Table 1.

	F1 Screen	F2 Screen
Number of initial fathers	120	2540
Number of F1 crosses	45	730
Number of F2 crosses	8	102
Ratio of keepers / F1 crosses	0.18	0.14

Table 2.

Initial Phenotype of F1(*sca* driver)	F2 Keeper Phenotype (*sd* driver)	Chromosome location
\$5, missing scutellar	small crumpled wings	2 (homozygous viable)
\$6, missing scutellars	small crumpled wings	2 (homozygous viable)
\$24, smaller wings	jagged wing edges	3 (homozygous viable)
\$26, *w Cy* heterozygote	crumpled wings	2 (homozygous viable)
\$27c, *w Cy* heterozygote	crumpled wing edges	2 (homozygous viable)
\$38, missing scutellar	wings 2/3 size	3 (homozygous viable)
\$77, *w Cy* heterozygote	small crumpled wings	2 (homozygous viable)
\$115, wrinkled wing	wrinkled wing	2 (homozygous lethal)

Table 3. Estimated time in minutes required to generate a keeper.

Mobilization cross (F0) (1 min per cross)
F1 screen total 120 +120 (transfer)= 240 mins.
F2 screen total 2540 mins.
F1 score (4 min)
F1 screen total 480 mins.
F2 screen total 10288 mins.
F1 cross (2 min)
F1 screen total 64 x 2 = 128 mins.
F2 screen total 1460 mins.
F2 score (7 min)
F1 screen total 224 mins.
F2 screen total 5110 mins.
Totals
F1 screen 1072 mins.
F2 screen 19398 mins.
Minutes per keeper
F1 screen 134
F2 screen 190

The effort required to generate each keeper was calculated using time estimates for each step in the respective screens, with the data shown in Table 3. One fact that must be mentioned is that each parent cross of the F1 screen was transferred to a second vial five days after the initial cross, to generate more progeny. This was not done for the F2 screen. Additionally, the F1 phenotypes selected to cross with the scabrous driver were also transferred five days after the cross, while the F2 screen was kept in a single vial. When this is broken down into the effort required to generate each keeper, the F1 screen is approximately one hour faster per keeper than the F2 screen.

In the F2 screen, once a y+ male was identified it was assumed that each y+ progeny in the cluster of F1 progeny was a result of the same "hop", and therefore only one was crossed to generate F2 progeny. In the F1 screen, it was assumed that there could be more that one "hop" per cluster and thus every fly with a distinct phenotype was crossed to generate F2 progeny. However, one of the keepers (\$26) from the F1 screen gave interesting results. This was the result of the cross of a brother of a Ki male, a cross that should not have been made according to the rules of F1 phenotype selection. The fact that this cross generated a keeper phenotype provided evidence that more than one "hop" could occur in the same cluster, since the crossed brothers of \$26 did not exhibit a keeper phenotype. If the results were corrected for \$26, the efficiency percentage would drop from 6.7% to 5.8%, while the minutes per keeper value increases from 134 to 151.

Conclusions: In a direct comparison of the two types of screens involved in this experiment, the F1 screen has advantages over the classic F2 screen. The proportion of keeper phenotypes obtained was greater than the F2 screen, indicating that the F1 screen did not suffer from a decrease in positive results. Considering effort, the time difference between the F1 and F2 screens was found to be large, lending additional support to the efficiency of the F1 screen. Once the keepers were identified, the next step would be to perform crosses that generate a homozygous stock of each individual keeper. This stock can then be crossed to other drivers and analyzed by molecular genetic techniques in an effort to identify new genes through gain of function phenotypes.

Castrezana, Sergio. Department of Zoology, Arizona State University, Tempe, AZ 85287. A new recipe for rearing cactophilic *Drosophila*.

The cactophilic species *Drosophila mettleri* and especially *D. nigrospiracula* have difficulty adapting to laboratory culture. Both species are associated with necrotic Saguaro (*Carnagiea gigantea*) or Cardon (*Pachycereus pringlei*) in nature, with *D. nigrospiracula* breeding in the cactus tissue and *D. mettleri* in soil soaked with fermented cactus juice (Heed, 1978).

