

**New Phytologist Supporting Information Figs S1–S4**

Article title: Lineage-specific gene radiations underlie the evolution of novel betalain pigmentation In Caryophyllales

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The following Supporting Information is available for this article:

**Fig. S1** Taxon-labeled phylogeny of the CYP76AD1 lineages (and CYP76AD1- $\gamma$ ).

**Fig. S2** Taxon-labeled phylogeny of the CYP76AD1 lineages (CYP76AD1- $\alpha$ , CYP76AD1- $\beta$ )

**Fig. S3** Taxon-labeled phylogeny of the 4,5-dioxygenase (DODA) lineages (DODA- $\beta$ ).

**Fig. S4** Taxon-labeled phylogeny of the 4,5-dioxygenase (DODA) lineage (DODA- $\alpha$ ).

**Table S1** Sources of the transcriptome data (separate Excel file)

**Table S2** Information for 14 newly sequenced transcriptomes: provenance, herbarium vouchers, type of material (separate Excel file)

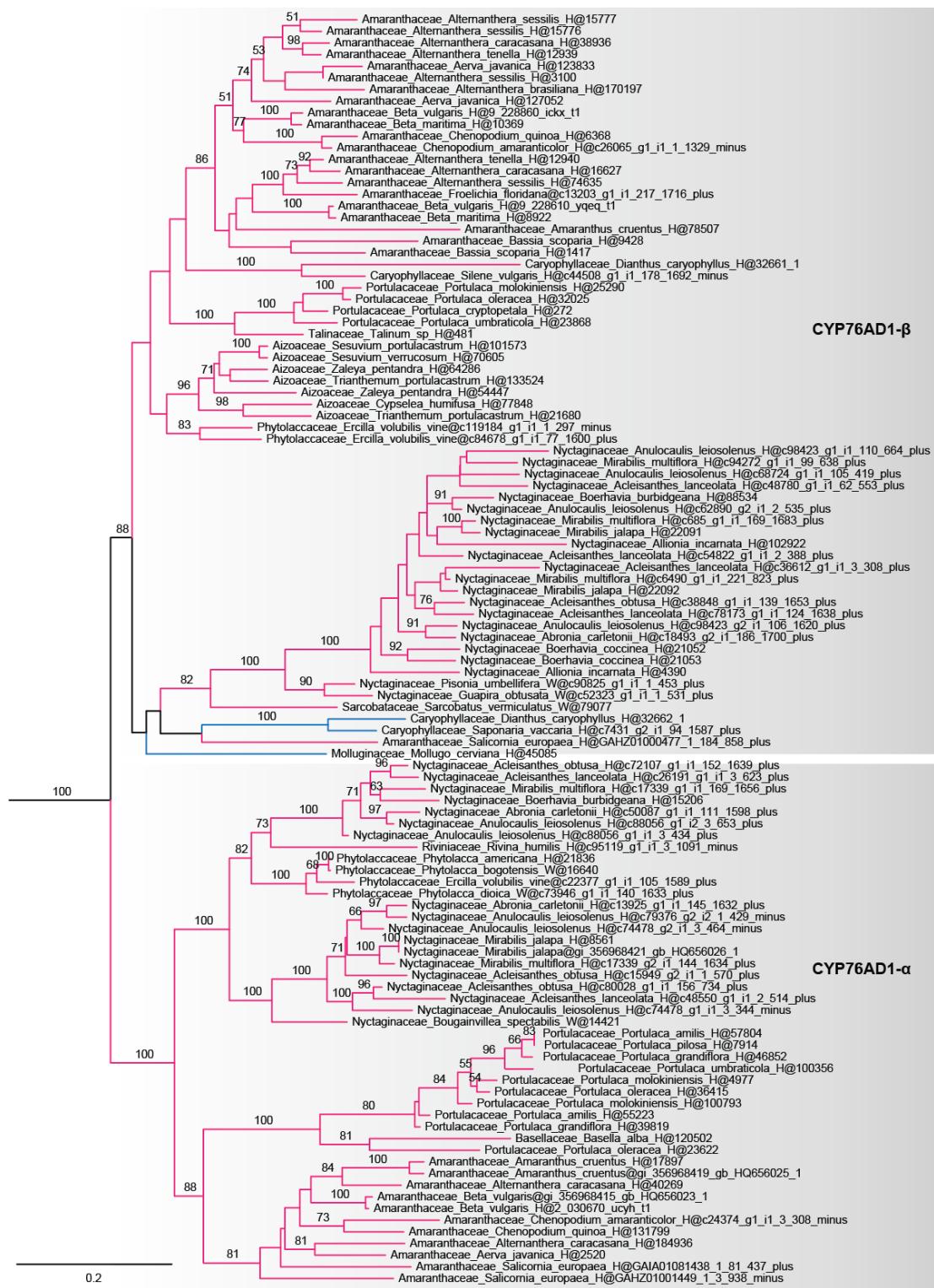
**Table S3** List of 4,5-dioxygenase (DODA) gene accessions and corresponding taxa (separate Excel file)

