Plant height heterosis is quantitatively associated with expression levels of plastid ribosomal proteins

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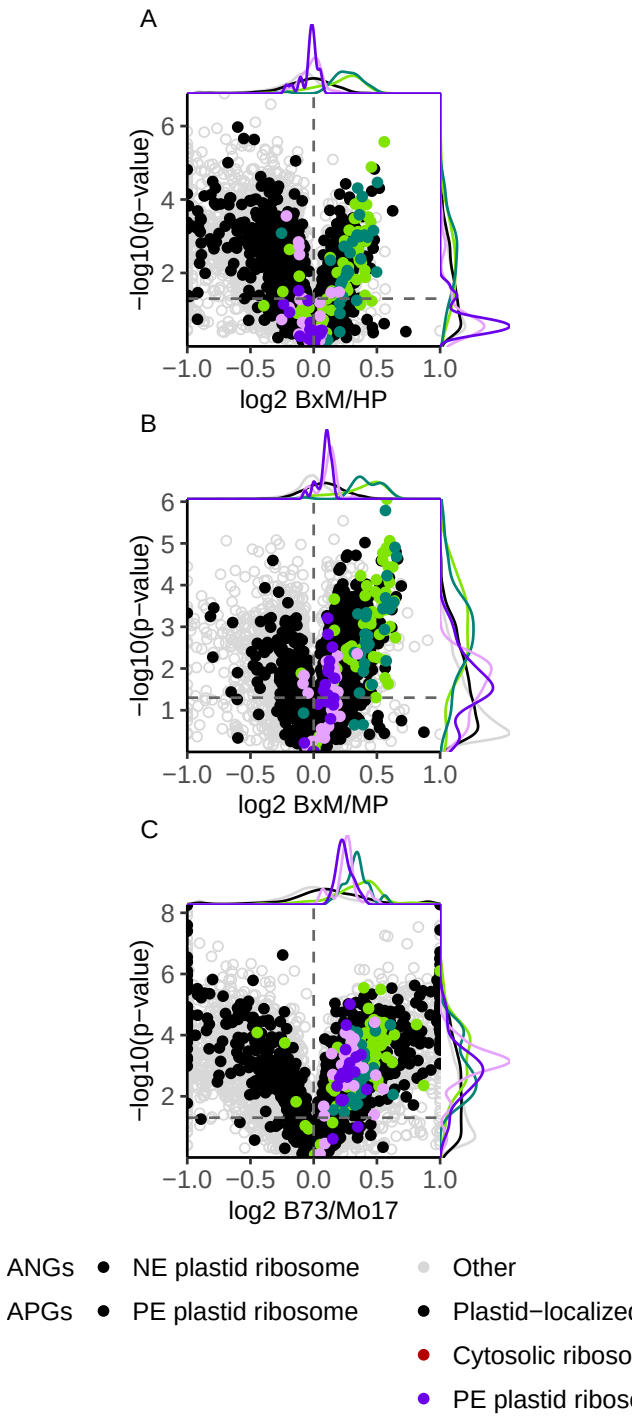

Figure 1: Volcano plots displaying expression patterns of the most significantly non-additive proteins, representing B73xMo17/high-parent (A), B73xMo17 /mid-parent (B), and B73/Mo17 (C). Points to the left of the vertical dotted line correspond to below high-parent (A), below mid-parent (B), or Mo17 high-parent (C) proteins; points to the right of the vertical dotted line correspond to above high-parent (A), above mid-parent (B), or B73 high-parent (C) proteins. Photosynthesis-associated Nuclear Genes (PhANGs), Photosynthesis-associated Plastid Genes (PhAPGs), Nuclear-Encoded (NE) plastid ribosome, and Plastid-Encoded (PE) plastid ribosome proteins are color-coded.

