Table 1 (Continued)

	Population	Year	MALES n	MALES number	MALES percent	FEMALES n	FEMALES number	FEMALES percent
	Lenkoran	1967	1148	0	0	-	-	-
	Baku	1971	158	18	11.39	294	111	37.8
Middle	Alma Ata	1961	2013	0	0	1625	3	0.19
Asia	Frunze	1969	1668	132	7.9	-	-	-
		1970	595	86	14.5	412	215	52.2
		1971	699	97	13.9	551	200	36.3
Far East	Vladivostok	1971	185	13	7.0	219	40	18.3

Grell, R.F. Oak Ridge National Laboratory, Oak Ridge, Tennessee. Viability of tetra-4 flies.

A number of papers concerned with meiotic mutants and their effects on segregation have been published recently. In each paper it has been stated or tacitly assumed that the tetra-4 genotype is lethal; no provision has been made to distinguish it phenotypically from the triplo-4 fly; and segregation analysis has proceeded on this assumption. When a reference to the lethality of the tetra-4 is cited, it is E.H. Grell (1961). However, the purpose of the Grell paper was to demonstrate that tetra-4 flies do survive, although under the conditions of the experiment they appeared infrequently. As pointed out by Grell, their rare appearance was attributable, at least in part, to the segregation pattern required for their recovery - namely, that all three parts of the double X:4 translocation, T(1:4)w^{m5}T(1:4)B^S, move to the same pole at meiosis I in both the heterozygous translocation-bearing mother and the hemizygous translocation-bearing father. Further, his scheme precluded the recovery of a tetra-4 male, since the recovery of two X chromosomes necessarily accompanied the recovery of the four 4's.

Recent studies by Moore and R.F. Grell (1972) have established that the very low recovery of tetra-4 flies with the translocation method was largely segregational in origin. The Moore and Grell experiments utilized compound-4's constructed by Lewis and Roberts (E.H. Grell, 1963), and in the course of the work they recovered tetra-4's in large numbers. As shown in Table 1, crosses of diplo-4 mothers carrying a compound-4, phenotypically wild-type, to triplo-4 fathers carrying a compound-4 homozygously marked with ci and ey^R as well as a single 4 marked with ci^D produced diplo-4, triplo-4, and tetra-4 progeny which were phenotypically distinguishable as ci ey^R, ci^D, and +, respectively. In the first set of crosses, approximately 26% of the 90,128 progeny were tetra-4; in the second set, approximately 24% of the 27,786 progeny were tetra-4 (Table 1, col. 4 and 5). Viability of the tetra-4 is calculated to be 76% of the diplo-4 and 63% of the triplo-4 in the first set of crosses and 68% and 58%, respectively, in the second set. Marker-wise, the tetra-4 possesses a viability advantage since it is wild-type. Nevertheless it is clear that the tetra-4 is far from lethal, and genetic experiments which fail to distinguish the tetra-4 from the triplo-4 on the grounds that it is must contain some error.

Table 1. Numbers of diplo-4, triplo-4 and tetra-4 progeny from crosses of C(4)RM, ci ey^R/gvl sv^n♀♀ x C(4)RM, ci ey^R/ci^D♂♂

Set	diplo-4 (ci ey^R)	triplo-4 (ci^D)	tetra-4 (+)	Total	Viability of tetra-4: % of diplo-4	Viability of tetra-4: % of triplo-4
1	30,357	36,581	23,190	90,128	76	63
2	9,764	11,429	6,593	27,786	68	58

References: Grell, E.H. 1961 Genetics 46:1177-1183; Grell, E.H. 1963 Genetics 48:1217-1229; Moore, C. and R.F. Grell 1972 Genetics (in press).

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