**Table S4** List of CYP76AD1 gene accessions and corresponding taxa (separate Excel file)

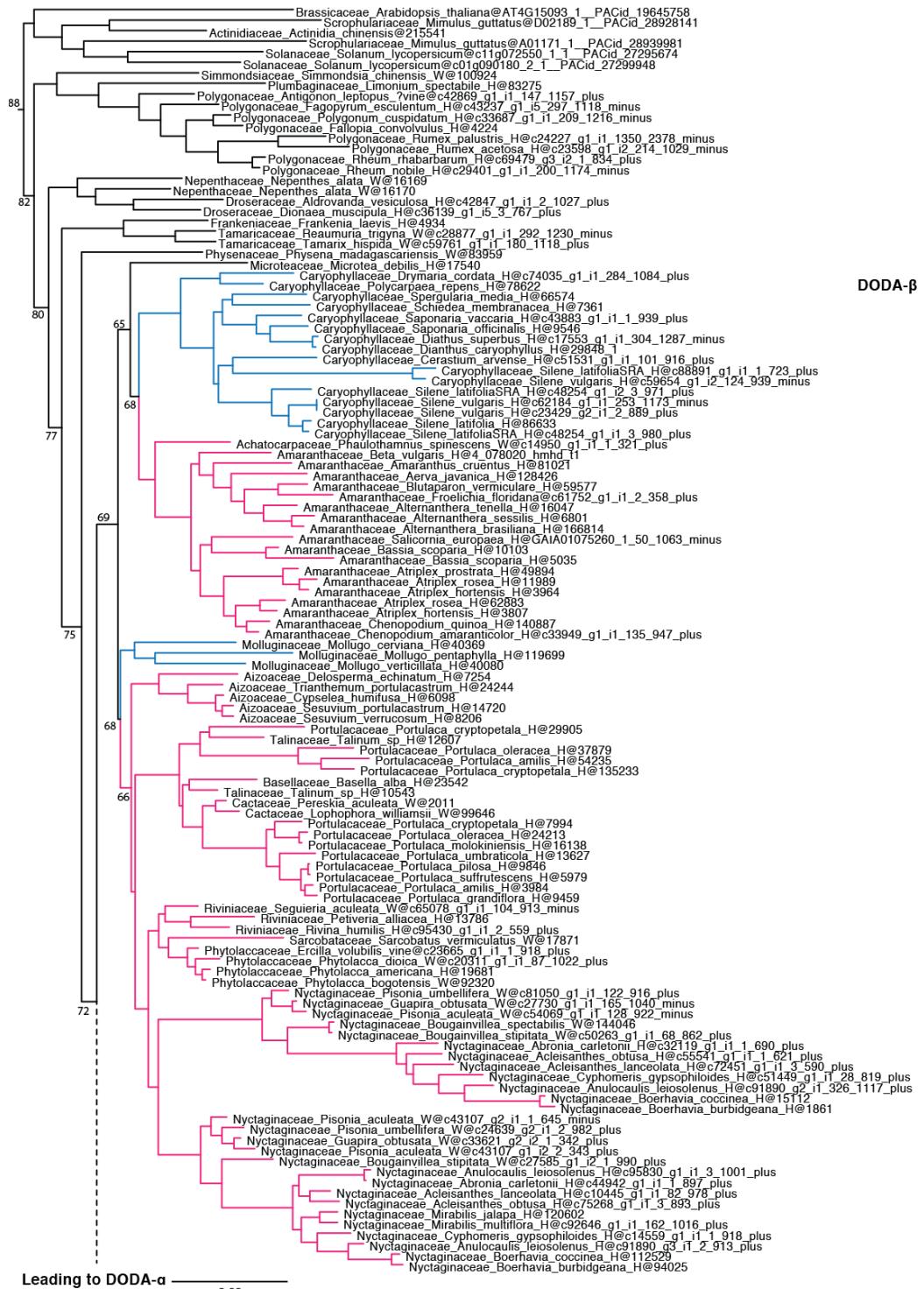
**Leading to CYP76AD1- $\alpha$ /CYP76AD1- $\beta$**