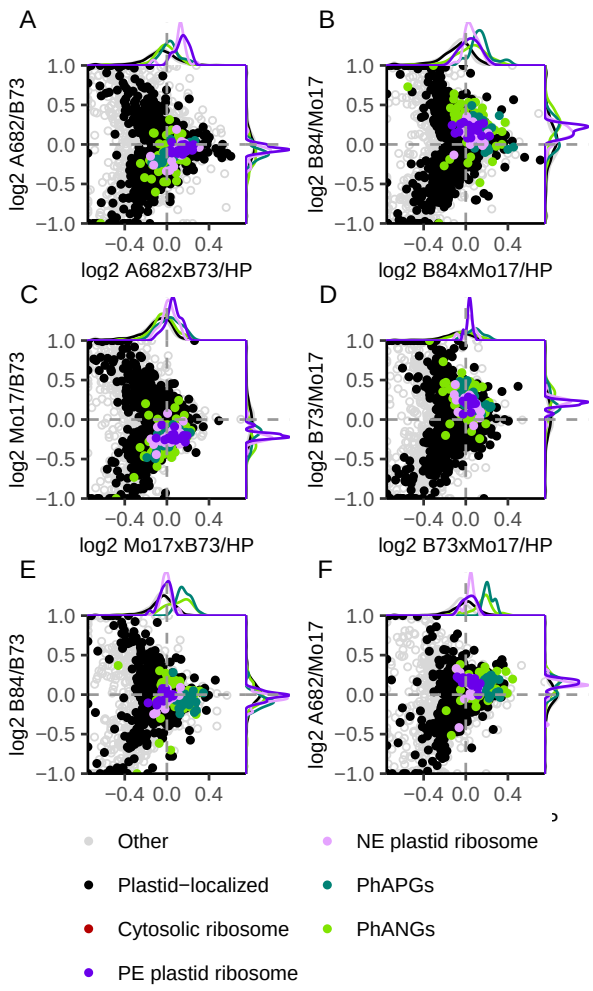

Figure 2: Volcano plots displaying plastid-localized proteins in seedling leaves of six hybrids relative to high-parent (HP) levels. Hybrids represented in A-F are ordered from greatest plant height heterosis (A) to least plant height heterosis (F). Points to the left or right of the vertical dotted lines correspond to proteins that are below high-parent or above high-parent, respectively. -associated Nuclear Genes (PhANGs), Photosynthesis-associated Plastid Genes (PhAPGs), Plastid-Encoded (PE) plastid ribosomes, and Nuclear-Encoded (NE) plastid ribosomes are color-coded.

