van Breugel, F. M. A. Genetisch Laboratorium. The Netherlands. Experimental puffs in D. hydei salivary gland chromosomes observed after treatment with CO, CO_2, and N_2.

Third instar larvae of D. hydei were treated with sublethal doses of carbon monoxide (3 hours in 100 percent CO at 25°C). Salivary glands from treated larvae were inspected for changes in puffing pattern. No changes were found immediately after treatment. However, subsequent exposure to air produced six large puffs not normally seen in larvae. These puffs begin to appear after 15 minutes, attain rapidly their maximum size and revert to normal slowly within several hours under aerobic conditions. They are located at 32A, 36A, 48C, 58B, 81B, and 85B following the chromosome map by Berendes (Chromosoma 14, 1963).

In an attempt to find out whether these puffs are induced by lack of oxygen, larvae were similarly kept for 3 hours in pure (commercial quality) O_2, N_2, or CO_2, or submerged in Ringer solution (30-40 larvae in 1 ml in hermetically sealed container). Whereas pure oxygen had no effect on the puffing pattern either during or after treatment, the remaining agents induced exactly the same puffs in the same manner as CO, i.e., the puffs became visible shortly after exposure to air following treatment. Furthermore, if 3 hours of CO_2 was immediately followed by N_2 (1/2 hour), the puffs did not begin to form until some time after removal from the N_2 atmosphere.

In larvae deprived of oxygen for a shorter time (under 3 hours), these "recovery" puffs will be present for a shorter period also. Tentatively, it may be concluded that these special puffs are somehow connected with respiration. The fact that the same puffs are obtained also by temperature shock (Holt and Berendes, DIS 40) suggests that temperature treatment may act via the respiratory system (cf. Ritossa 1964, Exp. Cell Res. 35).

Meyer, Helen U. and Rayla G. Temin. University of Wisconsin. A recessive suppressor of Curly found in a third chromosome from a natural population of D. melanogaster.

In an experiment in which chromosomes 2 and 3 from nature were made homozygous with the aid of the Cy-Oster and the Me inversions, the classes (Cy/2; Me/3), (Cy/2; 3/3), (2/2; Me/3) and (2/2; 3/3) were expected in a 4:2:2:1 ratio in the absence of any viability mutations. In about 1500 such tests, one case was found in which only the first and last classes were present. The latter appeared to have the normal wild phenotype. This was inconsistent with the presence of a recessive lethal on either or both chromosomes, but suggested instead a translocation or some type of epistasis. Testing for a translocation, by crossing Cy/2; Me/3 with cn bw; e, yielded negative results. Other such testcrosses, using instead the non-Cy, non-Me sibs as parents, unexpectedly gave rise to Cy progeny. Twenty-four such "wild-type" males, bred individually, gave 778 Cy to 771 non-Cy offspring. The 1:1 ratio suggested that the wild-type flies belonged, in fact, in the Cy, non-Me class, their phenotype being suppressed by a recessive gene on the 3rd chromosome. This agreed with the observation of a nearly 2:1, rather than a 4:1, ratio of Cy:non-Cy progeny in repetitions of the original inbreeding cross, Cy;Me x Cy;Me. The actual counts from 9 such tests were 257 Cy;Me to 119 "wild type." When the 3rd chromosome was extracted from the original stock and made homozygous in the presence of Cy-Oster/Pm from another stock, the Cy phenotype was again suppressed. This test showed, furthermore, that the original 2nd chromosome from nature was not required for the effect.

A recessive lethal in chromosome 2 was shown to be responsible for the absence of the non-Cy genotypes in the original culture. Such lethals occur with a frequency of about 25 percent in nature.

Therefore the flies originally classified as wild type were in fact of the composition Cy/lethal 2; suppressor-Cy/suppressor-Cy. They are of good viability and can be kept in stock in the above form.