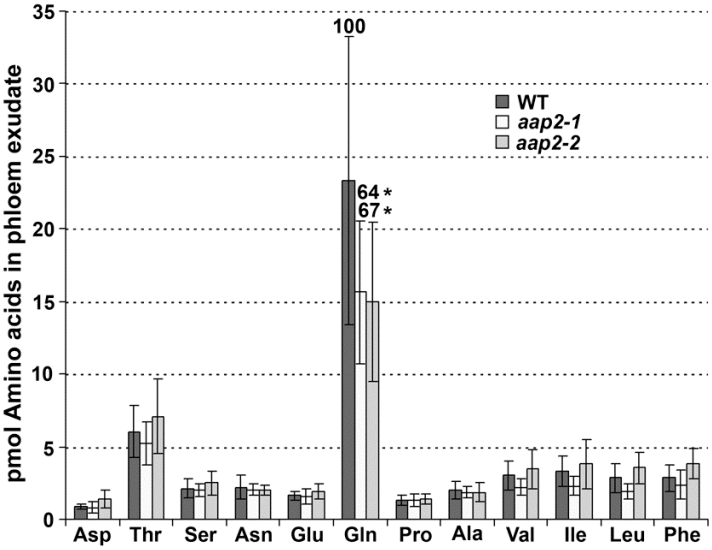
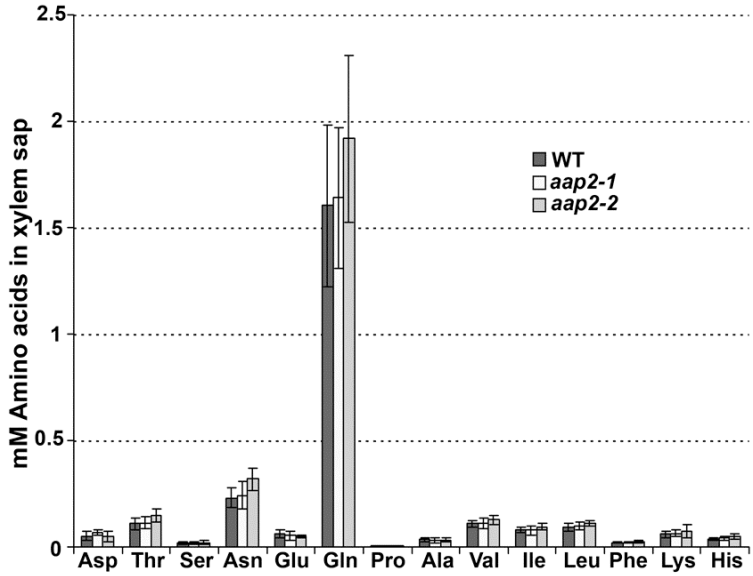
**A**



