

Burdick, A.B. 1999. Trihybrid with duplicate independent factors. *Dros. Inf. Serv.* 82: 129.

Trihybrid with duplicate independent factors.

Burdick, A.B. [reprinted from DIS 28: 173, 1954].

We have made up a stock in which *v* (1-33.0), *cn* (2-57.5), and *st* (3-44.0) are all homozygous and which has eye color indistinguishable from either *v*, *cn*, or *st*, that is, a bright vermilion color. We refer to this stock as “Bright” and use it in the student laboratory as an unknown mutant type.

If a virgin Bright (*i.e.*, *v;cn;st*) female is mated with a wild-type male, the F1 males are Bright and the F1 females are wild type. This leads to the tentative conclusion that Bright is a sex-linked recessive. However, when an F2 is produced from F1 × F1 mating, it is in a ratio of about 2.5 Bright to 1 wild type; or when an F1 female is testcrossed to a Bright male parent, the ratio is 7 Bright to 1 wild type. The Bright trait, which in F1 looked like a sex-linked recessive, now looks somewhat like a dominant.

On the basis of the above data the student may conclude either (1) three duplicate independent genes, one sex-linked, or (2) two duplicate sex-linked genes with about 26% recombination. Test matings of F2 Bright types with Bright parents are interesting if time permits. They yield 1:1, 3:1, and 7:1 ratios and indicate that conclusion (1) is correct.

Burdick, A.B. 1999. Effect of environment on segregation results. *Dros. Inf. Serv.* 82: 130.

Effect of environment on segregation results.

Burdick, A.B. [reprinted from DIS 28: 173, 1954].

We have a stock with *vg* (2-67.0) and *c* (2-75.5) both homozygous. The flies appear *vg* at room temperature, but if they are reared at 80°-85°F the *vg* wings become almost normal and the stock appears *c*. If the stock is outcrossed to wild type, and F1 females testcrossed to *vg c*, the following testcross proportion results (Table 1).

Table 1.

Phenotype	At 70° F	At 80° F
Vg	50	4
+	48	46
C	4	50

Results may vary depending on the temperature used and the ability of the student to detect an “almost normal” *vg* wing. However, the experiment provides an impressive illustration of gene-environment interaction and, used late in the semester, moderates a student’s faith in genetic ratios as such.