

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

Article title: Latent developmental and evolutionary shapes embedded within the grapevine leaf

Authors: Daniel H. Chitwood, Laura L. Klein, Regan O’Hanlon, Steven Chacko, Matthew Greg, Cassandra Kitchen, Allison J. Miller and Jason P. Londo

Article acceptance date: 13 October 2015

The following Supporting Information is available for this article:

**Fig. S1** Numbers of species, vines, leaves, and shoot positions sampled.

**Fig. S2** Developmental stage and leaf number are partially confounded.

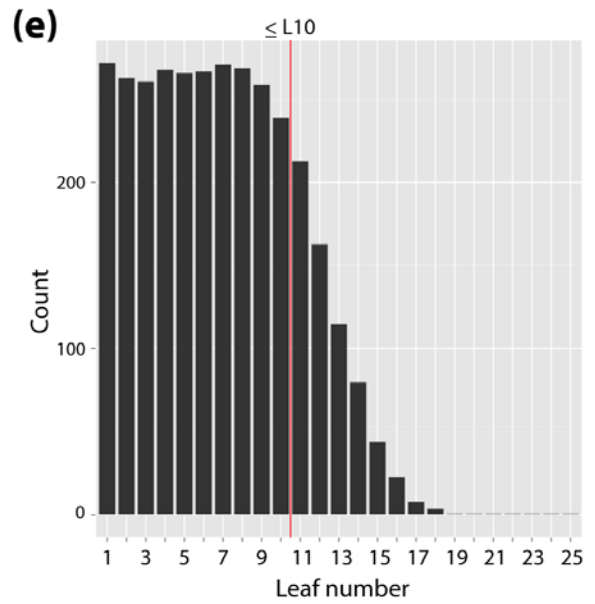
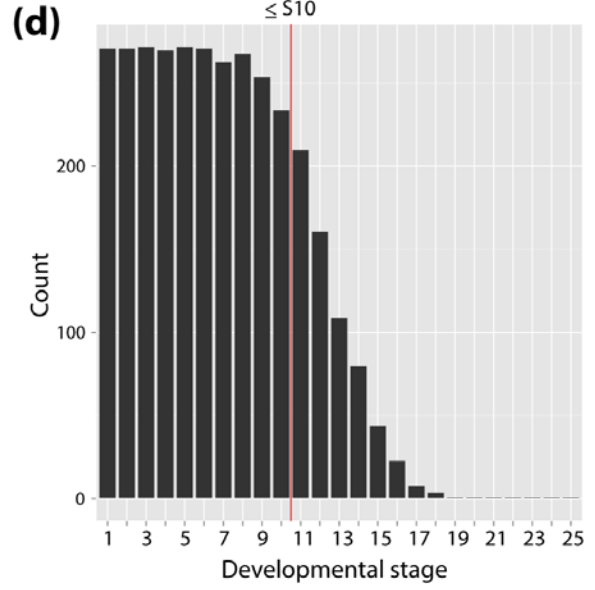
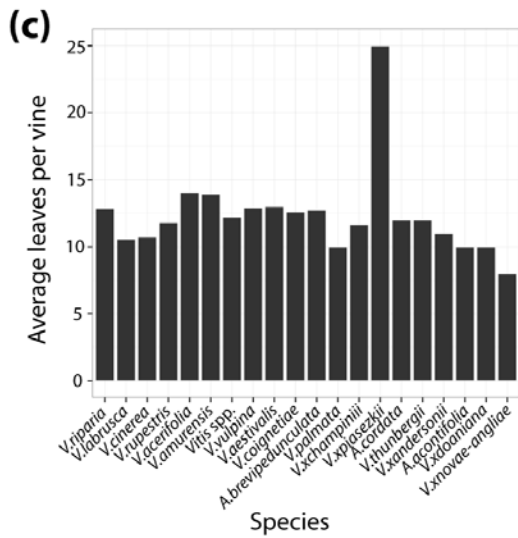
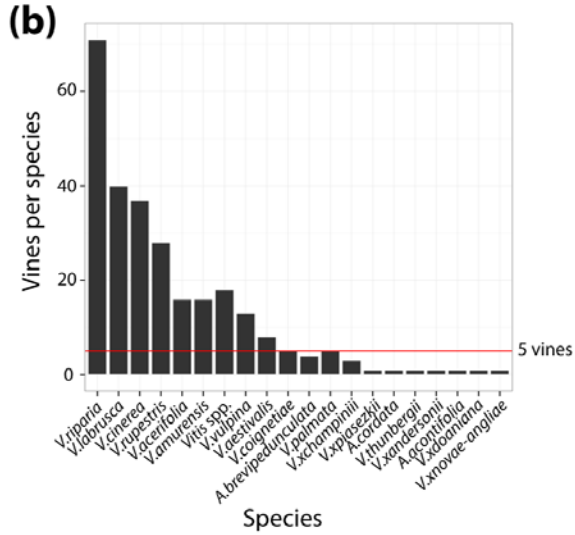
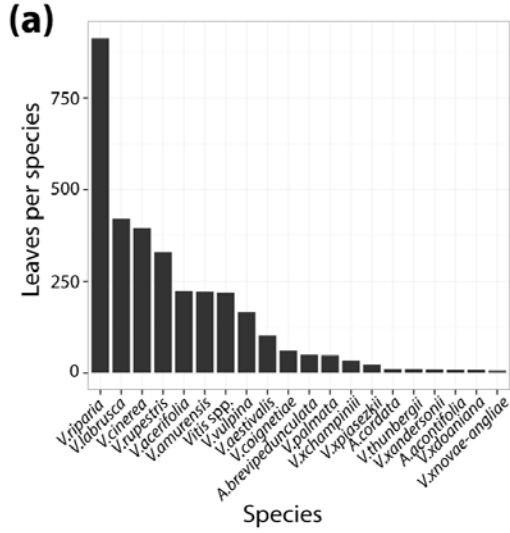
**Fig. S3** Projection of species with  $\geq 5$  vines onto the morphospace.

