

Activities for Chapter 16

Activity 16.3 Growing pollen tubes

Skills

A03.1 Using techniques, apparatus and materials
A03.3 Observing, measuring and recording
A03.4 Interpreting and evaluating observations and data
A03.5 Evaluating methods

When a stigma is ripe, it secretes a fluid which stimulates pollen grains on it to grow tubes. The fluid contains sugar. In this investigation, you can try germinating different kinds of pollen grains in different concentrations of sugar solution.

It is best if the class is divided into groups. Each group should use a sugar solution of just one concentration.

- 1 Collect four cavity slides. Using your finger, make a neat ring of petroleum jelly around the outer edge of each cavity.
- 2 Stick a label on each slide. Write your initials on it, and the concentration of sugar solution your group is using.
- 3 Fill the cavity in each slide with sugar solution.
- 4 Choose one flower of each kind that has pollen on its anthers. Dust pollen from one flower onto the solution on one of your slides. Gently lower a cover slip over it, without squashing the petroleum jelly ring. Write the name of the flower on the label.
- 5 Repeat step 4 with the other three flowers.
- 6 Place each slide in a warm incubator, and leave for at least an hour.
- 7 Set up a microscope. Examine each of your slides under the microscope. Look carefully for pollen tubes. Record your results in a table, and collect results from groups using other concentrations of sugar solution.

? Questions

- A1 Why was a ring of petroleum jelly put around the cavity in each slide?
- A2 In which solution did each of the four types of pollen germinate best?
- A3 Can you suggest why pollen dies if it lands on an unripe stigma, or a stigma of the wrong sort of flower?
- A4 Why do pollen grains grow tubes?