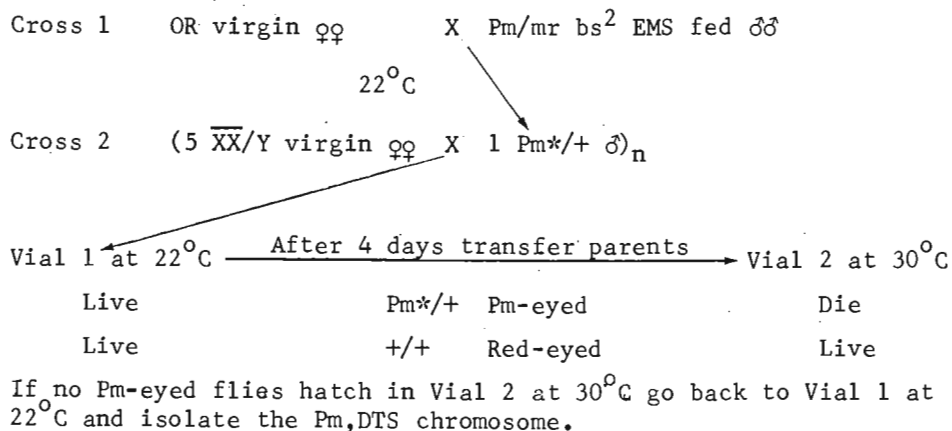


Falke, E.V. and T.R.F. Wright University of Virginia, Charlottesville, Virginia. Induction of dominant temperature sensitive lethals into the CyO balancer, (In 2LR)O, and the Pm balancer, (In 2LR)bw^{v1}, chromosomes.

Certain selection schemes for the recovery of mutations could be run more efficiently if an autosomal balancer chromosome were available which also carried a dominant temperature sensitive mutation (DTS). For this reason an attempt was made to induce a DTS into the Pm, CyO, TM2, and TM3 chromosomes.

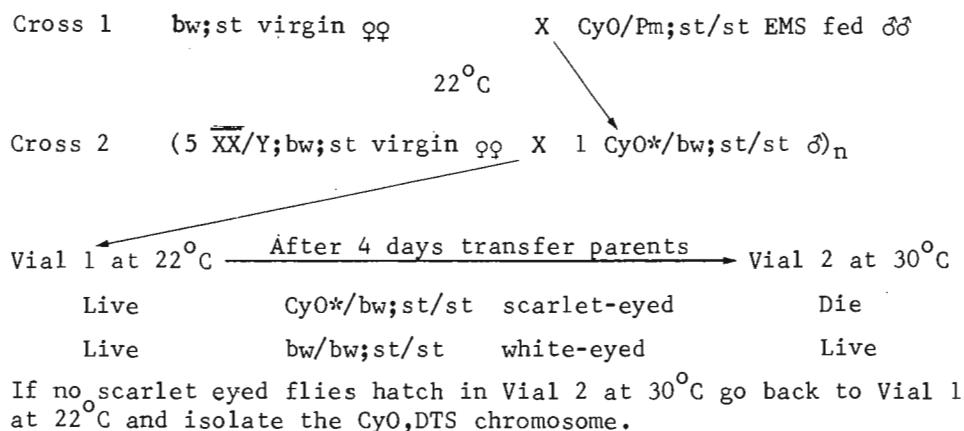
Males heterozygous for the balancer chromosome were fed with 0.025M EMS in 1% sucrose (Lewis and Bacher, DIS 43:193, 1968). Virgin females were collected using Wright's method (DIS 44:63, 1969) except Cross 1 virgin females were collected in the usual way.

Scheme for inducing a DTS into the Pm balancer.



Of 690 Cross 2 vials made, 616 vials were analyzable at 30°C and one DTS was found and designated Pm,DTS18.

Scheme for inducing a DTS into the CyO chromosome.



Of 1834 Cross 2 vials made, 1555 were analyzable at 30°C and three CyO chromosomes were found containing a DTS. These have been designated as CyO,DTS100, CyO,DTS486, and CyO,DTS513.

An attempt was made to induce a DTS into TM2, Ubx¹³⁰ and TM3, Ser Sb using a crossing scheme analagous to that used for the CyO chromosome. Of 2513 Cross 2 vials made, 2285 vials were analyzable at 30°C and none of the third chromosomes tested had a DTS.

The balancer DTS chromosomes were tested by making reciprocal crosses to flies from an OR stock in 1/2 pint bottles at 30°C. For all crosses duplicate cultures were made with bottles containing 20, 10, and 5 parental pairs. Data from duplicate cultures were lumped together.

The results in Table 1 and Table 2 indicate that as far as the testing went, all the DTS chromosomes (except CyO,DTS486) were completely lethal at 30°C. Pm,DTS18 and CyO,DTS486 female heterozygotes are almost completely sterile at the restrictive temperature. Earlier experiments in an incubator which fluctuated between 28.5 and 30.0°C indicated there may be up to 2% escapers for Pm,DTS18 and CyO,DTS513, and 0.1% for CyO,DTS100.

Although it is possible to maintain the DTS stocks at 25°C, they grow much better be-

tween 21 and 23°C.