**Fig. S4** Comparison of leaf shape changes due to developmental stage ( $S_n$ ) and leaf number ( $L_n$ ) for different species.

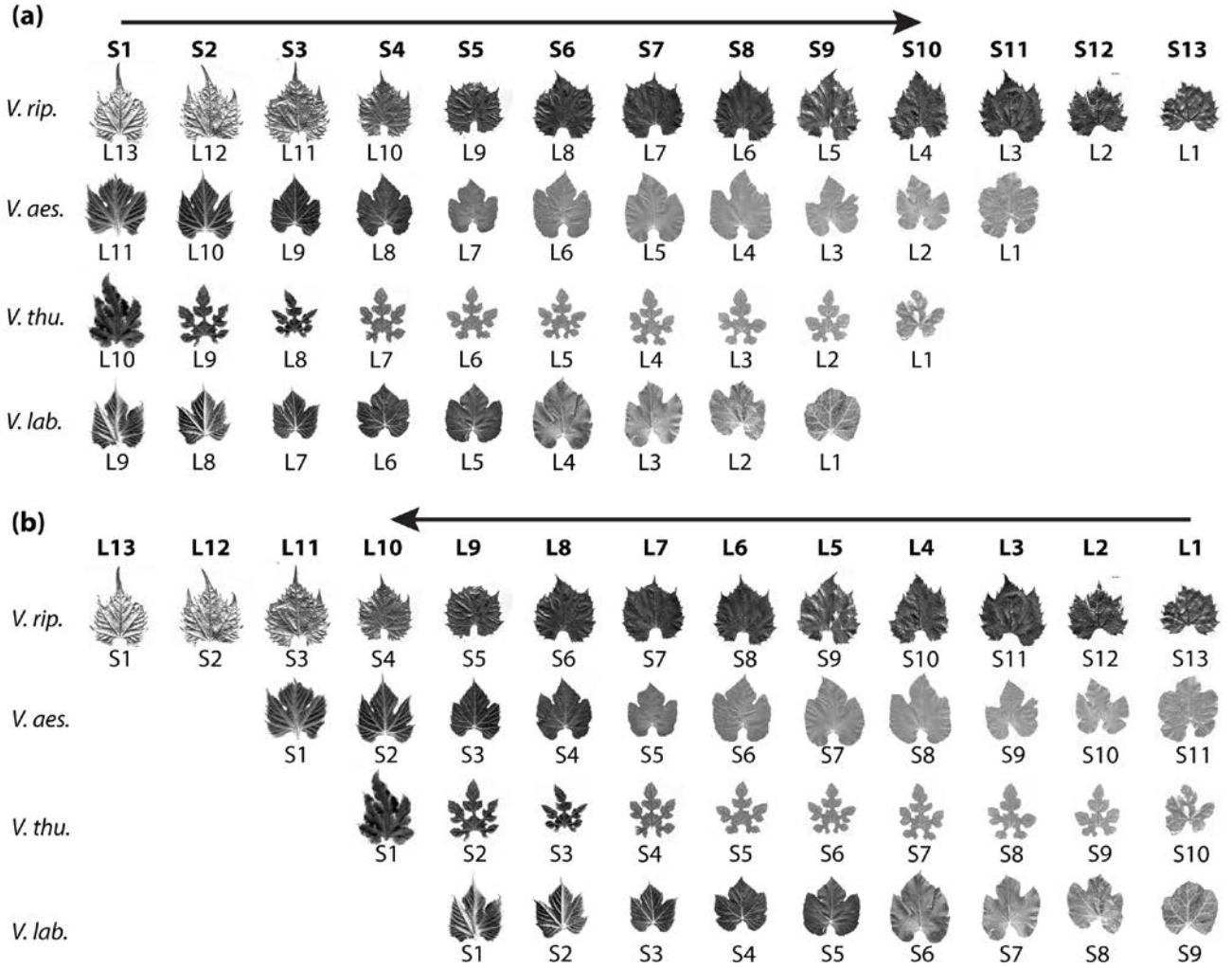
**Table S1** Procrustes-aligned coordinates (separate Excel file)

