

double crossovers (Figure 4). Thus, it seems that closer markers will be needed to have a more precise position of *bd*.

*swg*¹ and *ogl*¹ resemble mutants previously identified in *D. melanogaster*. *swg* is similar to *miniature* and *ogl*¹ resembles *glass* (*gl*). We mapped *ogl*¹ on the third chromosome inside or close to In(3R)Ubx, which includes the region that contains the *D. melanogaster gl* gene. Future allelism tests and molecular data should resolve whether *ogl* corresponds to the *D. melanogaster gl*.

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References: Coyne, J.A., and P.D. Sniegowski 1994, Sturtevant, A.H. (1929). *Publs Carnigie Instn* 399: 1-62.



New mutants of *D. simulans* in Koltzov Developmental Biology Institution, Moscow.

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All the mutations listed below are of a spontaneous origin, besides those with compound X chromosomes. These last strains were obtained by E.G. Ugnivenko in 1975 by X-irradiation of the original *y w* strain. Permissive temperatures for temperature-sensitive strains are between 19° and 22°C. All the strains besides the *y*² and the *y w* derive from our laboratory.

Recessive mutants, no selection required

1. *vermilion*-724. Eyes are bright red, vermilion. This mutation is on the X chromosome. It is recessive, analogous to the correspondent mutation in *Drosophila melanogaster*. Mass culturing is allowed. Fertility and viability are very good.
2. *yellow*². The body and bristles are yellow, wings are grey. The mutation originated spontaneously in the strain *vermilion*. The *y*²/*y* flies have the *y*² phenotype.
3. *yellow* (a revertant from *y*² to *y*) – body and bristles are yellow, wings are grey. The strain contains also *vermilion*. Culture does not require individual crosses. *See also the description of the y² allele in the strain # 7, together with vg^X.*
4. *yellow*^{bold} – The body, bristles and wings are yellow. Microchaetae are rare, especially on the central lane between the left and right dorsocentral macrochaetae. In total, only four rows of microchaetae are present instead of eight. Viability and fertility are not very good. Females *yellow*^{bold} / *yellow* have a *yellow* phenotype. Requires constant attention because of the possible reversion of *yellow*^{bold} to *yellow*.
5. *white* – white eyes; X-chromosomal, 4.5 M. Well viable and fertile.
6. *vestigial*¹. Phenotypically corresponds to *vg* mutants in *D. melanogaster*. Dense culture is recommended. Viability is lower than in the wild type. Avoid high and low temperatures.

7. *yellow vestigial*^X. *y* – yellow body and bristles. *vg*^X – reduced, laterally griped notum and scutellum, halteres and wings are missing; some individuals may have remnants of the wing blade, frequently shapeless or bubbled. Weak viability and fertility. Mass culture is allowed.
8. *porcupine* (*pcp*) – rough, grainy eyes; recessive, autosomal. Macrochaetae are multiplied and grow in bunches from two to six macrochaetae in each. The number of microchaetae is also increased. Viability and fertility are fine. Mass culture is allowed.
9. #65 (not received a regular name yet, the gene is not mapped). Reddish-orange eyes, getting darker with age, becoming orange-brownish in a combination with *vermilion* also floating in the strain.
10. *vestigial*^X *y*⁺ is like the strain # 7 with no yellow.
11. #1206 (no name assigned) is an autosomal recessive mutation. Flies have large, rough grainy eyes, wide wings, frequently with small nodes on the veins. The viability and fertility are moderate.
12. *radius_incompletus_scutellum* (*risc*) *vermilion* (*v*). Autosomal recessive mutation. Flies have a shortened scutellum of a semilunar shape. Scutellar macrochaetae grow near a scuto-scutellar suture in groups of three macrochaetae in each from both sides of the scutellum. Left and right bunches of scutellar macrochaetae are distant from each other. On the wing, the radius is absent in the upper 1/3 – 1/4 of the wing. Eyes are bright red due to a *vermilion* mutation. The mutation *risc* frequently reverts to *risc*⁺, so the strain requires permanent attention. Mass culture is recommended. Viability and fertility are fine.
13. *lozenge* (*lz*). Homology to a correspondent mutation in *D. melanogaster* was not shown. Eyes are almond-shaped, narrower than in *D. melanogaster*, rough and strongly granulated. The eye color is yellow-orange in the center, nearly white near edges. The mutants poorly survive cold. Otherwise well viable and fertile strain, mass culture is recommended.
14. *grooved-1* (*gv-1*) is a recessive allele of the dominant gene *Gv* found in *D. simulans* in our lab. The notum is shortened and to some extent bifid, the dorsocentral macrochaetae are approximate to each other and are not oriented parallel to the Anterior – Posterior line, like in the wild type. The posterior dorsocentral macrochaetae are more distant from this line than the anterior ones. Eyes are reduced, sometimes missing, irregular-shaped. Irregularities in the left and right eye are independent, they are not symmetrical. There are also some flies with one or both normal compound eyes. Both viability and fertility are very good. Mass culture is recommended. Sometimes the *gv-1* mutants revert to a wild type, so they must be checked from time to time.

