Table S5_A. Selection results for P-Branch gene ontology categories in non-disordered proteins encoded by chloroplast genes and transferred to nuclear genome.

<table>
<thead>
<tr>
<th>GO annotation</th>
<th>AT</th>
<th>PT</th>
<th>VV</th>
<th>OS</th>
<th>SB</th>
<th>ZM</th>
<th>GM</th>
<th>PP</th>
<th>OT</th>
<th>MRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ribosome biogenesis</td>
<td>28 / 110</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>1.28 E-31*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ribonucleo-protein complex biogenesis</td>
<td>28 / 110</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>3.44 E-31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>response to external stimulus</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>20 / 62</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.0 E-13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>metabolic process</td>
<td>-</td>
<td>118 / 157</td>
<td>-</td>
<td>-</td>
<td>54 / 62</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.91 E-15</td>
<td></td>
<td></td>
<td>1.58 E-11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>translation</td>
<td>36 / 110</td>
<td>41 / 157</td>
<td>17 / 218</td>
<td>15 / 62</td>
<td>17 / 62</td>
<td>15 / 120</td>
<td>16 / 23</td>
<td>39 / 136</td>
<td>-</td>
<td>14 / 36</td>
</tr>
<tr>
<td></td>
<td>4.20 E-30</td>
<td>2.89 E-22</td>
<td>1.14 E-06</td>
<td>6.36 E-08</td>
<td>6.64 E-10</td>
<td>9.1 E-15</td>
<td>9.67 E-20</td>
<td>5.00 E-17</td>
<td></td>
<td>8.48 E-09</td>
</tr>
<tr>
<td>cellular ketone metabolic process</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>19 / 62</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.50 E-08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>carboxylic acid metabolic process</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>18 / 62</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.26 E-07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>oxoacid metabolic process</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>18 / 62</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.26 E-07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>organic acid metabolic process</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>18 / 62</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.33 E-07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subcategory</td>
<td>Value1</td>
<td>Value2</td>
<td>Value3</td>
<td>Value4</td>
<td>Value5</td>
<td>Value6</td>
<td>Value7</td>
<td>Value8</td>
<td>Value9</td>
<td>Value10</td>
</tr>
<tr>
<td>------------------------------------------------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>cellular component biogenesis at cellular level</td>
<td>28 / 110</td>
<td>2.25 E-27</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>cellular component biogenesis</td>
<td>32 / 110</td>
<td>9.71 E-26</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>cellular macromolecule biosynthetic process</td>
<td>41 / 110</td>
<td>1.06 E-21</td>
<td>45 / 157</td>
<td>7.73 E-18</td>
<td>18 / 62</td>
<td>2.78 E-07</td>
<td>15 / 120</td>
<td>4.88 E-12</td>
<td>16 / 23</td>
<td>1.90 E-15</td>
</tr>
<tr>
<td>macromolecule biosynthetic process</td>
<td>41 / 110</td>
<td>1.91 E-21</td>
<td>45 / 157</td>
<td>9.17 E-18</td>
<td>18 / 62</td>
<td>2.87 E-07</td>
<td>15 / 120</td>
<td>5.11 E-12</td>
<td>16 / 23</td>
<td>2.08 E-15</td>
</tr>
<tr>
<td>gene expression</td>
<td>36 / 110</td>
<td>5.61 2E-21</td>
<td>42 / 157</td>
<td>7.04 E-17</td>
<td>17 / 62</td>
<td>4.07 E-07</td>
<td>15 / 120</td>
<td>3.02 E-12</td>
<td>16 / 23</td>
<td>2.16 E-16</td>
</tr>
<tr>
<td>cellular component organization or biogenesis at cellular level</td>
<td>35 / 110</td>
<td>1.38 E-20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>cellular biosynthetic process</td>
