



Supplement of

A stable ultrastructural pattern despite variable cell size in *Lithothamnion corallioides*

Valentina Alice Bracchi et al.

Correspondence to: Valentina Alice Bracchi (valentina.bracchi@unimib.it)

The copyright of individual parts of the supplement might differ from the article licence.

Supplement 1

Results of ANOVA tests performed to evaluate the differences in the long cell morphometry and wall thickness of *L. corallioides* collected in different sampling sites. Statistically significant p-values are given in bold. ANOVA test significance at $\alpha = 0.05$; Tukey's test significant at $p \leq \alpha$. Any data transformation is indicated on the right side of the table

One-way ANOVA test (Cell length)					
Long cells					
	Df	Sum sq.	Mean sq.	F value	Pr(>F)
SITE	4	0.230	0.057	68.590	5.05E-11
Residuals	19	0.016	0.001		
Shapiro-Wilk normality test				P=0.109	
Bartlett's K-squared				P=0.798	
Tukey's test					
Multiple comparisons of means					
SITE	Mean difference	95% confidence interval		P. adjusted	
	SITE	lower bound	upper bound		
Elba-Egadi	-0.025	-0.080	0.030	0.661	
Morlaix-Egadi	0.158	0.103	0.213	0.000	
Pontine-Egadi	-0.152	-0.211	-0.094	0.000	
Santa Caterina-Egadi	-0.044	-0.099	0.011	0.159	
Morlaix-Elba	0.183	0.128	0.238	0.000	
Pontine-Elba	-0.128	-0.186	-0.069	0.000	
Santa Caterina-Elba	-0.019	-0.074	0.036	0.833	
Pontine-Morlaix	-0.311	-0.369	-0.252	0.000	
Santa Caterina-Morlaix	-0.202	-0.257	-0.147	0.000	
Santa Caterina-Pontine	0.109	0.050	0.167	0.000	

One-way ANOVA test (Lumen length)					
Long cells					
	Df	Sum sq.	Mean sq.	F value	Pr(>F)
SITE	4	0.312	0.078	78.110	1.59E-11

Residuals	19	0.019	0.001	
Shapiro-Wilk normality test				P=0.097
Bartlett's K-squared				P=0.846
Tukey's test				
Multiple comparisons of means				
SITE	Mean difference	95% confidence interval		P. adjusted
	SITE	lower bound	upper bound	
Elba-Egadi	-0.010	-0.070	0.050	0.985
Morlaix-Egadi	0.181	0.121	0.241	0.000
Pontine-Egadi	-0.191	-0.255	-0.127	0.000
Santa Caterina-Egadi	-0.021	-0.081	0.039	0.831
Morlaix-Elba	0.191	0.131	0.251	0.000
Pontine-Elba	-0.181	-0.245	-0.117	0.000
Santa Caterina-Elba	-0.011	-0.071	0.049	0.982
Pontine-Morlaix	-0.372	-0.435	-0.308	0.000
Santa Caterina-Morlaix	-0.202	-0.262	-0.142	0.000
Santa Caterina-Pontine	0.170	0.106	0.234	0.000

One-way ANOVA test (Cell sw)					
Long cells					
	Df	Sum sq.	Mean sq.	F value	Pr(>F)
SITE	4	1.790	0.447	7.207	1.05E-03
Residuals	19	1.180	0.062		
Shapiro-Wilk normality test				P=0.362	
Bartlett's K-squared				P=0.068	
Tukey's test					
Multiple comparisons of means					
SITE	Mean difference	95% confidence interval		P. adjusted	
	SITE	lower bound	upper bound		

Elba-Egadi	0.347	-0.127	0.821	0.222
Morlaix-Egadi	-0.165	-0.639	0.309	0.830
Pontine-Egadi	0.487	-0.016	0.990	0.060
Santa Caterina-Egadi	0.517	0.043	0.991	0.028
Morlaix-Elba	-0.512	-0.986	-0.038	0.030
Pontine-Elba	0.140	-0.362	0.643	0.915
Santa Caterina-Elba	0.170	-0.304	0.644	0.814
Pontine-Morlaix	0.652	0.150	1.155	0.008
Santa Caterina-Morlaix	0.682	0.208	1.156	0.003
Santa Caterina-Pontine	0.030	-0.473	0.533	1.000

Results of ANOVA tests performed to evaluate the differences in the short cell morphometry and wall thickness of *L. corallioides* collected in different sampling sites. Statistically significant p-values are given in bold. ANOVA test significance at $\alpha = 0.05$; Tukey's test significant at $p \leq \alpha$. Any data transformation is indicated on the right side of the table.

