An efficient rearing population cage to expose Drosophilids to various environmental agents.

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Despite the growing number of genetic toxicology studies that use the *Drosophila melanogaster* model, the methodologies to assess genetic damage in this organism are essentially laboratory-based (Markow, 2015). This technical note describes a rearing population cage potentially useful to expose drosophilid to various environmental stress agents, including natural radiation and atmospheric pollution, as recently investigated by our research group (Verçosa, 2015; Santana, 2015).

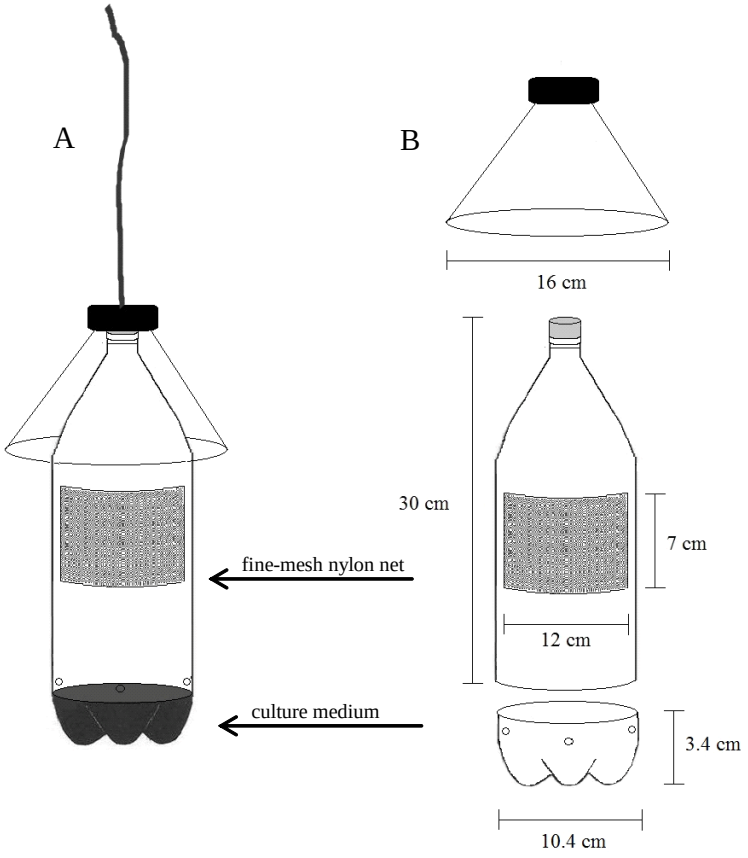

Figure 1. Scheme showing the population cage mounted (A) and dimensions of each part (B).

The population cage model was developed using clear 2-L polyethylene terephthalate (PET) bottles (Figure 1). Two 12 × 7 cm rectangular holes were cut facing each other on the bottle walls and covered with fine-mesh nylon net. This allows atmospheric agents to enter the flask, while preventing the drosophilids tested from leaving. In addition, other organisms are left out. The bottom of the bottle was cut out to serve as a container for approximately 180 mL of culture medium, and fastened back using clear duct tape. This amount of medium should suffice to feed drosophilid adults and larvae exposed for six days in the field given appropriate relative humidity conditions. In dry places, such as in semi-arid regions, for instance, four small holes cut on the bottom of the bottle body enable to restock the culture medium without opening the flask. Wide duct tape is used to cover these orifices. This maintenance care can be carried out every two days, keeping the appropriate conditions with no stress to drosophilids. The neck of the bottle was covered with a PET umbrella cut out of a larger container. The idea was to stop rainwater from entering the cages through the nylon nets below. A loop was attached to the bottle top to hang cages in shaded areas, 1.50 m above the ground (Figure 2).

Each population cage was able to lodge about 120 adults of *Drosophila melanogaster* for six days in environments with temperatures ranging between 25 and 30ºC on average. The environmental mutagenicity and genotoxicity assays carried out in the population cages used 3-day-old males and females. Since emerged larvae reached the third development stage and adults were no more than 10 days old after a 6-day exposure

period in the field, both stages of *Drosophila melanogaster* could be analyzed successfully using the population cage model. The efficiency of the cage described was confirmed in all the 27 experiments we have carried out so far. Another advantage is that drosophilids can be transported to the laboratory in the same cage if vertically shipped in a proper means of transport.

Figure 2. Image of rearing population cage exposed in a humid natural environment of Northeast Brazil.

References: Markow, T.A., 2015, eLife 4:e06793; Santana, S.L., 2015, O Ensaio Cometa em *Drosophila melanogaster* como bioindicador da poluição atmosférica em uma área urbana e rural (in Portuguese), *Trabalho de Conclusão de Curso*, *Ciências Biológicas*, Universidade Federal de Pernambuco, Brazil; Verçosa, C.J., 2015, Aplicação do Ensaio Cometa em *Drosophila melanogaster* para avaliação da genotoxicidade ambiental (in Portuguese), M.Sc. Thesis (*Biologia Celular e Molecular Aplicada*), Universidade de Pernambuco, Brazil.

Technical adaptations to the retention baited trap to Drosophilidae.

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Introduction

In Brazil, nowadays, one of the most used methods to capture live adults Drosophilidae flies is the use of traps proposed by Tidon and Sene (1988), once it is a simple retention trap, cheap, that use recycled material and had an excellent performance on field. This trap has been successfully used by our research group in several taxonomic survey on different environments (Gottschalk *et al.*, 2006; Blauth and Gottschalk, 2007; Gottschalk *et al*., 2007; Blauth *et al*., 2013). Roque *et al.* (2013) suggested two structural adaptations in the trap to avoid the flies getting stuck to the bait, impeding the retention parts of adult flies. In sampling