**Table S1: Results of pairwise tests in beta diversity analysis.** All samples were normalized to 23,622 raw sequences per sample. Tests were conducted for specified comparisons. *DF*, degree of freedom; *F*-value, F distribution under null hypothesis; *Q*-value, Bonferroni-Holm-corrected *P*-value.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Comparison** | ***DF*** | ***Variance*** | ***F-value*** | ***Q-value*** | ***P*-value** |
| Atlantic (Massachusetts): Gastric - Epidermis | 1 | 0.109 | 9.041 | 0.004 | **0.004** |
| Atlantic (Massachusetts): Gastric - Water | 1 | 0.376 | 31.051 | 0.001 | **0.001** |
| Atlantic (Massachusetts): Epidermis - Water | 1 | 0.374 | 28.118 | 0.001 | **0.001** |
| Atlantic (Florida): Gastric - Epidermis | 1 | 0.021 | 3.594 | 0.030 | **0.030** |
| Atlantic (Florida): Gastric - Water | 1 | 0.365 | 46.083 | 0.001 | **0.001** |
| Atlantic (Florida): Epidermis – Water | 1 | 0.388 | 65.135 | 0.001 | **0.001** |
| North Sea: Gastric - Epidermis | 1 | 0.029 | 1.607 | 0.059 | 0.059 |
| North Sea: Gastric - Water | 1 | 0.438 | 30.591 | 0.003 | **0.001** |
| North Sea: Epidermis - Water | 1 | 0.333 | 17.931 | 0.003 | **0.002** |
| Mediterranean Sea: Gastric - Epidermis | 1 | 0.055 | 7.274 | 0.002 | **0.002** |
| Mediterranean Sea: Gastric - Water | 1 | 0.316 | 30.188 | 0.001 | **0.001** |
| Mediterranean Sea: Epidermis - Water | 1 | 0.201 | 16.592 | 0.001 | **0.001** |
| Atlantic (Massachusetts) - Atlantic (Florida) | 1 | 0.318 | 27.260 | 0.001 | **0.001** |
| Atlantic (Massachusetts) - North Sea | 1 | 0.237 | 10.961 | 0.001 | **0.001** |
| Atlantic (Massachusetts) - Mediterranean Sea | 1 | 0.292 | 16.622 | 0.001 | **0.001** |
| Atlantic (Florida) - North Sea | 1 | 0.284 | 25.017 | 0.001 | **0.001** |
| Atlantic (Florida) - Mediterranean Sea | 1 | 0.325 | 33.115 | 0.001 | **0.001** |
| North Sea - Mediterranean Sea | 1 | 0.171 | 9.980 | 0.001 | **0.001** |