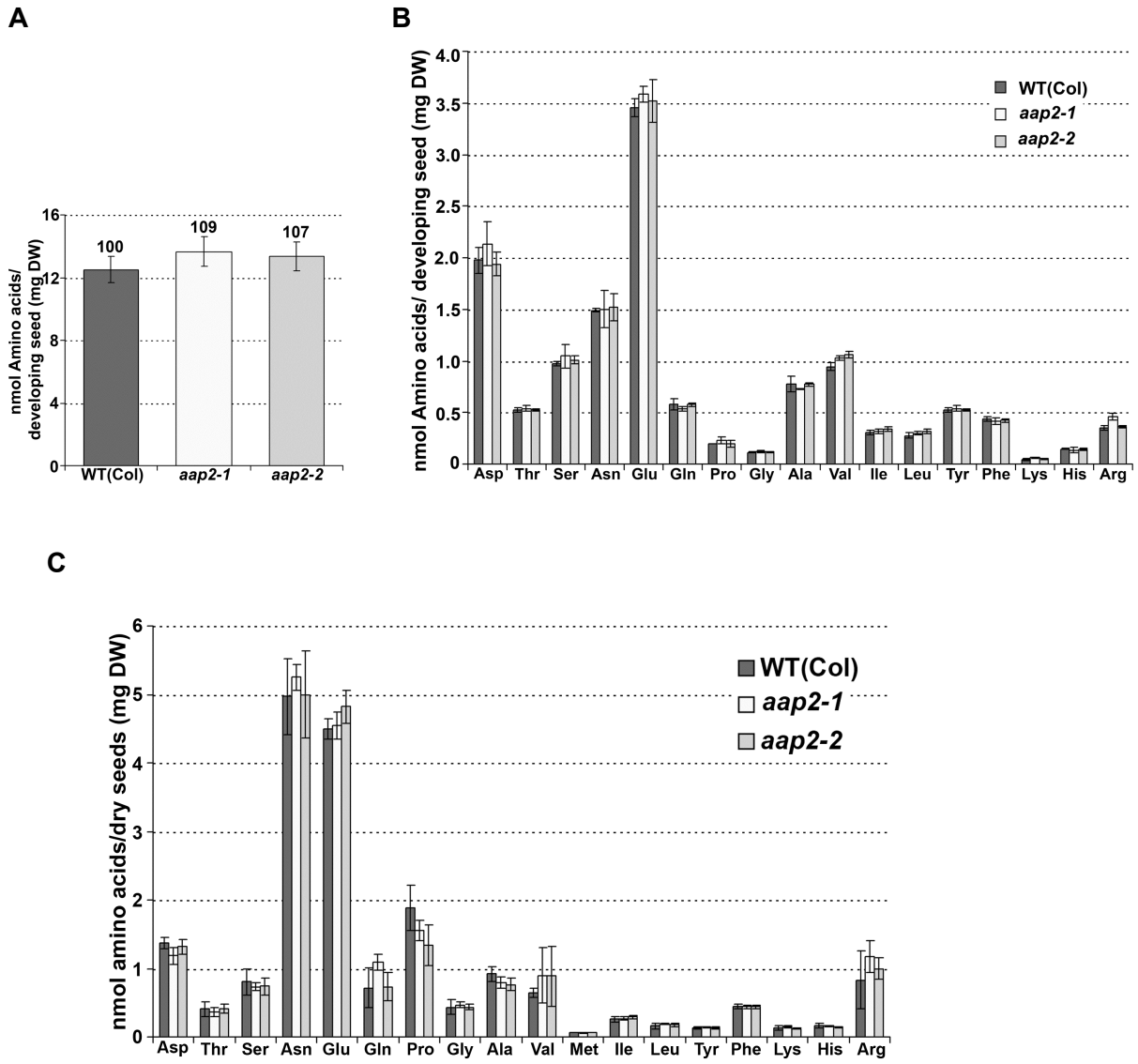

**B**




**Supplemental Figure 1. Amino Acid Concentrations and Composition in the Phloem Exudate and Xylem Sap of 6-Week Old *aap2* Plants.** Error bars depict standard deviation.

**(A)** Free amino acids in the phloem exudate (*n* = 8).

**(B)** Free amino acids in the xylem sap (*n* = 10).




**Supplemental Figure 2. Amino Acid Levels in Developing and Desiccated Seeds.**

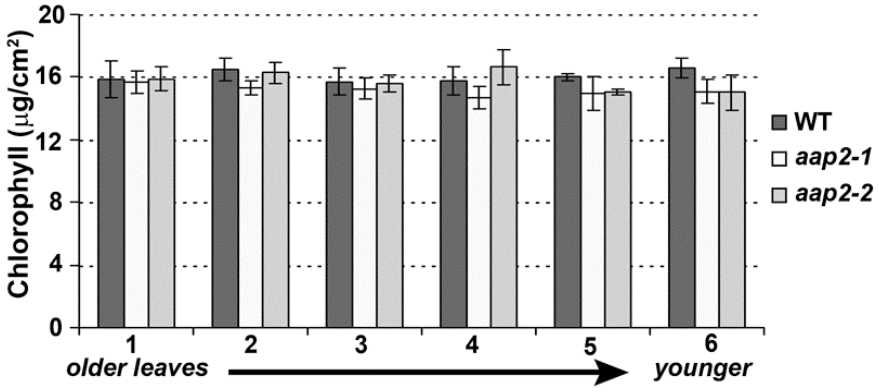
Error bars depict standard deviation.

