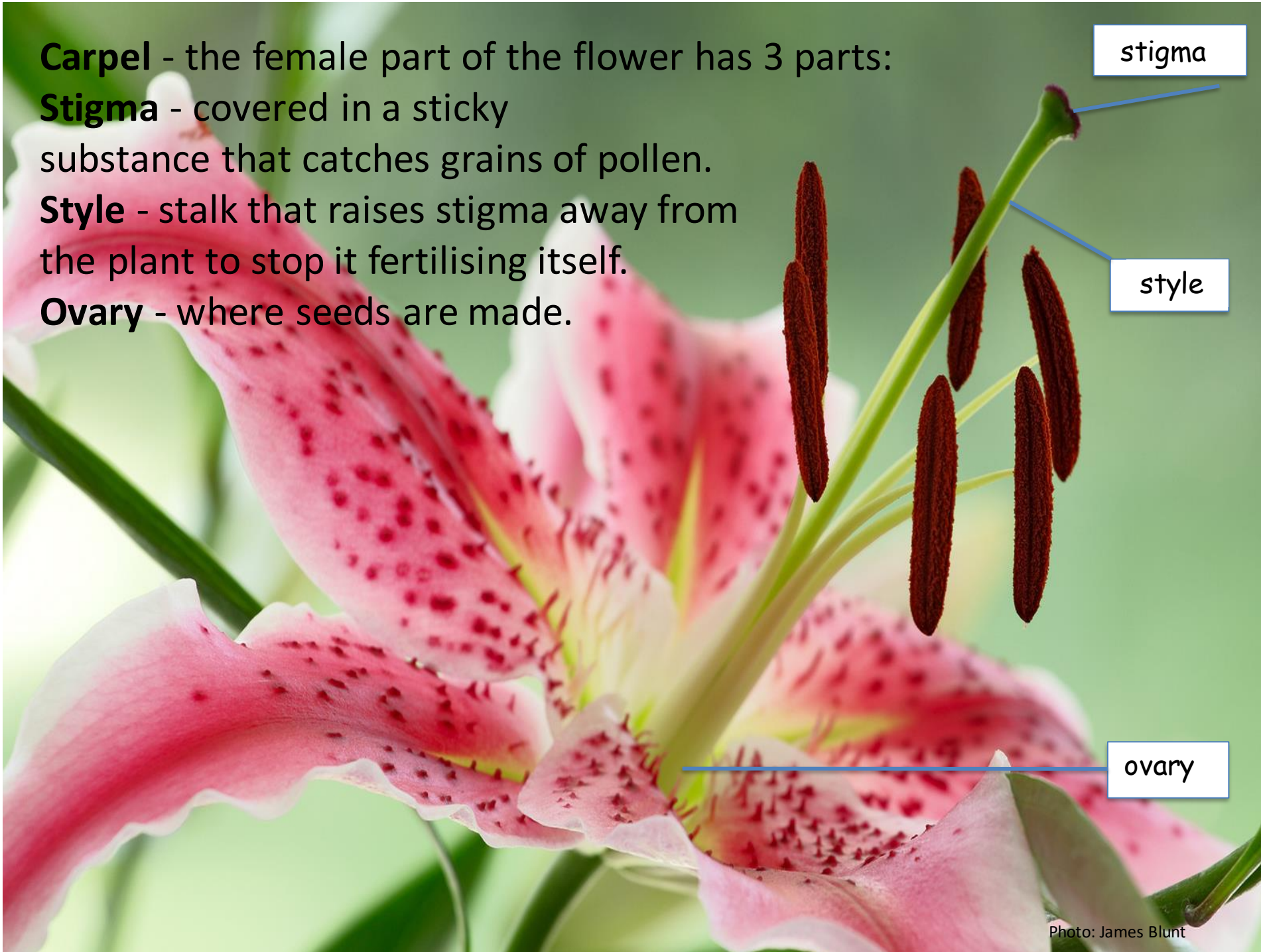
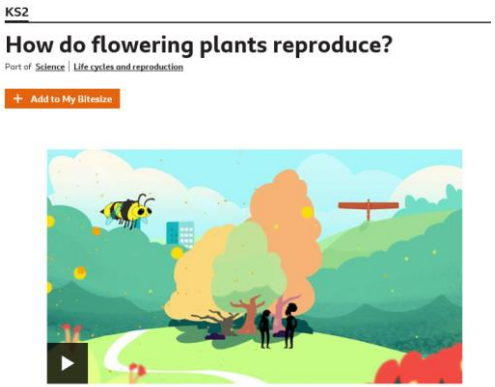



Photo: James Blunt

When the flower is **pollinated,** the pollen grains stick to the **stigma** and produce a pollen tube which grows down through the **style** until it reaches the **ovule** inside the **ovary** . This enables the male pollen cell and the female **ovule** to join together - this process is known as **fertilisation** .

