

# Supplementary Materials: Identification of Differentially Expressed Genes between “Honeycrisp” and “Golden Delicious” Apple Fruit Tissues Reveal Candidates for Crop Improvement

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**Table S1.** Subset of differentially expressed transcripts from differential display study, confirmed via qRT-PCR, from apple genome release 1.0.

| Gene Model ID | Gene Model ID  |
|---------------|----------------|
| MDP0000200646 | MDP0000172863  |
| MDP0000037251 | MDP0000180389  |
| MDP0000875654 | MDP0000523205  |
| MDP0000296716 | MDP0000138340  |
| MDP0000128468 | MDP0000166116  |
| MDP0000712586 | MDP0000220601  |
| MDP0000618650 | MDP0000237908  |
| MDP0000920333 | MDP0000273484  |
| MDP0000152947 | MDP0000286959  |
| MDP0000883284 | MDP0000292888  |
| MDP0000253074 | MDP0000320533  |
| MDP0000213808 | MDP00005772242 |
| MDP0000547450 | MDP0000697474  |
| MDP0000310811 | MDP0000233229  |
| MDP0000232309 | MDP0000255887  |
| MDP0000161275 | MDP0000901731  |
| MDP0000176723 |                |
| MDP0000304285 |                |

**Table S2.** BLAST output from Blast2GO against the nr-database using sequences of apple genome (v1.0) predicted genes against sequences with highest similarity to sequenced differential display fragments. SeqName—name of sequence from apple genome predicted gene set, Description—annotation, Length—length of query in base pairs, *e*-Value—expected value, Sim mean—percentage of sequence identity. Differential display fragment-to-apple genome predicted sequence correlations performed using UCLUST at default parameters in global alignment.

| SeqName       | Description   | Length | <i>e</i> -Value | Sim Mean | GO Terms  | Enzyme Codes List           | InterPro Ids  |
|---------------|---|--------|-----------------|----------|---|-----------------------------|---|
| MDP0000547450 | unc93-like protein  | 1389   | 0.00E+00        | 82.35%   | C:membrane; P:transport; P:cellular process   | -                           | IPR011701 (PFAM); IPR016196 (SUPERFAMILY); G3DSA:1.20.1250.20 (GENE3D), PTHR23294 (PANTHER), PTHR23294:SF0 (PANTHER), tmhmm (TMHMM)   |
| MDP0000172863 | protein   | 1824   | 0.00E+00        | 76.95%   | F:nucleotide binding; P:response to biotic stimulus; C:nucleus; P:signal transduction; C:membrane; P:cellular amino acid metabolic process; P:cellular protein modification process; F:receptor activity; F:kinase activity; P:response to stress; C:plastid; C:plasma membrane | EC:2.7.11.0;<br>EC:2.7.10.0 | IPR000719 (PROFILE); IPR001245 (PFAM); IPR002290 (SMART); IPR011009 (SUPERFAMILY); IPR020635 (SMART); PR00019 (PRINTS), G3DSA:1.10.510.10 (GENE3D), G3DSA:3.30.200.20 (GENE3D), G3DSA:3.80.10.10 (GENE3D), PTHR24420 (PANTHER), PTHR24420:SF428 (PANTHER), PF13504 (PFAM), PF13855 (PFAM), SignalP-NN(euk) (SIGNALP), tmhmm (TMHMM), SSF52058 (SUPERFAMILY) |
| MDP0000316244 | probable adp-ribosylation factor gtpase-activating protein agd15-like | 1596   | 2.20E-87        | 73.65%   | P:signal transduction; F:binding; F:enzyme regulator activity   | -                           | IPR001164 (PRINTS); IPR002068 (PFAM); IPR008978 (SUPERFAMILY); G3DSA:2.60.40.790 (GENE3D), PTHR23180 (PANTHER), PTHR23180:SF31 (PANTHER), tmhmm (TMHMM)   |
| MDP0000320533 | proteasome assembly chaperone   | 390    | 8.10E-61        | 78.20%   | P:catabolic process; P:lipid metabolic process; P:cellular process; C:intracellular   | -                           | IPR018788 (PFAM); PTHR31051 (PANTHER)   |
| MDP0000161275 | mitochondrial substrate carrier family protein                        | 978    | 1.80E-177       | 89.30%   | C:membrane; C:mitochondrion; P:transport; P:cellular process; F:transporter activity; C:plastid   | -                           | IPR018108 (PFAM); IPR023395 (G3DSA:1.50.40.GENE3D); PTHR24089 (PANTHER), PTHR24089:SF22 (PANTHER)   |
| MDP0000232309 | transmembrane bax inhibitor motif-containing protein 4                | 759    | 4.50E-117       | 80.35%   | C:membrane; P:cellular component organization; P:transport; P:cellular process; C:intracellular   | -                           | IPR006214 (PANTHER); PTHR23291:SF24 (PANTHER), tmhmm (TMHMM)  |

