## annotation table

|  | Inner Shelf | | Outer Shelf | |
| --- | --- | --- | --- | --- |
| *C. closterium UGA8* | *G. oceanica* | *C. closterium UGA4* | *G. huxleyi* |
| **transdecoder** | | | | |
| No. protein coding regions (%) | 40,225 (77%) | 62,761 (99%) | 46,224 (90%) | 54,643 (89%) |
| **Eggnogmapper** | | | | |
| No. annotated protein coding regions (%) | 27,112 (52%) | 38,861 (61%) | 31,893 (62%) | 34,816 (55%) |
| KEGG | 10,966 | 23,156 | 12,264 | 20,378 |
| PFAM | 21,042 | 33,958 | 24,496 | 30,162 |
| GO | 3,486 | 13,373 | 3,592 | 10,724 |

## assembly table

|  | Inner Shelf | | Outer Shelf | |
| --- | --- | --- | --- | --- |
| *C. closterium UGA8* | *G. oceanica* | *C. closterium UGA4* | *G. huxleyi* |
| **rnaQUAST** | | | | |
| No. Transcripts | 52,113 | 63,484 | 51,476 | 63,518 |
| Transcripts > 500 bp | 30,673 | 50,401 | 32,814 | 44,739 |
| Transcripts > 1000 bp | 20,213 | 39,504 | 23,556 | 31,245 |
| Mean assembled transcript length (bp) | 1,071 | 1,477 | 1,289 | 1,214 |
| Longest transcript (bp) | 34,028 | 20,419 | 25,128 | 16,215 |
| Total length (Mbp) | 55 | 93 | 66 | 77 |
| Transcript N50 | 1,728 | 1,976 | 2,108 | 1,755 |
| GeneMarkS-T predicted genes | 32,583 | 42,644 | 32,265 | 42,563 |
| **BUSCO** | | | | |
| Total | 80% (205) | 86% (219) | 86% (219) | 84% (213) |
| Complete: single-copy | 48% (121) | 30% (77) | 42% (107) | 40% (101) |
| Complete: duplicated-copy | 16% (40) | 42% (107) | 30% (76) | 28% (71 |
| Fragmented | 17% (44) | 14% (35) | 14% (36) | 16% (41) |

## isolation location table

|  | Inner Shelf | | Outer Shelf | |
| --- | --- | --- | --- | --- |
| *C. closterium UGA8* | *G. oceanica* | *C. closterium UGA4* | *G. huxleyi* |
| **Cruise Date** | September 23, 2021 | September 23, 2021 | January 24, 2021 | May 23, 2022 |
| **Shelf Location** | Inner shelf | Inner shelf | Outer shelf | Outer shelf |
| **Taxa** | Diatom | Coccolithophore | Diatom | Coccolithophore |
| **Lat/Lon** | -80.49, 31.49 | -80.49, 31.50 | -79.6, 31.3 | -80, 30.6 |
| **Water Temperature (°C)** | 27.28 | 27.28 | 22.36-21.16 | 22.92 |
| **Depth (m)** | 5-10 | 5-10 | 5-35 | 5-10 |

## DEGs all ORFs

|  | Inner Shelf | | Outer Shelf | |
| --- | --- | --- | --- | --- |
| *C. closterium UGA8* | *G. oceanica* | *C. closterium UGA4* | *G. huxleyi* |
| **High vs Low Iron** | 1649 (6.95%) | 3177 (9.05%) | --- | 1783 (6.14%) |
| **Iron Amendment vs Low Iron** | 1910 (8.05%) | 2202 (6.27%) | 880 (3.24%) | 2032 (7%) |
| **Iron Amendment vs High Iron** | 3611 (15.23%) | 1102 (3.13%) | --- | 940 (3.23%) |

## DEGs Kegg orfs

|  | Inner Shelf | | Outer Shelf | |
| --- | --- | --- | --- | --- |
| *C. closterium UGA8* | *G. oceanica* | *C. closterium UGA4* | *G. huxleyi* |
| **Iron Amendment vs Low Iron** | 799 (28.3%) | 1109 (23.5%) | 198 (6.66%) | 1022 (24.1%) |
| **High vs Low Iron** | 254 (9%) | 1186 (25.2%) | --- | 1089 (25.7%) |

