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**1:** Zh Obshch Biol. 2001 Nov-Dec;62(6):472-95. [Related Articles, Books, LinkOut](#)

**[Genetic-evolutionary basis of symbiosis doctrine]**

[Article in Russian]

[Provorov NA.](#)

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The author presents the current notion of symbiosis as one of the main adaptation of an organism to changeable environment. Symbiosis is considered as a super organism genetic system within which there are different interactions (including mutualism and antagonism). Genetic integration of symbiotic partners can be realized as cross regulation of their genes, exchange of gene products (proteins, RNA), gene amplification and sometimes gene transfer between organisms. On the phenotypic level these processes result in signal interactions, integration of partner metabolic systems and development of symbiotic organs. Co-evolution is considered as an assemblage of micro- and macroevolution processes basing on pre-adaptations and proceeding under influence of different forms of natural selection (individual, frequency-dependend and kin selection). Symbiosis can be compared with sexual process since both are the forms of organism integration characterized by different genetic mechanisms and evolutionary consequences. The genome evolution in symbiotic microorganisms can proceed by: 1) simplification of genome in obligate symbiosis (loss of genes that are necessary for independent existence, transfer of some genes to the host organism); 2) complication of genome in facultative symbiosis (increase in genome plasticity, structural and functional differentiation of genome into systems controlling free-living and symbiotic parts of life cycle). Most of symbiotic interactions are correlated to an increase in genetic plasticity of an organism that can lead to evolutionary saltations and origin of new forms of life.

MeSH Terms:

- [English Abstract](#)
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