Table S2. Cont.

| SeqName       | Description   | Length | e-Value  | Sim Mean | GO Terms   | Enzyme Codes List | InterPro IDs  |
|---------------|---|--------|----------|----------|--|-------------------|---|
| MDP0000875654 | hydroquinone glucosyltransferase                                    | 1419   | 0.00E+00 | 79.50%   | P:secondary metabolic process; P:biological_process; P:catabolic process; P:biosynthetic process; P:transport; P:response to stress; C:intracellular; P:cellular process; P:response to abiotic stimulus; P:cell death; P:response to external stimulus; P:cellular amino acid metabolic process; F:transferase activity | EC:2.4.1.218      | IPR002213 (PANTHER); G3DSA:3.40.50.2000 (GENE3D), PTHR11926:SF15 (PANTHER), SSF53756 (SUPERFAMILY)  |
| MDP0000883284 | PREDICTED:<br>uncharacterized protein LOC100248602 [Vitis vinifera] | 606    | 1.60E-04 | 76%      |  | -                 | SignalP-NN(euk) (SIGNALP), tmhmm (TMHMM)  |
| MDP0000237908 | metallothionein-like protein  | 201    | 4.10E-26 | 79%      | F:binding  | -                 | no IPS match  |
| MDP0000310811 | cysteine protease inhibitor   | 501    | 8.20E-56 | 81.55%   | P:biological_process; P:protein metabolic process; P:catabolic process; F:enzyme regulator activity; F:hydrolase activity  | -                 | IPR000010 (PFAM); IPR018073 (PROSITE); IPR020381 (PRODOM); G3DSA:3.10.450.10 (GENE3D), PTHR11413 (PANTHER), PTHR11413:SF3 (PANTHER), SSF54403 (SUPERFAMILY)   |
| MDP0000584042 | protein   | 951    | 0.00E+00 | 80.60%   | P:biological_process; F:molecular_function   | -                 | IPR006904 (PANTHER); PTHR16007:SF5 (PANTHER), SignalP-NN(euk) (SIGNALP), tmhmm (TMHMM)  |
| MDP0000443265 | ---NA---  | 366    | -        | -        |  | -                 | no IPS match  |
| MDP0000606453 | probable nitrite transporter at1g68570-like                         | 1743   | 0.00E+00 | 80.25%   | C:membrane; P:transport; F:transporter activity  | -                 | IPR000109 (PFAM); IPR016196 (SUPERFAMILY); IPR018456 (PROSITE); G3DSA:1.20.1250.20 (GENE3D), PTHR11654 (PANTHER), PTHR11654:SF57 (PANTHER), tmhmm (TMHMM)   |
| MDP0000255887 | tir-nbs-lrr resistance protein                                      | 3138   | 5.80E-90 | 54.15%   | F:nucleotide binding; F:ATP binding; P:signal transduction; F:nucleoside-triphosphatase activity; F:ADP binding; P:defense response; C:intracellular   | -                 | IPR000157 (PFAM); IPR000767 (PRINTS); IPR001232 (PANTHER); IPR002182 (PFAM); IPR011333 (G3DSA:3.30.710.GENE3D); IPR016072 (PFAM); IPR016073 (PFAM); G3DSA:3.40.50.10140 (GENE3D), G3DSA:3.80.10.10 (GENE3D), PTHR11165:SF47 (PANTHER), SSF52058 (SUPERFAMILY), SSF52540 (SUPERFAMILY) |

