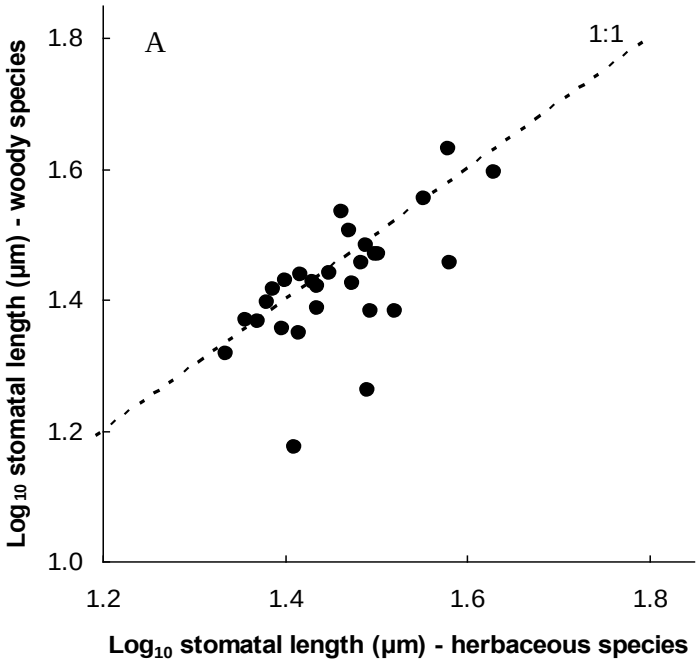
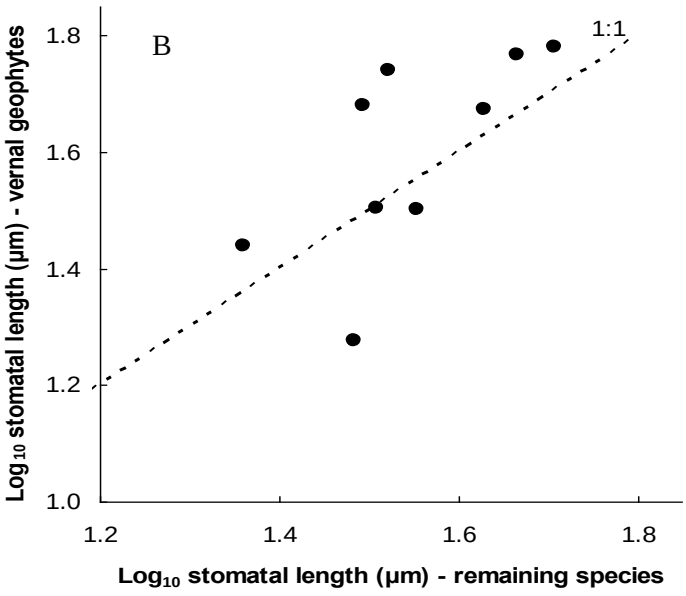
SUPPLEMENTARY DATA

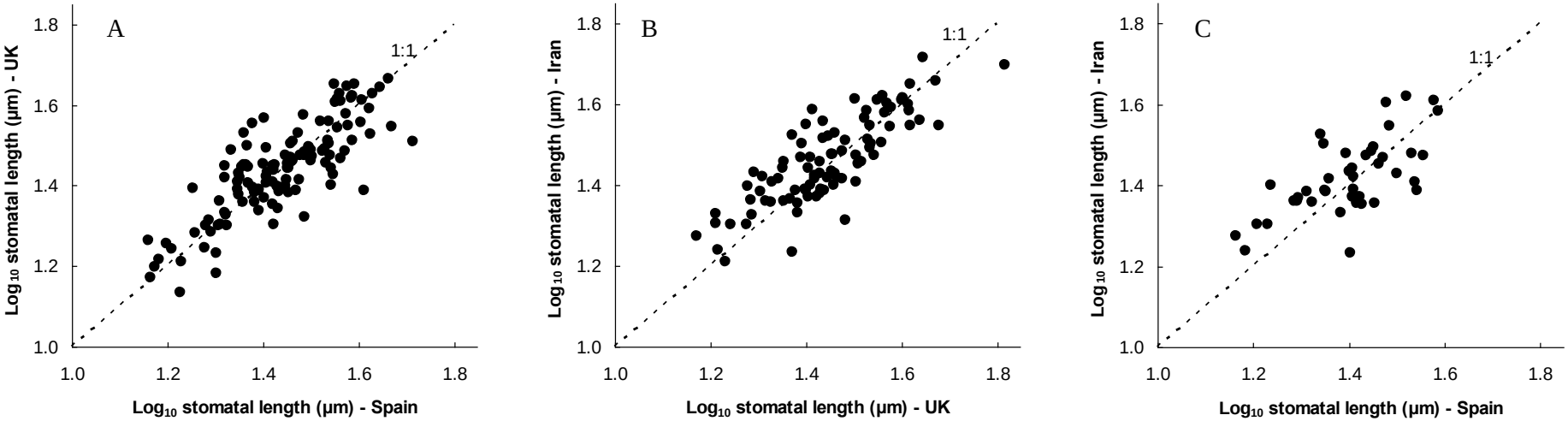
FIG. S1. Intrafamilial variation in stomatal length: comparing values from different life-history groupings.





