

Additional file 2. GO enrichment analysis by high-throughput functional annotation for gene product properties. The genes belonging to the different clusters in the RNA-Seq heatmap were analysed using the software Blast2GO 5.2.1 software (<https://www.blast2go.com/>).

| Cluster | GO group | (%) | Cluster | GO group | (%) |
|---|---|---------------------------------------|---|---|-----|
| Cluster 1 | Transmembrane transport | 9 | Cluster 4 | rRNA processing | 15 |
| | Lipid metabolic process | 8 | | Cellular response to stimulus | 12 |
| | Phosphate-containing compound metabolic process | 7 | | Regulation of transcription, DNA templated | 11 |
| | Translation | 7 | | Translation | 8 |
| | Protein transport | 7 | | Oxidation-reduction process | 7 |
| | RNA processing | 7 | | Organelle organization | 7 |
| | Ribonucleoprotein complex biogenesis | 7 | | Regulation of gene expression | 6 |
| | Cellular protein modification process | 6 | | Organic substance transport | 4 |
| | Oxidation-reduction process | 5 | | Cellular response to stress | 4 |
| | Intracellular transport | 5 | | Protein localization | 4 |
| | Cellular response to stimulus | 4 | | Macromolecule modification | 4 |
| | Organelle organization | 4 | | Regulation of cellular metabolic process | 4 |
| | Regulation of gene expression | 4 | | Regulation of nitrogen compound metabolic process | 3 |
| | Regulation of cellular macromolecule biosynthetic process | 4 | | Nitrogen component transport | 3 |
| | Cellular protein localization | 4 | | Cellular protein-containing complex assembly | 3 |
| | RNA biosynthetic process | 4 | | Small molecule metabolic process | 3 |
| | ncRNA metabolic process | 3 | | Phosphate-containing compound metabolic process | 1 |
| | Small molecular metabolic process | 2 | | Regulation of primary metabolic process | 1 |
| | Regulation of nitrogen compound metabolic process | 1 | | Regulation of primary metabolic process | 1 |
| | Regulation of primary metabolic process | 1 | | | |
| Cluster 2 | Protein phosphorylation | 12 | Cluster 5 | Transmembrane transport | 27 |
| | Cellular response to DNA Damage stimulus | 11 | Regulation of transcription, DNA templated | 12 | |
| | Regulation of transcription by RNA pol II | 10 | Oxidation-reduction process | 11 | |
| | Transmembrane transport | 9 | Phosphate-containing compound metabolic process | 10 | |
| | Protein transport | 9 | Ion transport | 7 | |
| | Regulation of catalytic activity | 8 | Cellular protein modification process | 7 | |
| | Vesicle mediated transport | 8 | Organic substance transport | 6 | |
| | DNA metabolic process | 7 | Cellular response to stress | 6 | |
| | Cell communication | 4 | Nitrogen compound process | 5 | |
| | Organelle organization | 3 | Cellular localization | 3 | |
| | Cellular catabolic process | 3 | Cellular catabolic process | 2 | |
| | Ion transport | 2 | Organonitrogen compound biosynthetic process | 2 | |
| | Response to chemical | 2 | Small molecular metabolic process | 1 | |
| | Organic substance catabolic process | 2 | Cluster 6 | Transmembrane transport | 12 |
| | Organonitrogen compound catabolic process | 2 | Cellular response to stress | 12 | |
| | Establishment of localization in cell | 2 | Regulation of transcription, DNA templated | 11 | |
| | Positive regulation of cellular process | 2 | Cellular amino acid metabolic process | 11 | |
| | Small molecular metabolic process | 1 | Oxidation-reduction process | 9 | |
| | Negative regulation of macromolecule metabolic process | 1 | Phosphate-containing compound metabolic process | 7 | |
| | Negative regulation of cellular metabolic process | 1 | Organonitrogen compound biosynthetic process | 7 | |
| Regulation of cellular component organization | 1 | Cellular protein modification process | 4 | | |
| Negative regulation of nitrogen compound metabolism | 1 | Cellular catabolic process | 4 | | |
| | | Organelle organization | 4 | | |
| Cluster 3 | Translation | 36 | Response to chemical | 4 | |
| | Oxidation-reduction process | 15 | Amide biosynthetic process | 4 | |
| | Transmembrane transport | 11 | Organic substance transport | 3 | |
| | Intracellular transport | 7 | Nitrogen component transport | 3 | |
| | Cellular component biogenesis | 6 | Organonitrogen compound catabolic process | 3 | |
| | RNA metabolic process | 6 | Cellular component biogenesis | 2 | |
| | Organic substance transport | 5 | Small molecule biosynthetic process | 1 | |
| | Macromolecule localization | 4 | Cluster 7 | Protein localization | 13 |
| | Mitochondrion organization | 4 | Oxidation-reduction process | 11 | |
| | Nitrogen compound process | 3 | Transmembrane transport | 9 | |
| | Small molecular metabolic process | 2 | Carbohydrate metabolic process | 9 | |
| | Biological regulation | 2 | Phosphorylation | 8 | |
| | | | Cellular catabolic process | 7 | |
| | | | Regulation of transcription by RNA pol II | 7 | |
| | | | Cellular response to stress | 6 | |
| | | Cellular protein modification process | 5 | | |
| | | Response to chemical | 5 | | |
| | | Organelle organization | 4 | | |
| | | Organic substance transport | 4 | | |

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| Cellular localization | 4 |
| Organic substance catabolic process | 4 |
| Nitrogen component transport | 2 |
| Cellular component biogenesis | 2 |
| Small molecular metabolic process | 2 |