Table S2. Cont.

| SeqName       | Description   | Length | e-Value   | Sim Mean | GO Terms   | Enzyme Codes List | InterPro IDs  |
|---------------|---|--------|-----------|----------|--|-------------------|---|
| MDP0000138340 | nac domain ipr003441                                  | 639    | 3.00E-40  | 59.90%   | P:response to biotic stimulus; P:response to abiotic stimulus; F:transcription factor activity, sequence-specific DNA binding; F:protein binding; P:transcription, DNA-templated; P:multicellular organismal development; F:obsolete transcription regulator activity; P:response to endogenous stimulus; P:response to stress; C:nucleoplasm  | -                 | IPR003441 (PFAM); PTHR31989 (PANTHER), PTHR31989:SF0 (PANTHER)  |
| MDP0000200646 | nac domain ipr003441                                  | 705    | 1.20E-38  | 61.20%   | F:transcription factor activity, sequence-specific DNA binding; F:protein binding; P:transcription, DNA-templated; P:multicellular organismal development; P:response to stress; C:nucleoplasm   | -                 | IPR003441 (PFAM); PTHR31989 (PANTHER), PTHR31989:SF0 (PANTHER)  |
| MDP0000618650 | nac domain ipr003441                                  | 1494   | 0.00E+00  | 74.05%   | F:DNA binding; F:transcription factor activity, sequence-specific DNA binding; P:transcription, DNA-templated; C:cytoplasm; P:multicellular organismal development; C:nucleoplasm  | -                 | IPR003441 (PFAM); PTHR31079 (PANTHER), PTHR31079:SF0 (PANTHER)  |
| MDP0000128468 | abscisic acid stress ripening protein homolog         | 627    | 1.10E-12  | 62.75%   | P:response to stress   | -                 | IPR003496 (PFAM)  |
| MDP0000296716 | ethylene-responsive transcription factor rap2-7-like  | 1392   | 1.40E-132 | 64.15%   | P:biological_process; P:transcription, DNA-templated; P:multicellular organismal development; P:post-embryonic development; P:anatomical structure morphogenesis; P:reproduction   | -                 | IPR001471 (PRINTS); IPR016177 (SUPERFAMILY); PTHR32467 (PANTHER), PTHR32467:SF0 (PANTHER)   |
| MDP0000234325 | wve protein-protein interaction domain family protein | 1908   | 0.00E+00  | 60.85%   | P:embryo development; P:biological_process; P:signal transduction; P:post-embryonic development; P:anatomical structure morphogenesis; P:biosynthetic process; P:transport; P:response to stress; P:cellular process; P:reproduction; P:response to biotic stimulus; P:carbohydrate metabolic process; C:nucleus; P:response to abiotic stimulus; F:protein binding; P:cell death; C:cytoplasm; P:response to endogenous stimulus; P:cellular component organization | -                 | IPR004170 (PFAM); IPR012317 (PROFILE); IPR022003 (PFAM); G3DSA:3.90.228.10 (GENE3D), PTHR32263 (PANTHER), PTHR32263:SF0 (PANTHER), SSF56399 (SUPERFAMILY) |

Table S2. Cont.

