

## **Understanding the association of *Escherichia coli* with diverse macroalgae in the lagoon of Venice**

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**Table S1.**

**Figures S1 – S2 – S3 – S4 – S5 – S6.**

**Supplementary Table S1.** Results of the three-way ANOVA test on the abundance of *E. coli* in the study area. SS= sum of squares; DF = degrees of freedom; MS = mean square; F = statistic F. Reported are also the results of the Cochran's test performed prior to the ANOVA analysis to test the homogeneity of variance.

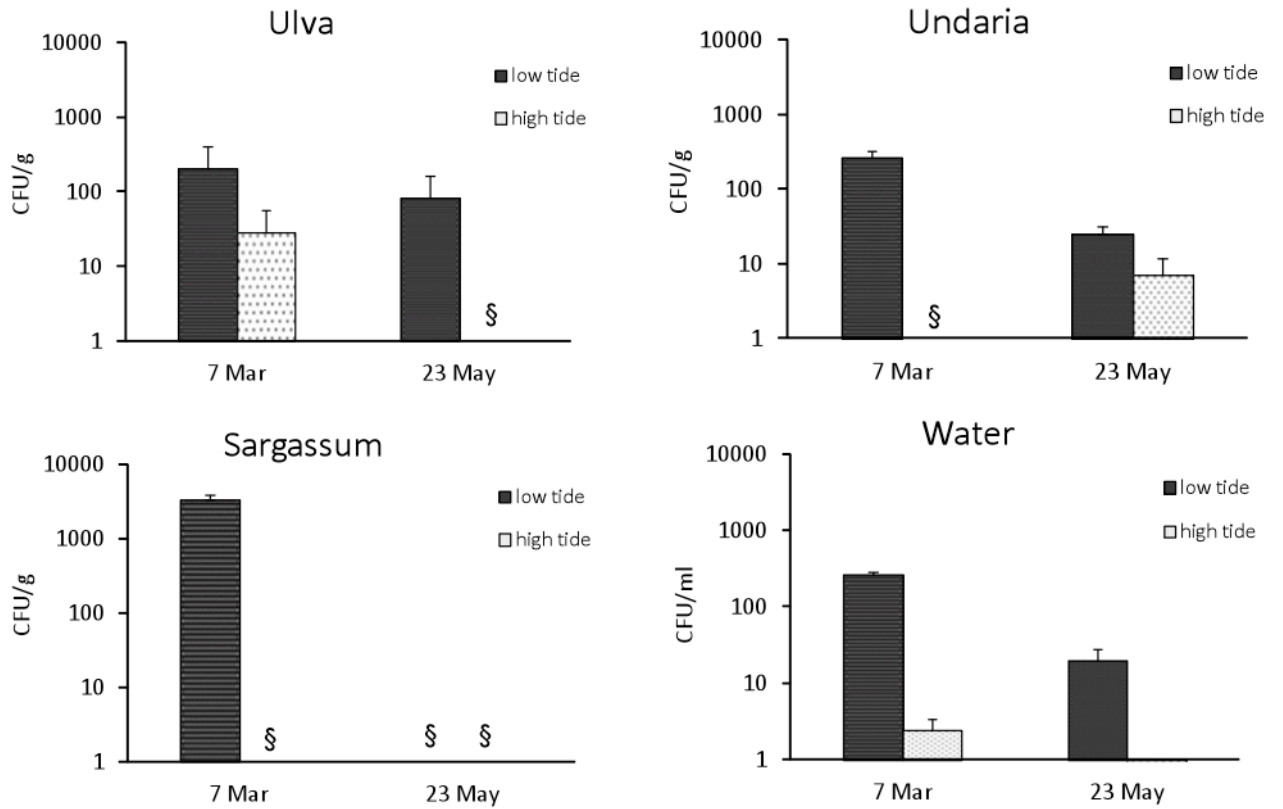
Transform: Ln(X+1)