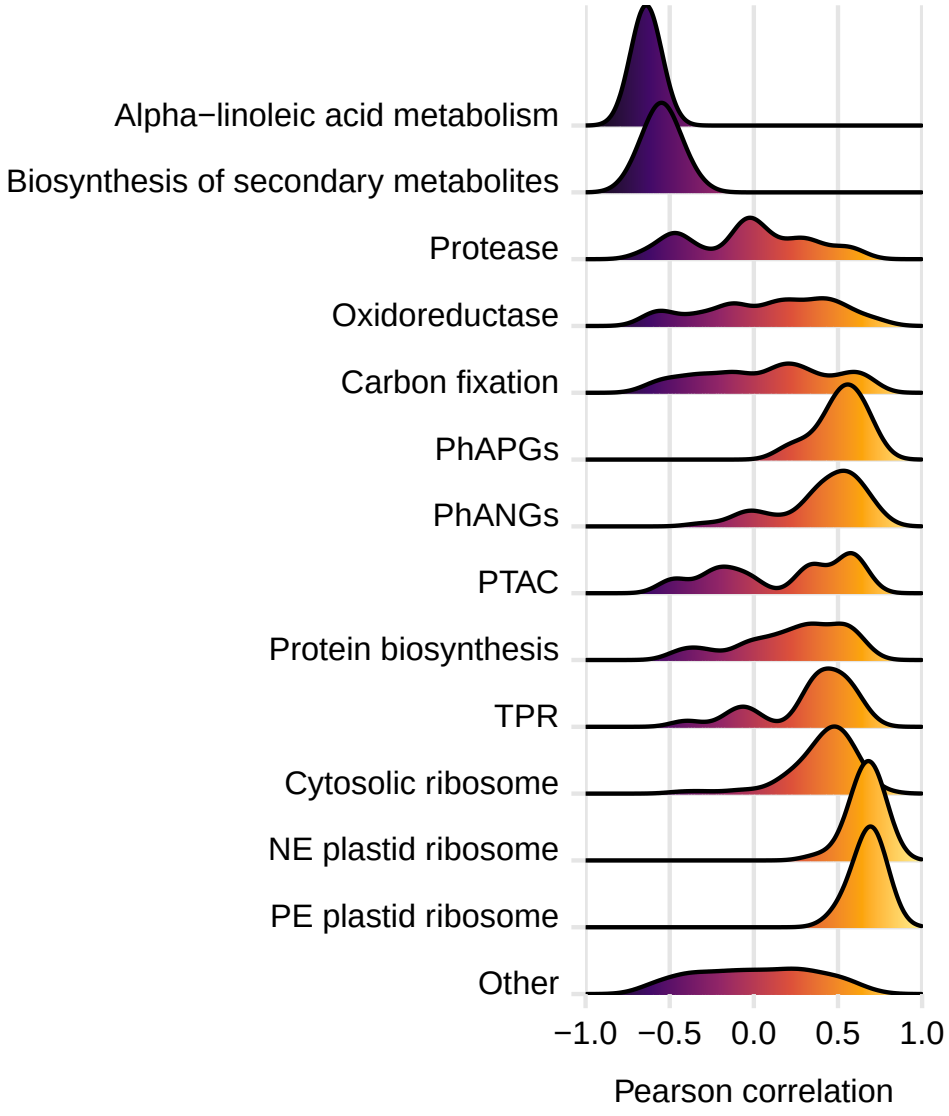

Figure 3: Density curves of Pearson correlations between protein expression heterosis and plant height heterosis in the combined RIL and six hybrids datasets.

