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Editorial

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Overview*

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**In*: Carvalho, M.R. de & Craig, M.T. (Eds) (2011) Morphological and Molecular Approaches to the Phylogeny of Fishes: Integration or Conflict?. *Zootaxa*, 2946, 1–142.

At about this time last year, one of us (MRC) edited a manuscript submitted by systematic ichthyologists Randall D. Mooi and Anthony C. Gill to *Zootaxa* entitled "Phylogenies without synapomorphies—a crisis in fish systematics: time to show some character" (Mooi & Gill, 2010; hereafter M&G). A preview of this manuscript had been presented at an American Society of Ichthyologists and Herpetologists (ASIH) meeting in 2008, and caused quite a stir among many in attendance. The strong reaction was a response to what was perceived as unfair criticism of the molecular paradigm in the phylogeny of fishes, particularly of percomorphs, the core of their presentation. Before publishing M&G in *Zootaxa*, the authors were advised that a similarly strong reaction would probably occur. They did not flinch, and hence M&G was published (after peer review). Needless to say, M&G got strong feedback, either in a negative or positive vein, from molecular and morphological workers, respectively. MRC even received a critical e-mail from one molecular worker accusing M&G of superficiality and *Zootaxa* of employing "low" standards of scholarship.

The idea to expand these negative and positive reactions into a larger edited volume stemmed from our belief that, somewhere in the fracas, there was a constructive message to heed—a positive outcome to what appeared to be, in essence, a contentious debate. Ichthyological workers known to have either opposing or complementary views to M&G were approached in the hopes of answering, or at least shedding light upon, the question posed in our title. Many workers declined our invitation, but specialists in other groups also came forth. The 15 papers presented here represent something of a mixed bag, but nonetheless do capture some of the tension that presently exists in systematic ichthyology, and perhaps in systematics in general. We clearly wished to start something here, not finish it.

The volume begins with a reply to M&G by Wiley et al. (2011a), followed by a rejoinder from Mooi, Williams & Gill (2011) and Gill & Mooi (2011), themselves replied to by Wiley et al. (2011b). Craig (2011) presents an additional criticism of M&G, which these authors respond to separately (Mooi & Gill 2011). Papers defending the need for integration (Hastings 2011), and highlighting particular tools or approaches that facilitate the interpretation of molecular results (Faith et al. 2011, Cruickshank 2011) are presented next. Further conceptual criticisms of the current molecular paradigm follow (Ebach et al. 2011, Britz & Johnson 2011). Specific fish taxa are treated by Conway & Britz (2011; carps, Cypriniformes) and Dillman & Hilton (2011; sturgeons, Acipenseridae). The last chapter, by G. Nelson (2011), is another historical perspective on homology and homologues, intended as an exploration of the dual notions of *evidence* and *ancestry.* Finally, Williams & Gill, in our second-to-last chapter, compile a presentation given by Colin Patterson to the Systematics Association (London) in 1995, previously unpublished, which is included here as our last chapter (Patterson 2011). Hopefully, readers will finish this volume hearing Colin's resounding baritone telling us to forget ancestors and focus more on characters—a plea, in other words, that *quality* matters greatly. This is a message we wish to expound as well.

To summarize matters, the central issue treated here boils down to one, yet again, of homology (i.e., of relationship)—morphologists want molecular homologies to figure explicitly in discussions of molecular phylogenies

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and in the presentation of molecular topologies (a key to understanding what they characterize as the "flip-flopping" nature of molecular topologies), whereas molecular workers maintain that their topologies are in fact based on implicitly and sufficiently indicated molecular homologies, and do not represent indirect or intangible evidence of relationship. It would seem, therefore, that we all want the same thing—better homology assessments, more robust phylogenetic hypotheses. So, in the end, will we have some form of integration, or will conflict prevail among the different approaches in systematics? The jury may still be out.

While the manuscripts presented here were being compiled and reviewed in 2010, an e-mail discussion among some of the authors, and many other participants, focusing mostly on what constitutes evidence of relationship (or so it seemed initially), was in full swing. That discussion veered down many paths, some appearing constructive, while others amounted to personal attacks. During the apogee of that sometimes vituperative venture, it became clear that a deep-rooted divergence, much greater than the relative size of a character, was at large. The e-mails exposed fundamental divides about what constitutes evidence of relationship and underlying systematic philosophy. Once united as a common front against pheneticists and syncretists, phylogeneticists now battle each other (yet again)—a clear sign of intolerance, of conflict. But others may identify this as a sign of vigor, indicative of a dynamic field. We wished to see this discussion expand and mature; providing this forum was one way to achieve this.

Towards the end of that e-mail quarrel, Prof. Willy Bemis posed a legitimate and fundamentally important question: Should students be exposed to this debate? In other words, are there real, constructive lessons to be learned? Perhaps one lesson that should be learned is that *open-mindedness* and opposing "ways of seeing" may be healthy, and indeed necessary, for progress. In spite of our differences, aren't we all proposing hypotheses of phylogenetic relationships amenable to further scrutiny and testing, whether on a micro (molecular) or macro (morphological) scale? The discussion eventually died down, and it took a while to recover from the over-exposure.

We thank the authors of the papers compiled here for their patience, and the wonderful staff of *Zootaxa* for their efforts in getting this volume into final shape. But, most importantly, we thank ichthyologists Gareth Nelson, Donn Rosen and Colin Patterson for initially guiding us on this route way back in the day when learning how to dissect a fish, or prepare a fossil with acid, seemed greatly important.

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