

linkage with *w* and smaller observed distance to *mt*, indirectly indicate that the reason of mutant allele occurrence is a chromosomal aberration.

The final clarification of observed mutation nature and genetic features needs further research.

Materials and Methods

The new *Notch-like* mutation of *D. virilis* was obtained from the progeny of dysgenic crosses and was kindly presented by L. (Institute of Molecular Biology of RAS, Moscow). Not less than 100 females from progeny of all crosses were analyzed to estimate the phenotypic occurrence of the mutation. The principles of bilateral occurrence of phenotypical signs were according to Actayrov (1927). If there are no dependence between sign occurrence on different sides of the body the frequency of its symmetrical occurrence (C) is equal to the product of frequencies of its occurrence (A) on the left (AL) and on the right (AR). The type of correlation between side of occurrence was estimated by comparing the theoretical frequency of symmetrical occurrence (cm) with the real frequency observed in the experimental sampling (ce). It was considered that there is no dependence if $cm = ce$.

For the localization of the newly observed mutation on the genetic map and for estimating the type of inheritance the crossbreds with strains mutant for genes *white* (*w*, 1-105.0), *yellow* (*y*, 1-2.9), and *miniature* (*mt*, 1-78.0) were held. Two continuous crossbreds were held *miniature* strain males. The F2 specimens were analyzed in a number not less than 100. The distance between genes was estimated according to formula: $D = 100 \cdot r$, when *r* is a frequency of crossover, *D* is a distance between genes in cM.

The flies were maintained in glass tubes using standard nutritional medium at 25°C temperature.

Also fly wing structure was analyzed with optical microscopes using preparation of wing in Canada balsam.

References: Arias, A.M., 2003, Nat. Rev. 4: 321–325; Ren, N., C. Zhu, L. Haeryun, and P.N. Adler 2005, Genetics 171: 625-638; Albagli, O., and H. Pelczar 2006, Med. Sci. 22: 695; Baena-Lopez, L., and A. García-Bellido 2006, Proc. Natl. Acad. Sci., USA 103: 13734; Wilkin, M.B., M.N. Becker, D. Mulvey, I. Phan, A. Chao, K. Cooper *et al.* 2000, Curr. Biol. 10: 559–567; Molnar, C., and A. Lopez-Varea, R. Hernandez, and J.F. Celis 2006, Genetics 174: 1635-1659; Artavanis-Tsakonas, S., K. Matsuno, and M.E. Fortini 1995, Science 268: 225–232; Actayrov, B.J. 1927, Журн. Эксперим. Биол. 3: 1-61; Chino, M.T., 1941, Jpn. J. Genet. 17: 185-206; Gubenko, I.S., and M.B. Evgenev 1984, Genetica 128: 127–139; Whiting, J.H., M.D. Pliley, J.L. Farmer, and D.E. Jeffery 1989, Genetics 122: 99-109.



Novel mutants in *Drosophila simulans*.

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Here I report the isolation of 7 new spontaneous mutants in *D. simulans* identified recently and provide some updates about other mutants previously reported in Sousa-Neves *et al.*, 2009.

The new mutants are:

1. *bolha* (*bl*).

ORIGIN: The mutation appeared in the *blond* stock (Sousa-Neves *et al.*, 2009).

PHENOTYPE: Recessive mutant with blisters on the wing surface (Figure 1).

LINKAGE: possibly on the second chromosome near *plum* (*pm*) based on the low frequency of double mutants.

2. *hairy-like* (*hl*).

ORIGIN: Found segregating in the stock *net pm*; *st e*.

PHENOTYPE: Extra microchaeta on the lateral thorax below the humerals, recessive.

LINKAGE: Not yet mapped.

3. *minute bristles* (*mb*).

ORIGIN: The mutation appeared in the F3 of a cross between *cyS*; *tronc*³ and *ogl*.

PHENOTYPE: Recessive mutant that causes thinning of hairs and pale body color.

LINKAGE: Not yet mapped.

NOTES: Often *mb* flies have etched abdomen like *bobbed* mutants. Good viability and fertility.



Figure 1. *sw*^{bd} *bl*¹ mutants. A) Female. B) Male.

4. *postscutellars* (*ps*).