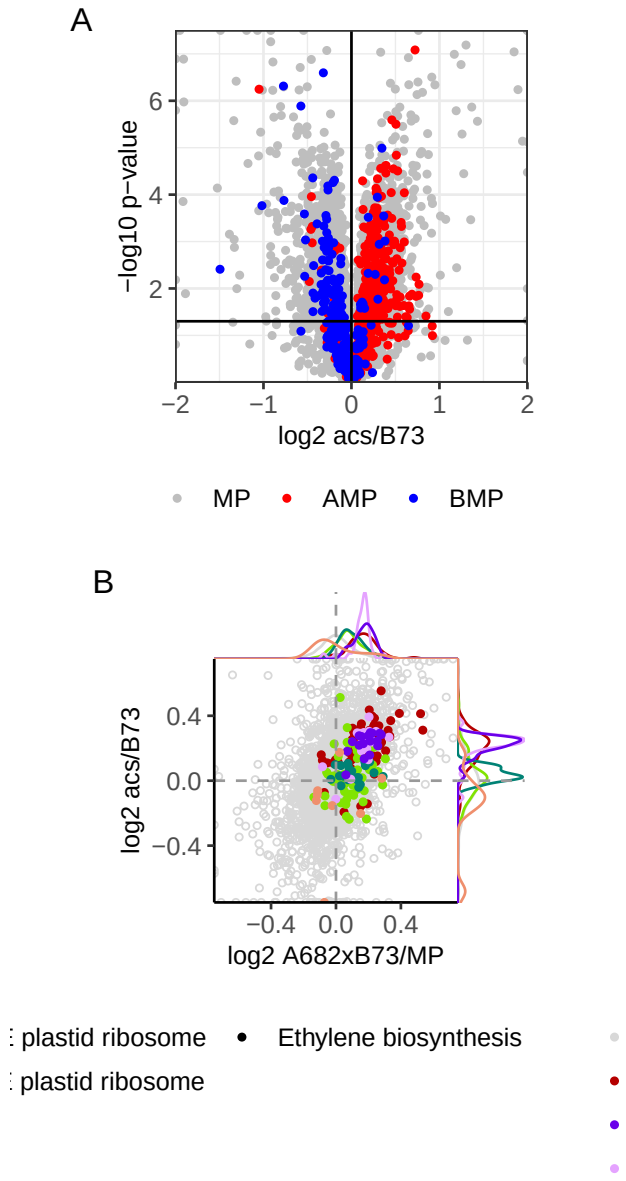

Figure 4: (A) Volcano plot of protein expression in the acs2-6 double mutant in B73 background relative to B73. Each data point represents the mean of five biological replicates. Colors correspond to their expression in the hybrid with greatest plant height heterosis, A682xB73, designated as mid-parent (MP), above mid-parent (AMP), or below mid-parent (BMP) (B) Plastid-localized proteins in seedling leaves of the acs2-6 double mutant in B73 background relative to B73, compared to expression in A682xB73 relative to MP. Points to the left or right of the vertical dotted line correspond to proteins that are below mid-parent or above mid-parent, respectively. Proteins above or below the horizontal dotted line correspond to proteins that are over-expressed or under-expressed in the mutant, respectively. Photosynthesis-Associated Nuclear Genes (PhANGs), Photosynthesis-Associated Plastid Genes (PhAPGs), Plastid-Encoded (PE) plastid ribosomes, Nuclear-Encoded (NE) plastid ribosomes, and ethylene biosynthesis proteins are color-coded.

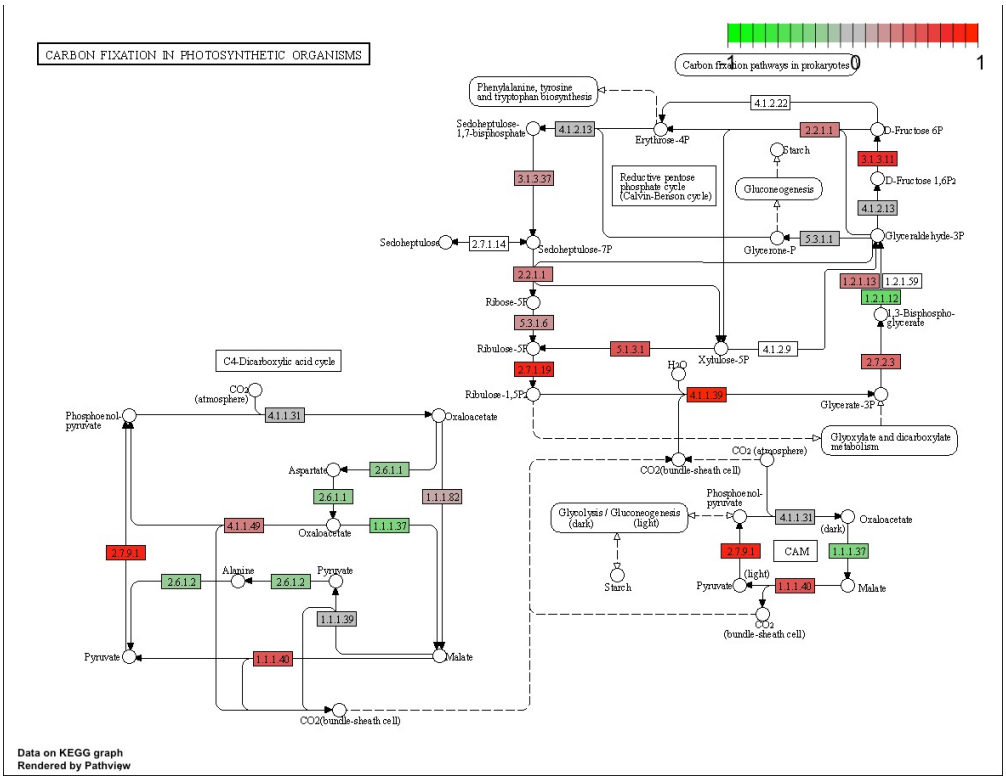

Figure 5: Expression of carbon fixation enzymes in the hybrid B73xMo17 relative to its mid-parent level.

