Table 2. Analysis of the degree of correlation between ^{3}H-TdR and ^{3}H-UR labelling frequency in contralateral experiments of salivary gland chromosome of **Drosophila melanogaster** after in vitro treatment with alpha-amanitin.

Gland number	Frequency of ^{3}H-TdR labelled nuclei	Frequency of ^{3}H-UR labelled chromosomes	Frequency of mid to terminal pattern of ^{3}H-TdR labelled nuclei	Slope (a)	Intercept (b)	Correlation coefficent (r)	Multiple correlation coefficient ($r_{1.23}$)
1A/1B	9.75	18.40	9.75				
2A/2B	31.11	19.14	8.89				
3A/3B	13.21	24.32	12.22				
4A/4B	3.00	0.00	3.00				
5A/5B	87.88	33.33	87.88				
6A/6B	4.65	15.79	4.65	$b_{12.3}$=0.25	0.85	r_{12}=0.47	0.94
7A/7B	0.00	1.16	0.00	$b_{13.2}$=0.89		r_{23}=0.35	
8A/8B	60.50	6.00	58.66			r_{13}=0.93	
9A/9B	21.11	31.34	17.70				
10A/10B	25.86	46.41	5.17				
11A/11B	52.11	50.00	45.07				
12A/12B	0.00	1.00	0.00				
13A/13B	5.45	31.11	5.45				
14A/14B	0.00	4.13	0.00				
15A/15B	17.78	11.43	17.78				
16A/16B	15.04	5.06	15.04				

percent of ^{3}H-TdR labelled cells and that of 3C-1D patterns are significant at 5% level (Fisher's 'r' significant test Table). On the other hand, the correlation coefficient for the relation between the percent of ^{3}H-UR labelled chromosomes and that of 3D-1D patterns of ^{3}H-TdR labelling is not significant (r = 0.35). It appears therefore that there is a reasonably good correspondence between the proportion of ^{3}H-TdR labelled cells and that of ^{3}H-uridine labelled chromosomes. Conversely, therefore, the inhibition of ^{3}H-UR incorporation parallels the inhibition of ^{3}H-TdR incorporation by α-amanitin. A multiple correlation test on the percent of ^{3}H-uridine labelled chromosomes, the percent of all ^{3}H-thymidine labelled cells and the percent of 3D-1D patterns, yields a high positive correlation coefficient ($r_{12.3}$ = 0.94). Thus, the result shows clearly that the in vitro treatment of salivary glands with α-amanitin fails to intercept the labelling of late patterns (3D-1D), but drastically interferes with the initiation of replication. Therefore, the result of contralateral experiments suggest the inhibition of the initial pattern by α-amanitin is causally related to the inhibition of RNA polymerase II. So, on the basis of these observations, it may be suggested that the synthesis of RNA and initiation of DNA synthesis are closely coupled, and that disorder in the first process affects the process of initiation of DNA synthesis.

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Collins, M.F. and J.K. Hewitt. University of Birmingham, Birmingham, England. Correlations between the elements of male courtship behavior in a series of inbred lines of **Drosophila melanogaster** derived from the same population.

The male mating behavior of a series of 16 inbred lines of **D.melanogaster** derived the Texas (Barnes & Kearsey 1970) population was recorded using the time-sampling technique described in Collins, Hewitt & Gogarty (1984). The male courtship behavior in pairs of three day old male and female flies was scored, using Texas 15 females as a common tester genotype. The experiment was carried out in a fully randomised block design, consisting of ten blocks of five replicates. All courtships were recorded within the first four hours of a 12 hour day/night light cycle at 25°C.

Table 1. Means (±S.E.) of the male courtship behavior of a series of inbred lines derived from the Texas population.

