

Table S1. Variance components inter-trait correlations: deciduous morphology.

Trait ^a	N/Cov ^b	Genetic			Environmental		Phenotypic
		ρ_G^c	$P(\rho_G=0)^d$	$P(\rho_G =1)^d$	ρ_E^c	$P(\rho_E=0)^d$	ρ_P^f
m ¹ meta ^e							
m ² meta	280/s	0.080±0.122	0.515	<0.001	-0.072±0.139	0.605	0.031
m ¹ hypo	252	0.384±0.133*	0.005	<0.001	-0.113±0.123	0.262	0.186
m ² hypo	281	0.041±0.116	0.726	<0.001	0.027±0.142	0.851	0.037
m ² c5	278/s	-0.030±0.141	0.832	<0.001	-0.027±0.138	0.842	-0.029
m ² ctrait	279	0.056±0.106	0.594	<0.001	-0.204±0.136	0.148	<0.001
m ² para	281	-0.036±0.125	0.777	<0.001	-0.150±0.132	0.267	-0.074
m ₂ afov	276	0.315±0.161	0.060	0.001	-0.092±0.134	0.496	0.129
m ₁ cno	261/s	0.033±0.124	0.788	<0.001	-0.068±0.133	0.609	0.001
m ₂ dwrink	274	-0.001±0.118	0.996	<0.001	0.051±0.138	0.714	0.013
m ₁ c5	260/s	0.116±0.117	0.326	<0.001	-0.029±0.131	0.822	0.071
m ₂ c5	284/a, a*s	-0.047±0.201	0.814	0.009	0.081±0.133	0.545	0.019
m ₂ c7	284	-0.106±0.111	0.339	<0.001	0.021±0.134	0.874	-0.072
m ₂ dtcrest	276	0.224±0.113	0.055	<0.001	0.009±0.139	0.949	0.156
m ² meta							
m ¹ hypo	280/s	0.136±0.140	0.324	<0.001	-0.007±0.126	0.579	0.053
m ² hypo	279/s	0.134±0.108	0.218	<0.001	-0.059±0.121	0.628	0.075
m ² c5	279/s	-0.287±0.139*	0.045	<0.001	-0.050±0.133	0.708	-0.190
m ² ctrait	279/s	0.064±0.101	0.527	<0.001	-0.241±0.126	0.069	-0.004
m ² para	281/s	-0.046±0.118	0.699	<0.001	0.087±0.121	0.475	0.001
m ₂ afov	285/a, s	0.193±0.175	0.268	<0.001	-0.096±0.137	0.486	0.055
m ₁ cno	281/s	0.061±0.129	0.641	<0.001	0.195±0.134	0.156	0.106
m ₂ dwrink	284/s	-0.041±0.121	0.732	<0.001	0.156±0.143	0.285	0.014
m ₁ c5	281/a, s	0.114±0.121	0.350	<0.001	0.060±0.132	0.649	0.096
m ₂ c5	286/all	0.359±0.203	0.066	0.021	-0.052±0.125	0.676	0.127
m ₂ c7	286/s	-0.124±0.106	0.245	<0.001	0.059±0.124	0.636	-0.073
m ₂ dtcrest	285/s	0.010±0.123	0.935	<0.001	-0.062±0.141	0.662	-0.014