<td>50 / 110</td>
<td>1.40 8E-20</td>
<td>76 / 157</td>
<td>2.53 E-30</td>
<td>35 / 218</td>
<td>3.04 E-09</td>
<td>24 / 62</td>
<td>1.23 E-08</td>
<td>17 / 120</td>
<td>6.56 E-12</td>
</tr>
<tr>
<td>biosynthetic process</td>
<td>51 / 110 4.88 E-20</td>
<td>83 / 157 1.44 E-33</td>
<td>40 / 218 3.47 E-11</td>
<td>41 / 62 2.49 E-13</td>
<td>29 / 62 1.97 E-11</td>
<td>18 / 120 1.42 E-12</td>
<td>17 / 23 3.16 E-12</td>
<td>74 / 136 9.42 E-30</td>
<td>17 / 26 2.55 E-08</td>
<td>22 / 36 1.84 E-10</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------</td>
<td>----------------------</td>
<td>----------------------</td>
<td>----------------------</td>
<td>----------------------</td>
<td>----------------------</td>
<td>----------------------</td>
<td>----------------------</td>
<td>----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>cellular component</td>
<td>36 / 110 1.85 E-17</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>organization or biogenesis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>metabolic process</td>
<td>76 / 110 3.35 E-17</td>
<td>- 70 / 218 5.22 E-08</td>
<td>54 / 62 1.75 E-09</td>
<td>- 22 / 120 1.35 E-06</td>
<td>- 103 / 136 1.02 E-14</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>cellular protein metabolic process</td>
<td>42 / 110 1.28 E-11</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>16 / 120 6.79 E-08</td>
<td>16 / 23 5.95 E-09</td>
<td>56 / 136 2.33 E-09</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>cellular metabolic process</td>
<td>59 / 110 5.61 E-11</td>
<td>91 / 157 2.08 E-09</td>
<td>54 / 218 7.93 E-06</td>
<td>46 / 62 2.52 E-08</td>
<td>- 19 / 120 9.68 E-07</td>
<td>- 86 / 136 8.79 E-14</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>cellular process</td>
<td>70 / 110 1.73 E-10</td>
<td>103 / -157 3.43 E-07</td>
<td>- 51 / 62 2.93 E-06</td>
<td>-</td>
<td>-</td>
<td>- 93 / 136 8.45 E-13</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>E Value</td>
<td>Count</td>
<td>E Value</td>
<td>Count</td>
<td>E Value</td>
<td>Count</td>
<td>E Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-------</td>
<td>---------</td>
<td>-------</td>
<td>---------</td>
<td>-------</td>
<td>---------</td>
<td>-------</td>
<td>---------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cellular macromolecule metabolic process</td>
<td>47 / 110</td>
<td>3.02 E-10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>17 / 120</td>
<td>3.73 E-07</td>
<td>16 / 23</td>
<td>5.6 E-07</td>
<td></td>
</tr>
<tr>
<td>protein metabolic process</td>
<td>43 / 110</td>
<td>4.56 E-10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>17 / 120</td>
<td>1.19 E-07</td>
<td>16 / 23</td>
<td>8.05 E-08</td>
<td></td>
</tr>
<tr>
<td>macromolecule metabolic process</td>
<td>48 / 110</td>
<td>6.74 E-09</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>17 / 120</td>
<td>5.43 E-06</td>
<td>16 / 23</td>
<td>4.56 E-06</td>
<td></td>
</tr>
<tr>
<td>lipid A biosynthetic process</td>
<td>5 / 110</td>
<td>7.00 E-09</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>17 / 62</td>
<td>1.05 E-06</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>lipid A metabolic process</td>
<td>5 / 110</td>
<td>7.00 E-09</td>
<td>-</td>
<td>-</td>
<td>17 / 62</td>
<td>1.05 E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>lipopolysaccharide metabolic process</td>
<td>5 / 110</td>
<td>1.86 E-08</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>lipopolysaccharide biosynthetic process</td>
<td>5 / 110</td>
<td>1.86E-08</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>phylloquinone biosynthetic process</td>
<td>4 / 110</td>
<td>3.76 E-07</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>phylloquinone metabolic process</td>
<td>4 / 110</td>
