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Transcriptomics: Genes and ontogenes in Drosophila

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For the existence of genetic systems, independent hereditary factors are not sufficient, such as Mendelian genes. The search for the hereditary factors of a different type was held. A new class of mutations, called conditional, was isolated in *D. melanogaster*. In a restrictive genotype, mutant dies and permissive survives and reproduces. Besides their conditional nature, mutations in the permissive genotype display a set of specific features that drastically distinguish them from conventional mutations. They are: 1) dominant; 2) as a rule, lethal; 3) drastically decrease fertility; 4) interact with chromosome rearrangements; 5) switch the genome from a stable to an unstable state; 6) increase basal metabolism; 7) induce modifications and morphoses; and 8) their manifestation is inherited in a parental manner. Four properties of the mutations - conditional manifestation and 1), 4) and 8) allow asserting that the mutated genes are: (1) segments of DNA; (2) their products are duplexes of RNA (3) active in germ cells and (4) repeated in the genome. The formation of morphoses in mutants suggests that the genes control the ontogeny (called ontogenes). Thus the genetic system comprises the genes working on the script DNA-RNA-protein and ontogenes working on the script of DNA-RNA. First engaged in the production of the "building material" in the organism, the second controlled this process and maintained the functioning of the organism. Such different functions of the genes depend on the type of transcript formed by the DNA, time and place of its origin.

Biography

Nina B Fedorova has completed her graduation from Tomsk State University, The Biology Faculty. In 2002, she finished her Post-graduate studies at Institute of Cytology and Genetics in Novosibirsk. She received her PhD in Genetics in 2007. She is a Researcher in the Laboratory of Mechanisms of Cell Division of the Institute and has published more than 20 papers in reputed Russian and foreign journals. Her research interest is in the relationship between facts and concepts of classical genetics and modern investigations in epigenetics, molecular and cellular biology.

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