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Molecular phylogenetics, barcoding and, speciation genetics: A perspective from mitogenomics

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Mitogenome is described for catfish, *Liobagrus obesus* and compared with other fish and vertebrates. For the protein-coding genes a nucleotide bias revealed. Such bias in favor of pyrimidine content is well known and now it is substantiated statistically in bulk of fish species. The properties of mitogenome of vertebrate animals will be briefly overviewed.

Nucleotide diversity for the genes Cyt-b and Co-1 was analyzed with special reference to the genetics of speciation. Genetic divergence of populations (1) and taxa of different rank, such as subspecies, semispecies and sibling species (2), species (3), species from different genera within a family (4), and species from separate families within an order (5) have been compared on p-distances. Data for 20,731 vertebrate and invertebrate animal species reveal various and increasing levels of divergence of the sequences of two genes in the five groups compared. Mean unweighted scores of p-distances (%) for five groups are: Cyt-b (1) 1.38±0.30, (2) 5.10±0.91, (3) 10.31±0.93, (4) 17.86±1.36, (5) 26.36±3.88 and Co-1 (1) 0.89±0.16, (2) 3.78±1.18, (3) 11.06±0.53, (4) 16.60±0.69, (5) 20.57±0.40. The results of the analysis of the nucleotide divergence within species and higher taxa of animals suggest that a phyletic evolution in animals is likely to prevail at the molecular level, and speciation mainly corresponds to the geographic mode. The approach suggested that allows recognize the speciation modes formally with the operational genetic criteria. Such approach may help to solve a key problem of the biological species concept, i.e. define species without knowledge on the reproductive isolation.

Biography

Yuri Ph. Kartavtsev has completed his Ph.D. in 1978 at the Institute of General Genetics, RAS (Moscow) and 2nd S.D. degree at the age of 45 years from S. Petersburg University. He served 7 years as the director of Vostok Marine Biological Station (Institute of Marine Biology, FEB RAS, Vladivostok, Russia). Currently he is the head of Lab of Molecular Systematics. He has published more than 60 papers in reputed journals, has several, reviews, monographs & textbooks and serving as an editorial board member of repute. Publically is active as the chairman of Vladivostok Public Foundation for Development of Genetics and RUS-BOL.

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