Values used were average stomatal length for each intrafamilial life-history grouping and each graphical data point represents a family. To assess whether familial stomatal size was similarly expressed within different life-history groupings, values for Pearson correlation coefficient are presented. Similarly, to evaluate whether a particular life-history was associated with higher or lower values than expected, the results of a paired *t*-test are also given. (A) Herbaceous (excluding vernal geophytes) *v* woody species $r = 0.63$, $P < 0.001$, n = 28; paired $t = 2.4$, $P < 0.05$. (B) Vernal geophytes *v* other species $r = 0.68$, $P < 0.05$, n = 9; paired $t = 1.2$, ns.

FIG. S2. Intraspecific variation in stomatal length: comparing values from different countries. Similarity was assessed with Pearson correlation coefficient; *t*-test identified consistent geographical differences. (A) Spain *vs* UK: $r = 0.81$, $P < 0.001$, $n = 123$; paired $t = 0.3$, ns. (B) UK *vs* Iran: $r = 0.78$, $P < 0.001$, $n = 90$; paired $t = 1.7$, ns. (C) Spain *v* Iran : $r = 0.66$, $P < 0.001$, $n = 41$; paired $t = 1.40$, ns.



SUPPLEMENTARY DATA

TABLE S1. A regional comparison of stomatal length distribution within different life-history classes. Species groupings with the same letters are not statistically significantly different at $P < 0.05$ in Tukey (post-hoc) tests. Poorly represented life-histories ($n < 10$) are given in parentheses.

Life-history	England		Argentina		Iran		Spain	
	n	Log_{10} guard cell length ± s.d. (μm)	*n*	Log_{10} guard cell length ± s.d. (μm)	*n*	Log_{10} guard cell length ± s.d. (μm)	*n*	Log_{10} guard cell length ± s.d. (μm)
Woody polycarpic perennial	79	1.44 ± 0.11^{ab}	27	1.38 ± 0.09^{a}	62	1.42 ± 0.08^{a}	58	1.39 ± 0.13^{a}
Monocarpic perennial	50	1.45 ± 0.10^{ab}	1	1.57	22	1.41 ± 0.08^{a}	18	1.42 ± 0.09^{ab}
Annual	210	1.44 ± 0.11^{a}	6	1.47 ± 0.14	95	1.45 ± 0.11^{ab}	128	1.44 ± 0.11^{b}
Herbaceous polycarpic perennial	402	1.47 ± 0.11^{b}	20	1.39 ± 0.11^{a}	258	1.47 ± 0.1^{b}	70	1.46 ± 0.11^{b}
Vernal geophyte	35	1.70 ± 0.16	–		10	1.67 ± 0.12	4	1.54 ± 0.16
	$F_{4,771} = 41.6$, $P < 0.001$		$F_{3,50} = 2.1$, n.s.		$F_{4,442} = 14.6$, $P < 0.001$		$F_{4,273} = 4.1$, $P < 0.01$	

TABLE S2. Familial summary of stomatal length values. Families have been phylogenetically ordered as recommended by Haston *et al.* (2007, 2009).

