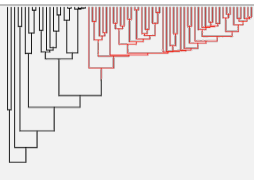
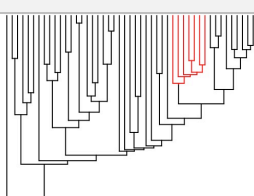
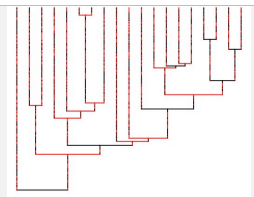
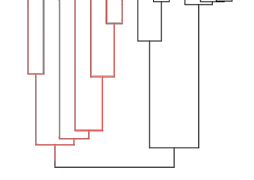


**Supplemental Table 11.** OUwie weighted AICc scores for 20% sampling effort of genome wide coverage. Tests conducted are specified below as selection regime ~ modelled phenotype. BM1; single-rate Brownian motion, BMS; Brownian motion with different rate parameters for each state on a tree, OU1; Ornstein-Uhlenbeck model with a single optimum for all species, OUM; Ornstein-Uhlenbeck model with different state means and a single  $\alpha$  and  $\sigma^2$  acting all selective regimes, OUMV; Ornstein-Uhlenbeck model that assumes different state means as well as multiple  $\sigma^2$ , OUMA; Ornstein-Uhlenbeck model that assumes different state means as well as multiple  $\alpha$ , OUMVA; Ornstein-Uhlenbeck model that assumes different state means as well as multiple  $\alpha$  and  $\sigma^2$  per selective regime. The best models, as determined with AICc, are bolded and italicized. Asterisk (\*) indicated analyses which returned the warning, “You might not have enough data to fit this model well.” Analyses with plus (+) indicate those that are different from analyses using 500,000 reads for TE estimation.

Simmap	Test Conducted	BM1	BMS	OU1	OUM	OUMV	OUMA	OUMVA
	AtAlpha/All ~ Total TE	0.0128139	0.02218767	0.27521355	0.08918321	0.02781495	0.0361695	<b><i>0.5366172</i></b> * +
	AtAlpha/All ~ Gypsy	0.00208393	0.00289653	<b><i>0.5560288</i></b>	0.21590307	0.06452161	0.06527786	0.0932882 *
	AtAlpha/All ~ Copia	0.00429655	0.00183176	<b><i>0.5006112</i></b>	0.21821271	0.08949653	0.07501245	0.11053881 *
	Brassicaceae/Brassicaceae ~ Total TE	0.00482202	0.00149545	<b><i>0.5847513</i></b>	0.25995552 *	0.06677833 *	0.06677347 *	0.01542391 *
	Brassicaceae/Brassicaceae ~ Gypsy	0.00275847	0.00683213	<b><i>0.2690823</i></b>	0.25152818 *	0.21180762 *	0.2090873 *	0.04890403 *
	Brassicaceae/Brassicaceae ~ Copia	0.00923169	0.00299945	<b><i>0.6343302</i></b>	0.20416896 *	0.06491571 *	0.05980559 *	0.02454847 *
	Neo/BMAP ~ Total RE	0.13118789 *	0.04124829 *	<b><i>0.7040983</i></b> * +	0.08764229 *	0.01543998 *	0.01989543 *	0.00048786 *
	Neo/BMAP ~ Gypsy	0.1344883 *	0.02485949 *	<b><i>0.7022896</i></b> * +	0.11875475 *	0.00915509 *	0.0101874 *	0.00026543 *
	Neo/BMAP ~ Copia	0.03936127 *	0.00922431 *	<b><i>0.8219309</i></b> *	0.10515527 *	0.0139412 *	0.01006545 *	0.00032163 *
	ThAlpha/Cleomaceae ~ Total RE	0.20692274 *	<b><i>0.6870449</i></b> * +	0.03308268 *	0.00645791 *	0.00429031 *	0.05947943 *	0.002722 *
	ThAlpha/Cleomaceae ~ Gypsy	<b><i>0.7275436</i></b> * +	0.13426329 *	0.11631944 *	0.01975233 *	0.00111915 *	0.00098643 *	0.00001577 *
	ThAlpha/Cleomaceae ~ Copia	<b><i>0.6390425</i></b> * +	0.23818191 *	0.10308684 *	0.0151368 *	0.00153757 *	0.00297874 *	0.00003566 *