Alonso, C. University of Nijmegen, The Netherlands. The effect of gibberellic acid on the development of D. hydei.

The effect of injection into larvae of D. hydei of various concentrations of gibberellic acid (GA_3) on the chromosomal puffing pattern, the moment of puparium formation and the number of flies emerging from pupae was investigated.

It was observed that GA_3 can induce a new puff, 4-72B, in 15% of the larvae injected at 140 hours following oviposition. This puff can be observed 9 - 10 hours after injection. If CA_3 is injected at 153 h. a new puff develops within 3 - 4 hours at region 2-21B. These puffs have never been observed in normal development and are absent in animals injected with the solvent (Ringer's). The frequency with which puff 2-21B occurs depends on the concentration GA_3 applied, but never reaches a 100%. Apart from the newly induced puffs, GA_3 appears to affect the occurrence and size of puffs which are characteristic for the period prior to puparium formation. Injection of 1.5 µg/larva delays the appearance of the ecdysone-specific puff 4-78B and inhibits its full development. The same applies for puff 4-77BC. Mixtures of ecdysone and GA_3 injected into intermoult larvae gave a similar effect, a delayed development of the puffs 4-78B, and 4-77BC as compared with larvae injected with ecdysone only (2.10^{-1} µg/larva).

Also puparium formation was delayed if GA_3 was injected at 153 h. or later (pup. formation occurs normally around 160 h.). The delay was increased with increasing concentration of GA_3.

The percentage of flies emerging from pupae developed from GA_3 injected larvae decreased considerably with increasing GA_3 concentration. Injection of 6 µg/larva resulted in 54% lethality.

Schalet, A.* University of Connecticut, Storrs, Connecticut. Two modified crossover-selector systems of general application to fine structure analysis.

Scheme 1 has been used in a fine structure analysis of the vermilion locus, but is applicable to other X-linked and autosomal loci. For the v locus a cross of the following type was used:

♀♀ (A) $\frac{l1 + v^x\ l3 + X}{(B) + l2\ v^y + l4}$ ♂♂ (C) $\frac{+\ l2\ v\ l3 +}{(D) - + v + - Y}$; bw^D

From this cross the only ♂♂ that survive are 1/2 of the crossovers between the outside lethals, l1 & l4. The only ♀♀ that survive, aside from non-disjunctionally produced individuals, are 1/2 of the crossovers between the inside lethals, l2 & l3. If v^x is located to the left of v^y, then v^+ recombinant ♂♂ will survive. If v^x is located to the right of v^y, then v^+ recombinant ♀♀ will survive.

Chromosome (B) was introduced into the cross thru parental ♂♂ carrying a Y chromosome that covered the region from l2 thru l4 (Schalet DIS 44: 123). This chromosome, as well as chromosome (D), was derived from the v^+Y y^+ chromosomes synthesized by Chovnick, DIS 43: 170. The presence of the y^+ region on the Y, chromosome (D), with its Hw effect, and the partial suppression of the bw^D phenotype in ♀♀ carrying a Y chromosome, permitted the detection of XXY ♀♀. Such ♀♀ appeared at an estimated rate of 1 for every 1,500 regularly produced zygotes. Linkage relationships determined from other crosses were as follows: ras--l1, 0.1; l1--l2, 0.4; l2--v, 0.2; v--l3, 0.7; l3--l4, 2.0. Note that the value of 0.7 for the interval between ras and v is closer to the value of 0.59 reported by Lefevre, DIS 45: 40, than the standard value of 0.2.

In the table below the total number of zygotes sampled has been calculated on the basis that each regularly produced ♀ represented approximately 1/444 of the number of eggs laid, (2/1,000 & 7/1,000)/4. Although only 1/2 of the eggs laid represent sampled chromosomes, this scheme provides the advantage that for any two potentially separable alleles, whatever their left-right orientation, only a single cross is required. Consequently, each allele need be inserted in or induced on only one of the two types of lethal bearing chromosomes.

Test	v^+/Total	Order	Test	v^+/Total	Order
2/1	0/307,000		1/E1	1♂/330,000	1-E1
1/k	0/890,000		36f/E1	1♀/460,000	E1-36f
36f/65c	0/250,000		2/E1	3♂♂/167,000	2-E1
1/36f	(Green)	1-36f	36f/2	1♀/195,000	2-36f
48a/36f	(Barish & Fox)	48a-36f	36f/k	2♀♀/350,000	k-36f