Cochran's Test

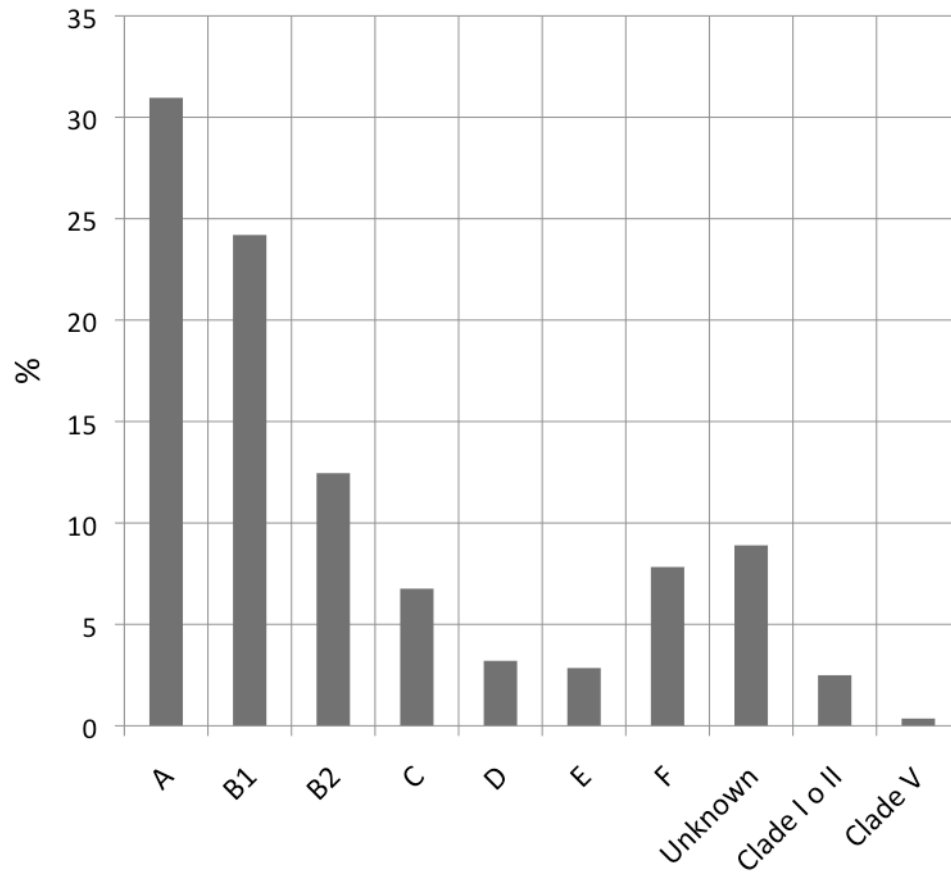
C = 0.3267 (P < 0.01)

Source	SS	DF	MS	F	P
SITE	173.6255	1	173.6255	17.98	0.0240
TIME	183.7927	4	45.9482	3.45	0.0428
HABITAT	28.6240	3	9.5413	34.52	0.0001
SI × TI	64.2726	4	16.068	1.63	0.2311
SI × HA	28.9691	3	9.6564	34.93	0.0001
TI × HA	160.0020	12	13.3335	48.24	0.0001
SI × TI × HA	118.5239	12	9.8770	35.73	0.0001
RES	22.1131	80	0.2764		
TOT	779.9229	119			