| SeqName       | Description   | Length | e-Value   | Sim Mean | GO Terms  | Enzyme Codes List            | InterPro IDs   |
|---------------|---|--------|-----------|----------|---|------------------------------|--|
| MDP0000037251 | cinnamyl alcohol dehydrogenase-like protein             | 1083   | 0.00E+00  | 88.60%   | P:secondary metabolic process; F:nucleotide binding; P:response to biotic stimulus; P:cell death; F:catalytic activity; P:catabolic process; P:cellular amino acid metabolic process; P:metabolic process; P:biosynthetic process; F:binding; P:response to stress; P:cellular process  | EC:1.1.1.90;<br>EC:1.1.1.195 | IPR002085 (PANTHER); IPR002328 (PROSITE); IPR011032 (SUPERFAMILY); IPR013149 (PFAM); IPR013154 (PFAM); IPR016040 (G3DSA:3.40.50.GENE3D); IPR020843 (SMART); G3DSA:3.90.180.10 (GENE3D), PTHR11695:SF261 (PANTHER), SSF51735 (SUPERFAMILY)  |
| MDP0000580900 | porin voltage-dependent anion-selective channel protein | 846    | 1.60E-157 | 82.45%   | P:biological_process; P:generation of precursor metabolites and energy; P:catabolic process; P:transport; C:vacuole; P:cellular process; C:plastid; F:transporter activity; C:plasma membrane; P:response to biotic stimulus; P:carbohydrate metabolic process; C:cell wall; C:membrane; C:mitochondrion  | -                            | IPR001925 (PFAM); PTHR11743 (PANTHER), PTHR11743:SF14 (PANTHER)  |
| MDP0000129664 | 3-ketoacyl- thiolase                                    | 2067   | 0.00E+00  | 91.55%   | P:secondary metabolic process; P:protein metabolic process; P:catabolic process; P:signal transduction; P:metabolic process; P:biosynthetic process; C:nucleolus; C:vacuole; P:response to stress; P:cellular process; C:plastid; C:plasma membrane; P:response to biotic stimulus; C:peroxisome; P:response to external stimulus; C:membrane; P:lipid metabolic process; P:response to endogenous stimulus; C:mitochondrion; P:cellular amino acid metabolic process; P:cellular component organization; C:cytosol; F:transferase activity | EC:2.3.1.16                  | IPR002155 (PANTHER); IPR016038 (G3DSA:3.40.47.GENE3D); IPR016039 (SUPERFAMILY); IPR020610 (PROSITE); IPR020613 (PROSITE); IPR020615 (PROSITE); IPR020616 (PFAM); IPR020617 (PFAM); PTHR18919:SF15 (PANTHER)  |
| MDP0000180389 | disease resistance protein at3g14460-like               | 4335   | 0.00E+00  | 57.25%   | F:ADP binding; P:defense response   | -                            | IPR000767 (PRINTS); IPR001611 (PFAM); IPR002182 (PFAM); IPR025875 (PFAM); G3DSA:3.40.50.300 (GENE3D), G3DSA:3.80.10.10 (GENE3D), PTHR23155 (PANTHER), PTHR23155:SF138 (PANTHER), SignalP-NN(euk) (SIGNALP), SSF52047 (SUPERFAMILY), SSF52058 (SUPERFAMILY), SSF52540 (SUPERFAMILY) |
| MDP0000286959 | dentin sialophospho protein                             | 5976   | 0.00E+00  | 58.55%   | C:plasma membrane   | -                            | PTHR31267 (PANTHER)  |

Table S2. Cont.

