

Ohba, S. and F. Sasaki. Tokyo Metropolitan University, Japan. Polymorphisms of electrophoretic variants of esterase in a natural population of *D. virilis*.

In August 1965, 131 *D. virilis* flies were sampled from a large natural population in Niigata City. Zymograms of non-specific esterases were examined by means of thin layer agar gel electrophoresis.

Clear polymorphisms were found at all Est

loci. For Est-2, which shows four alleles ( $2^S$ ,  $2^M$ ,  $2^F$  and  $2^O$ ), flies were classified into seven electrophoretically different phenotypes as shown in the following table. Gene frequencies of these four alleles could be estimated in the following way:  $2^O = (\sqrt{S+O} + \sqrt{M+O} + \sqrt{F+O} - 1) / 2$ ,  $2^S = \sqrt{S+O} - 2^O$ ,  $2^M = \sqrt{M+O} - 2^O$ ,  $2^F = \sqrt{F+O} - 2^O$ . Expected numbers of each phenotype calculated from estimated gene frequencies coincided with observed ones.

Phenotype	Genotype	Observed		Gene frequency	Expected	
		No	%		%	No
S	S/S + S/O	80	61.1		61.5	80.6
M	M/M + M/O	1	0.8	$2^S = 0.734$	1.2	1.6
F	F/F + F/O	4	3.0	$2^M = 0.071$	3.5	4.6
O	O/O	1	0.8	$2^F = 0.143$	0.3	0.4
SM	S/M	13	9.9	$2^O = 0.052$	10.4	13.7
SF	S/F	28	21.4		21.0	27.5
MF	M/F	4	3.0		2.0	2.7

Lefevre, G. and L. Moore. San Fernando Valley State College, Northridge, California. Sperm transfer and storage.

The processes of sperm transfer and storage in *Drosophila* have been investigated by dissection of 1, 2 and 3-day-old males (both wild-type and  $v f^{3n} car$ ) and their consorts (3-day-old virgins) at

accurately timed intervals after the initiation of mating. In 264 dissections completed to date, the first evidence of sperm transfer was seen at 6.0 minutes after the initiation of mating by 3-day-old males, and at 8.0 minutes by 1-day-old males. The first evidence of sperm storage in the ventral receptacle or spermathecae was found at 8.5 minutes for 3-day-old males and at approximately 1 minute after completion of mating for 1-day-old males. A decided preference for initial storage in the receptacle, rather than in the spermathecae, was exhibited by sperm from males of all ages. Matings allowed to go to completion lasted an average of 18.2 minutes for 3-day-old males and 15.9 minutes for 1-day-old males. Sperm from 1-day-old males seem to be transferred and stored somewhat more slowly than do those from 3-day-old males. Maximum storage appears to occur within 15-20 minutes or less, regardless of the source of sperm.

To explore the effects of diminished sperm transfer on the storage process, females were dissected following second and third consecutive matings of 3-day-old males. Storage was found to be accomplished in these cases as promptly as in the case of large transfers (i.e., first matings).

The males were dissected following completion of their mating programs and inspected for condition of testes, seminal vesicles, ejaculatory duct, and accessory glands. Males dissected immediately after interruption of matings in which sperm transfer had begun were observed to have many motile sperm in the duct, but this rarely, if ever, occurs when matings go to completion. Dissection of 3-day-old males following second and third matings showed a progressive depletion of fluid in their accessory glands. Accessory gland fluid was usually found to be present in the glands of males dissected following second matings; whereas, following third matings the glands were nearly always collapsed and empty of secretion. Sperm were still present in the vesicles of 3-day-old males after 3 matings, but young males sometimes had virtually empty vesicles after only one mating.