



A modern look at the Animal Tree of Life*

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Table of contents

Abstract	61
The setting	62
The Animal Tree of Life—molecules and history	62
The Animal Tree of Life—morphology and new developments	63
Recent consensus on the Animal Tree of Life	65
The base of the animal tree	68
Bilateria	72
Protostomia-Deuterostomia	72
The Future of the Animal Tree of Life	73
Acknowledgements	73
References	73

Abstract

The phylogenetic interrelationships of animals (Metazoa) have been elucidated by refined systematic methods and by new techniques, notably from molecular biology. In parallel with the strong molecular focus of contemporary metazoan phylogenetics, morphology has advanced with the introduction of new approaches, such as confocal laser scanning microscopy and cell-labelling in the study of embryology. The discovery of new animal diversity (previously unknown groups like Cycliophora and Micrognathozoa) has invigorated the field as well. At present, broad consensus exists for the monophyly of bilaterian animals, a split of Bilateria into Deuterostomia and Protostomia, a division of protostomes into a clade of mostly spiral cleavers (Lophotrochozoa) and a moulting clade (Ecdysozoa), a ‘restricted’ deuterostome hypothesis that excludes the lophophorate phyla, and a basal position of acoel and nemertodermatid flatworms within Bilateria. However, the position of several protostome phyla, especially Bryozoa and Chaetognatha, remains intractable. Phylogenomic approaches such as Expressed Sequence Tags are showing much promise for resolving ongoing controversies at the base of the animal tree, especially the branching pattern among ctenophores, sponges and cnidarians.

Key words: Animals, Ecdysozoa, Expressed Sequence Tags, metazoa, phylogeny, Spiralia, systematics