

Drosophila

Carolina™ CareSheet

The common fruit fly, *Drosophila melanogaster*, is the organism most widely used in genetic studies. It is also an excellent live food for mantises and small reptiles and amphibians. *Drosophila* demonstrates complete metamorphosis with egg, larva, pupa, and adult stages in its life cycle.

Immediate care and handling

Cultures are shipped in vials with foam plugs and caps. The blue material in the bottom of the vial is food, Formula 4-24® Instant *Drosophila* Medium. Plastic netting helps hold it in place during shipment. In examining a vial, you may or may not see pupae attached to the side of the vial and larvae within the medium, but there should be plenty of eggs in the medium that will hatch into larvae. There may or may not be live adult flies, and their absence does not mean the culture is bad. (Easy Fly® cultures are an exception. See below for further details.) Remove the caps but leave the plugs in place. Keep cultures out of direct sunlight, and maintain at 20 to 25° C (68 to 77° F).

Cultures

We ship cultures of individual fly types (wild type, sepia, vestigial, etc.), F₁ crosses, and Easy Fly® cultures.

Individual cultures

These are used for stock cultures and to provide parental flies for making crosses. We start a culture by placing 25 to 30 flies in a vial with culture media and stamp the date on the vial label. Due to their short life span, some or even all of the adult flies may be dead when you receive your cultures; however, there should be plenty of eggs in the medium and there may be larvae and pupa. Adult flies will emerge from pupae beginning about 14 days after the date on the label. We ship individual cultures about 1 week after the date on the label. For best results, plan to receive individual cultures 1 week ahead of the intended use date.

F₁ crosses

We set up these crosses by placing male and female flies of 2 different types in a vial. An example would be to place virgin female sepia flies and male wild type flies in a vial. After the females lay eggs, we remove the adults from the vial. Adult F₁ flies begin emerging about 14 days after the date on the label and will continue to emerge for about 10 to 12 days after you receive the culture. Discard F₁ cultures after 12 days because F₂ flies may begin emerging in the vials. Because we must set up these crosses, place your order 2 weeks before your desired delivery date. We can also do a custom cross of any 2 parental stocks that we carry; however, we need your order for a custom cross 6 weeks before the delivery date. We ship F₁ crosses about 2 weeks after the date on the label. For best results, plan to receive your F₁ crosses 2 to 3 days before the intended use date.

The use of F₁ cultures means that you do not have to collect virgin female flies and reduces the time required for a genetics study with *Drosophila*. For more details, see our “Carolina LabSheets™: Genetics with *Drosophila* F₁ Crosses” available for download from this site.

Easy Fly® cultures

Also known as heat-shocked cultures because they are heat shocked to kill all the male larvae, allowing only female flies to emerge. Easy Fly® cultures ship with 12 to 20 virgin female flies in each vial. This eliminates the need to collect virgin female flies for crosses. There are no eggs, larvae, or pupae in the vials and no more flies will emerge. The female flies must be transferred to vials with males for reproduction to occur. Place your order for Easy Fly® cultures at least 2 weeks before your desired delivery date and plan to use them no more than 1 to 2 days after delivery.

Culturing

Drosophila are easily cultured and their generation time is only 2 weeks at 21° C (70° F). The development of the flies is slower when the cultures are maintained at lower temperatures, while higher temperatures may promote male sterility, growth of bacteria and fungi, and mite infestation.

Use transparent vials (item #173120) or glass or plastic bottles (item #173135) as culture vessels for *Drosophila*. We recommend our Formula 4-24® Instant *Drosophila* Medium (items #173200 and #173210) as the food source. When you open a bag of medium you will find a packet of dried baker’s yeast and two ½-oz (15-mL) measuring cups. Add a level measuring cup of Formula 4-24® and a level measuring cup of water to a *Drosophila* Vial (item #173120) and wait a few seconds for the medium to gel. Sprinkle about 6 grains of yeast into the vial and it is ready to use. (Instructions for preparing the medium are printed on the bag and in the *Carolina™ Drosophila Manual*.) If you have purchased Formula 4-24® in bulk (items #173218 and #173216), the yeast (item #173235) and measuring cups are not included. Food medium should be moist at all times, as dry food will inhibit larval growth and result in few flies emerging. For continuous culturing of stock flies, transfer them to new culture vials every 10 to 14 days. (F₁ flies are not suitable for continuous culturing since they will not breed true.)

Flies must be anesthetized to select males and females for crosses and to score the phenotypes of the F₂. We recommend the use of FlyNap® (item #173010) for anesthetizing *Drosophila*. We cannot ship FlyNap® to a residential address. For those customers we recommend our Carbon Dioxide Anesthetizer (item #173034).

For more information on setting up cultures and making crosses, see the *Carolina™ Drosophila Manual* (item #452620) and our *Culturing Drosophila melanogaster* video available for viewing at this site.

FAQs

Which type of *Drosophila* should I order to feed my mantis (or small frog or reptile)?

We recommend our Fruit Flies Culture (item #172910). They have wing variations that restrict their ability to fly, so they seldom escape from a terrarium or habitat with a fine mesh screen. These flies are also available in the Fruit Fly Culture Kit (item #172900) that contains the materials needed for their culture.

What materials do you recommend for culturing *Drosophila* for genetic studies?

Our *Drosophila* Culture Kit (item #173050) has everything you need except for the starter cultures. It also comes with the *Carolina™ Drosophila Manual* that will explain the procedures for culturing and doing *Drosophila* crosses, and contains information on crosses that are widely used in genetics labs.

Why can't you ship the *Drosophila* Culture Kit (item #173050) to my home?

The kit includes FlyNap®, which we cannot ship to a residential address. Call 800.334.5551 and ask the customer service representative to take the FlyNap® out of the kit and substitute the Carbon Dioxide Anesthetizer (item #173034). With this change the kit can be shipped to your home.

Which cultures should I order for a beginning genetics lab?

The *Carolina™ Science* catalog listing is color coded to indicate the strains that have easy-to-recognize phenotypes that are good for beginning students. Among the most widely used are vestigial crossed with wild type to give a monohybrid cross; vestigial crossed with sepia for a dihybrid cross; and white crossed with wild type for a sex-linked cross. We list F₁ cultures of these crosses for your convenience.

What is the size of your culture vials?

Size is 1¼ × 4" (32 × 102 mm).

Problems?

We hope not, but if so contact us. We want you to have a good experience.

Orders and replacements: 800.334.5551, then select Customer Service.

Technical support and questions: caresheets@carolina.com

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