<td>3.77 E-07</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Process</td>
<td>Value 1</td>
<td>Value 2</td>
<td>Value 3</td>
<td>Value 4</td>
<td>Value 5</td>
<td>Value 6</td>
<td>Value 7</td>
<td>Value 8</td>
<td>Value 9</td>
<td>Value 10</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>vitamin K biosynthetic process</td>
<td>4 / 110</td>
<td>1.12 E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>vitamin K metabolic process</td>
<td>4 / 110</td>
<td>1.12 E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>primary metabolic process</td>
<td>53 / 110</td>
<td>1.89 E-06</td>
<td>92 / 157</td>
<td>2.59 E-08</td>
<td>49 / 62</td>
<td>6.27 E-08</td>
<td>20 / 120</td>
<td>9.03 E-07</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>glycolipid metabolic process</td>
<td>5 / 110</td>
<td>1.991E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>glycolipid biosynthetic process</td>
<td>5 / 110</td>
<td>1.991E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>membrane lipid biosynthetic process</td>
<td>5 / 110</td>
<td>1.33 E-05</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>quinone cofactor metabolic process</td>
<td>4 / 110</td>
<td>9.93 E-05</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>quinone cofactor biosynthetic process</td>
<td>4 / 110</td>
<td>9.93 E-05</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Process Type</td>
<td>Count</td>
<td>Probability</td>
<td>Count</td>
<td>Probability</td>
<td>Count</td>
<td>Probability</td>
<td>Count</td>
<td>Probability</td>
<td>Count</td>
<td>Probability</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-------</td>
<td>-------------</td>
<td>-------</td>
<td>-------------</td>
<td>-------</td>
<td>-------------</td>
<td>-------</td>
<td>-------------</td>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>fat-soluble vitamin metabolic process</td>
<td>4 / 110</td>
<td>5.24 E-05</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>cofactor biosynthetic process</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>12 / 136</td>
<td>8.19 E-09</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>small molecule biosynthetic process</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>19 / 136</td>
<td>7.61 E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>glutamate biosynthetic process</td>
<td>-</td>
<td>5 / 157</td>
<td>2.78 E-07</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3 / 62</td>
<td>9.87 E-06</td>
</tr>
<tr>
<td>glutamine family amino acid biosynthetic</td>
<td>-</td>
<td>9 / 157</td>
<td>4.67 E-10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>glutamine family amino acid metabolic process</td>
<td>-</td>
<td>9 / 157</td>
<td>4.57 E-09</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>organic acid biosynthetic process</td>
<td>-</td>
<td>18 / 157</td>
<td>7.58 E-08</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>carboxylic acid biosynthetic process</td>
<td>-</td>
<td>18 / 157</td>
<td>7.58 E-08</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S-glycoside biosynthetic process</td>
<td>-</td>
<td>6 / 157</td>
<td>5.9485722</td>
<td>1623502E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Process</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>----</td>
</tr>
<tr>
<td>glycosinolate biosynthetic process</td>
<td>-</td>
<td>6 / 157</td>
<td>5.95 E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>glucosinolate biosynthetic process</td>
<td>-</td>
<td>6 / 157</td>
<td>5.95 E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>glutamate metabolic process</td>
<td>-</td>
<td>5 / 157</td>
<td>6.42 E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* P-value cut-off = 1.0 E-5
Table S5_B. Selection results for C-Branch gene ontology categories in non-disordered proteins encoded by chloroplast genes and transferred to nuclear genome.

