

**S3 Table. Results of DISTLM marginal tests.** Results of marginal tests using a distance-based linear model (DISTLM) quantifying the relative contribution of algal group affiliation and culture condition variables [nutrient status (e.g., replete and limited; Nutrient), light intensity (Light), hours of light (Hrs. Light), temperature (Temp), and salinity] for both fatty acid datasets (% FA and FA % DW). The marginal tests result reports the proportion of the variation (prop. var.) explained by each variable, independent of any others (see Methods).

| Variable   | reg. df | % FA                 |          |               |         | FA % DW              |          |               |         |
|------------|---------|----------------------|----------|---------------|---------|----------------------|----------|---------------|---------|
|            |         | Pseudo<br>- <i>F</i> | <i>P</i> | prop.<br>var. | res. df | Pseudo<br>- <i>F</i> | <i>P</i> | prop.<br>var. | res. df |
| Group      | 6       | 95.16                | 0.0001   | 0.436         | 615     | 11.67                | 0.0001   | 0.362         | 103     |
| Nutrient   | 2       | 4.56                 | 0.0006   | 0.007         | 619     | 6.40                 | 0.0008   | 0.056         | 107     |
| Light      | 2       | 9.03                 | 0.0001   | 0.014         | 619     | 8.23                 | 0.0003   | 0.071         | 107     |
| Hrs. Light | 2       | 21.39                | 0.0001   | 0.033         | 619     | 13.52                | 0.0001   | 0.112         | 107     |
| Temp       | 2       | 8.37                 | 0.0001   | 0.013         | 619     | 3.41                 | 0.0097   | 0.031         | 107     |
| Salinity   | 2       | 76.53                | 0.0001   | 0.110         | 619     | 6.02                 | 0.0003   | 0.053         | 107     |