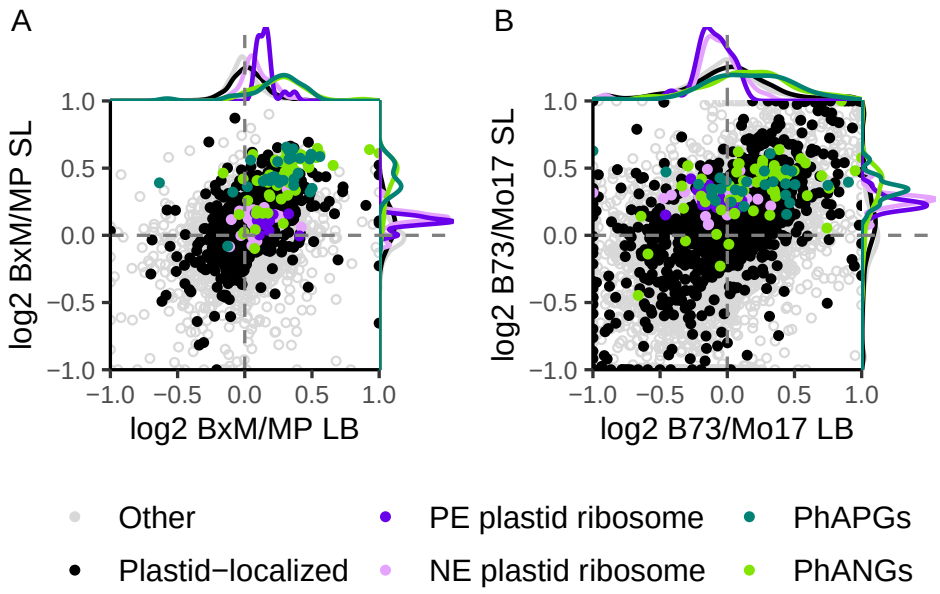

Figure 6: Comparison of expression of the significantly non-additive proteins in seedling leaf (SL) versus leaf blade (LB) tissue. A compares hybrid/mid-parent values; B compares parent/parent values. Points to the left of the vertical dotted line correspond to proteins that are below mid-parent (A) or Mo17 high-parent (B) in the leaf blade; points to the right of the vertical dotted line correspond to proteins that are above mid-parent (A) or B73 high-parent (B) in the leaf blade. Points below the horizontal dotted line correspond to proteins that are below mid-parent (A) or Mo17 high-parent (B) in the seedling leaf; points above the horizontal dotted line correspond to proteins that are above mid-parent (A) or B73 high-parent (B) in the seedling leaf. Photosynthesis-associated Nuclear Genes (PhANGs), Photosynthesis-associated Plastid Genes (PhAPGs), Plastid-Encoded (PE) plastid ribosomes, and Nuclear-Encoded (NE) plastid ribosomes are color-coded.