<table>
<thead>
<tr>
<th>GO annotation</th>
<th>AT</th>
<th>PT</th>
<th>VV</th>
<th>OS</th>
<th>SB</th>
<th>ZM</th>
<th>GM</th>
<th>PP</th>
<th>OT</th>
<th>MCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>cytosolic large ribosomal subunit</td>
<td>32 / 110</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>1.05 E-46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>peroxisome</td>
<td>12 / 62</td>
<td>-</td>
<td>12 / 62</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>8.22 E-17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cytosolic ribosome</td>
<td>40 / 110</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>2.54 E-46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ribosome</td>
<td>43 / 110</td>
<td>38 / 157</td>
<td>15 / 62</td>
<td>17 / 62</td>
<td>15 / 120</td>
<td>16 / 23</td>
<td>37 / 136</td>
<td>-</td>
<td>12 / 36</td>
<td>6.43 E-10</td>
</tr>
<tr>
<td></td>
<td>3.89E-45</td>
<td>1.87 E-24</td>
<td>2.07E-11</td>
<td>6.84 E-13</td>
<td>1.25 E-16</td>
<td>3.40 E-21</td>
<td>1.65 E-20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cytosolic part</td>
<td>40 / 110</td>
<td>73 / 157</td>
<td>47 / 218</td>
<td>-</td>
<td>20 / 120</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>13 / 36</td>
</tr>
<tr>
<td></td>
<td>5.97 E-45</td>
<td>3.69 E-18</td>
<td>4.88 E-14</td>
<td></td>
<td>9.88 E-06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.06 E-06</td>
</tr>
<tr>
<td>large ribosomal subunit</td>
<td>32 / 110</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>1.04 E-43</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ribonucleo protein complex</td>
<td>43 / 110</td>
<td>38 / 157</td>
<td>15 / 62</td>
<td>17 / 62</td>
<td>15 / 120</td>
<td>16 / 23</td>
<td>38 / 136</td>
<td>-</td>
<td>12 / 36</td>
<td>8.59E-09</td>
</tr>
<tr>
<td>Cytosol</td>
<td>40 / 110</td>
<td>-</td>
<td>11 / 62</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>6.11 E-37</td>
<td></td>
<td>4.56 E-08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-membrane-bounded organelle</td>
<td>43 / 110 9.28 E-30</td>
<td>38 / 157 1.81 E-14</td>
<td>-</td>
<td>-</td>
<td>17 / 62 6.42 E-09</td>
<td>15 / 120 1.28 E-12</td>
<td>16 / 23 1.10 E-16</td>
<td>37 / 136 7.49 E-14</td>
<td>-</td>
<td>12 / 36 1.25 E-06</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>---</td>
<td>---</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>---</td>
<td>----------------</td>
</tr>
<tr>
<td>intracellular non-membrane-bounded organelle</td>
<td>-</td>
<td>38 / 157 1.81 E-14</td>
<td>-</td>
<td>-</td>
<td>17 / 62 6.42 E-09</td>
<td>15 / 120 1.28 E-12</td>
<td>16 / 23 1.10 E-16</td>
<td>37 / 136 7.49 E-14</td>
<td>-</td>
<td>12 / 36 1.25 E-06</td>
</tr>
<tr>
<td>macromolecular complex</td>
<td>44 / 110 1.47 E-21</td>
<td>46 / 157 4.33 E-07</td>
<td>-</td>
<td>-</td>
<td>16 / 120 2.52 E-12</td>
<td>16 / 23 4.10 E-14</td>
<td>46 / 136 2.04 E-08</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>intracellular organelle part</td>
<td>50 / 110 1.98 E-21</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>organelle part</td>
<td>50 / 110 2.02 E-21</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>cytoplasmic part</td>
<td>71 / 110 1.51 E-20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>16 / 23 1.73 E-07</td>
<td>40 / 136 1.39 E-13</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>cytoplasm</td>
<td>72 / 110 1.38 E-19</td>
<td>77 / 157 2.56 E-18</td>
<td>48 / 218 7.09 E-13</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>16 / 23 1.18 E-06</td>
<td>44 / 136 1.40 E-13</td>
<td>13 / 26 2.54 E-06</td>
<td>15 / 36 5.18 E-06</td>
</tr>
<tr>
<td>intracellular organelle</td>
<td>71 / 110 1.94 E-12</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>organelle</td>
<td>71 / 110 1.95 E-12</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>intracellular part</td>
<td>72 / 110 8.89 E-11</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>intracellular</td>
<td>72 / 110 1.24 E-09</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Coverage</td>
<td>Start</td>
<td>End</td>
<td>Value 1</td>
<td>Value 2</td>
<td>Value 3</td>
<td>Value 4</td>
<td>Value 5</td>
<td>Value 6</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------</td>
<td>-------</td>
<td>-------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>plastid</td>
<td>33 / 110</td>
<td>39 / 157</td>
<td>32 / 218</td>
