Worms

1. Early Jurassic Hydrothermal Vent Community, By Crispin T. S. Little
The presence of vestimentiferan tube worm fossils in the Figueroa deposit is at odds with the supposed time of origin of the modern vestimentiferans (=100 Ma), based on molecular data. Page 542

2. Parallel evolution of segmentation, By Ariel D. Chipman
I start by presenting and discussing the data that have led many researchers to suggest a common origin for segmentation, and follow this with a discussion of the data that make this scenario unlikely. There are problems with many of the arguments in both directions, and I also discuss these. Page 61

The third super phylum Lophotrochozoa, which includes the segmented annelids, has a much poorer fossil record than Deuterostomia or Ecdysozoa, and the interpretation and affinity of early lophotrochozoans is hotly **debate**d. Page 64

While the **debate** about the interpretation of the phylogenetic relationships of these fossils is bound to continue (and has only been reviewed briefly here), it is generally accepted by most of the authors cited above that already in the Cambrian, segmentation was a trait distinguishing annelids from other lophotrochozoans. Page 64, 65

3. Looks can deceive, By Elizabeth M. Perkins
The morphological based taxonomy of highly derived parasite groups is likely to poorly reflect their evolutionary relationships. Page 705

Consequently the current morphological classification shows little correspondence with the phylogenetic relationships within the family. Page 705

This is not an uncommon dilemma and there has been much **debate** in the literature about how to combine traditional taxonomy with phylogenetic relationships. Page 713

4. Syndermatan phylogeny, By Holger Herlyn
Apart from the phylogeny within the Acanthocephala, the acanthocephalan sistergroup still remains unresolved. Page 155

5. Haemadipsoid leeches, By Elizabeth Borda
A scourge of tropical and subtropical jungles, blood feeding terrestrial leeches of Haemadipsidae have long confused systematists and defied sensible biogeographic interpretation. The family Haemadipsidae usually includes problematic taxa that neither fit the typical Indo Pacific distribution of the group, nor properly match diagnostic characters used to define the family. Page 142

6. Character loss in orbiniid phylogeny, By Christoph Bleidorn
Orbiniid phylogeny is matter of **debate** and incongruence between hypothesis based on molecules and morphology has been repeatedly reported. Moreover, the phylogenetic position of the “oligochaetoid polychaetes” of the taxon Questa varies between morphological and molecular cladistic analyses. Page 57

The position of orbiniids within Annelida is disputed. Whereas the cladistic analysis of morphological data by Rouse and Fauchald (1997) favors a close relationship to Paraonidae, molecular analyses recovered Parergodrilidae as their sister group (e.g., Bleidorn, 2005; Struck et al., 2008). Based on chaetal arrangement, Hoffmann and Hausen (2007) propose a closer relationship to Spionidae. Struck et al. (2007) discuss a possible position within the acicula-bearing errant polychaete taxa (Phyllodocida and Eunicida). Relationships within Orbiniidae are also under discussion. Page 57

7. New insights into polychaete phylogeny, By Christoph Bleidorn
Annelid systematics and the ingroup relationships of polychaete annelids are matter of ongoing **debate**s in recent analyses. Page 279

The phylogenetic relationships of these polychaete taxa are matter of ongoing **debate**s in recent papers on annelid morphology (Bartolomaeus, 1998; Hausen, 2001; Hausen and Bartolomaeus, 1998; Meyer and Bartolomaeus, 1996; Purschke, 1997; Rouse and Fauchald, 1997, 1998; Westheide, 1997; Westheide et al., 1999). Page 279

8. Phylogenetic assessment of the earthworm, By Marcos Pérez-Losada
These four taxa are morphologically very similar and difficult to differentiate because of their morphological variability. Consequently, their taxonomic status and their phylogenetic relationships have been a matter of discussion for more than a century. Page 293

9. Evolutionary origins of nematodes, By Neil B. Chilton
The evolutionary relationships of the different suborders and superfamilies within the Strongylida, based on morphological characters, have also been the subject of considerable **debate** (Skrjabin et al., 1952). Page 120

References

1. Early Jurassic Hydrothermal Vent Community, By Crispin T. S. Little, Journal of Paleontology, 2004, Volume 78, Number 3, Pages 542 To 559

2. Parallel evolution of segmentation, By Ariel D. Chipman, Bio Essays, 2010, Volume 32, Pages 60–70

3. Looks can deceive, By Elizabeth M. Perkins, Molecular Phylogenetics and Evolution, 2009, Volume 52, Pages 705–714

4. Syndermatan phylogeny, By Holger Herlyn, Molecular Phylogenetics and Evolution, 2003, Volume 26, Pages 155–164

5. Haemadipsoid leeches, By Elizabeth Borda, Molecular Phylogenetics and Evolution, 2008, Volume 46, Pages 142–154

6. Character loss in orbiniid phylogeny, By Christoph Bleidorn, Molecular Phylogenetics and Evolution, 2009, Volume 52, Pages 57–69

7. New insights into polychaete phylogeny, By Christoph Bleidorn, Molecular Phylogenetics and Evolution, 2003, Volume 29, Pages 279–288

8. Phylogenetic assessment of the earthworm, By Marcos Pérez-Losada, Molecular Phylogenetics and Evolution, 2009, Volume 52, Pages 293–302

9. Evolutionary origins of nematodes, By Neil B. Chilton, Molecular Phylogenetics and Evolution, 2006, Volume 40, Number, Pages 118–128

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