| SeqName       | Description   | Length | e-Value  | Sim Mean | GO Terms   | Enzyme Codes List        | InterPro IDs  |
|---------------|---|--------|----------|----------|--|--------------------------|---|
| MDP0000220601 | zinc finger cch domain-containing protein 53-like   | 2217   | 0.00E+00 | 63.40%   | F:nucleic acid binding; F:binding  | -                        | IPR000504 (SMART); IPR000571 (PFAM); IPR012677 (G3DSA:3.30.70.GENE3D); G3DSA:4.10.1000.10 (GENE3D), PTHR24009 (PANTHER), PTHR24009:SF0 (PANTHER), PF14259 (PFAM), SSF54928 (SUPERFAMILY)  |
| MDP0000901731 | ---NA---  | 471    | -        | -        |  | -                        | SignalP-NN(euk) (SIGNALP), tmhmm (TMHMM)  |
| MDP0000152947 | wound-induced protein                               | 603    | 2.00E-59 | 66.90%   | P:response to biotic stimulus; P:biological_process; P:response to stress  | -                        | no IPS match  |
| MDP0000689999 | protein disulfide isomerase                         | 1503   | 0.00E+00 | 85.30%   | P:embryo development; P:cellular homeostasis; P:biological_process; P:metabolic process; P:post-embryonic development; P:cellular protein modification process; C:endoplasmic reticulum; P:biosynthetic process; C:vacuole; P:reproduction; P:response to stress; P:cellular process; F:molecular_function; C:plastid; C:plasma membrane; C:thylakoid; P:carbohydrate metabolic process; P:response to abiotic stimulus; P:cell death; F:catalytic activity; C:cell wall; C:membrane; F:transferase activity | EC:5.3.4.1; EC:2.4.1.119 | IPR005746 (PRINTS); IPR005788 (TIGRFAMs); IPR005792 (TIGRFAMs); IPR012336 (G3DSA:3.40.30.GENE3D); IPR013766 (PFAM); IPR017937 (PROSITE); PTHR18929 (PANTHER), PTHR18929:SF32 (PANTHER), PF13848 (PFAM), SignalP-NN(euk) (SIGNALP) |
| MDP0000166116 | acyl:coa ligase acetate-coa synthetase-like protein | 1659   | 0.00E+00 | 83.65%   | C:peroxisome; F:catalytic activity; P:biosynthetic process; P:cellular process   | EC:6.2.1.26              | IPR000873 (PFAM); IPR020845 (PROSITE); IPR025110 (PFAM); G3DSA:2.30.38.10 (GENE3D), G3DSA:3.30.300.30 (GENE3D), G3DSA:3.40.50.980 (GENE3D), PTHR24095 (PANTHER), PTHR24095:SF29 (PANTHER), SSF56801 (SUPERFAMILY)                 |
| MDP0000304285 | xanthine uracil permease family expressed           | 1728   | 0.00E+00 | 75.15%   | P:transport; C:plasma membrane; P:cellular process; F:transporter activity   | -                        | IPR006043 (PANTHER); PTHR11119:SF8 (PANTHER), tmhmm (TMHMM)   |
| MDP0000920333 | protein phosphatase                                 | 315    | 2.40E-52 | 89.50%   | P:signal transduction; P:cellular protein modification process; P:biosynthetic process; C:plasma membrane; P:response to stress; P:cellular process; C:cell; P:response to biotic stimulus; C:nucleus; P:response to abiotic stimulus; P:cellular amino acid metabolic process; P:cellular component organization; F:hydrolase activity  | -                        | IPR001932 (G3DSA:3.60.40.GENE3D); IPR015655 (PANTHER); PTHR13832:SF188 (PANTHER)  |

Table S2. Cont.