**(A)** Total free amino acids in developing *aap2* seeds (*n* = 4).

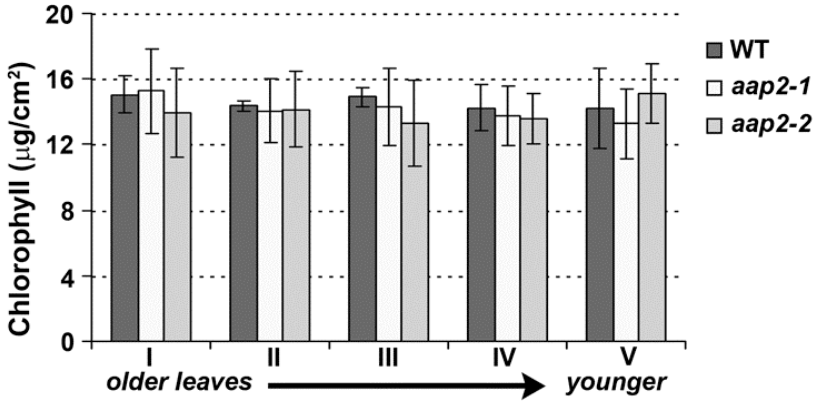
**(B)** Concentrations and composition of free amino acids in developing *aap2* seeds (*n* = 4).

**(C)** Concentrations and composition of free amino acids in desiccated *aap2* seeds (*n* = 4).

**A**




**B**




**Supplemental Figure 3. Leaf Chlorophyll Levels in Four and Six Week Old *aap2* Plants.** Error bars depict standard deviation.

