pattern of proteases in Drosophila is heterogeneous, and at least 3 components contribute to the total proteolytic activity observed.

Based on azocasein hydrolysis the proteinase activity in the lethal lme/lme larvae aged 3-4 days has been determined to be only 48-58% of that in the wild type of corresponding ages. This is in agreement with our previous findings from both in vitro experiments (Chen and Hadorn 1955) and histo-chemical analyses (Meyer-Taplick and Chen 1960). On the other hand, the enzyme activity in 4-day-old homozygous larvae of the lethal mutant ltr has been found to be as high as 95% of the normal value. This indicates that the deficiency of proteolytic digestive activity of the mutant lme is probably locus-specific.

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On some aspects of the copulation, insemination reaction and sperm storage in two species of quinaria group.

The first mating between virgin females and males of D. brachynephros and of D. unispina were observed during the period from the 4th day to the 12th day after the emergence, at the temperature of 20°C. Mating occurred in most cases on the 8th day. Copulation times were recorded for 100 pairs in the two species. The average time was 9 minutes and 36 seconds (ranged 5' 10" - 11' 42") for D. unispina, and 5 minutes and 6 seconds (ranged 3' 43" - 6' 51") for D. brachynephros. The reproductive organ was dissected out in a saline solution under the binocular microscope. A total of 998 females (478 for D. unispina and 420 for D. brachynephros) was dissected at varying times, starting immediately after copulation and extending through for about 40 days. The results of insemination reaction and sperm storage are summarized in the table. The evidence presented suggests that both species belong to a group of species which develops a large insemination reaction in homogamic matings (Wheeler, 1947).

Table 1. Insemination reaction and survival of sperm within the storage organs of females in D. unispina and D. brachynephros.

	D. unispina					D. brachynephros				
		Sperm storage					Sperm storage			
Time of dissection	insemination reaction	uterus	seminal receptical	spermathecae	remarks	insemination reaction	uterus	seminal receptical	spermathecae	remarks
immediate	a	+++	-	-	A	a	+++	-	+	A
2-minutes	b	+++	+	+	B	b	+++	+	+	B
10-minutes	c	++	+	++		c	++	+	++	
1-hour	d	+	+++	+++	C	d	+	+++	+++	C
3-hours		+	+++	+++			+	+++	+++	
6-hours	e	-	+++	+++			+	+++	+++	
7-hours		-	+++	+++	D	e	-	+++	+++	
9-hours		-	+++	+++			-	+++	+++	D
5-days		-	++	++	F		-	+++	+++	E
10-days		-	++	++			-	++	++	F
20-days		-	++	++			-	+	+	G
30-days		-	+	+	G		-	-	+	I
40-days		-	+	+	H		-	-	-	J

+++: large amount of sperm. ++: less sperm. +: few sperm. -: no sperm. a: beginning to enlarge. b: reaction mass in uterus c: small mass opaque. d: maximum size. e: mass reduced. A: end of coitus. B: highly motile sperm. C: both organs full of sperm. D: uterus normal. E: sperm few reduced in both organs. F: sperm reduced in both organs. G: sperm more reduced in both organs. H: very few sperm in both organs. I: no sperm seminal receptable. J: all gone.