

Supplementary tables showing details of the statistical analysis

In the following analyses, "phylotype garden" refers to the phylotype of bacteria found on the nurses and the fungus garden, while "phylotype pupae" refers to the phylotype of bacteria found on the cuticle of workers in the colony from which experimental pupae were collected. Similarly "garden colony" refers to the original stock colony from which the subcolony in which the experimental pupae enclosed was derived, and "pupae colony", the original stock colony from which pupae were collected. Nested terms are shown with the terms within which they are nested in square brackets. Significant terms ($p < 0.05$) are shown with p-values marked in bold, followed by an explanation of the source of the significant difference. Note that for the analysis of behavioural data (Tables 3-6), table-wise Bonferroni correction was applied, such that $p < 0.0125$ was considered significant.

Table 1: ANOVA, Growth rate of bacterial cover

Source	<i>df</i> ₁	<i>df</i> ₂	<i>F</i>	<i>p</i>	notes
phylotype garden	1	94	0.0356	0.8507	
phylotype pupae	1	94	1.1672	0.2826	
phylotype garden × phylotype pupae	1	94	0.2049	0.6518	
garden colony [phylotype garden]	2	94	3.9313	0.0228	Workers hatching in gardens from Ae.160 have lower bacterial growth rates than workers hatching in gardens from Ae.331
pupae colony [phylotype pupae]	2	94	8.0015	0.0006	Workers from Ae. 150 have lower bacterial growth rates than workers from Ae.488
garden × pupae colony [phylotype garden,phylotype pu]	4	94	1.2089	0.312	
replicate [garden,pupae]	16	94	1.7251	0.0541	

Table 2: Ordinal logistic analysis of bacterial cover score 2 weeks after infection

Source	<i>df</i>	<i>L-R χ²</i>	<i>p</i>	notes
phylotype garden	1	0.071	0.7900	
phylotype pupae	1	4.504	0.0338	Workers with Ps2 have a higher final cover
phylotype garden × phylotype pupae	1	6.299	0.0121	Workers with Ps2 have a higher final cover in gardens with Ps2
garden colony [phylotype garden]	2	39.416	<0.0001	Workers in gardens from Ae.160 have lower final cover than workers in gardens from Ae.331
pupae colony [phylotype pupae]	2	10.407	0.0055	Workers from Ae.160 have lower final cover than workers from Ae.331
garden × pupae colony [phylotype garden,phylotype pu]	4	5.119	0.2753	
replicate [garden,pupae]	16	28.219	0.0133	

Table 3: Nested ANCOVA, PC1

Source	<i>df</i> ₁	<i>df</i> ₂	<i>F</i>	<i>p</i>
Time	2	66	0.3858	0.6814
phylotype garden	1	66	0.2581	0.6131
phylotype pupae	1	66	9.4042	0.0031
Time × phylotype garden	2	66	0.2796	0.7570
Time × phylotype pupae	2	66	1.6462	0.2006
phylotype garden × phylotype pupae	1	66	4.7385	0.0331
Time × phylotype garden × phylotype pupae	2	66	0.0426	0.9583
Median bacterial cover score	1	66	0.5660	0.4545
garden colony [phylotype garden]	2	66	3.9186	0.0247
pupae colony [phylotype pupae]	2	66	3.6302	0.0319
garden × pupae colony [phylotype garden,phylotype pu	4	66	2.2515	0.0729

Table 4: Nested ANCOVA, PC2

Source	<i>df</i> ₁	<i>df</i> ₂	<i>F</i>	<i>p</i>
Time	2	66	2.3238	0.1059
phylotype garden	1	66	0.7874	0.3781
phylotype pupae	1	66	1.2604	0.2656
Time × phylotype garden	2	66	0.5511	0.5790
Time × phylotype pupae	2	66	0.2037	0.8162
phylotype garden × phylotype pupae	1	66	8.2213	0.0056
Time × phylotype garden × phylotype pupae	2	66	2.7312	0.0725
Median bacterial cover score	1	66	7.8899	0.0065
garden colony [phylotype garden]	2	66	2.0147	0.1415
pupae colony [phylotype pupae]	2	66	0.1314	0.8771
garden × pupae colony [phylotype garden,phylotype pu	4	66	1.5345	0.2024

