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In addition to many commonly encountered paracentric inversions in natural populations of *Drosophila robusta*, there exist many rare inversions typically seen only a few times in wild-caught individuals or their progeny (Carson 1958). One of these is 2L-5, a paracentric

inversion of the left arm of the second chromosome, first seen by Levitan (1951) in the offspring of a wild caught female near Blacksburg, Virginia, in October 1950. Carson (1958) captured an adult female heterozygous for 2L-5 near Fenton, Missouri, in June 1955. This report describes two more occurrences of 2L-5 each in different populations in the region of the Great Smoky Mountains National Park, Tennessee.

Populations of *D.robusta* were sampled during July 1982 along the altitudinal transect of Stalker and Carson (1948). Population cages were started in the lab with F_1 progeny of about 500 wild caught females from each of three elevations and maintained at 20°C. During the fourth generation, 200 larvae per cage were karyotyped. One larva from the 1000 ft. population was found to be heterozygous for 2L/2L-5 (Fig. 1a), and one larva from the 1360 ft. population was found to be heterozygous for 2L-1/2L-5 (Fig. 1b). The sites from which these flies were captured are approximately 11 km apart. No adults from nature were found to contain 2L-5. Since 2L-5 was seen in two population cages, spontaneous origin in the lab can be ruled out. No other "rare" inversions were seen in the lab populations.

Population sizes of many *Drosophila* spp. in the Great Smoky Mountains are very large (Etges, pers.obs.): collection of thousands of *D.robusta* at most sites below 4000 ft. is possible in a week or two. Higher incidence of low frequency variants such as 2L-5 will be fostered when population sizes are large even if this inversion contains a deleterious recessive allele. Why a rare gene arrangement such as 2L-5 has not increased in frequency in nature and yet has recurred over a span of 30 years in widely disjunct populations remains a mystery.

Acknowledgement: Dr. Hampton L. Carson kindly confirmed this siting of 2L-5 from a photograph of 2L/2L-5.

References: Carson, H.L. 1958, Adv. Genet. 9:1-40; Stalker, H.D. and H.L. Carson 1948, Evolution 2:295-305; Levitan, M. 1951, DIS 25:94.

Figure 1a. 2L/2L-5.

Figure 1b. 2L-1/2L-5.



Figure 1. (a) Chromosome two of *D.robusta* showing 2L/2L-5 to the left of the centromere (c). The proximal part of the right arm is missing in this photograph with only the distal portion (r) shown.

Figure 1. (b) Chromosome two of *D.robusta* showing the overlapping complex 2L-1/2L-5 to the left of the centromere (c).