Since out of 2285 EMS-treated chromosomes no TM2, Ubx¹³⁰ nor TM3, Ser Sb chromosomes were recovered carrying a DTS and since Suzuki, D.T. (Science 170:595-706, 1970) reports a very low induced mutation rate for DTSs on the third chromosome, the attempt to induce new DTSs in the third chromosome balancers was abandoned. Instead, DTS-1165 of Suzuki located between h and st was crossed-over into the TM2, Ubx¹³⁰ chromosome. When flies from the presently available

Table 1. Test of the Pm,DTS18 isolate.

Cross	# Parental Pairs	CyO Progeny		Pm,DTS Progeny	
		♀♀	♂♂	♀♀	♂♂
Pm,DTS18/CyO ♀♀ x OR ♂♂	20	5	0	0	0
	10	3	0	0	0
	5	1	0	0	0
	Total	9	0	0	0
OR ♀♀ x Pm,DTS18/CyO ♂♂	20	292	326	0	0
	10	215	210	0	0
	5	133	155	0	0
	Total	640	691	0	0

Table 2. Test of the CyO,DTS isolates.

Cross	# Parental Pairs	Tft Progeny		CyO,DTS Progeny	
		♀♀	♂♂	♀♀	♂♂
CyO,DTS100/Tft ♀♀ x OR ♂♂	20	333	284	0	0
	10	236	210	0	0
	5	127	112	0	0
	Total	696	606	0	0
OR ♀♀ x CyO,DTS100/Tft ♂♂	20	283	281	0	0
	10	188	180	0	0
	5	143	115	0	0
	Total	614	576	0	0
CyO,DTS486/Tft ♀♀ x OR ♂♂	20	0	1	0	0
	10	0	1	0	0
	5	0	1	0	0
	Total	0	3	0	0
OR ♀♀ x CyO,DTS486/Tft ♂♂	20	299	330	29	10
	10	202	200	12	7
	5	140	151	13	4
	Total	641	681	54	21
CyO,DTS513/Tft ♀♀ x OR ♂♂	20	290	283	0	0
	10	217	205	0	0
	5	92	86	0	0
	Total	599	574	0	0
OR ♀♀ x CyO,DTS513/Tft ♂♂	20	159	165	0	0
	10	116	114	0	0
	5	185	198	0	0
	Total	460	477	0	0

TM2, Ubx¹³⁰ DTS-II65/Sb stock were reciprocally crossed at 30°C to flies from an Oregon-R wild type stock no Ubx progeny survived in the +/+ ♀♀ x TM2, Ubx¹³⁰ DTS-II65/Sb ♂♂ cross, but in the reciprocal cross 7% of the progeny were Ubx,non-Sb. In addition TM2, Ubx¹³⁰ DTS-II65/ru h th st cu sr e^s ca ♀♀ have been checked for crossing-over. Exchanges involving ca occurred with a frequency of .026. The frequency in the ru-h region was .003 and in the h-th region .005.

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Hunter, A.S. University of the Pacific
Stockton, California. Distribution of
Drosophila of Gothic, Colorado.

During a 5-week visit in June and July of 1971 at the Rocky Mountain Biological Laboratory in Gothic, Colorado, collections of *Drosophila* were made in two different community types in order to compare the distribution of species.

A banana and yeast bait was spread on the ground in the shade of trees and sweepings were made at half hour intervals during the day. The species collected were the same as those found by Dr. D.D. Miller in 1963. The number of each species collected in each community type is shown in Table 1.

Table 1. *Drosophila* collections Gothic July 1971

Site 1 Aspen community						
	<u>athabasca</u>	<u>pseudoobscura</u>	<u>montana</u>	<u>subquinaria</u>	<u>suboccidentalis</u>	<u>Totals</u>
Week 1	7	6	45	34	37	129
Week 2	7	23	42	69	34	175
Week 3	13	36	64	38	30	181
Total	27	65	151	141	101	485

Site 2 Spruce community						
	<u>athabasca</u>	<u>pseudoobscura</u>	<u>montana</u>	<u>subquinaria</u>	<u>suboccidentalis</u>	<u>Totals</u>
Week 1	30	18	10	14	26	98
Week 2	22	27	11	27	36	123
Week 3	26	23	19	15	34	117
Total	78	68	40	56	96	338

At that time of year, *D. montana*, *D. subquinaria* and *D. suboccidentalis* were the most abundant species. Of the five predominant species collected, three differed in the number collected in an aspen community as compared with those collected in a spruce-fir community. *D. subquinaria* and *D. montana* were collected in greater numbers in the aspen community while with *D. athabasca* the reverse was found. An analysis of variance of the data of Table 1 is shown in Table 2.

Table 2. Analysis of variance

	<u>Sum of squares</u>	<u>Degrees freedom</u>	<u>Mean square</u>	<u>F</u>
Species	1,224	4	306	3.4
Location	719	1	719	7.9
Interactions	2,978	4	745	8.3
Deviations	1,802	20	90	

Conclusions

Significant effect of location P = 0.005
Questionable effect of species P = 0.05
Definitely significant interaction P = 0.005

These preliminary data support the hypothesis that some species are more abundant in certain community types.