were not different among any of the four interactions, it is not known whether the larger tube will alter other activity parameters, such as average bout length, counts per bout, bouts per day, or Light:Dark activity ratio.

Table 1. Average activity (number of beam crossings per 10 min bin ± SEM) in LD and DD, as well as free-running period (hours ±SEM) for the two wild-type flies (CS and Or-R) and the period mutants (perS and perL).

Genotype	Tube Length	N (Sample)	Activity in LD	Activity in DD	Period
Canton-S	65mm	35	5.00 ± .31	5.13 ± .31	24.34 ± .03
(*CS*)	80mm	25	4.28 ± .30	5.14 ± .35	24.33 ± .02
Oregon-R	65mm	45	6.35 ± .37	6.56 ± .31	24.05 ± .04
(*Or-R*)	80mm	46	5.92 ± .44	6.47 ± .48	24.04 ± .04
period Short	65mm	32	6.87 ± .60	7.25 ± .57	19.26 ± .12
(*perS*)	80mm	23	6.79 ± .58	7.65 ± .81	19.29 ± .10
period Long	65mm	28	4.82 ± .37	4.77 ± .42	28.37 ± .11
(*perL*)	80mm	26	5.29 ± .52	4.00 ± .39	28.44 ± .18

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An efficient, practical, and reliable *Drosophila* trap.

Freda, P.J.[1], and J.M. Braverman[1*]. [1]Department of Biology, Saint Joseph's University, Philadelphia, PA, USA; *corresponding author (E-mail: jbraverm@sju.edu).

A good *Drosophila* trap should be made of materials that are inexpensive and readily available. Also, the materials should be sturdy enough to be used outdoors. Additionally, a trap should be simple enough that anyone can assemble it quickly. The trap of Medeiros and Klaczko (1999) is well designed, but improvements and simplifications are possible. Using their work as a foundation, an efficient, practical, and reliable trap for live *Drosophila* specimen collection was designed.

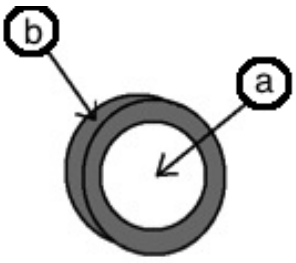

Figure 1. Bottle cap

The first step is to modify a bottle cap for attachment of a plastic culture vial (1¼'' diameter × 4'' high; Carolina Biological Supply item #173120). Using a rotary tool or sharp blade, make a hole approximately ½-inch in diameter in the middle of the bottle cap so flies can travel through it (Figure 1a). Make sure not to damage the threading on the inside of the cap so it can still be tightened onto the bottle. Next, add masking tape to the outside of the bottle cap (Figure 1b). Circle the side of the cap with enough tape so that a culture vial fits snuggly. The tape may need to be cut horizontally so that it does not interfere with the culture vial. Modify multiple caps as a supply for many traps. Alternatively, this trap can be used without a bottle cap by taping the culture vial to the bottle itself. However, the cap makes it much easier to remove and replace the culture vial quickly.

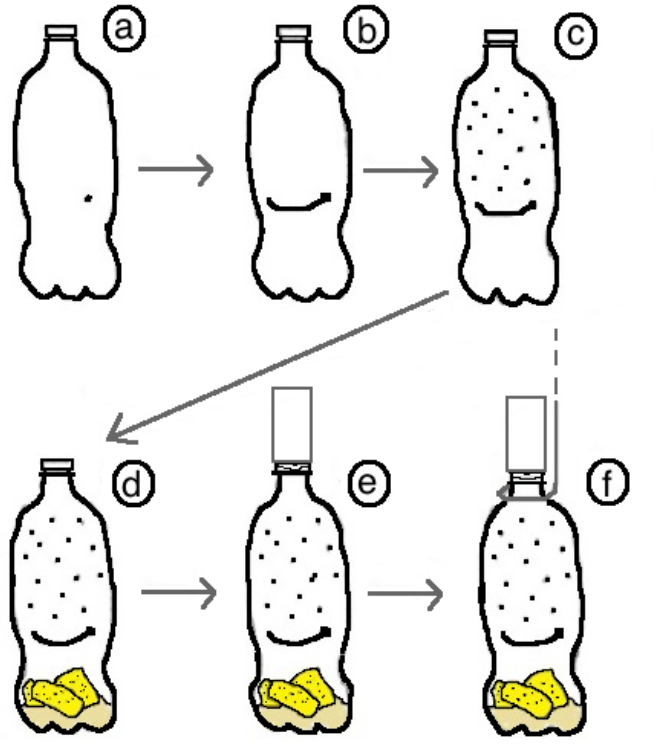

Figure 2. Procedures for making the trap.