**(A)** Four weeks old *aap2* and WT plants (*n* = 5).

**(B)** Six weeks old *aap2* and WT plants (*n* = 5).

Supplemental Data. Zhang et al. (2010). Plant Cell 10.1105/tpc.110.073833

**Supplemental Table 1. Overview of Primers Used for Expression Analyses of Genes of N and C Metabolism and Transport.**

| Genes | Accession | Protein | Function | Primers used | Literature |
|---|---|---|---|---|---|
| *cPGM* | At1g70730 | PGM | phospho-glucomutase | F5'-CATGGGATTGAGTAAAACTGATGATG-3'<br>R5'-CTGAAGTATGGTATGGCCCCAAC-3' | Fettke et al., 2008 |
| AGPase *mRNA* | At1g74910 | AGPase | ADP glucose pyrophosphorylase | F5'-GCTGCTTCATTACACCGAGAAACC-3'<br>R5'-TTCCTCTGAGTAGAAACATCTCCTATG-3' | Villand et al., 1993 |
| *HXK3* | At1g50460 | HXK3 | hexokinase 3 | F5'-ATTATCACGATCCAGATACGGTTGTTG-3'<br>R5'-ATGTCATACGAAGTTCTAGGCAAATGAG-3' | Karve et al., 2008 |
| *DPE2* | At2g40840 | DPE2 | cytosolic transglucosidase | F5'-GTCAGATCAAGATGATTCAGTTGTTGTC-3'<br>F5'-CGACATAGTTGAGTCTAAGTCCATTTTC-3' | Chia et al., 2004 |
| *SPS4F* | At4g10120 | SPS4F | sucrose phosphate synthase | F5'-GATTGGATAAACAGTTACCTGGAAGC-3'<br>F5'-ATGGGACTAAACACCTTCTCTTGATG-3' | Strand et al., 2000 |
| *TPT* | At5g46110 | TPT | trioseP/ phosphate translocator | F5'-CTGCCATCATCGTTGAAGGTCCTAAAC-3'<br>R5'-ATTCCAACCCAGAAGAGATCAGAGATG-3' | Schneider et al., 2002 |
| *pGlcT* | At5g16150 | pGlcT | plastidic glucose transporter | F5'-GATCCAGAGCGTTATGAGTTTCTCTTCTG-3'<br>F5'-AAAGAGTATAGCACCAAGACAAGCAACAC-3' | Weber et al., 2000 |
| *MEX1* | At5g17520 | MEX1 | plastidic maltose transporter | F5'-GAGCACTATTTATCCGTGATTTGATGTG-3'<br>F5'-CATCTCTCCACAAAGCCAGTCCTATC-3' | Niittyla et al., 2004 |
| *TMT2* | At4g35300 | TMT2 | vacuolar hexose transporter | F5'-TGGTTCTCTAGTAATGCTATGGTCTCC-3'<br>R5'-GTGAACTGCGGTAGCGTATTCAAC-3' | Wormit et al., 2006 |
| *VGT2* | At5g17010 | VGT2 | vaculoar hexose transporter | F5'-GGTCTCAGTTGGACTGGCAATGC-3'<br>R5'-CTGTAAGACTACCGATTCCATAACCTCC-3' | Aluri and Büttner, 2006 |
| *SUC2* | At1g22710 | SUC2 | sucrose transporter | F5'-GGTGTTCTGAATCTAGCCATTGTCG-3'<br>R5'-GTCAACGCCAATACACCACTTACC-3' | Sauer and Stolz, 1994 |
| *SUT2/ SUC3* | At2g02860 | SUT2/ SUC3 | sucrose transporter | F5'-GACGACCATTTATTCTAGTTGGATCATTC-3'<br>R5'-GCAATGTTCCTTTGAATCTCCTAACAG-3' | Barker et al., 2000<br>Meyer et al., 2004 |
| *SUT4/ SUC4* | At1g09960 | SUT4/ SUC4 | sucrose transporter | F5'-ACTTCATATAGTGCTGGGGTCAGTATG-3'<br>R5'-TTATCATTCCAAGAAAGCAAATAGCC-3' | Weise et al., 2000 |
| *SUC5* | At1g71890 | SUC5 | sucrose transporter | F5'-CGGCGGTGGAAACCTACCTTC-3'<br>R5'-GAATCCCATAGCCCCTGACATG-3' | Baud et al., 2005 |
| *AAP1* | At1g58360 | AAP1 | amino acid transporter | F5'-GCATCGCTGTCCACCTTATTG-3'<br>R5'-CTTGTTGTCTGGATAGTTTCTGTTGC-3' | Hirner et al., 1998;<br>Sanders et al., 2009 |
| *AAP2* | At5g09220 | AAP2 | amino acid transporter | F5'-GGTCGCTTTCGCCATCATTACTTACTAC-3'<br>R5'-CAAGCATCACTCCGGCGATTGATCC-3' | Hirner et al., 1998 |
| *AAP8* | At1g10010 | AAP8 | amino acid transporter | F5'-GGTCGCTTTCGCCATCATTACTTACTAC-3'<br>R5'-GTAACCAATAGTGACCCCTACGAGATTCAC-3' | Schmidt et al., 2007 |
| *LHT1* | At5g40780 | LHT1 | amino acid transporter | F5'-ATTAGCAGCAGCGAGACAAAAAGAG-3'<br>R5'-TAGTGTTATGACCCATGACAAAACCAAC-3' | Chen and Bush, 1997 |
| *ANT* | At3g30390 | ANT | aromatic neutral amino acid transporter | F5'-GCTGCTATTCTTCTGATTACTACTCTTGG-3'<br>R5'-AATAATGAGAAACACAACCGCCAGAG-3' | Carter et al., 2004 |
| *CAT2* | At1g58030 | CAT2 | cationic amino acid transporter | F5'-ATGGGGTTTTTGGTGGATACGC-3'<br>R5'-GAGGAACAGTGAGGGCTCTAGCAAG-3' | Su et al., 2004 |
| *PTR2* | At2g02040 | PTR2 | peptide transporter | F5'-TACAACAAGAAATGGGCAAGAAGGTTG-3'<br>R5'-GCTTATACCTAGCAGCAGAGAAGAAGTAAAC- | Steiner et al., 1994<br>Carter et al., 2004 |
| *KASI* | At5g46290 | KASI | β-ketoacyl-acyl carrier protein synthase I | F5'-ACTGGTATGGGTCTCGTCTCTGTG-3'<br>R5'-TTCAAACAATCATCAAGCCTACGC-3' | Olsen et al., 2004 |
| *FAE1* | At4g34520 | FAE1 | fatty acid elongation 1 | F5'-GCGGGGACAACACTTACGAAAAATATAG-3'<br>R5'-GTTTCTTGGCGACGAAGGTAGCG-3' | James et al., 1995 |
| *FAD2* | At3g12120 | FAD2 | fatty acid desaturase 2 | F5'-GGTTCGCTTGCCATTTCTTCCC-3'<br>R5'-GCATTCACTATCAGAAGCGGTACTCC-3' | Covello and Reed, 1996 |
| *FAD3* | At2g29980 | FAD3 | fatty acid desaturase 3 | F5'-TCCTCTACTGAATAGTGTGGTTGGTCAC-3'<br>R5'-GGACAGTGTATCTGAGCATCCGAGTAC-3' | Browse et al., 1993 |
| *2S1* | At4g27140 | 2S albumin | albumin storage protein | F5'-GAAGAAGATGACGCCACTAACCCC-3'<br>R5'-GCTGTTGTTCCTGCTGTTGTCCC-3' | Guerche et al., 1990 |
| *CRU3* | At4g28520 | 12S globulin | globulin storage protein | F5'-GCTATACCTTGCCCATCTTGGAGTATG-3'<br>R5'-GTTGTATTTAGGAAGCACCATCGCATTAC-3' | Pang et al., 1988 |