



Divergence With Genetic Exchange

By Michael L. Arnold

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The study of genetic exchange resulting from natural hybridization, horizontal gene transfer, and viral recombination has long been marked by controversy between researchers holding different conceptual frameworks. Those subscribing to a doctrine of 'species purity' have traditionally been reluctant to recognise inferences suggesting anything other than a marginal role for non-allopatric divergence leading to gene transfer between different lineages. However, an increasing number of evolutionary biologists now accept that there is a growing body of evidence indicating the existence of non-allopatric diversification across many lineages and all domains of biological diversity.

Divergence with Genetic Exchange investigates the mechanisms associated with evolutionary divergence and diversification, focussing on the role played by the exchange of genes between divergent lineages, a process recently termed 'divergence-with-gene-flow'. Although the mechanisms by which such divergent forms of life exchange genomic material may differ widely, the outcomes of interest - adaptive evolution and the formation of new hybrid lineages - do not. Successive chapters cover the history of the field, detection methodologies, outcomes, implications for conservation programs, and the effects on the human lineage associated with the process of genetic transfer between divergent lineages.

This research level text is suitable for senior undergraduate and graduate level students taking related courses in departments of genetics, ecology and evolution. It will also be of relevance and use to professional evolutionary biologists and systematists seeking a comprehensive and authoritative overview of this rapidly expanding field.

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Review

"Arnold's *Divergence with Genetic Exchange*, with its comprehensive treatment of different evolutionary topics and wealth of references, is a must for everyone who wants to extend their view beyond Mayr's species dogma and its consequence that 'hybridization is unimportant in animal taxa.' ... This book will also be most valuable in the further development of the recent discussion on using networks (webs-of-life) to expand our evolutionary thinking..." --*Systematic Biology*

About the Author

Michael L. Arnold, *Distinguished Research Professor, Department of Genetics, University of Georgia*

Mike Arnold, Distinguished Research Professor of Genetics at the University of Georgia, has concentrated his research work in the area of evolutionary genetics, particularly the study of genetic exchange. Mike has championed the view of such exchange as a critical evolutionary process. For example, through breeding experiments and genomic analyses, Mike's research group has demonstrated that natural hybridization often leads to significant gene exchange between closely related species. Mike is particularly well known for studies involving the plants known as Louisiana Irises, which have become a classic example of the role of hybridization in adaptive evolution and speciation. Mike is the author of four books and more than 130 academic articles.

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