ORIGIN: *swg*; *net bd pm*; *st e* stock.

PHENOTYPE: Posterior scutellar macrochaeta appear erect and miniaturized.

LINKAGE: Not yet mapped.

5. *brownish* (*bwsh*).

ORIGIN: The mutation appeared in a *cyS* *tronc*¹ stock several times but was too weak to be maintained.

PHENOTYPE: Recessive brown eyes. Young flies appear with colorless ocelli, lighter eyes than the wild type and no pseudopupils. With age, the eyes become brown (Figure 2A). The eyes often appear variegated.

LINKAGE: Not yet mapped

NOTES: Once *tronc*¹ was removed, *bwsh* strived. *bwsh* may be linked to Ab(2R)ST (see below). Good viability and fertility.

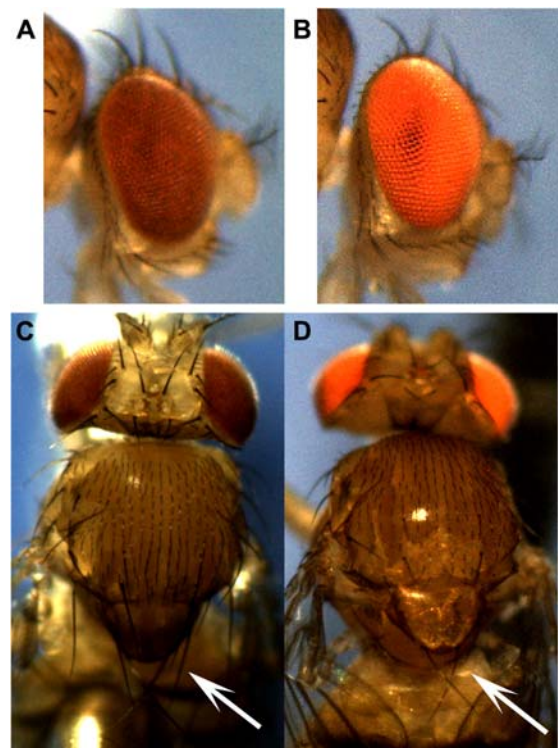


Figure 2. *bwsh* and *M*^{bd} mutants. A) *bwsh*, and (B) *bwsh/M(2)bd* eyes. Note the slight variegation of the eye in A compared to B. C and D), dorsal view of a homozygote (*bwsh/bwsh*) and a *bwsh/M(2)bd* trans-heterozygote. Note that *M(2)bd* has much thinner and shorter bristles than *bwsh* homozygotes, which have wild type bristles (arrows).

6. *Minute of blond* (*M(2)bd*).

ORIGIN: *bd* stock (Sousa-Neves *et al.*, 2009)

PHENOTYPE: Dominant thinning of the hairs (compare Figure 2B to 2C) and late emergence of adult flies. Homozygous lethal.

LINKAGE: 2 - 119.6. *M(2)bd* appears to be 18.1 units to the left of *pm*.

7. Aberration 2R of Sacra Tronc (*Ab(2R)ST*). Chromosomal aberration found in the *cyS*; *tronc*¹ stock segregating *bswh*. The rearrangement has 4 breakpoints involving two segments: (ST1) 53F|54A to 55B|C and (ST2) 57B to 58F|59A (Figure 3). *Ab(2R)ST* carries *bwsh* but it is not clear yet if *bwsh* is separable from the rearrangements. *Ab(2R)ST* balances to some extent *M(2)bd*.

Updates of previous mutations described in D.I.S. (Sousa-Neves *et al.*, 2009):

small wings (*swg*) is X-linked and complements the *D. melanogaster m*. No evident restriction polymorphisms in *m* were found in *swg* mutants.

blond (*bd*) is an allele of *straw*.

orange glue (*ogl*). Previously, we suspected that this mutant might be a new allele of *glass*. PCR amplification and restriction analyses show that *glass* is rearranged in *ogl* mutants. The rearrangement seems to be an inversion inside the *glass* gene.



Figure 3. Polytene chromosome of *Ab(2R)ST*. Note the two unpaired regions (Brackets).

References: Sousa-Neves, R., J. Cater, and J. Schinaman 2009, Dros. Inf. Serv. 92: 143-147.