Drosophila embryo collection

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Abstract

This protocol describes how to set up an embryo collection cage in order to collect fruit fly eggs and how to relabily dispense a consistent number of eggs into food medium for development.

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Protocol

Setting up embryo collection cage

Step 1.
Place an apple-agar plate in the embryo collection cage to provide a substrate for egg laying. Prior to adding the plate, smear a small quantity of yeast paste (dry yeast mixed with water to a peanut-butter like consistency) onto the centre of the apple-agar. The addition of yeast will encourage egg laying. Water soaked absorbent cotton wool is also added to the cage to provide moisture.

Step 2.
Add fly population to cage and place cage at 25±1 °C in a 12 h:12h light:dark cycle for 24 hours.

Step 3.
Check the surface of the apple-agar plate for eggs. If If there are too few eggs, flies may require a longer habituation period. Replace with a fresh apple-agar plate, re-soak the cotton wool and leave the fly population in cage for a further 24 hours.

Egg collection and squirts

Step 4.
Take egg laden apple-agar plate from the cage and remove remaining yeast paste and any dead flies from the agar surface.

Step 5.
Submerge the apple-agar plate in 1x PBS and gently dislodge eggs from the agar surface with a fine paintbrush– most eggs will be found on the outer edge of the agar. While suspended in PBS, transfer the eggs to a falcon tube and leave for 5 min, allowing the eggs to sink to the bottom of solution.

Step 6.
Cut the bottom 4mm off a p1000 filtered pipette tip, and use this to draw 1 mL of ‘eggy solution’, taken from the bottom of the falcon tube. Transfer this to a 1.5 mL microcentrifuge tube and allow to settle. When drawing up solution a more consistent number of eggs is achieved by snap-releasing the pipette plunger rather than by gentle-release.

Step 7.
Cut the bottom 4 mm off a p20 filtered pipette tip. Set the pipette to a desired volume and draw this from the bottom of the microcentrifuge tube, again using the snap-release pipetting method. With practice a consistent number of eggs can be obtained, a volume of 5µL will produce 102±4 eggs.

NOTES

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See 'egg squirt graph' in abstract

Step 8.

Dispense collected eggs onto food source and leave to develop until required for experiments.