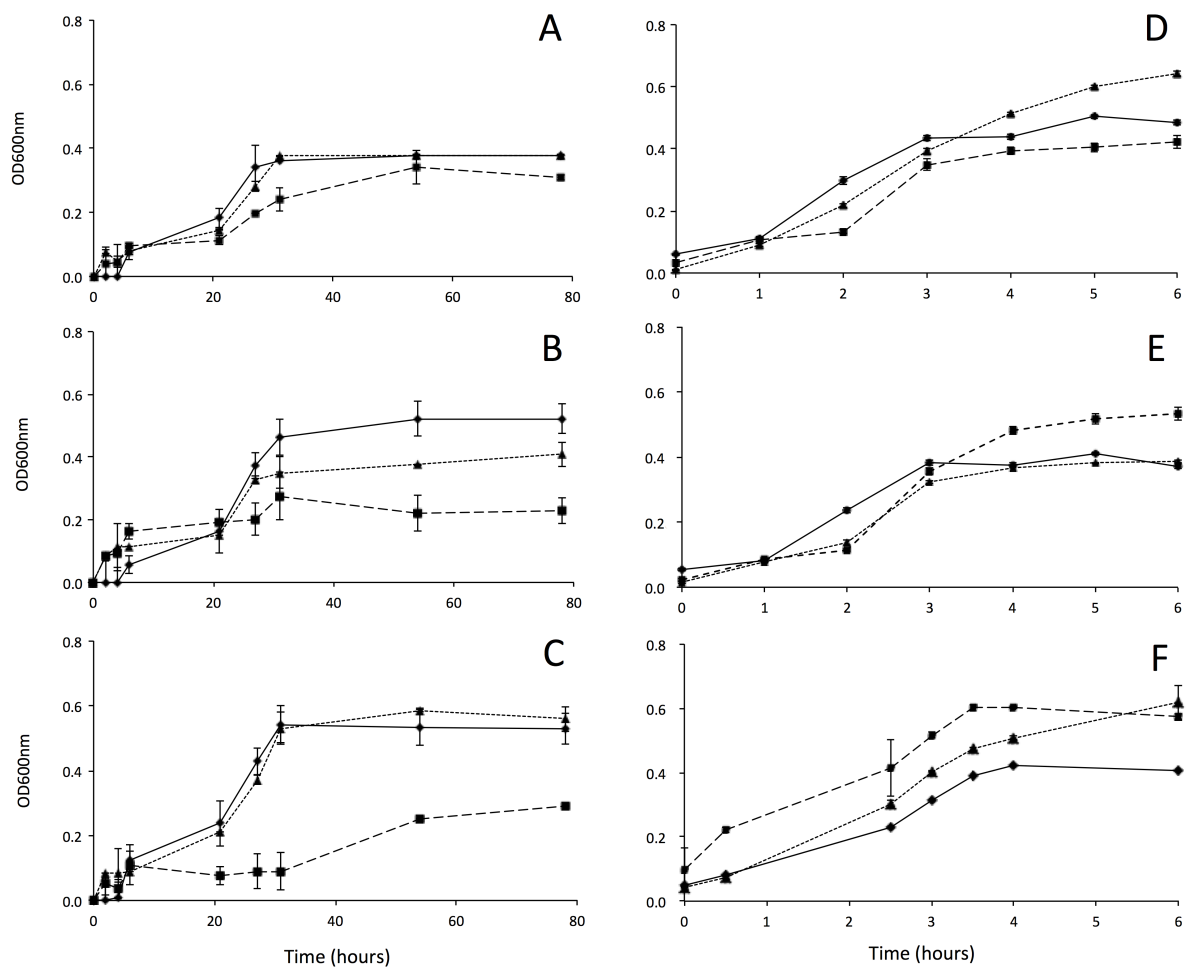
**Supplementary Figure S1.** Abundance of *E. coli* (average  $\pm$  standard error) in the Sette Martiri sampling site during low and high tide regime. Data are expressed as CFU g<sup>-1</sup> (for macroalgae) or CFU ml<sup>-1</sup> (for water). § = no *E. coli* growth was observed. The *E. coli* abundance in water on the 23 May during high tide is  $0.06 \pm 0.05$  CFU/ml.



