

What Makes an Orchid an Orchid?

Answer Guide for Critical Thinking Questions

These answers are a general guide to the information and/or concepts students should understand by reading and completing the other *What Makes an Orchid an Orchid* worksheets. Due to the nature of critical thinking questions, student answers should vary and show the different ways that students interpret and understand each question.

These questions can be a good way to begin discussions about the pollination process and how orchids, as well as other plants, have developed unique systems to support this process.

1. Answer: The orchid's flower attracts pollinators with distinctive colors, fragrances, and shapes. Each orchid attracts a specific pollinator. The third petal, called a lip or labellum, guides the pollinators to the pollinia that is located under the anther cap. The orchid in the Orchid Flower Activity is a *Bletia purpurea*. Follow the link to see an image and find the lip/labellum. The lip is pink with yellow stripes leading bees to the center of the flower. This orchid does not have nectar as a reward for the bees who are enticed by its color and fragrance. But when the bee leaves, the pollinia is stuck to the back of its head. When the bee is attracted to the next *Bletia purpurea*, it "deposits" the pollinia on the stigma and pollinates the flower.

2. Answer: Instead of producing tiny individual grains of pollen to be carried by pollinators, the pollinium allows thousands of tiny pollen grains to attach to pollinators as a cohesive unit which is an efficient way to transport pollen from one orchid flower to another, fertilizing the plant and beginning the seed making process.

3. Answer: Orchid flowers' unique pollination process, from mimicking their pollinators to their use of pollinia, requires that these reproductive structures be kept in proximity. A pollinator that has already received pollinium from one orchid flower may enter a second flower the same way, searching for a mate or nectar. This means that the Orchid flower's stigma will need to be closely located to the pollinia, so that it can collect pollen from the pollinator as it leaves the flower. Ideally, a pollinator will enter and leave each flower in a similar manner. Picking up pollinia and dropping them off each time.

4. Answer: The Orchid flower is made up of the column, pistil, ovary, ovule, stigma, stamen, anther cap, pollinia, petal, lip, sepal, and seeds. These parts work together to facilitate the orchid's reproductive cycle, attracting pollinators and producing pollen and seeds.