m ¹ hypo							
m ² hypo	281	0.490±0.123*	<0.001	<0.001	-0.075±0.126	0.556	0.272
m ² c5	279/s	0.019±0.159	0.904	<0.001	0.161±0.127	0.213	0.084
m ² ctrait	280	0.346±0.111*	0.004	<0.042	0.127±0.134	0.347	0.267
m ² para	281	-0.063±0.144	0.663	<0.001	0.160±0.125	0.210	0.030
m2 afov	276/a	0.011±0.191	0.956	<0.001	-0.064±0.129	0.619	-0.029
m1 cno	262/s	0.321±0.149*	0.031	<0.001	-0.140±0.124	0.268	0.135
m2 dwrink	275	0.324±0.126*	0.013	<0.001	-0.086±0.134	0.522	0.181
m1 c5	261/s	0.459±0.127*	0.001	<0.001	-0.135±0.121	0.272	0.231
m2 c5	284/a, a*s	-0.108±0.219	0.621	0.008	0.028±0.124	0.823	-0.026
m2 c7	284	0.147±0.123	0.240	<0.001	0.031±0.127	0.807	0.105
m2 dtcrest	277	0.309±0.134*	0.020	<0.001	-0.186±0.130	0.165	0.109
m ² hypo							
m ² c5	279/s	0.380±0.116*	0.002	<0.001	-0.249±0.121	0.053	0.165
m ² ctrait	280	0.306±0.092*	0.001	<0.065	-0.108±0.129	0.407	0.219
m ² para	281	0.278±0.108*	0.012	<0.001	-0.097±0.120	0.425	0.155
m2 afov	286/a	-0.323±0.157*	0.033	0.001	0.328±0.121	0.014	-0.044
m1 cno	282/s	0.258±0.137	0.055	<0.001	-0.220±0.139	0.129	0.104
m2 dwrink	285	0.158±0.108	0.145	<0.001	-0.029±0.141	0.837	0.111
m1 c5	282/s	0.288±0.117*	0.017	<0.001	-0.001±0.139	0.992	0.200
m2 c5	287/a, a*s	0.344±0.174*	0.050	0.009	-0.062±0.130	0.639	0.132
m2 c7	287	0.159±0.100	0.115	<0.001	-0.120±0.124	0.341	0.090
m2 dtcrest	286	-0.023±0.112	0.838	<0.001	-0.027±0.132	0.839	-0.024
m ² c5							
m ² ctrait	279/s	0.251±0.133*	0.050	<0.001	-0.111±0.150	0.449	0.137
m ² para	281/s	0.118±0.148	0.422	<0.001	0.080±0.126	0.524	0.102
m2 afov	285/a, s	0.326±0.207	0.116	0.003	-0.146±0.139	0.304	0.075
m1 cno	277/s	-0.033±0.149	0.827	<0.001	0.095±0.142	0.508	0.017
m2 dwrink	283/s	0.129±0.142	0.368	<0.001	0.241±0.163	0.154	0.160
m1 c5	277/s	-0.021±0.138	0.878	<0.001	0.097±0.134	0.475	0.024
m2 c5	287/all	0.056±0.232	0.808	0.006	0.003±0.130	0.980	0.024

m2 c7	287/s	0.054±0.128	0.678	<0.001	0.068±0.135	0.616	0.057
m2 dtcrest	285/s	0.162±0.139	0.249	<0.001	0.020±0.166	0.903	0.106
m ² ctrait							
m ² para	281	0.378±0.107*	0.001	<0.001	-0.202±0.122	0.111	0.221
m2 afov	285/a	-0.060±0.144	0.675	<0.001	-0.001±0.145	0.997	-0.035
m1 cno	279/s	-0.060±0.114	0.599	<0.001	0.166±0.141	0.248	-0.008
m2 dwrink	284	-0.016±0.100	0.870	<0.001	-0.074±0.149	0.620	-0.027
m1 c5	279/s	0.072±0.105	0.497	<0.001	0.101±0.134	0.454	0.077
m2 c5	286/a, a*s	-0.099±0.170	0.556	0.007	0.057±0.150	0.706	-0.031
m2 c7	286	0.075±0.093	0.421	<0.001	0.196±0.132	0.153	0.096
m2 dtcrest	285	-0.020±0.104	0.849	<0.001	0.232±0.153	0.149	0.034
m ² para							
m2 afov	286/a	0.005±0.171	0.976	<0.001	0.127±0.123	0.313	0.064
m1 cno	282/s	-0.109±0.132	0.415	<0.001	0.126±0.133	0.351	-0.028
m2 dwrink	286	0.348±0.112*	0.003	<0.001	-0.203±0.124	0.115	0.183
m1 c5	283/s	-0.025±0.127	0.847	<0.001	0.050±0.130	0.699	0.001
m2 c5	288/a, a*s	-0.012±0.198	0.952	0.005	0.064±0.126	0.612	0.028
m2 c7	287	0.181±0.109	0.099	<0.001	0.013±0.122	0.912	0.129
m2 dtcrest	287	0.031±0.116	0.791	<0.001	-0.105±0.124	0.402	-0.016
m2 afov							
m1 cno	276/a, s	0.099±0.183	0.591	<0.001	-0.075±0.156	0.633	0.018
m2 dwrink	274/a	0.082±0.173	0.649	<0.001	0.373±0.121	0.005	0.189
m1 c5	275/a, s	0.127±0.169	0.455	<0.001	-0.048±0.146	0.743	0.045
m2 c5	284/a, a*s.	0.110±0.326	0.727	0.029	-0.138±0.122	0.276	-0.050
m2 c7	284/a	0.030±0.150	0.840	<0.001	0.109±0.129	0.403	0.057
m2 dtcrest	277/a	0.366±0.161*	0.019	0.003	-0.140±0.128	0.282	0.123
m1 cno							
m2 dwrink	272/s	0.244±0.133	0.059	<0.001	-0.368±0.132	0.014	0.067
m1 c5	240/s	0.940±0.041**	<0.001	0.078	0.624±0.081	<0.001	0.826
m2 c5	283/all	-0.167±0.213	0.451	0.005	0.007±0.160	0.967	-0.073
m2 c7	284/s	0.058±0.113	0.610	<0.001	0.157±0.130	0.240	0.084