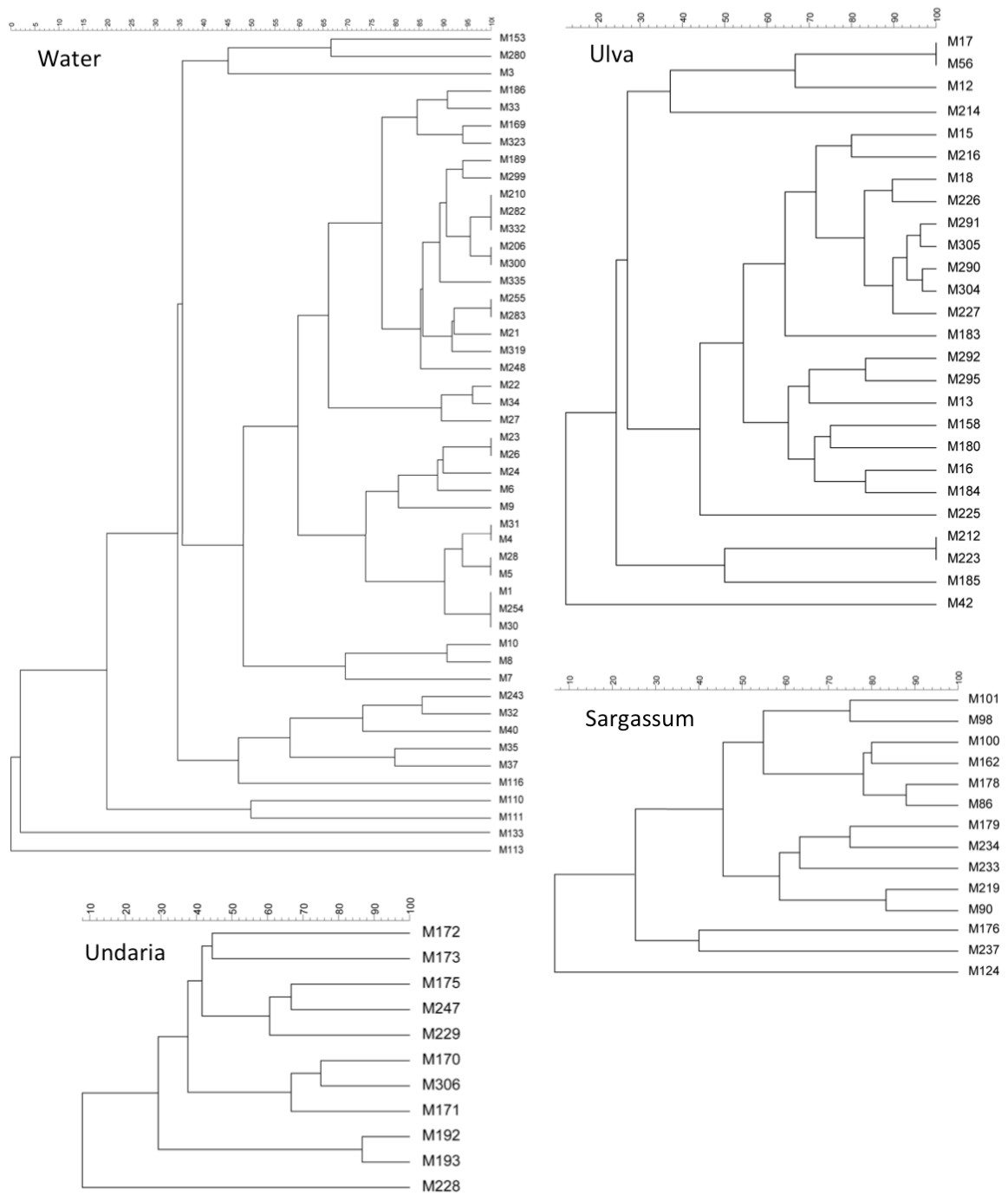
**Supplementary Figure S2.** Cumulative distribution (expressed as percentage, %) of the *E. coli* phylogroups in the entire set of isolates (macroalgae and water).



