Preuss, V. University of Tübingen, Germany. Light-dependent and light-independent mating of D. subobscura.

Successful mating of wild type D. subsbscura depends on light. Springer (1964), however, could obtain a light-independent strain (L1) by selection. In order to investigate the question as to whether or not the elements of courtship are the same in the L1 strain and other strains, flies from a wild type strain, a yellow mutant strain and the L1 strain were observed directly in Elens-Wattiaux observation chambers. The male choice and the female choice method was used. In each individual male choice experiment, 10 males of one strain were brought together with 10 females of the same and 10 females of another strain. For the female choice experiments, 10 females were combined with 10 males of the same strain and 10 males of another. Homogamic and heterogamic matings were registered over an observation time of one hour. During the course of the observations it became clear that most of the matings occured after a significant and pronounced courtship of the males. Such a sort of mating may be called "typical". In some cases, however, matings were performed spontaneously without any proceeding "dance" of the males. These matings may be described as "atypical" matings. The results of the observations are shown in the following table:

MALE CHOICE EXPERIMENT

males	females	matings				total number of matings observed
		homogamic		heterogamic		
		typ.	atyp.	typ.	atyp.	
+	+ and y	139	1	123	1	264
L1	L1 and y	30	33	59	52	174
y	y and +	69	--	23	--	92
y	L1 and +	56	3	4	--	63

FEMALE CHOICE EXPERIMENT

females	males					
+	+ and y	163	5	9	1	178
L1	L1 and y	39	50	8	6	103
y	y and +	30	--	134	6	170
y	L1 and y	31	1	55	54	141

With respect to typical and atypical matings it is rather clear that atypical matings occur almost exclusively in experiments with L1 males. Hence, it may be assumed that this type of courtship behavior of the L1 strain is responsible for its ability to mate in the dark. It can be further seen from the table that yellow males are discriminated by wild type and L1 females. Further, L1 males seem to prefer yellow females, while wild type males do not. The meaning of optical signals for the mating display is obviously different for the wild type and the L1 selection strain. It is generally different also for males and females of all strains.

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tually' or 'given enough time' have broad spectrum. The neo-Gause law also helps to account for the sympatric diversity present in the natural populations occupying the heterogenous environments more aptly than the earlier concept.

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