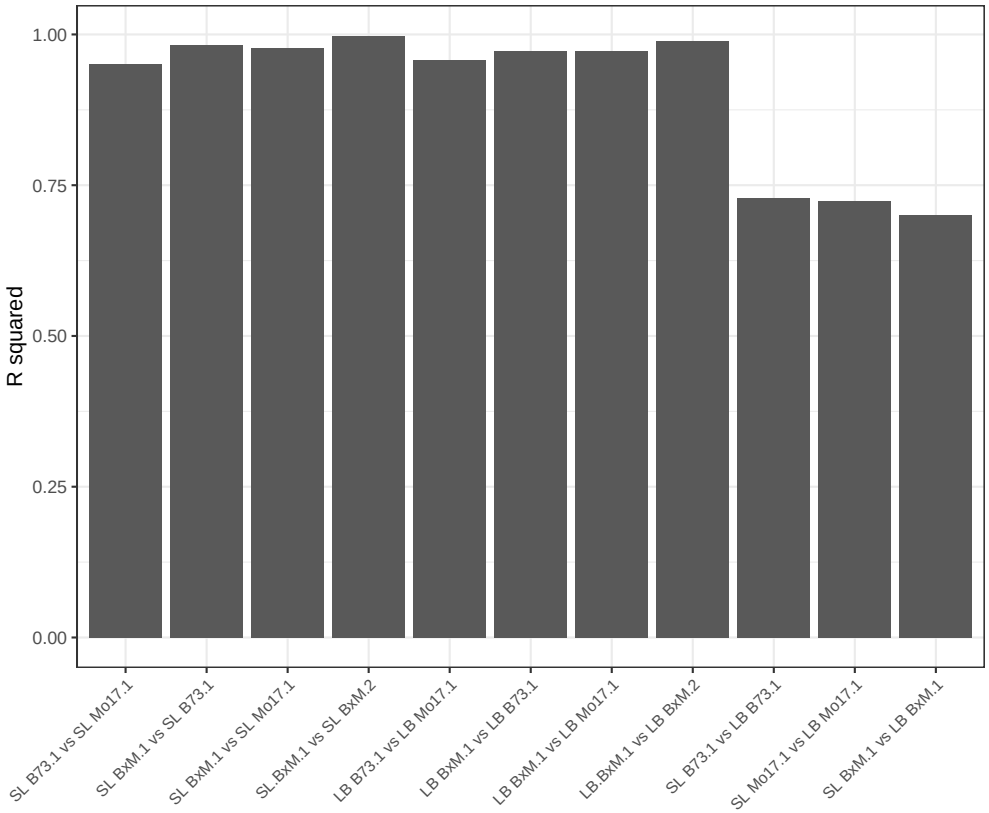

Figure 7: R-squared values from the comparison of biological replicates of the seedling leaf (SL) and mature leaf blade (LB) tissues.

