

Comment on “Something on the side: axillary meristems and plant development.” by Tom Bennett and Ottoline Leyser, *Plant Molecular Biology* 60 (2006) 843–854

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Depending on the system of classification adopted, the diversity of living plants is unevenly distributed between 10 and 12 phyla. At least six extinct phyla are added to these to complete the image that we have presently of the overall systematic diversity of the organisms classified as land plants or embryophytes. Among these, true axillary meristems are known only in five living (plus two extinct) phyla that comprise the spermatophytes (seed plants), so from the point of view of systematic diversity most of the organisms we call plants do not produce axillary meristems. In their comprehensive and up-to-date review of the mechanisms controlling the formation of axillary meristems, Bennett and Leyser (2006) fail to acknowledge this aspect—throughout the article “plant” is used without any additional taxonomic precision (e.g. seed plants). Moreover, the article covers only one of the axillary meristem-producing phyla, the flowering plants (Phylum Magnoliophyta or Anthophyta). Although the possibility that the mechanisms controlling axillary meristem formation are conserved across all seed plants cannot, and should not, be excluded, the article does not present any evidence in that respect. Considering all of these, additional precision of language in the title and the text of the article would have been welcome, eliminating any possibility of confusion with respect to the taxonomic groups that produce axillary meristems and to the exact phylum of plants discussed.

This may seem a minor detail having more to do with plant systematics and morphology than with

molecular biology, and it could be argued that reference to flowering plants was implicit. However, this also illustrates the pervasiveness of the reductionist paradigm. This paradigm has its virtues and has led to important discoveries in many fields of plant biology, but as scientists we always have to keep in mind the whole picture and to be aware what proportion of this picture is influenced by our data, in order to draw the most meaningful inferences. We also have to realize how important it is to use a finer filter when it comes to deciding when and where the reductionist paradigm is appropriate. In fact, using the most appropriate and precise terms when expressing ideas is one of the basic rules of scientific communication, and a rule by which we should permanently strive to abide, whether we are writing about subjects within our area of direct expertise, or about more general topics.

Bennett and Leyser (2006) give an age of 250 million years (earliest Triassic) for the divergence of monocotyledons and dicotyledons (unreferenced, p. 846). Such an early age is reminiscent of the results of early molecular clock studies (e.g. Brandl et al. 1992) and predates the oldest fossil attributable to flowering plants (*Archaeofructus*, 125 million years old; Sun et al. 2002) by more than 100 million years. These results are contradicted by recent studies that place the origin of angiosperms between 180 and 140 million years ago (Bell et al. 2005) and the timing of the monocot–dicot divergence at about 150–140 million years ago (Chaw et al. 2004). The timing of the monocot–dicot divergence is certainly not the main subject of Bennett and Leyser’s contribution and it has to do more with plant evolution and phylogeny, but these do not overrule the need for accuracy of all facts included in science writings.

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I cannot conclude without pointing out that none of the above diminishes the value of Bennett and Leyser's contribution to our understanding of the mechanisms that govern the formation of axillary meristems in flowering plants.

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