	Log_{10}stomatal length (μm)					% with nuclear DNA values
Family	Mean ± sd	Min.	Max.	Range	n	
Nymphaeaceae	1.39 ± 0.03	1.37	1.42	0.05	2	100
Lauraceae	1.5	–	–	–	1	100
Acoraceae	1.29	–	–	–	1	100
Araceae	1.7	–	–	–	1	100
Alismataceae	1.65 ± 0.14	1.50	1.77	0.27	3	67
Butomaceae	1.73	–	–	–	1	100
Juncaginaceae	1.62	–	–	–	1	0
Potamogetonaceae	1.47 ± 0.02	1.45	1.48	0.03	2	50
Nartheciaceae	1.34	–	–	–	1	100
Dioscoreaceae	1.42	–	–	–	1	0
Liliaceae	1.94 ± 0.06	1.88	2.00	0.12	3	100
Orchidaceae	1.76 ± 0.06	1.64	1.88	0.23	20	5
Hypoxidaceae	1.59	–	–	–	1	0
Iridaceae	1.43 ± 0.11	1.28	1.52	0.24	4	0
Xanthorrhoeaceae	1.49	–	–	–	1	0
Amaryllidaceae	1.51 ± 0.08	1.32	1.60	0.28	10	60
Asparagaceae	1.62 ± 0.12	1.47	1.81	0.34	9	44
Typhaceae	1.3 ± 0.03	1.27	1.33	0.06	3	33
Juncaceae	1.51 ± 0.08	1.37	1.61	0.24	10	60
Cyperaceae	1.51 ± 0.1	1.29	1.70	0.41	44	9
Poaceae	1.5 ± 0.13	1.18	1.74	0.56	147	59
Papaveraceae	1.48 ± 0.08	1.36	1.68	0.32	22	32
Berberidaceae	1.53 ± 0.17	1.41	1.79	0.38	4	25
Ranunculaceae	1.64 ± 0.11	1.33	1.82	0.48	37	62
Buxaceae	1.53	–	–	–	1	100
Grossulariaceae	1.5 ± 0.05	1.47	1.53	0.06	2	0
Saxifragaceae	1.56 ± 0.08	1.47	1.74	0.27	7	14
Crassulaceae	1.52 ± 0.05	1.46	1.63	0.18	8	38
Vitaceae	1.32	–	–	–	1	100
Geraniaceae	1.41 ± 0.03	1.37	1.46	0.09	13	8
Lythraceae	1.33 ± 0.16	1.17	1.49	0.32	3	33
Onagraceae	1.35 ± 0.08	1.19	1.41	0.23	8	50
Zygophyllaceae	1.43 ± 0.08	1.34	1.50	0.16	4	25
Fabaceae	1.36 ± 0.09	1.10	1.55	0.46	119	39
Polygalaceae	1.5 ± 0.05	1.45	1.58	0.13	4	0
Rosaceae	1.42 ± 0.08	1.21	1.59	0.38	62	18
Elaeagnaceae	1.42	–	–	–	1	0