After fertilisation , the female parts of the flower develop into a fruit – the ovules become the **seeds** and the ovary wall becomes the rest of the **fruit** .

**Receptacle** - the thickened top part of the stem from which the flower organs grow. The receptacle sometimes becomes part of the fruit, as seen in the apple. (see next slide)




Watch BBC Bitesize animation
https://www.bbc.co.uk/bitesize/topics/zgssgk7/articles/zqbcxfr

# The apple is a good example of how parts of the flower help to form the fruit


The stem

Seeds (pips) and ovary wall forming the core

Fleshy part – the top of the flower stalk (receptacle)

Remains of sepals and styles

# OTHER WAYS PLANTS REPRODUCE ?

It is possible for plants to naturally produce offspring from one parent, without flowers or fertilisation. There are a number of ways plants can do this, but 3 important methods are:

**Runners** - a slender fast growing stem that grows sideways (horizontally) over the soil surface and pushes down roots to form new plants e.g. spider plant and strawberry. The new plants are called **plantlets.**

Strawberry runners

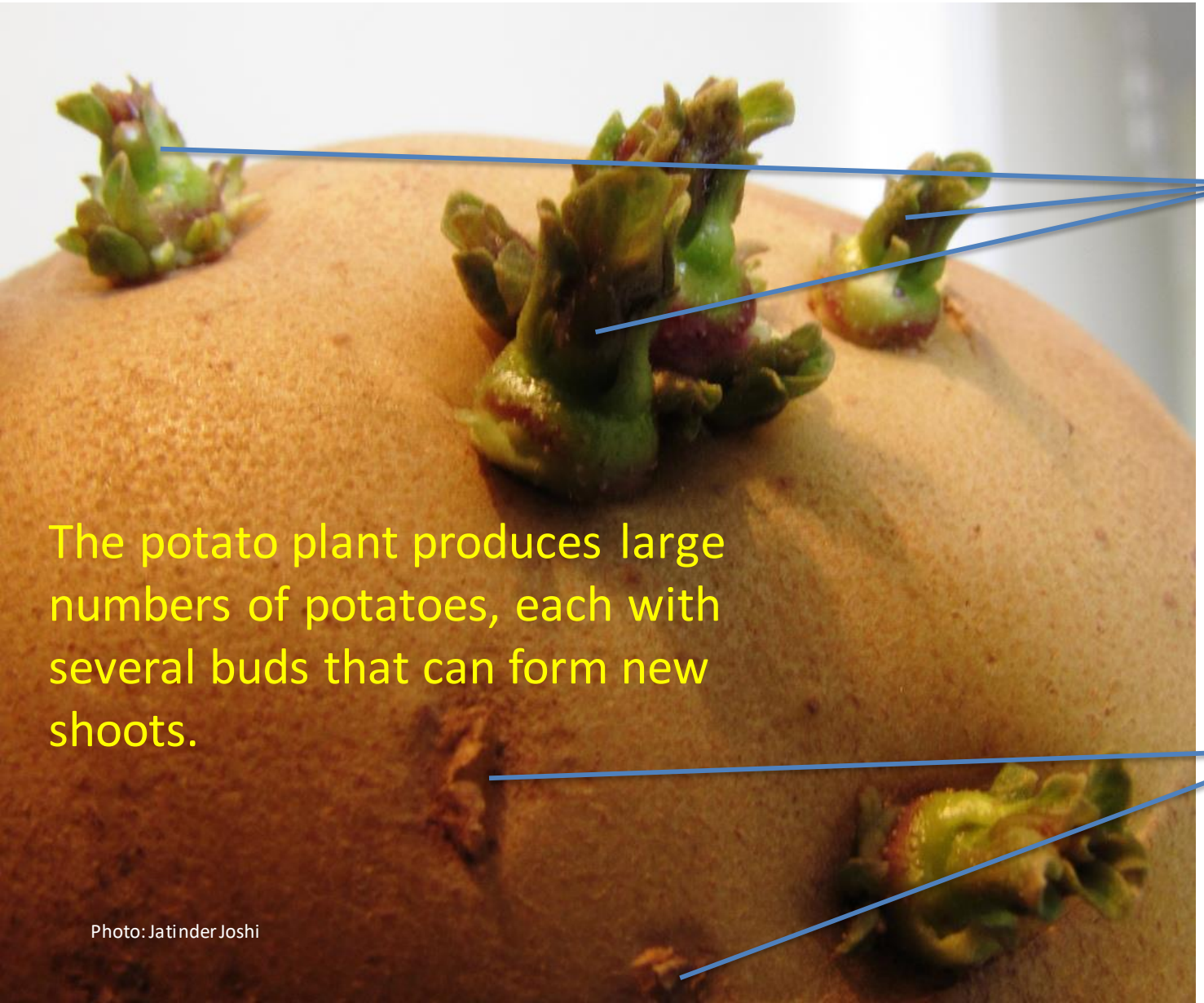
This spider plant has sent out a long runner and formed a plantlet at the far end. This plantlet can be planted in another pot and will take root.