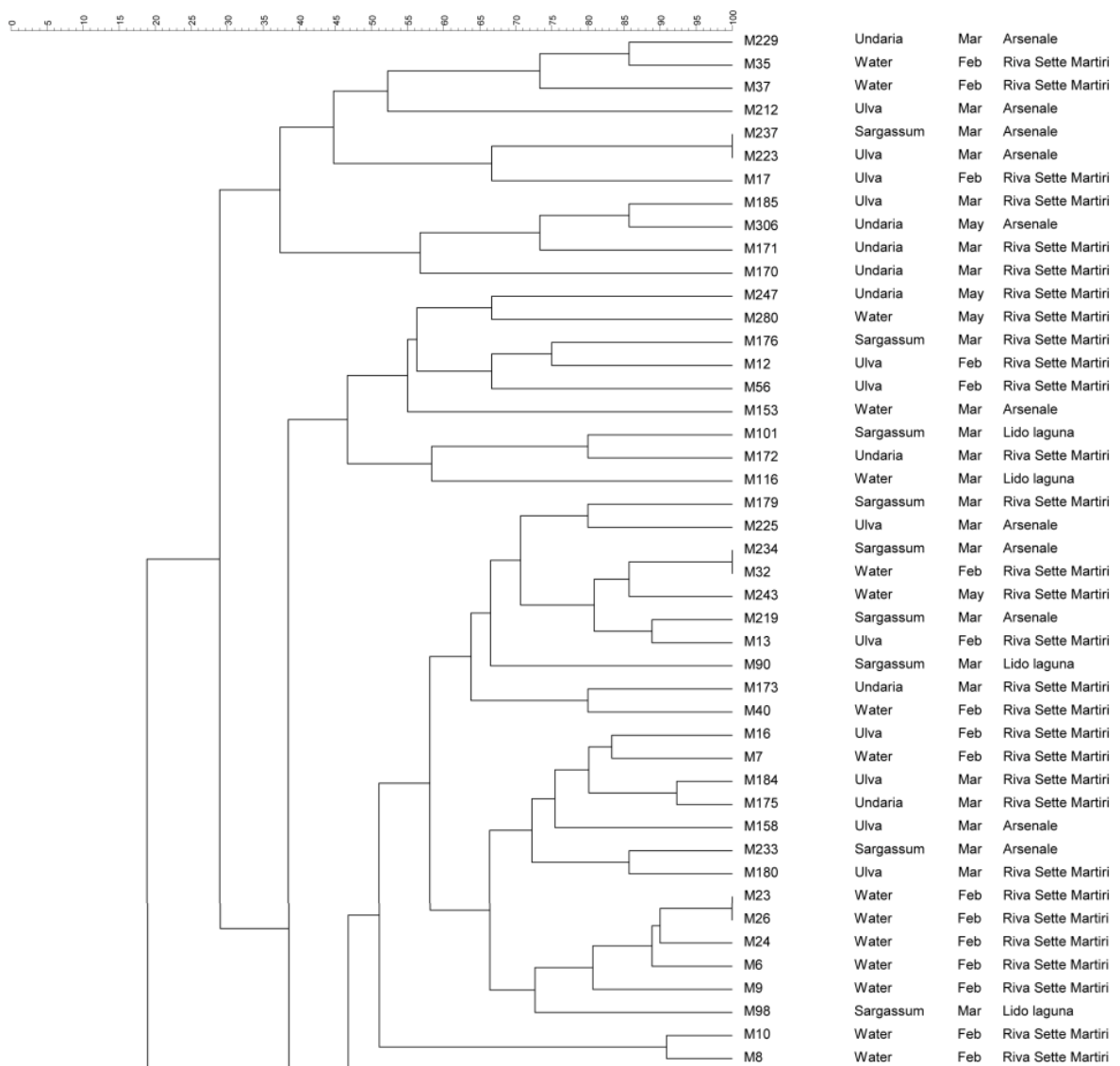
**Supplementary Figure S3.** Growth curves on macroalgal extracts for representative *E. coli* isolates. A and D= strain #223 isolated from *Ulva*; B and E = strain #349 isolated from *Sargassum*; C = strain #306 isolated from *Undaria*, F = strain #360 isolated from *Ulva*. Panel A, B and C refer to *E. coli* isolates growth at 10°C; panels D, E and F to *E. coli* growth at 37°C. Triangles refer to the growth on the *Undaria* medium, while rhombuses to the growth on *Sargassum* and squares on *Ulva*. The data are averages  $\pm$  standard errors of the averages. OD600nm = optical density at 600 nm.