<td>4.90 E-05</td>
<td>3.08 E-12</td>
<td>3.50 E-14</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>chloroplast</td>
<td>31 / 110</td>
<td>36 / 157</td>
<td>30 / 218</td>
<td>2.82 E-4</td>
<td>1.11 E-10</td>
<td>4.86 E-13</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>cytosolic small ribosomal subunit</td>
<td>6 / 110</td>
<td>6 / 157</td>
<td>6 / 218</td>
<td>6.00 E-4</td>
<td>1.30 E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>microbody</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>12 / 62</td>
<td>8.22 E-17</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>small ribosomal subunit</td>
<td>-</td>
<td>9 / 157</td>
<td>21 / 218</td>
<td>3.90 E-07</td>
<td>7.44 E-07</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>plastid part</td>
<td>-</td>
<td>15 / 157</td>
<td>19 / 218</td>
<td>7.68 E-07</td>
<td>9.31 E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>plastid stroma</td>
<td>-</td>
<td>19 / 157</td>
<td>19 / 218</td>
<td>7.68 E-07</td>
<td>9.31 E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>chloroplast stroma</td>
<td>-</td>
<td>19 / 157</td>
<td>19 / 218</td>
<td>7.68 E-07</td>
<td>9.31 E-06</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
Table S5_C. Selection results for F-Branch gene ontology categories in non-disordered proteins encoded by chloroplast genes and transferred to nuclear genome.

<table>
<thead>
<tr>
<th>GO annotation</th>
<th>AT</th>
<th>PT</th>
<th>VV</th>
<th>OS</th>
<th>SB</th>
<th>ZM</th>
<th>GM</th>
<th>PP</th>
<th>OT</th>
<th>MCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>structural constituent of ribosome</td>
<td>41 / 110</td>
<td>36 / 157</td>
<td>14 / 218</td>
<td>15 / 62</td>
<td>17 / 62</td>
<td>-</td>
<td>-</td>
<td>37 / 136</td>
<td>-</td>
<td>1.09 E-19</td>
</tr>
<tr>
<td>UDP-3-O-[3-hydroxymyristoyl] acetylglucosamine deacetylase activity</td>
<td>5 / 110</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>AMP binding</td>
<td>5 / 110</td>
<td>4 / 157</td>
<td>5 / 218</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>deacetylase activity</td>
<td>5 / 110</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>hydrolase activity, acting on carbon-nitrogen (but not peptide) bonds, in amides</td>
<td>5 / 110</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>thiamine pyrophosphate binding</td>
<td>-</td>
<td>-</td>
<td>7 / 218</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Activity</td>
<td>Unit</td>
<td>Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>--------</td>
<td>------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>acetolactate synthase activity</td>
<td></td>
<td>4 / 218 7.67 E-07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>structural molecule activity</td>
<td></td>
<td>14 / 218 5.75 E-06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>glutamate synthase activity</td>
<td></td>
<td>7 / 157 5.75 E-11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>oxidoreductase activity, acting on the CH-NH2 group of donors</td>
<td></td>
<td>7 / 62 2.19 E-16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ligase activity, forming carbon-sulfur bonds</td>
<td></td>
<td>7 / 62 7.15 E-14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-coumarate-CoA activity</td>
<td></td>
<td>12 / 157 1.29 E-15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CoA-ligase activity</td>
<td></td>
<td>13 / 157 3.81 E-15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>acid-thiol ligase activity</td>
<td></td>
<td>13 / 157 3.81 E-15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>benzoate-CoA ligase activity</td>
<td></td>
<td>6 / 157 1.03 E-11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>---------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>two-component response regulator activity</td>
<td>$11/157$ $1.66 \times 10^{-8}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>acetylglutamate kinase activity</td>
<td>$4/157$ $1.28 \times 10^{-6}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ligase activity</td>
<td>$26/157$ $2.02 \times 10^{-6}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>oxidoreductase activity, acting on the CH-NH2 group of donors</td>
<td>$7/157$ $3.78 \times 10^{-6}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>glutamate 5-kinase activity</td>
<td>$4/157$ $8.91 \times 10^{-6}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>