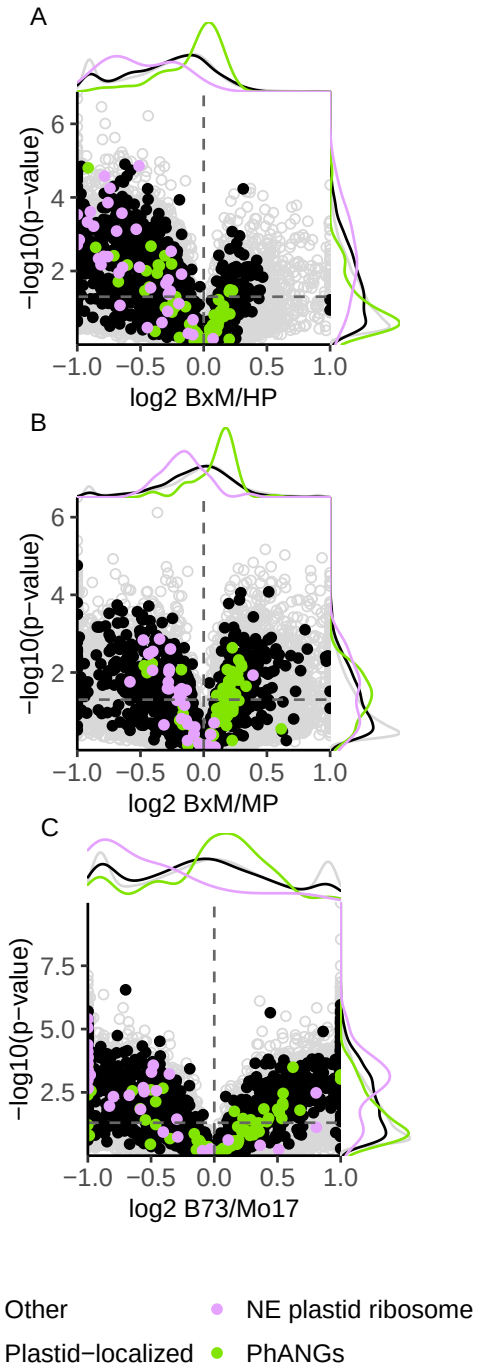

Figure 8: Volcano plots displaying RNA expression patterns of the most significantly non-additive proteins, representing B73xMo17/high-parent (A), B73xMo17/mid-parent (B), and B73/Mo17 (C). Points to the left of the vertical dotted line correspond to below high-parent (A), below mid-parent (B), or Mo17 high-parent (C) transcripts; points to the right of the vertical dotted line correspond to above high-parent (A), above mid-parent (B), or B73 high-parent (C) transcripts. Photosynthesis-associated Nuclear Genes (PhANGs), Nuclear-Encoded (NE) plastid ribosome, and are color-coded.

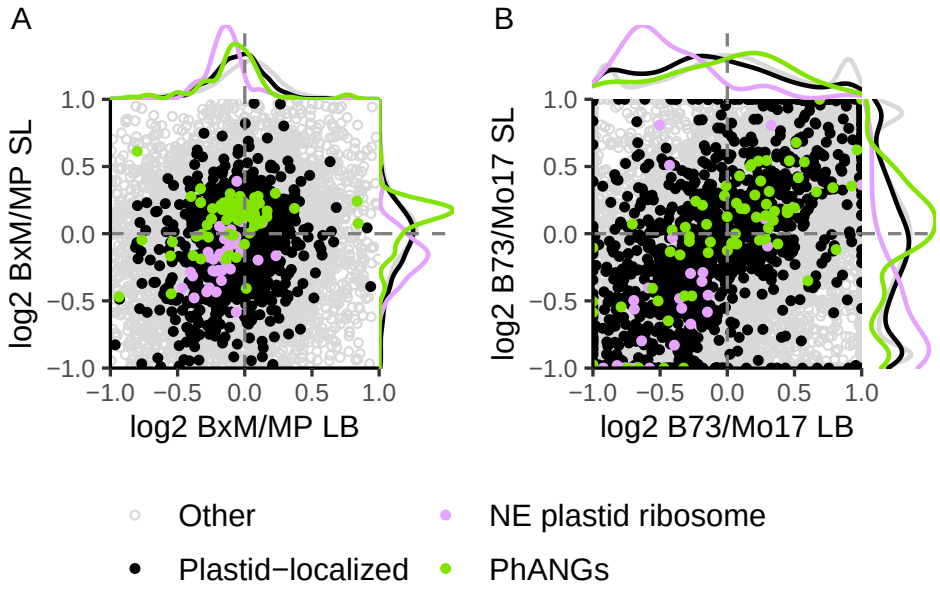

Figure 9: Comparison of expression of transcripts for the significantly non-additive proteins in seedling leaf (SL) versus leaf blade (LB) tissue. A compares hybrid/mid-parent values; B compares parent/parent values. Points to the left of the vertical dotted line correspond to transcripts that are below mid-parent (A) or Mo17 high-parent (B) in the leaf blade; points to the right of the vertical dotted line correspond to transcripts that are above mid-parent (A) or B73 high-parent (B) in the leaf blade. Points below the horizontal dotted line correspond to transcripts that are below mid-parent (A) or Mo17 high-parent (B) in the seedling leaf; points above the horizontal dotted line correspond to transcripts that are above mid-parent (A) or B73 high-parent (B) in the seedling leaf. Photosynthesis-associated Nuclear Genes (PhANGs) and Nuclear-Encoded (NE) plastid ribosomes are color-coded.