**Table 3. Gene expression in day vs. night by functional categories in Trout Bog.**  We aggregated timepoints by day (9AM, 1PM, 5PM) and night (9PM, 1AM, 5AM) to compare differential gene expression. This analysis includes the top 20,000 most expressed genes. Functional categories were determined based on gene annotations – only categories with at least 10 expressed genes were tested. Significance (\*) was considered to be p < 0.05. Genes with cyclic trends were detected using RAIN (Thaben and Westermark, 2014), while p-values of day vs. night read totals per sample were calculated using a two-tailed t-test. The day/night ratio is the sum of reads assigned to that category in day divided by the sum at night. A ratio greater than one indicates higher expression in day, while a ratio less than one indicates higher expression at night. Note that many samples from the second day of TB’s sampling did not sequence successfully, reducing our power to detect cyclic trends.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Number of genes | % Genes more expressed in day | % Genes more expressed at night | % Cyclic genes (12 hr phase) | p-value from t-test of day vs. night read totals | Day/night ratio |
| Photosynthesis | 324 | 52.78 | 18.52 | 4.01 | 0.01\* | 7.00 |
| RuBisCO | 59 | 32.2 | 3.39 | 1.69 | 0.01\* | 7.00 |
| Glycoside hydrolases | 13 | 23.08 | 15.38 | 0.00 | 0.66 | 0.94 |
| Polyamines | 19 | 5.26 | 10.53 | 0.00 | 0.05 | 0.76 |
| Reactive oxygen species | 58 | 29.31 | 10.34 | 0.00 | 0.21 | 1.22 |
| Protease | 231 | 18.61 | 12.12 | 0.00 | 0.05 | 1.56 |
| Ribose transport | 43 | 0.00 | 46.51 | 0.00 | 0.00\* | 0.42 |
| General sugar transport | 63 | 6.35 | 49.21 | 3.17 | 0.00\* | 0.55 |
| Xylose transport | 15 | 0.00 | 33.33 | 0.00 | 0.02\* | 0.58 |
| Methane/ammonia monooxygenase | 24 | 12.50 | 33.33 | 0.00 | 0.06 | 1.00 |
| Amino acid transport | 101 | 2.97 | 24.75 | 0.00 | 0.02\* | 0.67 |