m2 dtcrest	271/s	0.155±0.119	0.206	<0.003	0.244±0.138	0.091	0.184
m2 dwrink							
m1 c5	271/s	0.124±0.124	0.308	<0.001	-0.140±0.143	0.335	0.051
m2 c5	283/a, a*s	-0.001±0.199	0.994	0.006	-0.039±0.144	0.787	-0.016
m2 c7	284	0.321±0.099*	0.002	<0.001	-0.011±0.139	0.935	0.246
m2 dtcrest	268	0.082±0.115	0.472	<0.001	-0.181±0.131	0.178	0.010
m1 c5							
m2 c5	283/all	0.090±0.202	0.655	0.006	0.001±0.148	0.993	0.041
m2 c7	284/s	0.088±0.108	0.414	<0.001	0.106±0.126	0.401	0.093
m2 dtcrest	271/s	-0.041±0.118	0.731	<0.001	0.221±0.133	0.111	0.042
m2 c5							
m2 c7	285/a, a*s	0.246±0.169	0.141	0.006	-0.261±0.127	0.055	0.019
m2 dtcrest	283/a, a*s	-0.453±0.174*	0.009	0.016	0.150±0.124	0.238	-0.138
m2 c7							
m2 dtcrest	284	0.120±0.104	0.253	<0.001	0.009±0.126	0.941	0.090

^am=molar. Maxillary and mandibular traits indicated by superscript and subscript, respectively. All traits represented by their maximum antimeric expression score. For a list of morphological trait abbreviations, see Table 1. “e” superscript indicates a trait that was originally flagged for intra-observer error because the error range exceeded a single grade, but whose mean error does not exceed 0.300. Traits with mean error exceeding 0.300 were omitted from the correlation analyses. All models involving m1/m2 cusp 6 and all but one model involving m2 cusp number either failed to converge or yielded suspect results due to standard deviation ranges for parameter estimates and are excluded from the table. These traits are omitted from Figure 1 and all summary statistics. Results for these models can be found in the supplemental files of Paul (2017).

^bCovariates fixed in the genetic correlation models based on univariate model results (see Paul et al., 2020). “a”=age; “s”=sex; “a*s”=age/sex interaction; “all”=all covariates.

^cMaximum-likelihood estimate of genetic correlation. Cases of incomplete pleiotropy indicated by a single asterisk. Cases of complete pleiotropy indicated by two asterisks. Dashes are associated with incalculable parameter estimates.

^dProbability of hypothesis (as indicated in parentheses) given pedigree structure with values p<0.050 bolded. Dashes are associated with incalculable parameter estimates.

^eMaximum-likelihood estimate of environmental correlation. Dashes are associated with incalculable parameter estimates.

^fMaximum-likelihood estimate of derived phenotypic correlation. Dashes are associated with incalculable parameter estimates.