Table 5: Nested ANCOVA, PC3

Source	<i>df</i> ₁	<i>df</i> ₂	<i>F</i>	<i>p</i>
Time	2	66	0.8301	0.4405
phylotype garden	1	66	1.5110	0.2233
phylotype pupae	1	66	14.1206	0.0004
Workers from Ps2 colonies spend more time allo-grooming				
Time × phylotype garden	2	66	1.7703	0.1783
Time × phylotype pupae	2	66	0.6293	0.5361
phylotype garden × phylotype pupae	1	66	0.2675	0.6067
Time × phylotype garden × phylotype pupae	2	66	0.3091	0.7352
Median bacterial cover score	1	66	3.5449	0.0641
garden colony [phylotype garden]	2	66	1.4079	0.2519
pupae colony [phylotype pupae]	2	66	1.7607	0.1799
garden × pupae colony [phylotype garden,phylotype pu	4	66	3.4136	0.0134

Table 6: Nested ANCOVA, PC4

Source	<i>df</i> ₁	<i>df</i> ₂	<i>F</i>	<i>p</i>	
Time	2	66	7.6289	0.0010	Garden-weeding decreases over days
phylotype garden	1	66	0.1954	0.6599	
phylotype pupae	1	66	0.1113	0.7398	
Time × phylotype garden	2	66	0.2100	0.8111	
Time × phylotype pupae	2	66	0.0030	0.9970	
phylotype garden × phylotype pupae	1	66	3.9861	0.0500	
Time × phylotype garden × phylotype pupae	2	66	0.1182	0.8887	
Median bacterial cover score	1	66	0.5304	0.4690	
garden colony [phylotype garden]	2	66	2.3617	0.1022	
pupae colony [phylotype pupae]	2	66	2.4638	0.0929	
garden × pupae colony [phylotype garden,phylotype pu	4	66	3.4072	0.0136	

Table 7: Correlations matrix between the performance of 9 behaviours, excluding three subcolonies that suffered significant garden losses at the time of fungus garden infection experiment. Product-moment correlation coefficients are shown, with significant correlations ($p < 0.05$) shown in bold.

	Garden-grooming	Weeding	Immobile inside fungus garden	Allo-grooming	Carrying eggs/larvae/pupae	Tending eggs/larvae/pupae	Trophallaxis	Manuring
Self-grooming	-0.253	0.049	-0.560	-0.140	-0.157	0.079	-0.013	-0.136
Garden-grooming		-0.174	-0.312	-0.141	-0.088	-0.004	-0.178	-0.001
Weeding			-0.289	-0.265	0.032	0.130	-0.030	0.082
Immobile inside fungus garden				-0.080	-0.138	-0.335	-0.021	0.002
Allo-grooming					0.105	-0.305	0.091	0.071
Carrying eggs/larvae/pupae						0.001	-0.011	-0.003
Tending eggs/larvae/pupae							-0.020	0.013
Trophallaxis								-0.003

Table 8: Binomial Generalized Linear Model, Proportion of time spent outside the fungus garden

Source	<i>df</i>	<i>L-R χ²</i>	<i>p</i>	notes
Time	2	7.047	0.0289	Increase over days
phylotype garden	1	3.732	0.0526	
phylotype pupae	1	13.194	0.0003	Workers with Ps2 as native strain spend more time outside
Time × phylotype garden	2	0.264	0.8781	
Time × phylotype pupae	2	3.070	0.2137	
phylotype garden × phylotype pupae	1	7.044	0.0078	Workers with Ps2 as native strain spend less time outside in a Ps1 garden but more than ants with Ps1 as native strain
Time × phylotype garden × phylotype pupae	2	0.458	0.7964	
Median bacterial cover score	1	2.368	0.1228	
garden colony [phylotype garden]	2	13.690	0.0010	Caused by exclusion of colonies with garden-loss

pupae colony [phylotype pupae]	2	4.943	0.0832
garden × pupae colony [phylotype garden, phylotype pu	4	26.321	<.0001

Workers from Ae. 150 in garden from Ae. 160 spend more time outside; workers from Ae. 160 in garden from Ae. 150 spend less time outside