| SeqName       | Description   | Length | e-Value   | Sim Mean | GO Terms  | Enzyme Codes List | InterPro IDs   |
|---------------|---|--------|-----------|----------|---|-------------------|--|
| MDP0000213808 | probable ubiquitin conjugation factor e4-like       | 3189   | 0.00E+00  | 77.75%   | P:carbohydrate metabolic process; P:protein metabolic process; P:catabolic process; F:catalytic activity; P:cellular protein modification process; C:cytosol; P:biosynthetic process; P:cellular process; C:intracellular     | -                 | IPR003613 (PFAM); IPR013083 (G3DSA:3.30.40.GENE3D); IPR019474 (PFAM); PTHR13931 (PANTHER), PTHR13931:SF2 (PANTHER), SSF57850 (SUPERFAMILY)               |
| MDP0000253074 | abscisic acid stress ripening protein homolog       | 702    | 8.20E-10  | 59.71%   | P:response to stress  | -                 | IPR003496 (PFAM)   |
| MDP0000697474 | reverse transcriptase                               | 453    | 7.50E-25  | 88.10%   | F:nucleic acid binding; C:Golgi apparatus; P:biosynthetic process; F:transferase activity; F:binding; P:DNA metabolic process   | EC:2.7.7.49       | IPR013103 (PFAM); PTHR11439 (PANTHER), PTHR11439:SF127 (PANTHER), tmhmm (TMHMM)  |
| MDP0000292888 | gyf domain-containing protein                       | 5529   | 0.00E+00  | 59.50%   | P:response to endogenous stimulus   | -                 | IPR003169 (PFAM); G3DSA:3.30.1490.40 (GENE3D), PTHR14445 (PANTHER), PTHR14445:SF23 (PANTHER)   |
| MDP0000233229 | protein   | 2328   | 0.00E+00  | 68.50%   | P:biological_process; F:molecular_function  | -                 | tmhmm (TMHMM)  |
| MDP0000523205 | protein   | 1041   | 0.00E+00  | 81.85%   | P:secondary metabolic process; P:response to biotic stimulus; F:catalytic activity; P:metabolic process; P:cellular amino acid metabolic process; P:biosynthetic process; F:binding; P:response to stress; P:cellular process | EC:1.14.11.9      | IPR002283 (PRINTS); IPR005123 (PFAM); G3DSA:2.60.120.330 (GENE3D), PTHR10209 (PANTHER), PTHR10209:SF55 (PANTHER), PF14226 (PFAM), SSF51197 (SUPERFAMILY) |
| MDP0000378585 | at4g03420 f9h3_4                                    | 1122   | 1.40E-173 | 83.25%   | P:biological_process; C:cellular_component; F:molecular_function  | -                 | IPR008507 (PFAM); PTHR31343 (PANTHER), PTHR31343:SF0 (PANTHER)   |
| MDP0000572242 | probable xyloglucan glycosyltransferase 12-like     | 2202   | 0.00E+00  | 83.45%   | P:carbohydrate metabolic process; C:membrane; P:biosynthetic process; F:transferase activity; P:nucleobase-containing compound metabolic process; C:plasma membrane; P:cellular process                                       | EC:2.4.1.12       | G3DSA:3.90.550.10 (GENE3D), PTHR32044 (PANTHER), PTHR32044:SF0 (PANTHER), PF13641 (PFAM), tmhmm (TMHMM), SSF53448 (SUPERFAMILY)                          |
| MDP0000281279 | protein   | 2601   | 0.00E+00  | 57.65%   | C:mitochondrion; F:binding  | -                 | IPR001752 (PRINTS); PTHR24115 (PANTHER), PTHR24115:SF169 (PANTHER), SSF52540 (SUPERFAMILY)   |
| MDP0000712586 | protein scai-like                                   | 708    | 1.10E-05  | 69.54%   | P:biological_process; C:cytosol; F:molecular_function   | -                 | IPR022709 (PFAM); PTHR21243 (PANTHER), PTHR21243:SF10 (PANTHER), SignalP-NN(euk) (SIGNALP)   |
| MDP0000176723 | acyl:coa ligase acetate-coa synthetase-like protein | 420    | 1.70E-74  | 89.10%   | C:peroxisome; F:o-succinylbenzoate-CoA ligase activity; P:ubiquinone biosynthetic process   | EC:6.2.1.26       | no IPS match   |

Table S2. Cont.

