

**USAGE THE *DROSOPHILA MELANOGASTER*
AS OBJECT FOR STUDYING AGING AGE:
REVIEW OF RESEARCH AND TRENDS OF USE**

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Introduction. The study of genetic regulation of the aging process can today be considered one of the most interesting and promising for researching the problems of medical genetics.

Since the general genetic mechanisms of the regulation of life expectancy are considered to be evolutionarily conservative, very far from human species can be used as model objects for their study.

Drosophila melanogaster is considered one of the most studied and often used model objects in genetics.

Since the discovery of the gene *methuselah* (and further many other genes affecting life expectancy), *Drosophila* has been one of the most useful model objects for studying the role of genes in the regulation of aging.

However, to date, studies on the genetics of aging using *D. melanogaster* is becoming less.

Is *Drosophila* still staying useful as a model object in this area of research?

Objectives. Analyzing the literature data, to clarify the current trends in the use of *D. melanogaster* in the genetics of aging.

The literature data analysis. Most of the recent work on the study of aging processes in which *D. melanogaster* had been used as a model object was devoted to studying not directly the mechanisms of regulation of life expectancy, but, rather, various specific cases of their action.

For example, A.M. Vayserman, E.A. Fedorenko, and others studied the effects on the viability of imago restriction components of the dietary restriction of *D. melanogaster* larvae.

In the work of N.S. Filiponenko, N.E. Volkova, L.I. Vorob'eva, the dependence of the lifespan of individuals of *D. melanogaster* lines obtained from natural populations on the radiation background in the habitats of these populations was analyzed.

In addition, in this paper, the evolutionary relationship of life expectancy with fecundity of *D. melanogaster* was considered.

Of the works dealing with the genetic aspects of aging proper, the studies of A.A. Moskalev with co-authors (A.A. Malysheva, V.G. Zainulin and others) should be mentioned first of all.

The material accumulated in the study of the influence of the illumination regime on the life expectancy of *Drosophila* served as a basis for investigating the direct effect on the life span of *D. melanogaster* genes of the transcription factor *dFOXO*, *dSir2*, and *Hsp70*.

In addition, he conducted studies of the effect of the activity of the gene of the enzyme Cu / Zn superoxide dismutase on the change in the duration of life of *Drosophila* when the illumination regime was changed.

Long enough studies of the effect on the life span of *D. melanogaster* mutational changes caused by transpositions of mobile genetic elements (MGE) have been carried out for a long time.

As old example can be considered the studies provided by L.Z. Kaidanov with co-authors in the 1990s, which have been devoted to the influence of transpositions of MGE hobo on the intensity of aging and the relationship between the level of hybrid dysgenesis induced by it in the line with the lifespan of adults.

Of more recent studies, mention can be made of the work of N. Golub and I. I. Cernik on the effect on the lifetime of *D. melanogaster* induction of transpositions of MGE by the complex action of X-rays and chemical reagents (nitrosoethylcarbamide and caffeine) to varying degrees.

The most closely related to medical genetics from all the studies examined in this paper was the study by S.A. Kopyl with co-authors (including the already mentioned A.A. Moskalev) on the *D. melanogaster* model of the role of tumor suppression genes *l(3)hem*, *Hyd*, *gd*, *ex* and *ft* in the mechanisms of aging both at the cellular and at the organism level.

Conclusions. Thus, from the examples considered in this paper, can be seen that in modern gerontology, as the general knowledge about the genetic mechanisms of aging accumulates, the importance of *D. melanogaster* as a model object is gradually decreasing.

However, *Drosophila* can still be a useful model for solving particular problems and issues in the general genetics of aging.