Table 1. Number of leg bristles on the antennae in $Antp^{50}$ mutants.

	Genotype	No. of flies	Mean ± S.E.
Diploid ♂♂ & ♀♀	XY; $Antp^{50}/+$ XX; $Antp^{50}/+$	60	11.6 ± 1.6
Triploid ♀♀	XXX; $Antp^{50}/+/+$	40	5.6 ± 1.1
Intersexes	XX; $Antp^{50}/+/+$	15	32.3 ± 5.6

age number of leg bristles per pair of antennae was counted. These data are shown in Table 1.

Diploid males did not differ from the diploid females so the data on both could be pooled. In triploid females the number of leg bristles on the antennae was only about half of that in the diploid $Antp^{50}$ heterozygotes. This decrease may be interpreted as a result of the lower $Antp^{50}$ to $Antp^{+}$ ratio in triploids. However, the $Antp^{50}$ to $Antp^{+}$ ratio is hardly the only source of variation in the $Antp^{50}$ expression since in the XX; $Antp^{50}/+/+$ intersexes having the same $Antp^{50}$ to $Antp^{+}$ ratio as the triploid females the rate of antennal transformation is three times as large as that in the diploids and six times greater than in the triploids, thus suggesting the possible role of the balance of X-linked modifiers.

References: Bulyzhenkov, Ginter and Ivanov 1975, Genetika (USSR) 11:27-33.

Calvez, C. Université Claude Bernard Lyon I, Villeurbanne, France. Reduced mitotic activity in anterior and posterior follicle cells of the egg-chamber of Drosophila melanogaster.

The egg-chamber is surrounded by follicle cells derived from mesodermal cells during the migration of 16-cystocyte clusters through germarial region 2 (Brown and King 1964). Each chamber that enters the vitellarium contains approximately 80 follicle cells.

During egg-chamber growth from stage 1 to stage 6 (according to the terminology of King et al. 1956) these cells divide; during stage 6 a maximum number of follicle cells, roughly 1200, is reached and mitosis ceases (King and Vanoucek 1960). Each cell increases thereafter in surface area by a series of about four endopolyploid doublings. During stage 9, however, a group of follicle cells originating at the anterior pole of the egg-chamber migrates through the center of the nurse chamber. These follicle cells squeeze through the nurse cells and reach the surface of the oocyte (King 1970). These border cells thereafter secrete vitelline membrane and later form the micropylar complex.

Follicle cells from the posterior pole of the egg-chamber may also have a specific function and act as oocyte stabilization and growth factors (Koch and King 1969).

The question is whether during the division and differentiation of ovarian follicle epithelium the cells at the two poles have a particular behavior in relation to their particular function. To answer this question [^{3}H] thymidine (25 to 50 pmole per animal) was injected into newly hatched females. Groups of four females were killed, the first one hour after injection and the others daily thereafter until the seventh day.

Seriated sections of ovaries were examined after autoradiography (Calvez 1978).

The percentage of labelled follicle cells and their distribution in the egg-chamber were observed daily. The percentage of labelled border cells was also monitored.

Follicle cells: One hour after injection in all the egg-chambers in the vitellarium (stage 1 to stage 7), 40% to 50% of the follicle cells were labelled. Labelled cells were regularly located around each egg-chamber. During the migration of these chambers through the vitellarium, from day 1 to day 4, the percentage of labelled follicle cells decreased because the radioactive DNA was diluted during the doublings. Labelled follicle cell distribution was irregular. The largest numbers of labelled cells were found at the two poles (photos 1 and 2); density of silver grain labelling was very high in these cells.

Although the [^{3}H] thymidine pool was depleted in 30 minutes (Chandley 1966) a large number of labelled follicle cells appeared in egg-chambers produced from the first to the fourth day. Respective labelling percentages in stages 2 and 3 for these four days were 35%, 35%, 17%, 5%. In these chambers and during their migration the largest numbers of highly labelled cells were also observed at the two poles (photo 3). On and after the fifth day after injection isolated labelled cells were located only in these regions (photos 4 and 5).

Border cells: The percentage of labelled border cells was very high (80% to 90%) until the second day after injection. Moreover, seven days after injection grains were detected in 12% of border cells.