| SeqName       | Description       | Length | e-Value  | Sim Mean | GO Terms   | Enzyme Codes List | InterPro IDs   |
|---------------|-------------------|--------|----------|----------|--|-------------------|--|
| MDP0000876817 | ---NA---          | 198    | -        | -        |  | -                 | SignalP-NN(euk) (SIGNALP),<br>tmhmm (TMHMM)  |
| MDP0000273484 | skp1-like protein | 633    | 5.10E-61 | 61.70%   | C:nucleus; C:cytoplasm; C:nucleolus; P:ubiquitin-dependent protein catabolic process | -                 | IPR001232 (PANTHER); IPR011333<br>(G3DSA:3.30.710.GENE3D); IPR016072 (PFAM);<br>IPR016073 (PFAM); IPR016897 (PIR);<br>PTHR11165:SF47 (PANTHER) |



**Table S3.** Forward and Reverse primer sequences designed based upon predicted gene sequence from Apple Genome (1.0).

| Gene Model ID | Primer  | Sequence (5'→3')                |
|---------------|---------|---------------------------------|
| MDP0000037251 | Forward | GCCACTTGACCTCCATGTGTTTCC        |
| MDP0000037251 | Reverse | TCTTAGCGAGACGCTCCATTGCTG        |
| MDP0000128468 | Forward | CCACAAGCATCTCAAGCACCTC          |
| MDP0000128468 | Reverse | GAAAGCAAATCCACCCGAACC           |
| MDP0000129664 | Forward | GGATAAGTCCGGGATGCCTGAC          |
| MDP0000129664 | Reverse | CAATGCGTTGCAGTGCTACTCAC         |
| MDP0000138340 | Forward | GTCCTCTGGCGCCTGAAGAAC           |
| MDP0000138340 | Reverse | TGGCTCTGCAATCACGTCCTTAC         |
| MDP0000152947 | Forward | GATTACCCATTGGCGACAGTC           |
| MDP0000152947 | Reverse | CGACCCACCAGTTCTTGATGC           |
| MDP0000161275 | Forward | GAGATGGGAGAGTCTGCTGCC           |
| MDP0000161275 | Reverse | GCCCTTGTAATTCATCTTGCCATC        |
| MDP0000166116 | Forward | GTGGAGGTGGAGTCGGTGCTG           |
| MDP0000166116 | Reverse | CTCAATGATCTCCTTCTCCGTCG         |
| MDP0000172863 | Forward | GAATTGGTGACTGGACAGAAGCC         |
| MDP0000172863 | Reverse | CTGCAAAATCTCATCATCGTGACC        |
| MDP0000176723 | Forward | CATTCGTGAGCTTGAAGAGTGAGG        |
| MDP0000176723 | Reverse | GGAAGCTCGTCCGTAACACCAC          |
| MDP0000180389 | Forward | TGTCCAAAGCTAGCATCCATTCC         |
| MDP0000180389 | Reverse | CGCTCTCAAAGCAAGACAGAACC         |
| MDP0000200646 | Forward | GGTCAGATTCAAMCCCCTGATGAGTT      |
| MDP0000200646 | Reverse | TCTGGGAAGAATGCAGGAAGATCG        |
| MDP0000213808 | Forward | CTTTAATGAAGGATCCAGTTATCTTACCGTC |
| MDP0000213808 | Reverse | CTGTATCCTTGCCTTTAATTCATTGTCTGG  |
| MDP0000220601 | Forward | CGATATCGGTGATTTGCTGGAAG         |
| MDP0000220601 | Reverse | GAAGTCGCCAAGTTTATGTTAGCAGC      |
| MDP0000232309 | Forward | GCTGTGGTTGCATCCTTGACTG          |
| MDP0000232309 | Reverse | GGCACCATATATGGCATTAGTTGTAGG     |
| MDP0000233229 | Forward | GCATCGCCTTAGCTTTCTTACCTG        |
| MDP0000233229 | Reverse | CCAAATTCCGAGTCTCTGCTGCG         |
| MDP0000237908 | Forward | GAAACAGCTACGACTTGGTGATCG        |
| MDP0000237908 | Reverse | GTGACCACAGGTGCAGCTCACAC         |
| MDP0000253074 | Forward | CAGTTGCAATCAGGAGAAGAAATGAG      |
| MDP0000253074 | Reverse | GAAGGCAAATCCACCCGAACCAACT       |
| MDP0000255887 | Forward | AATATTCTGGCAAACCTCCTTTAACTCTG   |
| MDP0000255887 | Reverse | CCTCACGAAGCCACAATTGACTACGT      |
| MDP0000273484 | Forward | CAAGACCCTTTTGGACCTGACTTG        |
| MDP0000273484 | Reverse | CGACGAACTTCTCCTCTTCTCCTC        |
| MDP0000286959 | Forward | GAACGACCTCAAACAGATCTCCATG       |
| MDP0000286959 | Reverse | CTTCAAACGTCTCAAGTCTCTGACAAG     |
| MDP0000292888 | Forward | AGGAGTTGCTACCGGCTGATGTC         |
| MDP0000292888 | Reverse | GGTCCACATCCCCAACATCTGC          |
| MDP0000296716 | Forward | GCGAAGGGCGACTTCAGTTCC           |
| MDP0000296716 | Reverse | CAATGGTGGATGGTGATCTGATGTC       |
| MDP0000304285 | Forward | TTGTCTCGAACACCACCCCG            |
| MDP0000304285 | Reverse | CAAGCGTGTTATCCAGCAGCG           |
| MDP0000310811 | Forward | CCAAGGTTCCGCCAACAGC             |
| MDP0000310811 | Reverse | CAGATAATGCATAGTCCCCGAAACC       |
| MDP0000320533 | Forward | TCAACGTGGCTGTAATCTTCGG          |
| MDP0000320533 | Reverse | GAGAAAGCATTAAACGGCTTTGAGG       |
| MDP0000523205 | Forward | GGTTGCAGGTCCTTAGAAATGGC         |
| MDP0000523205 | Reverse | GGTGCTGGACAGTAGAAAGTTGGG        |
| MDP0000547450 | Forward | GAGCCTTGGCGGATGACTCTG           |
| MDP0000547450 | Reverse | CTAGCAACGGATAGCTCACGGTG         |