**Tubers** - many plants naturally develop underground food storage organs that later develop into the following year's plants. The **tuber** is the swollen, fleshy underground stem of a plant, bearing buds from which new plant shoots grow. These new shoots use stored food in the tuber to grow.

Sweet potatoes – buds form new shoots

Photo: Moss

# Sprouting Potato Tubers




The potato plant produces large numbers of potatoes, each with several buds that can form new shoots.

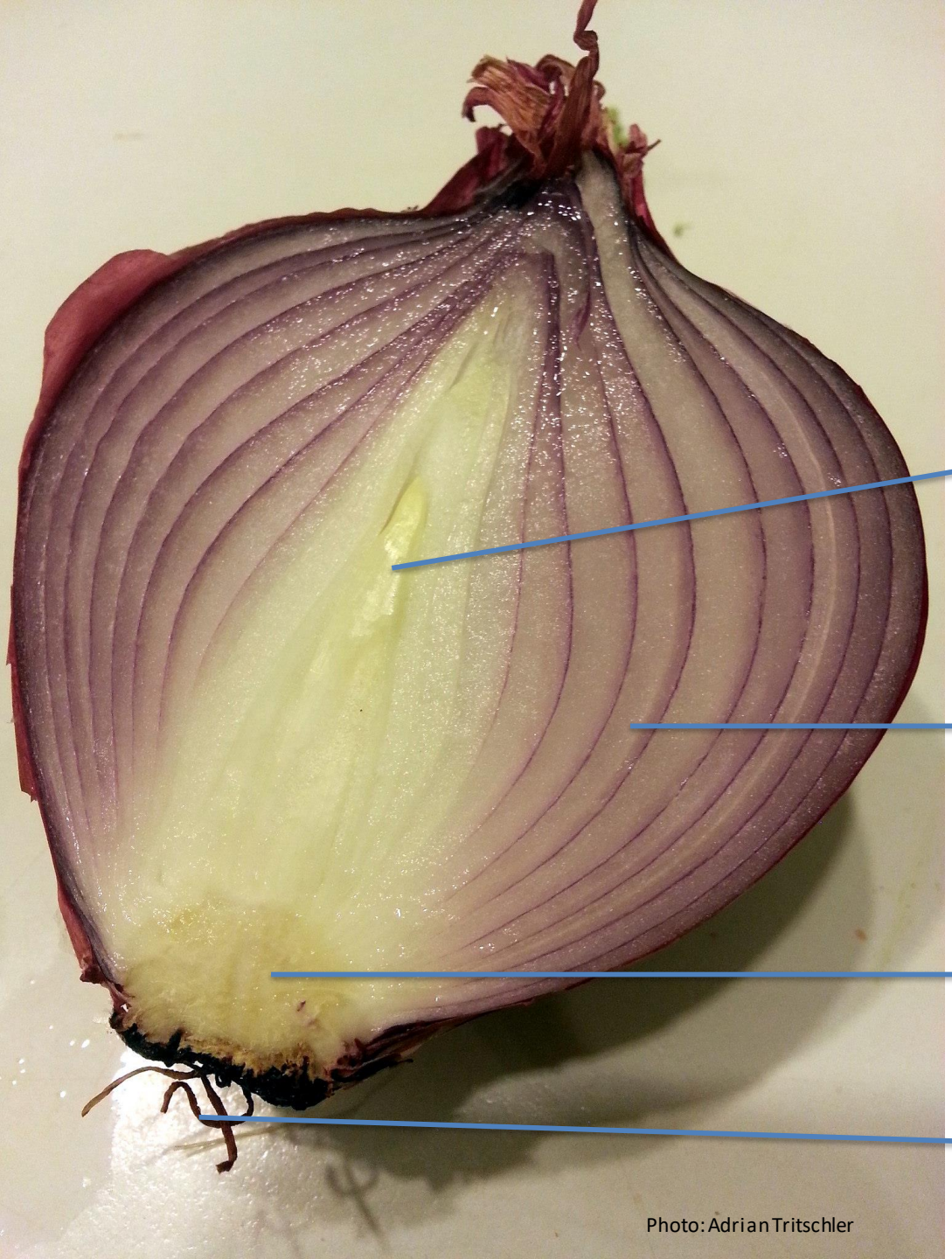
Photo: Jatinder Joshi


# New shoots developing from an onion bulb

**Bulbs** - a bulb is an underground short stem which has one or more buds enclosed in special thick leaves (or scales) which are full of stored food - this gives energy to the buds when they start to grow in the Spring.

Examples of bulbs are onions, garlic and tulips.

# The structure of a bulb



Flower bud (future flower stored inside the bulb for protection)

Scale leaves (fleshy modified leaves that store food)

Thick modified stem

Roots

Photo: Adrian Tritschler

# Artificial Propagation

Humans can produce new plants by **artificial propagation** . A simple method, used by many gardeners, is to use a cutting . A **cutting** is a section of a plant that when put into suitable soil or compost will produce roots and grow into a new plant. This can involve using different parts of the parent plant e.g. root cuttings, leaf cuttings or stem cuttings.

The stem cutting of a box tree has been planted - now it has grown new roots!


A leaf cutting from an African violet was planted


A few months later, new roots have grown and little baby leaves have sprouted! A new African violet has been made.

# Activities:

**Labelling Activity: Plant Parts**
Draw and label the different parts of the flower.

**Dissection Task**
Scientists learn about living things by dissecting them (cutting and separating parts of animal or plant specimens for scientific or medical study).