X-chromosomal mutants with *y w* females with attached XX and *sn, f* or *y*^{bold} males

15. *singed* (*sn*) – the bristles are corkscrew-shaped, like in *D. melanogaster*. The females are *y w* in this strain. Screening for detached XX resulting in appearance of *y w* males is necessary.
16. *forked* – the mutant is not identified well; it may represent a weak variant of *singed*. Macrochaetae are hunched angularly, sometimes split at the tip. The phenotype generally fits one of the *forked* mutation in *D. melanogaster*.
17. *yellow*^{bold}, females *y w* with attached XX, males are *yellow*^{bold}, eye color is normal. See the description of the strain # 4 for the characteristic of the *y*^{bold} mutation.

Autosomal dominant mutations

18. *Ubx*. The mutation is not finally characterized. Flies have large halteres turned down, with a row of bristle at the margin (like a costal row in *D. melanogaster*). Eyes are orange due to the presence of *v* together with an unknown mutation affecting eye color. Cross only mutant individuals, reject the normal ones. The strain is viable and fertile well.
19. *Cbx-1*. Wings are short; the proximal part of the wing is rudimentary, uplifted, and specifically orientated. The scutellum is reduced, it has a trapezoidal shape. Wings are often double-layered, bubble-shaped. Autosomal dominant mutation, mutant (homozygous and heterozygous) females are nearly sterile, mutant males are fertile. The viability of the strain is good. Cross normal virgins from the culture to the mutant males. Some mutant females are also allowed.
20. #1379 (no name is assigned). In heterozygotes *1379/+* wings are divergent. Homozygotes mostly die; rare escapers that survived have a ventral wing hinge practically fully disrupted, a duplication of a part of the proximal structures of the dorsal wing hinge and other abnormalities in the structure of the wing and the axillary apparatus. Homozygotes are practically not viable and sterile. Sometimes they have duplications of the structures of the notum in the place of the pleura. Heterozygotes have a practically disrupted tegula. For culturing, multiple heterozygotes identified by divergent wings (with the angle from 45° to 90°), should be crossed together, the normal flies should be rejected. Heterozygotes are vigorous and fertile well.
21. *vestigial*^{Dominant} (*vg^D*). In heterozygotes *vg^D / +* wings are notched. Rare, practically nonviable homozygous survivors have no wings and halteres. Heterozygotes have good viability and fertility. Allelism with *vg* is not shown. Cross multiple *vg^D/+* heterozygotes with notched wings and reject normal flies.
22. #2110 (no name assigned). Wings are different in shape and length, narrowish, with nodes on the veins, some individuals have shortened wings, left and right wings may have a different shape. An autosomal dominant mutation, well selectable from a wild type. Cross only mutants, irrespective of sex, rejecting the normal flies. Viability and fertility are good.
23. #1724 (no name assigned). An autosomal dominant mutation. Hetero- and homozygotes have narrow rough eyes. Cross the mutants, rejecting normal flies.

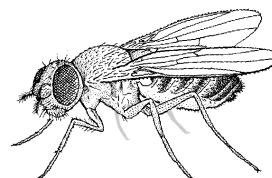
Recessive mutations, selection required

24. *rotund-1* (*rn-1*). Wings are smaller than normal due to the underdevelopment of the proximal part, round-shaped (this gave a name to the strain). Tarsi consist of 5 segments, sometimes their quantity is reduced, and they have abnormal shape. Homozygous females are sterile. Cross phenotypically normal virgins (heterozygotes *rn/rn⁺*) and homozygous mutant males *rn/rn*. Some homozygous females may be present in the culture. The viability of the strain is good.

This list represents only a small fraction of the unpublished *D. simulans* mutants we have, and we plan to expand it. The collection of *D. simulans* strains is partially supported by the RFBR grant #08-04-01596-a.

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