Inbred line	CI	OI	WVI	LACI	COPI	NoCop
Texas 1	0.752 (0.0145)	0.339 (0.0114)	0.229 (0.0122)	0.065 (0.0022)	0.119 (0.0095)	12
Texas 3	0.653 (0.0126)	0.393 (0.0138)	0.129 (0.0105)	0.040 (0.0044)	0.091 (0.0071)	7
Texas 5	0.728 (0.0130)	0.330 (0.0100)	0.240 (0.0118)	0.049 (0.0051)	0.109 (0.0084)	11
Texas 6	0.756 (0.0141)	0.335 (0.0141)	0.210 (0.0109)	0.072 (0.0020)	0.139 (0.0118)	14
Texas 7	0.735 (0.0145)	0.351 (0.0114)	0.221 (0.0084)	0.056 (0.0041)	0.107 (0.0100)	12
Texas 8	0.805 (0.0110)	0.317 (0.0145)	0.261 (0.0141)	0.102 (0.0049)	0.125 (0.0118)	15
Texas 9	0.727 (0.0126)	0.325 (0.0182)	0.246 (0.0141)	0.058 (0.0022)	0.098 (0.0114)	10
Texas 10	0.682 (0.0114)	0.408 (0.0095)	0.122 (0.0118)	0.060 (0.0041)	0.092 (0.0095)	8
Texas 15	0.798 (0.0114)	0.320 (0.0158)	0.227 (0.0110)	0.116 (0.0037)	0.135 (0.0126)	15
Texas 17	0.700 (0.0122)	0.335 (0.0114)	0.205 (0.0114)	0.064 (0.0036)	0.096 (0.0095)	10
Texas 18	0.720 (0.0155)	0.369 (0.0105)	0.186 (0.0122)	0.044 (0.0032)	0.121 (0.0105)	12
Texas 19	0.751 (0.0118)	0.358 (0.0122)	0.195 (0.0109)	0.070 (0.0030)	0.128 (0.0077)	12
Texas 20	0.770 (0.0122)	0.329 (0.0100)	0.248 (0.0134)	0.074 (0.0035)	0.119 (0.0095)	12
Texas 25	0.721 (0.0184	0.348 (0.0100)	0.192 (0.0118)	0.074 (0.0035)	0.107 (0.0084)	10
Texas 27	0.771 (0.0179)	0.319 (0.0122)	0.244 (0.0100)	0.078 (0.0057)	0.130 (0.0084)	14
Texas 28	0.821 (0.0179)	0.311 (0.0141)	0.272 (0.0141)	0.100 (0.0022)	0.138 (0.0109)	15

Each mean is based on the mean of ten blocks. Indices are: proportion of observation periods male engaged in orientation of female (OI), wing vibration (WI), licking and attempted copulation (LACI) and copulation (COPI). CI = OI + WI + LACI + COPI. NoCop is number of pairs (out of 50) achieving copulation within 10 minutes.

Table 2. Correlation matrix between courtship elements.

	CI	OI	WVI	LACI	COPI	NoCop
CI		-0.65^{**}	0.68^{**}	0.85^{***}	0.78^{***}	0.92^{***}
OI			-0.87^{***}	-0.64^{***}	-0.25^{NS}	-0.50^{*}
WVI				0.46^{NS}	0.21^{NS}	0.50^{*}
LACI					0.60^{*}	0.75^{***}
COPI						0.88^{***}
NoCop						

Pearson product-moment correlations (r_{14}):
*significant at 5%; ** significant at 1%;
***significant at 0.1%; and NS = non-significant.

Table 1 shows the means and standard errors for the courtships of each of the 16 inbred lines. Significant differences between inbred lines were found for all measures of courtship beahvior. These differences reflect additive genetic variation (and possibly i-type epistatic variation) within the Texas population for these courtship measures. Differences in mating speed and courtship success are therefore evident within a set of inbred lines derived from the same population.

The data on the courtship elements were subjected to correlational analysis. Correlations were computed across inbred lines. The correlation matrix between the courtship elements is shown in Table 2. Positive correlations were found between all the courtship elements except for OI which was negatively correlated with CI, WVI, LACI, COPI and the number achieving copulation. This negative correlation suggests that a high score for orientation is predictive of a less successful courtship pairing and is further supported by results from a diallel cross on courtship behavior where dominance was for high overall courtship, WVI, LACI and COPI but for decreased orientation (Collins & Hewitt 1984). This idea is furthered mirrored in that the unsuccessful courtship by males of fertilised females is composed mostly of orientation (see Collins, Hewitt & Gogarty 1984). Bastock (1956) demonstrated that yellow males were less successful courters than wildtype males and that the yellow courtship was characterised by a high level of orientation behavior. Obviously males must pass through the orientation phase for successful courtship but must move quickly to the more important later courtship elements and should not remain at the orientation level which would reflect poor male courtship or female unreceptivity. These results indicate that it is important to distinguish between orientation and the other courtship elements in any investigations of male courtship behavior.

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