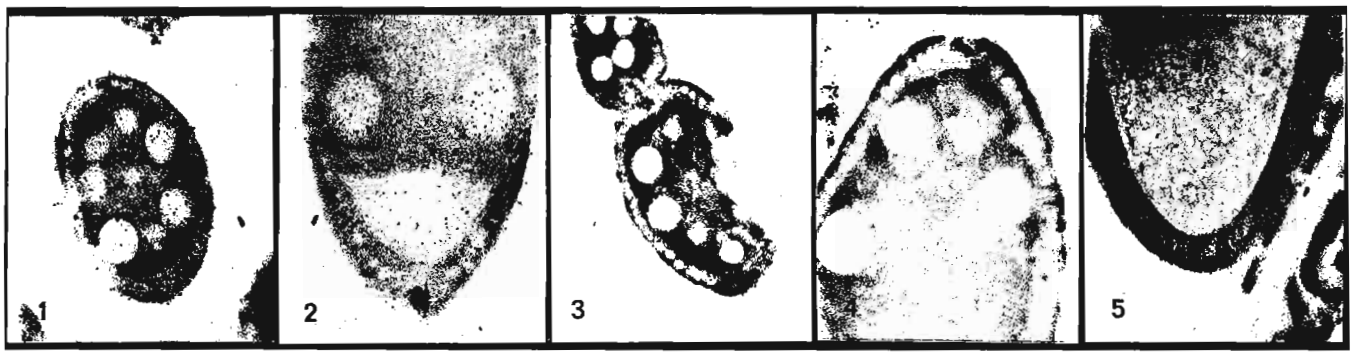

Photo 1: Stage 7 two days after injection with highly labelled follicle cells at the 2 poles.
Photo 2: Stage 9 two days after injection with a high density of silver grains at the posterior pole follicle cells.
Photo 3: Stage 7 four days after injection with labelled follicle cells at the 2 poles.
Photo 4: Stage 8 six days after injection with an isolated labelled follicle cell at the anterior pole.
Photo 5: Stage 10 six days after injection with an isolated labelled follicle cell at the posterior pole.

From these results four conclusions may be drawn:

1. Labelling of follicle cells in egg-chambers produced a long time after injection concurs with the hypothesis proposed by King (1970) that follicle cells derive from generative profollicle cells which must function as the stem-line oogonia.

2. Since labelled follicle cells were often found a long time after injection at the anterior pole and labelled border cells were subsequently found, the number of DNA doublings (mitoses and possibly endopolyploidy) was lower in these follicle cells. The specialization of the follicle cells was therefore determined as from egg-chamber formation.

3. The follicle cells of the posterior pole also have reduced mitotic activity. Like the anterior follicle cells, they may therefore have a specific function. This result corroborates the hypothesis of Koch and King (1969) who on the basis of morphological data suggest a role for these cells in oocyte induction.

4. Since during the first four days after injection the largest number of labelled follicle cells appeared at the two poles of the newly produced egg chambers it may be supposed that different profollicle lines exist in the germarium. Some cells form the majority of follicle cells, others specifically produce pole cells.

References: Brown, E.H. and R.C. King 1964, Growth 28:41-81; Calvez, C. 1978, Thèse 3ème Cycle, Lyon; Chandley, A.C. 1966, Exptl. Cell Res. 44:201-215; King, R.C. 1970, In Ovarian development in Drosophila melanogaster, Acad. Press N.Y. and London; King, R.C., A.C. Rubinson and R.F. Smith 1956, Growth 20:121-157; King, R.C. and E.G. Vanoucek 1960, Growth 24:333-338; Koch, E.A. and R.C. King 1969, Z. Zellforsch 102:129-152.

Carlson, E., P. Ferriola and E. Schuchman, State University of New York, Stony Brook.

Pseudoallelism at the vestigial locus.

The vestigial series of alleles involves several quantitative variations in wing size and shape and some qualitatively distinct pleiotropic traits (including scutellar bristle position, body size, and viability). The vestigial alleles are difficult to work with because some complement, some are phenotypically normal as homozygotes, and some show a nicking or notching of the wings in the heterozygous condition. Furthermore, vestigial is sensitive to temperature, lower temperatures (about 18°C) having more mutant phenotypes and higher temperatures (about 28°C) having more normal phenotypes.