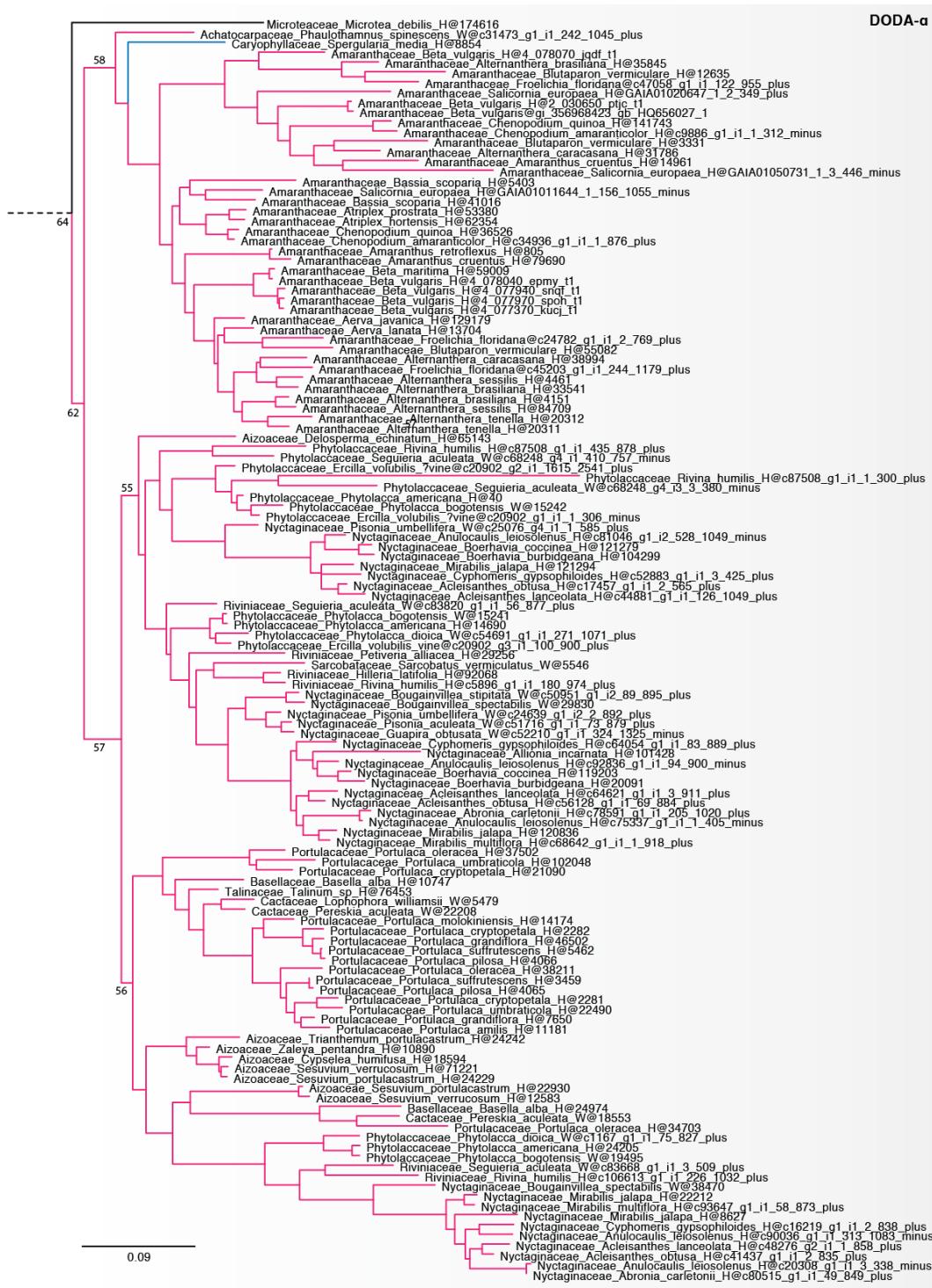
**Fig. S1** Taxon-labeled phylogeny of the CYP76AD1 lineages (CYP76AD1- $\gamma$ ).



**Fig. S2** Taxon-labeled phylogeny of the CYP76AD1 lineages (CYP76AD1- $\alpha$ , CYP76AD1- $\beta$ ).



**Fig. S3** Taxon-labeled phylogeny of the 4,5-dioxygenase (DODA) lineages (DODA- $\beta$ ).



**Fig. S4** Taxon-labeled phylogeny of the 4,5-dioxygenase (DODA) lineage (DODA- $\alpha$ ).