One-way ANOVA test (Lumen length)					
Short cells					
	Df	Sum sq.	Mean sq.	F value	Pr(>F)
SITE	4	145.453	36.363	30.573	4.86E-08
Residuals	19	22.598	1.189		
Shapiro-Wilk normality test				P=0.122	
Bartlett's K-squared				P=0.118	
Tukey's test					
Multiple comparisons of means					
SITE	Mean difference	95% confidence interval		P. adjusted	
	SITE	lower bound	upper bound		
Elba-Egadi	3.122	1.048	5.196	0.002	
Morlaix-Egadi	3.907	1.833	5.982	0.000	
Pontine-Egadi	-3.281	-5.481	-1.081	0.002	
Santa Caterina-Egadi	0.313	-1.761	2.387	0.991	
Morlaix-Elba	0.785	-1.289	2.859	0.785	
Pontine-Elba	-6.404	-8.604	-4.203	0.000	
Santa Caterina-Elba	-2.809	-4.883	-0.735	0.005	
Pontine-Morlaix	-7.189	-9.389	-4.989	0.000	
Santa Caterina-Morlaix	-3.594	-5.668	-1.520	0.000	
Santa Caterina-Pontine	3.595	1.394	5.795	0.001	

Short cells					
	Df	Sum sq.	Mean sq.	F value	Pr(>F)
SITE	4	0.053	0.013	1.138	7.64E-02

Residuals	19	0.222	0.012
Shapiro-Wilk normality test			P=0.069
Bartlett's K-squared			P=0.589

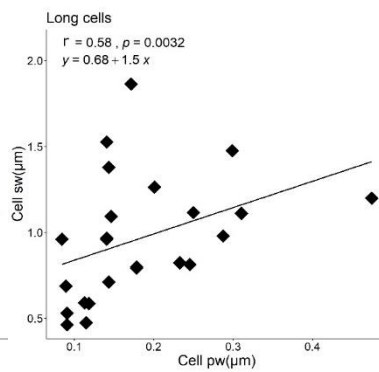
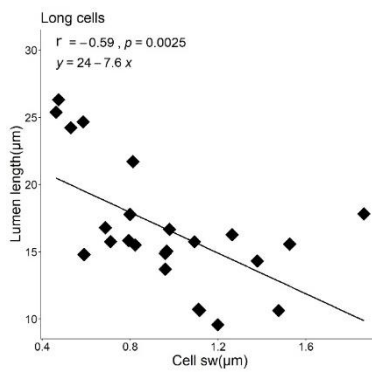
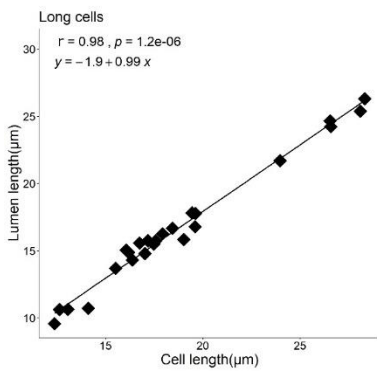
One-way ANOVA test (Cell pw)					
Short cells					
	Df	Sum sq.	Mean sq.	F value	Pr(>F)
SITE	4	1.312	0.328	10.090	1.82E-04
Residuals	18	0.585	0.033		
Shapiro-Wilk normality test				P=0.646	
Bartlett's K-squared				P=0.208	
Tukey's test					
Multiple comparisons of means					
SITE	Mean difference	95% confidence interval		P. adjusted	
	SITE	lower bound	upper bound		
Elba-Egadi	-0.211	-0.556	0.133	0.375	
Morlaix-Egadi	-0.245	-0.590	0.099	0.242	
Pontine-Egadi	0.346	-0.020	0.712	0.069	
Santa Caterina-Egadi	-0.373	-0.739	-0.008	0.044	
Morlaix-Elba	-0.034	-0.379	0.311	0.998	
Pontine-Elba	0.558	0.192	0.923	0.002	
Santa Caterina-Elba	-0.162	-0.528	0.204	0.672	
Pontine-Morlaix	0.592	0.226	0.957	0.001	
Santa Caterina-Morlaix	-0.128	-0.494	0.238	0.825	
Santa Caterina-Pontine	-0.719	-1.105	-0.334	0.000	

