

Primers

| | Forward primer | Reverse primer |
|--------|-----------------------|-------------------------|
| 135644 | ACATCATTTGCGTGTCTCGAA | GCTTTTTGCAGCTTTTCCAC |
| 70357 | ACGCTTCCTCAGAACTCCAA | GTCAGAACTGCCTGCACAA |
| 149790 | CAAGACAATCGACGGGAGAT | GAGCCAGGTCAAGTTGCTTC |
| 97861 | TTCCCCGGTGTACACTTCTC | GGTTTGTCCACGAAGCAACT |
| Rbcs | TTGTGGCTCCTGTCTCTGTG | CGAGAAGGTCTCGAACTTGG |
| 11916 | TGGACATGCGACCTACTCTGG | CGCCAAACCCGTAGCAAATA |
| 146196 | TGCTCAATTGCCTACTGTGG | AACCGTCACCGCAATAAAAG |
| 149962 | CACTGCCATCTGCCTGTTTA | CGCTGCATTGATGGAGATTA |
| 163268 | ATGGGTCACGTCGACTTCAAA | CATGACTGTGAGGGGAGAAACA |
| 100530 | ACTGACCTCCAGGCAGTTGT | TACACAAATCCCCAATGCAC |
| 184189 | AGCTGTTCAGCTGGGAGAAA | TGCATTTTCAGCCTTCACTTG |
| Actin2 | GCGAAGAGCGAGTATGACGAG | AGCCACGAATCTAACTTGTGATG |

Table S2 The number of genes associated in the total annotated genome, Gametophyte vs. early sporophyte, gametophyte vs. mid-sporophyte and early sporophyte vs. mid-sporophyte. The percentage of genes in each category studied here is included as a proportion of the total number of genes associated with each GO term.

| GO term | Total no. of genes associated with GO term | GvsES | GvsES % compared to total no. of <i>P. patens</i> | GvsMS | GvsMS % compared to total no. of <i>P. patens</i> | ESvsMS | ESvsMS % compared to total no. of <i>P. patens</i> |
|--|--|-------|---|-------|---|--------|--|
| Carbohydrate metabolic process | 643 | 164 | 25.5% | 146 | 22.7% | 30 | 4.7% |
| Protein amino acid phosphorylation | 815 | 126 | 15.5% | 112 | 13.7% | 50 | 6.1% |
| Regulation of transcription, DNA dependent | 686 | 100 | 14.6% | 81 | 11.8% | 32 | 4.7% |
| Proteolysis | 739 | 91 | 12.3% | 92 | 12.5% | 20 | 2.7% |
| Electron transport | 558 | 124 | 22.2% | 115 | 20.6% | 29 | 5.2% |
| Signal transduction | 360 | 59 | 16.4% | 53 | 14.7% | 19 | 5.3% |
| Lipid metabolic process | 272 | 52 | 19.1% | 63 | 23.2% | 11 | 4.0% |
| Protein ubiquitination | 273 | 41 | 15.0% | 44 | 16.2% | 13 | 4.8% |
| Response to stress | 287 | 45 | 15.7% | 34 | 11.8% | 14 | 4.9% |
| Fatty acid metabolic process | 85 | 23 | 27.1% | 31 | 36.5% | 3 | 3.5% |
| Cell wall organisation | 114 | 38 | 33.3% | 39 | 34.2% | 14 | 12.3% |

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|------------------------------|-----|-----|-------|-----|-------|----|------|
| Glycolysis | 93 | 20 | 21.5% | 21 | 22.6% | 6 | 6.5% |
| Amino acid metabolic process | 304 | 164 | 53.9% | 146 | 48.0% | 30 | 9.9% |
| Transmembrane transport | 106 | 13 | 12.3% | 14 | 13.2% | 6 | 5.7% |
| Vitamin metabolic process | 60 | 17 | 28.3% | 16 | 26.7% | 5 | 8.3% |
| Response to hormone stimulus | 13 | 6 | 46.2% | 3 | 23.1% | 0 | 0% |
| Reproduction | 13 | 4 | 30.8% | 3 | 23.1% | 1 | 7.7% |
| Photosynthesis | 110 | 43 | 39.1% | 46 | 41.8% | 1 | 0.9% |
| Apoptosis | 30 | 2 | 6.7% | 3 | 10% | 3 | 10% |