1. Find a suitable flower.

2. Look carefully at the flower - What can you see? What can you smell?

3. Starting at the base, remove the sepals (using fingers or tweezers).

4. Continue removing parts in the following order: petals, stamens, carpels.

5. Arrange the dissected parts in a line from left to right or right to left. Or arrange them as they are in the flower, in a series of rings. Label your dissected flower.

**Virtual Dissection**

On the BBC Bitesize website you will find games which involve the children labelling the parts of a flower and pulling away the different sections:
www.bbc.co.uk/bitesize/ks2/science/living_things/life_cycles/play/

**Create a Flower**

Make your own flower.
Possible materials to use for the different parts of the flower include:
Sepals and petals: coloured paper/card
Filaments - pipe cleaners, straws
Anthers - cotton wool, small pieces of sponge
Pollen - rice stained yellow
Ovary - small water bottle (cap can be the stigma)

**Challenge - Design a Flowering Plant**

Design your own flowering plant. Label the parts and annotate your drawing with information on the features and functions e.g. colouring and patterns on the flower to attract insects, large leaves to get lots of sunlight for photosynthesis, juicy fruits to attract animals for seed dispersal.

# Plant Handling Charter

- Always wash your hands after handling plants, soils, compost etc.

- Remember that plants can be poisonous or cause allergic reactions in some people.

- NEVER eat plants found in the wild

- Wild flowers should not be picked. In fact it is illegal for anyone (without permission from the landowner or occupier) to uproot any wild plant.

# LABELLING ACTIVITY: PARTS OF A FLOWER

Can you clearly label the following parts on this diagram of a flower:

| | | |
|---|---|---|
| Petal | Sepal | Nectaries |
| Stamen | Stigma | Style |
| Ovary | Receptacle | |