In developing an improved method to culture these species in the laboratory, I first made a food from commercial instant mashed potatoes (Betty Crocker potato flakes) with a piece of sterilized Saguaro cactus added to the surface. Although the number of offspring was higher than with standard cornmeal or banana recipes, sometimes field-caught flies carried mold that efficiently use the food, directly affecting the development of the flies. Thus, cultures were

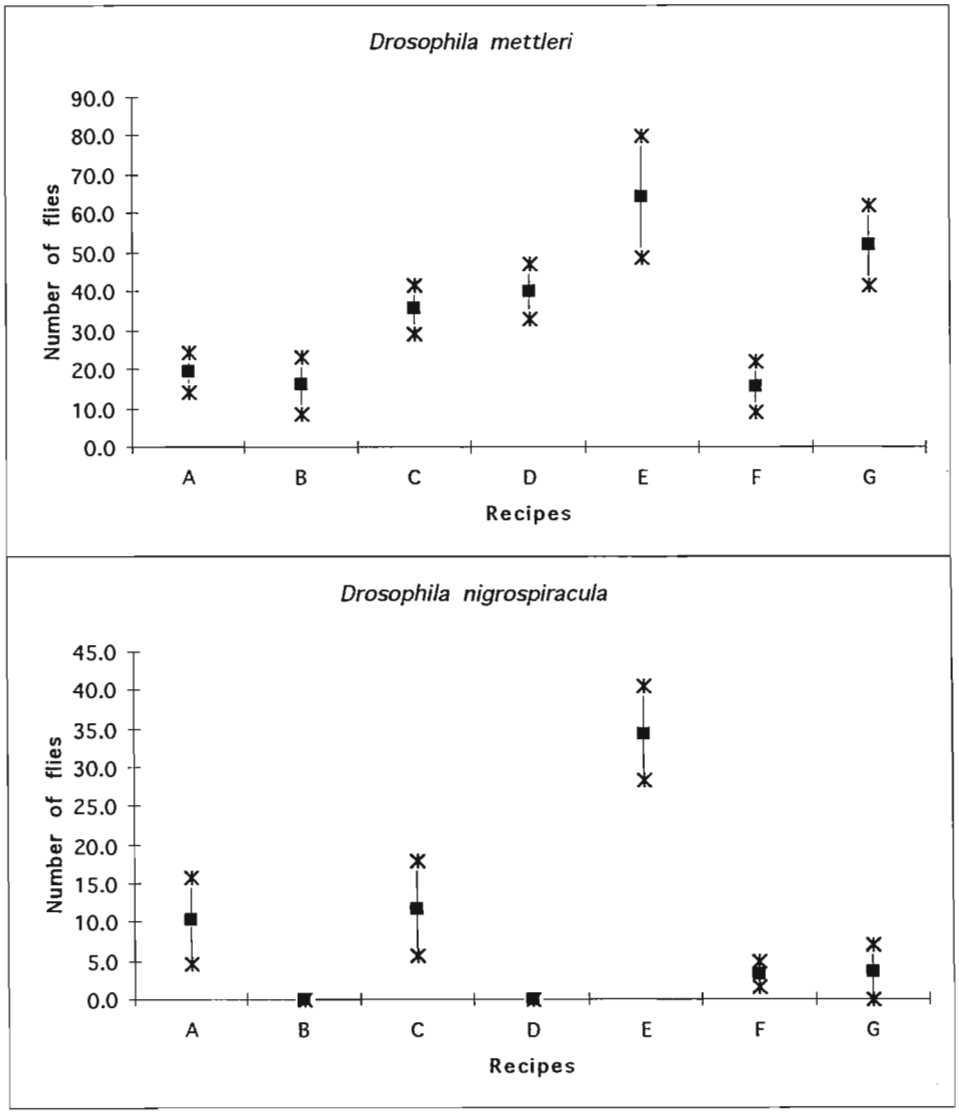

Figure 1. Mean ± SE number of flies emerging from each recipe.

inconsistent. Antibiotics, such as Penstrep, typically used in *Drosophila* media, controlled the mold, but the flies refused to oviposit on the food.

Seven modifications of potato medium were tested in order to find one that would control mold while stimulating oviposition and allowing development. Table 1 shows the seven recipes that were tested; for each test I used four vials of food; in each vial, one mated pair. When the Saguaro is present in the recipes, it is blended with the water. The liquid, either water or water/Saguaro blend, is cooked until it reaches 85°C. It is then cooled to 60°C, and the propionic acid is added. The potato blended flakes are then added and blended.

For both species, recipe E is clearly the best, although the difference is most dramatic for *D. nigrospiracula*.

Table 1. Ingredients and their proportions in seven recipes.

Recipe	Potato grams	Water mililiters	Saguaro tissue grams	Propionic acid mililiters	Antibiotic mililiters
A	15	80	-	0.5	-
B	15	75	-	0.5	0.06
C	15	75	2	0.5	-
D	15	75	2	0.5	0.06
E	15	80	5	0.5	-
F	15	80	5	-	0.06
G	15	80	5	0.5	0.06