Results of Kruskal-Wallis test performed to evaluate the differences in the cell length of *L. corallioides* collected in different sampling sites. Test significance at $\alpha = 0.05$

Kruskal-Wallis test (Cell length)				
Short cells				
	Df	χ^2	P	
SITE	4	16.468	0.002	
Dunn's test				
Comparisons by SITE (Bonferroni)				
Z P. adjusted	Egadi	Elba	Morlaix	Pontine
Elba	0.537826 1			
Morlaix	-0.35855	-0.89638 1		
Pontine	3.063535 0.0109	2.556467 0.0529	3.40158 0.0033	
Santa Caterina	2.061669 0.1962	1.523842 0.6377	2.42022 0.0776	-1.11978 1

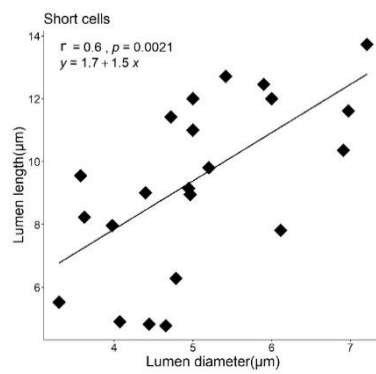
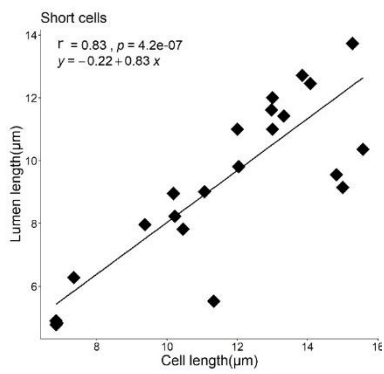
Statistical correlations were used to evaluate the relationship between each morphological and calcification parameter measured in the long cells of *L. corallioides*. Test significance at $p < 0.05$.

correlation	Long cells		p-value
Spearman's	cell.length	lumen.length	<0.05
Spearman's	cell.sw	lumen.length	<0.05
Spearman's	cell.length	cell.diameter	>0.05
Spearman's	cell.length	cell.sw	<0.05
Spearman's	cell.pw	cell.sw	<0.05
Spearman's	lumen.diameter	lumen.length	<0.05
Pearson's	lumen.diameter	cell.diameter	<0.05
Pearson's	cell.sw	lumen.diameter	<0.05
Pearson's	cell.sw	cell.diameter	>0.05



Statistical correlations were used to evaluate the relationship between each morphological and calcification parameter measured in the long cells of *L. corallioides*. Test significance at $p < 0.05$.

correlation	Short cells		p-value
Pearson's	cell.length	lumen.length	<0.05
Spearman's	cell.sw	lumen.length	>0.05
Pearson's	cell.length	cell.diameter	>0.05
Spearman's	cell.length	cell.sw	>0.05
Spearman's	cell.pw	cell.sw	>0.05
Pearson's	lumen.diameter	lumen.length	<0.05
Pearson's	lumen.diameter	cell.diameter	>0.05
Spearman's	cell.sw	lumen.diameter	>0.05
Spearman's	cell.sw	cell.diameter	>0.05



Supplement 2

Thallus arrangement, long and short cells for the studied samples of *L. corallioides*: Morlaix (a-c), Egadi islands (d-f), Santa Caterina shoal (g-i), Elba island (j-l), and Pontine islands (m-o). Scale bar in a), d), g) j) and m) = 20 μ m. Scale bar in b), e), h) and k) = 10 μ m. Scale bar in c), f), i), l), n) and o) = 2 μ m.