**Table S2** Correlation between traits (separate Excel file)

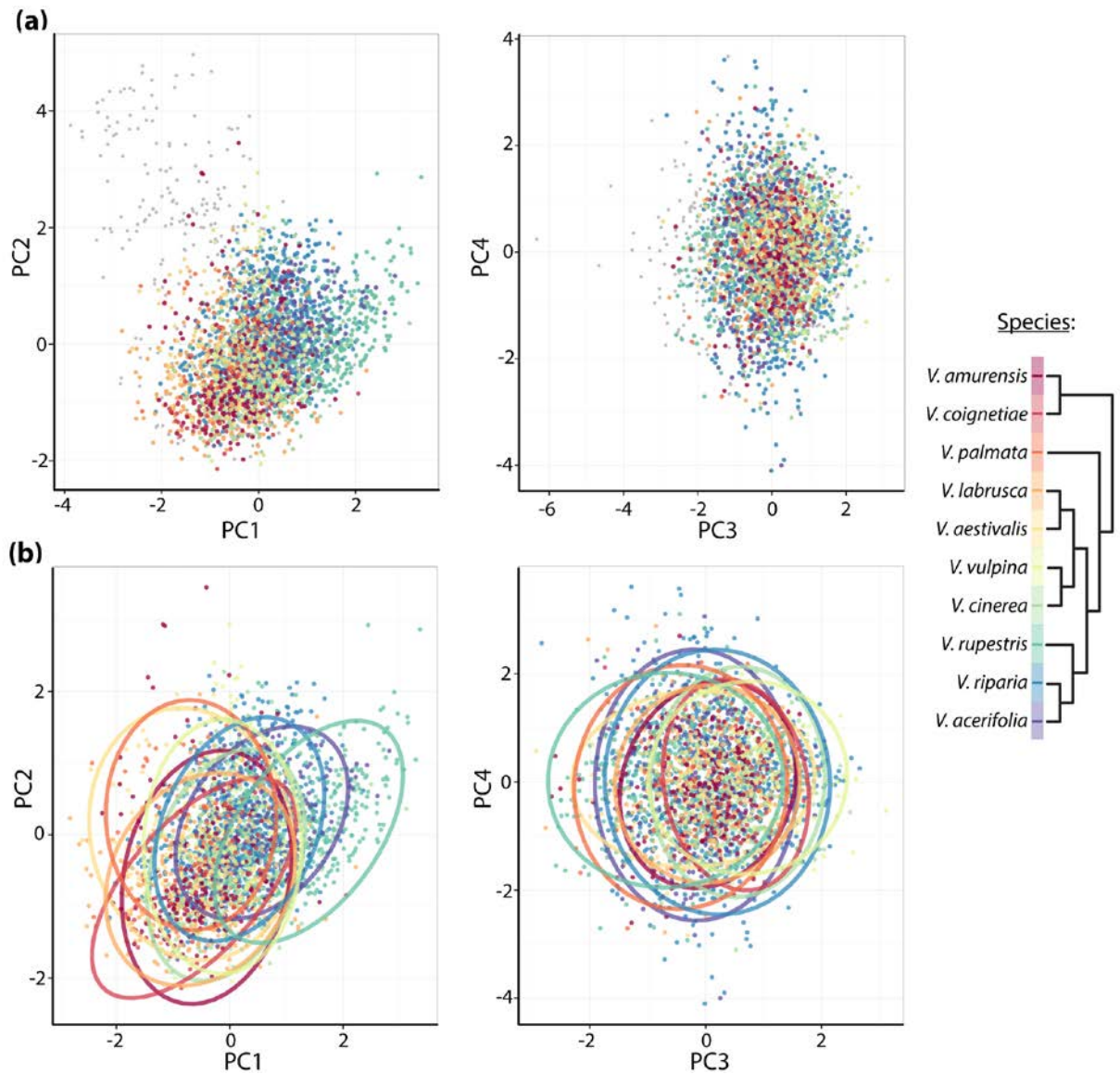
**Fig. S1** Numbers of species, vines, leaves, and shoot positions sampled. (a) Leaves per species, arranged in descending order. (b) Vines sampled per species. For some analyses in the paper, only those *Vitis* species with >5 vines were analyzed (indicated by red line). (c) The average number of leaves sampled per vine for each species. (d) Number of leaves represented at each developmental stage. For some analyses, only developmental stage  $\leq S10$  were analyzed (indicated by red line). (e) Number of leaves represented at each leaf number position. For some analyses, only leaf numbers  $\leq L10$  were analyzed (indicated by red line).



**Fig. S2** Developmental stage and leaf number are partially confounded. (a) Leaves (shown in Fig. 1) from different species aligned by developmental stage ( $S_n$ ), beginning at the shoot tip. Because of variability in shoot length, the developmental stage of each node corresponds to different leaf numbers between shoots. Developmental stage is similar to plastochron number ( $P_n$ ), a classic indexing method used in developmental studies of leaves. (b) Similar to (a) except that leaves are aligned by leaf number ( $L_n$ ), beginning at the shoot base. Because of variability in shoot length, the leaf number of each node corresponds to different developmental stages between shoots. Because developmental stage and leaf number are oppositely numbered, beginning with shoot tip and base, respectively, their effects on leaf morphology are generally opposite of each other. However, because of variability in shoot length, specific effects for each can be discerned to a limited degree. *V. rip.*, *V. riparia*; *V. aes.*, *V. aestivalis*; *V. thu.*, *V. thunbergii*; *V. lab.*, *V. labrusca*.



**Fig. S3** Projection of species with  $\geq 5$  vines onto the morphospace. (a) Species with  $\geq 5$  vines (indicated by color) projected onto the morphospace. Leaves from other species are indicated with gray points. Visualized data includes all shoot positions. (b) Same data as in (a) with 95% confidence ellipses for the highlighted species, indicated by color.



**Fig. S4** Comparison of leaf shape changes due to developmental stage (Sn) and leaf number (Ln) for different species. Each graph compares changes in a principal component (PC1, PC2, or PC3) against developmental stage (Sn, orange) and leaf number (Ln, blue) along the x-axis ('Shoot position') for each *Vitis* spp. for which  $\geq 5$  vines were sampled as a locally weighted scatterplot smoothing (LOWESS) curve.

- Developmental stage (Sn)
- Leaf number (Ln)