The containment portion of the trap is made with one transparent 2-L soda bottle. Alternatively, for a smaller trap, a 20-oz (591-mL) bottle can be used. The first step is to make a small hole near the middle of the bottle (Figure 2a). From this hole, cut a curved slit into the bottle (Figure 2b). The best tool to use for this is a box cutter. Bait will be introduced through this slit. After the trap is hung, this slit can be taped over to ensure larger animals, such as wasps, do not enter the trap. However, this usually is not an issue. Second, using a narrow, sharp tool, puncture small holes (~ 4 – 5 mm in diameter) in the trap at random locations above the curved slit (Figure 2c). Make these holes large enough for fly entry but small enough to limit the entry of larger insects. Make 15 to 30 of these holes for a 2-L trap. Next, add the bait via the curved slit (Figure 2d). Finally, place the culture vial onto the modified cap at the top of the trap (Figure 2e). The trap can be hung from vegetation or hooks using a bent wire coat hanger (Figure 2f).

To collect flies from the trap, have several culture vials and plugs available. Flick the trap by gently tapping it a few times. Flies will migrate upwards into the culture vial. Quickly remove the culture vial and immediately plug it using a foam plug (Carolina Biological Supply item # 173122) while holding the vial upside down. Replace the culture vial with an empty one. Repeat the

collection process until the trap is empty. A filtered aspirator (for example, Bioquip item #1135A) can be used through the slit to selectively remove specimens.

Using a sleeve expedites the collection process. Hollow cardboard mailing tubes (Uline model # S-10723) with plastic end caps (Uline model # S-7020) can be used as a sleeve (Figure 3a). Using a rotary tool, drill, or sharp blade, make a hole into the plastic cap of the tube so that the culture vial can tightly fit through (Figure 3b). Next, cut the tube to roughly the height of the bottle without the shell vial attached (Figure 3c). When collecting, slide the tube over the trap (Figure 3d). Specimens migrate upwards toward light into the culture vial (Figure 3e). Natural light or a lamp may be used.

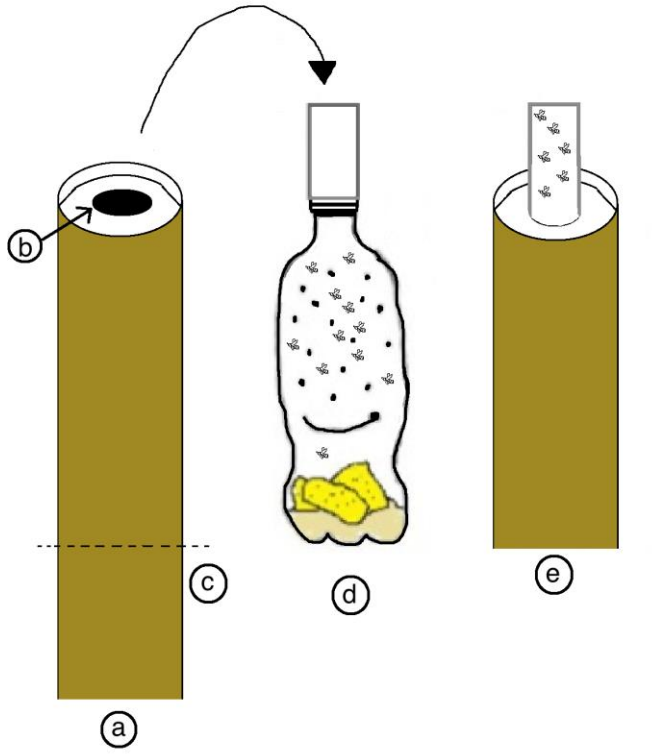

Figure 3. Collecting specimens using a sleeve.

A trap of this design is efficient because it is capable of trapping thousands of specimens 2 to 3 days after deployment, and it can be emptied quickly and easily. This trap has captured flies from many different species, including *D. melanogaster*, *D. simulans*, *D. busckii*, *D. robusta*, *D. affinis*, *D. tripunctata*, *D. immigrans*, *D. suzukii* (Freda and Braverman, 2013), and *Zaprionus indianus*.

References: Freda, P.F., and J.M. Braverman 2013, Entomol. News 123(1): 71-75; Medeiros, H.F., and L.B. Klaczko 1999, Dros. Inf. Serv. 82: 100-102.

The impact of pheromones on sexual behavior in *D. melanogaster*: Recommendations for laboratory protocols.

Beck, Aaron P.[1,3], Erica F. Hamlin[2,3], Erika L. Hume[1,3], and Robert M. Hallock[1,4]. Skidmore College; [1]Neuroscience program, Skidmore College, 815 N Broadway, Saratoga Springs, NY 12866 [2]Psychology Department, Skidmore College, 815 N Broadway, Saratoga Springs, NY 12866; [3]These authors contributed equally to this work; [4]Corresponding author: rhallock@skidmore.edu

Abstract

Pheromones are conspecific chemical signals used throughout the animal kingdom that elicit behavioral responses in other organisms and are essential for intraspecies communication. *D.*