**Supplemental Table S5.** Principal component analysis (PCA) of $g_m$ with loadings of principal components (PC), percent total variation explained and correlation coefficients ($r$) of leaf traits to each component.

<table>
<thead>
<tr>
<th>Loading variables</th>
<th>Trait</th>
<th>PC1 (25.3%)</th>
<th>Trait</th>
<th>PC2 (14.8%)</th>
<th>Trait</th>
<th>PC3 (11.0%)</th>
<th>Trait</th>
<th>PC4 (10.6%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pmes/S_P</td>
<td>0.191</td>
<td>T_P</td>
<td>0.197</td>
<td>T_LS</td>
<td>0.136</td>
<td>Chl_L</td>
<td>0.171</td>
</tr>
<tr>
<td></td>
<td>Smes/S_US</td>
<td>0.181</td>
<td>Smes/S_P</td>
<td>0.188</td>
<td>fias_LS</td>
<td>0.133</td>
<td>Smes/S_LS</td>
<td>0.147</td>
</tr>
<tr>
<td></td>
<td>Pmes/S_US</td>
<td>0.176</td>
<td>Pmes/S_US</td>
<td>-0.123</td>
<td>Chl_W</td>
<td>-0.117</td>
<td>T_LS</td>
<td>0.132</td>
</tr>
<tr>
<td></td>
<td>N/Smes/S</td>
<td>-0.151</td>
<td>fias_US</td>
<td>0.110</td>
<td>T_CW</td>
<td>0.116</td>
<td>Pmes/S_LS</td>
<td>0.114</td>
</tr>
<tr>
<td></td>
<td>T_US</td>
<td>0.151</td>
<td>T_CW</td>
<td>0.102</td>
<td>Sc/S</td>
<td>-0.115</td>
<td>Pmes/S_P</td>
<td>-0.070</td>
</tr>
<tr>
<td></td>
<td>Sc/S</td>
<td>0.132</td>
<td>fias_LS</td>
<td>0.086</td>
<td>fias_P</td>
<td>-0.095</td>
<td>Smes/S_P</td>
<td>-0.060</td>
</tr>
<tr>
<td></td>
<td>Smes/S_LS</td>
<td>0.128</td>
<td>Smes/S_US</td>
<td>-0.084</td>
<td>Smes/S_P</td>
<td>-0.077</td>
<td>Smes/S_US</td>
<td>-0.055</td>
</tr>
<tr>
<td></td>
<td>Pmes/S_LS</td>
<td>0.120</td>
<td>fias_P</td>
<td>0.076</td>
<td>Chl_L</td>
<td>-0.065</td>
<td>fias_P</td>
<td>0.055</td>
</tr>
<tr>
<td></td>
<td>fias_P</td>
<td>-0.113</td>
<td>Pmes/S_P</td>
<td>0.063</td>
<td>Smes/S_US</td>
<td>0.053</td>
<td>Sc/S</td>
<td>-0.049</td>
</tr>
<tr>
<td></td>
<td>T_GR</td>
<td>0.109</td>
<td>N/Smes/S</td>
<td>-0.062</td>
<td>Smes/S_LS</td>
<td>-0.050</td>
<td>fias_LS</td>
<td>0.045</td>
</tr>
<tr>
<td></td>
<td>Chl_W</td>
<td>0.090</td>
<td>Chl_L</td>
<td>-0.057</td>
<td>Pmes/S_P</td>
<td>0.048</td>
<td>T_CW</td>
<td>0.040</td>
</tr>
<tr>
<td></td>
<td>T_P</td>
<td>0.081</td>
<td>T_LS</td>
<td>0.039</td>
<td>Pmes/S_LS</td>
<td>-0.046</td>
<td>T_P</td>
<td>0.038</td>
</tr>
<tr>
<td></td>
<td>T_LS</td>
<td>0.081</td>
<td>Pmes/S_LS</td>
<td>-0.038</td>
<td>T_GR</td>
<td>0.041</td>
<td>Pmes/S_US</td>
<td>-0.031</td>
</tr>
<tr>
<td></td>
<td>fias_LS</td>
<td>-0.073</td>
<td>T_US</td>
<td>0.030</td>
<td>T_P</td>
<td>-0.039</td>
<td>T_GR</td>
<td>0.021</td>
</tr>
<tr>
<td></td>
<td>Smes/S_P</td>
<td>0.059</td>
<td>Smes/S_LS</td>
<td>-0.022</td>
<td>Pmes/S_US</td>
<td>0.034</td>
<td>T_US</td>
<td>-0.018</td>
</tr>
<tr>
<td></td>
<td>fias_US</td>
<td>-0.045</td>
<td>T_GR</td>
<td>0.016</td>
<td>T_US</td>
<td>-0.013</td>
<td>Chl_W</td>
<td>0.018</td>
</tr>
<tr>
<td></td>
<td>T_CW</td>
<td>0.037</td>
<td>Sc/S</td>
<td>0.007</td>
<td>fias_US</td>
<td>0.007</td>
<td>N/Smes/S</td>
<td>-0.013</td>
</tr>
<tr>
<td></td>
<td>Chl_L</td>
<td>-0.015</td>
<td>Chl_W</td>
<td>0.006</td>
<td>N/Smes/S</td>
<td>-0.007</td>
<td>fias_US</td>
<td>-0.004</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Correlation to other traits</th>
<th>Trait</th>
<th>PC1 (25.3%)</th>
<th>Trait</th>
<th>PC2 (14.8%)</th>
<th>Trait</th>
<th>PC3 (11.0%)</th>
<th>Trait</th>
<th>PC4 (10.6%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LMA</td>
<td>0.299</td>
<td>0.572***</td>
<td>-0.022</td>
<td>-0.095</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>-0.037</td>
<td>0.193</td>
<td>0.034</td>
<td>0.006</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>-0.317</td>
<td>0.113</td>
<td>0.019</td>
<td>0.071</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leaf thickness</td>
<td>0.608***</td>
<td>0.419</td>
<td>0.258</td>
<td>0.332</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chlorophyll content</td>
<td>0.163</td>
<td>0.465**</td>
<td>-0.070</td>
<td>0.297</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stomatal density</td>
<td>0.224</td>
<td>-0.365</td>
<td>-0.223</td>
<td>-0.304</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stomata pore length</td>
<td>-0.225</td>
<td>0.244</td>
<td>0.282</td>
<td>0.407</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Supplemental Table S1 for full abbreviations and trait values

* P<0.05, ** P<0.01, *** P<0.001