

**Supplemental Table S8.** Linear regression results for each dataset. Asterisks (\*) next to Coefficient P-value indicate a significant relationship between genome size and TE content using  $\alpha = 0.1$ . However, we note that in many cases, even when significant relationships are determined, the data are not well fit to the model (low  $r^2$  value). PIC=phylogenetically independent contrasts.

Sampling	TE category	Dataset	p-value with PIC	$r^2$ with PIC	p-value w/o PIC	$r^2$ w/o PIC
500K reads	Total TE	Brassicales	0.698	0.002532	0.1994	0.02686
		Brassicaceae	0.577	0.008472	0.9631	0.0000572
		Capparaceae	0.586	0.367	0.745	0.06504
		Cleomaceae	0.0516*	0.3023	0.00658*	0.4727
	<i>Copia</i>	Brassicales	0.0131*	0.09823	0.0031*	0.1346
		Brassicaceae	0.0277*	0.1243	0.05311*	0.09491
		Capparaceae	0.655	0.2658	0.959	0.001709
		Cleomaceae	0.0874*	0.2424	0.024*	0.3569
	<i>Gypsy</i>	Brassicales	0.116	0.04069	0.467	0.008702
		Brassicaceae	0.142	0.05747	0.158	0.05171
		Capparaceae	0.0478*	0.9944	0.0372*	0.927
		Cleomaceae	0.854	0.00322	0.0151*	0.4004
20% genome coverage	Total TE	Brassicales	0.0000000042*	0.502	0.000000908*	0.3796
		Brassicaceae	0.0000128*	0.4871	0.0000246*	0.4526
		Capparaceae	0.04*	0.996	0.0177*	0.9649
		Cleomaceae	0.00422*	0.616	0.00207*	0.6294
	<i>Copia</i>	Brassicales	0.000053*	0.281	0.000461*	0.2156
		Brassicaceae	0.000256*	0.3741	0.00756*	0.2147
		Capparaceae	0.346	0.7327	0.516	0.2345
		Cleomaceae	0.0156*	0.4959	0.033*	0.3793
	<i>Gypsy</i>	Brassicales	0.0412*	0.08074	0.03089*	0.08812
		Brassicaceae	0.128	0.07794	0.325	0.03229
		Capparaceae	0.0796*	0.9844	0.0394*	0.9227
		Cleomaceae	0.0945*	0.2795	0.0031*	0.5998
500K reads with outliers	Total TE	Brassicales	0.00211*	0.1343	0.00212*	0.1324
		Brassicaceae	0.00319*	0.185	0.000324*	0.257
		Capparaceae	0.586	0.367	0.745	0.06504
		Cleomaceae	0.0516*	0.3023	0.00658*	0.4727
	<i>Copia</i>	Brassicales	0.000271*	0.1832	0.000178*	0.1905
		Brassicaceae	0.000184*	0.2803	0.000182*	0.2752
		Capparaceae	0.655	0.2658	0.959	0.001709
		Cleomaceae	0.0874*	0.2424	0.0241*	0.3569
	<i>Gypsy</i>	Brassicales	0.45	0.008673	0.1383	0.0325
		Brassicaceae	0.341	0.02114	0.2898	0.02543
		Capparaceae	0.0478*	0.9944	0.0372*	0.927
		Cleomaceae	0.854	0.00322	0.0151*	0.4004