Family	Log_{10}stomatal length (μm)					% with nuclear DNA values
	Mean ± sd	Min.	Max.	Range	n	
Rhamnaceae	1.37 ± 0.06	1.30	1.45	0.15	6	17
Ulmaceae	1.51 ± 0.02	1.49	1.52	0.03	2	50
Cannabaceae	1.32 ± 0.04	1.26	1.36	0.11	5	40
Moraceae	1.18	–	–	–	1	100
Urticaceae	1.37 ± 0.06	1.33	1.44	0.12	5	40
Cucurbitaceae	1.51	–	–	–	1	0
Fagaceae	1.43 ± 0.04	1.35	1.50	0.15	11	64
Myricaceae	1.19	–	–	–	1	100
Juglandaceae	1.41	–	–	–	1	0
Betulaceae	1.45 ± 0.08	1.38	1.57	0.19	4	50
Celastraceae	1.53 ± 0.07	1.40	1.69	0.29	4	0
Oxalidaceae	1.38 ± 0.07	1.31	1.44	0.13	3	33
Euphorbiaceae	1.37 ± 0.08	1.21	1.51	0.30	13	8
Linaceae	1.46 ± 0.11	1.26	1.60	0.34	7	0
Hypericaceae	1.34 ± 0.09	1.21	1.46	0.25	6	33
Violaceae	1.53 ± 0.06	1.46	1.62	0.17	7	0
Salicaceae	1.28 ± 0.15	1.08	1.42	0.34	5	40
Resedaceae	1.59 ± 0.06	1.47	1.63	0.16	6	17
Brassicaceae	1.38 ± 0.07	1.22	1.60	0.37	69	23
Bursaraceae	1.49	–	–	–	1	0
Anacardiaceae	1.32 ± 0.13	1.11	1.47	0.36	6	17
Sapindaceae	1.34 ± 0.06	1.23	1.42	0.19	7	29
Simaroubaceae	1.46	–	–	–	1	0
Rutaceae	1.53	–	–	–	1	100
Malvaceae	1.43 ± 0.12	1.31	1.69	0.38	9	22
Thymelaeaceae	1.41 ± 0.11	1.31	1.52	0.21	3	0
Cistaceae	1.43 ± 0.09	1.23	1.59	0.35	11	18
Santalaceae	1.56 ± 0.02	1.55	1.57	0.02	2	0
Loranthaceae	1.54	–	–	–	1	100
Frankeniaceae	1.43 ± 0.02	1.42	1.44	0.02	2	0
Tamaricaceae	1.33	–	–	–	1	0
Plumbaginaceae	1.5 ± 0.08	1.42	1.56	0.14	3	33
Polygonaceae	1.5 ± 0.09	1.33	1.68	0.35	30	43
Droseraceae	1.61	–	–	–	1	0
Caryophyllaceae	1.51 ± 0.07	1.31	1.68	0.38	70	21
Amaranthaceae	1.43 ± 0.1	1.12	1.63	0.51	30	33
Portulacaceae	1.54 ± 0.11	1.33	1.62	0.29	6	50
Aizoaceae	1.48	–	–	–	1	0
Cornaceae	1.46 ± 0.06	1.41	1.50	0.09	2	100
Balsaminaceae	1.33 ± 0.03	1.31	1.35	0.04	2	50

Family	Log_{10}stomatal length (μm)					% with nuclear DNA values
	Mean ± sd	Min.	Max.	Range	n	
Polemoniaceae	1.56	–	–	–	1	0
Primulaceae	1.51 ± 0.06	1.38	1.62	0.24	14	21
Ericaceae	1.48 ± 0.06	1.39	1.59	0.19	10	0
Rubiaceae	1.55 ± 0.06	1.43	1.72	0.29	26	23
Gentianaceae	1.56 ± 0.05	1.50	1.61	0.11	6	33
Apocynaceae	1.43 ± 0.1	1.36	1.56	0.20	4	0
Boraginaceae	1.45 ± 0.09	1.30	1.63	0.33	28	4
Convolvulaceae	1.46 ± 0.06	1.36	1.53	0.17	8	25
Solanaceae	1.41 ± 0.07	1.33	1.55	0.22	9	56
Oleaceae	1.43 ± 0.04	1.37	1.49	0.12	5	60
Plantaginaceae	1.48 ± 0.08	1.38	1.66	0.28	36	72
Scrophulariaceae	1.44 ± 0.06	1.33	1.59	0.25	31	3
Lamiaceae	1.39 ± 0.05	1.29	1.50	0.21	73	12
Orobanchaceae	1.44 ± 0.05	1.39	1.53	0.15	8	25
Lentibulariaceae	1.57	–	–	–	1	0
Bignoniaceae	1.42	–	–	–	1	0
Verbenaceae	1.45	–	–	–	1	0
Aquifoliaceae	1.61	–	–	–	1	100
Campanulaceae	1.51 ± 0.06	1.41	1.61	0.20	9	0
Menyanthaceae	1.59	–	–	–	1	0
Asteraceae	1.47 ± 0.09	1.24	1.85	0.61	162	31
Adoxaceae	1.72 ± 0.07	1.66	1.77	0.10	2	100
Caprifoliaceae	1.49 ± 0.07	1.33	1.61	0.28	27	11
Araliaceae	1.47	–	–	–	1	100
Apiaceae	1.42 ± 0.09	1.21	1.66	0.45	67	21
All species	**1.46 ± 0.12**	**1.08**	**2.00**	**0.92**	**1442**	**31**