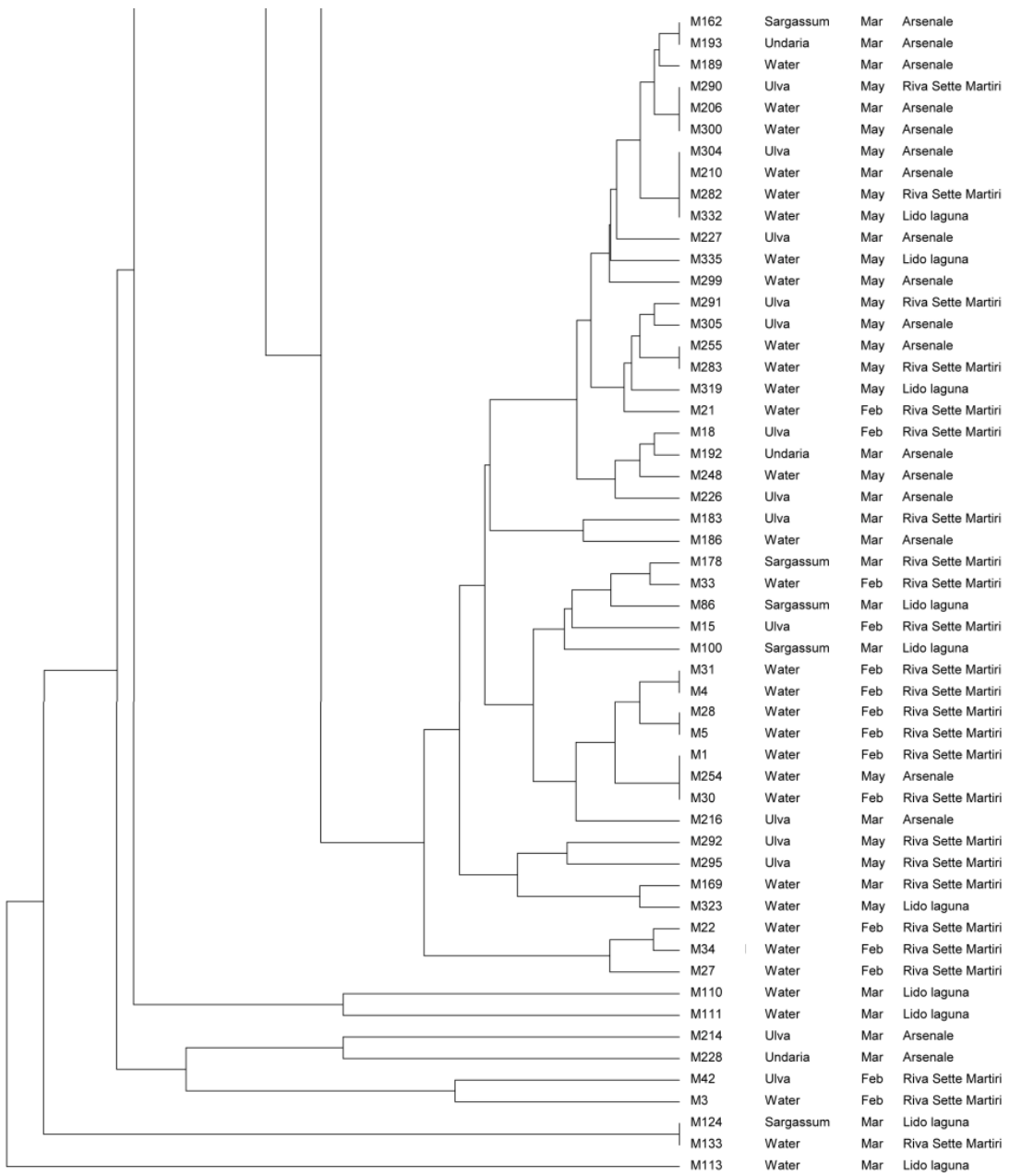
**Supplementary Figure S4.** Dendrograms showing the genetic diversity of the *E. coli* typed in this study, as divided per habitat (the three macroalgae and the overlying water). The top axis shows the percent similarity among the genotypes, as indicated by the Dice correlation coefficients. Numbers on the left side indicate the isolate's reference number.



**Supplementary Figure S5.** Dendrogram showing the genetic diversity of all *E. coli* isolates typed in this study. The top axis shows the percent similarity among the genotypes, as indicated by the Dice correlation coefficient. Numbers on the right side indicate the isolate reference number. Reported on the right are also the habitat type (*Undaria*, *Ulva*, *Sargassum* or water), the sampling time (Feb = February; Mar = March; or May) and the sampling site.



(continued on the next page)





**Supplementary Figure S6.** Examples of large macroalgal growth and colonization around the historical centre of Venice. All photographs from this figure were taken by Gian Marco Luna and Grazia Marina Quero.