## Sequencing stats

|  | Inner Shelf | | Outer Shelf | |
| --- | --- | --- | --- | --- |
|  | *C. closterium UGA4* | *C. closterium UGA8* | *G. huxleyi* | *G. oceanica* |
| **Illumina** | | | | |
| %GC | 42.2 | 39.00 | 56.61 | 60.89 |
| Mean length (bp) | 142.6 | 142.88 | 143.44 | 144.17 |
| M Sequences | 32.2 | 37.80 | 54.00 | 73.20 |
| Samples (n) | 5.0 | 8.00 | 9.00 | 9.00 |
| **PacBio** | | | | |
| Hifi reads | 555,202 | 7,577 | 714,271 | 895,368 |
| Mean Hifi length (bp) | 1,507 | 1,179 | 1,381 | 1,410 |
| Hifi yield (Mbp) | 836,693,098 | 8,937,837 | 986,541,517 | 1,263,362,046 |

## refrence growth rates

| Organism | Strain | Env. | Growth Rate (day^-1) | Lat/Lon | Temp (°C) | Irradiance (µM m-2 s-1) | Reference |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *C. closterium* | CS-5 | Estuary | 1.41 | -34.06, 151.13 | 24 | 100 | Stock et al. 2019 |
| CCMP1554 | 1.15 | 43.83, -69.63 | 24 | 100 | Stock et al. 2019 |
| SP01 | Coastal | 1.00 | 36.6, -6.2 | 24 | 100 | Stock et al. 2019 |
| PT01 | 1.13 | 40.65, -8.66 | 24 | 100 | Stock et al. 2019 |
| UGA4\* | 1.30\* | 31.3, -79,6 | 22 | 130 | This study |
| UGA8 | 1.70 | 31.49, -80.49 | 22 | 130 | This study |
| CIM222 | Oceanic | 1.56 | 44.03, 13.23 | 24 | 100 | Stock et al. 2019 |
| CS-114 | 0.92 | -17, 149 | 24 | 100 | Stock et al. 2019 |
| *G. oceanica* |  | Coastal | 1.33 | 39.17, -69.16 | 26 |  | Brand 1982 |
| UGA6 | 0.90 | 31.50, -80.49 | 22 | 130 | This study |
| NIES-1318 | Oceanic | 1.00 | 29.59, 128.41 | 20 | 120 | Jin et al. 2013 |
|  | 1.12 | 35.95, -68 | 26 |  | Brand 1982 |
| *G. huxleyi* |  | Estuary | 2.03 | 42.1, -66.22 | 26 |  | Brand 1982 |
| RCC 1232 | Coastal | 0.30 | 43.68, 7.316 | 15 | 50-200 | Johnes et al. 2019 |
| SAG 33.90 | 0.31 | 50.18, 0.5 | 15 | 50-200 | Johnes et al. 2019 |
| UGA13 | 0.70 | 30.6, -80 | 22 | 130 | This study |
| RCC 1824 | Oceanic | 0.37 | 33.62, 32.65 | 15 | 50-200 | Johnes et al. 2019 |
| RCC 868 | 0.40 | -31.68, -91.48 | 15 | 50-200 | Johnes et al. 2019 |

## reference mu/muMax

| Organism | Strain | Env. | µ/µMAX | Temp(°C) | Irradiance (µM m-2 s-1) | Ocean/Sea | Reference |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *C. closterium* | CS-5 | Coastal | 0.61 | 20 | 130 | Mediterranean | Pankowski et al. 2009 |
| *E. huxleyi* | PML 92-f | Oceanic | 0.74 | 18 | 80 | Port Hacking, Australia | Isik et al. 2007 |
|  | 0.52 | 16 | 150 | Subarctic Pacific | Muggli et al. 1996 |