|               |         |                               |
|---------------|---------|-------------------------------|
| MDP0000572242 | Forward | GAGAAGCCAAAGCATCAAAGGG        |
| MDP0000572242 | Reverse | AGAAGGAGGAATGCCAATGCC         |
| MDP0000618650 | Forward | CCACCACACCTCCATCATTCTTG       |
| MDP0000618650 | Reverse | CCTATCTCCCATCTTATGATGCTGTTG   |
| MDP0000697474 | Forward | CTAAACGATCCTCCGCCGC           |
| MDP0000697474 | Reverse | GATCATCATGATCGCCGCTCC         |
| MDP0000712586 | Forward | GAGTCGAAGAAATGCTGTTGAACTTG    |
| MDP0000712586 | Reverse | CTCCATAACTTTCTCTGTCCTATTCCTCC |
| MDP0000875654 | Forward | TCGTAAATGGTGTACCTCTTGTTGC     |
| MDP0000875654 | Reverse | CGCTTACCTTCCTCGCCTTCC         |
| MDP0000883284 | Forward | GGTGGAGGAGGACTTGGAGGAG        |
| MDP0000883284 | Reverse | GGAAGTGCATGGAGAAATGAATCG      |
| MDP0000901731 | Forward | GCAAAGATGGATGAGTTGGGTGAG      |
| MDP0000901731 | Reverse | GGAATTCGGAATTGGAAGG           |
| MDP0000920333 | Forward | TACTGATGTTCTAATCCTTGCCAG      |
| MDP0000920333 | Reverse | TCTAACAACAACGCATGAAATATCATC   |

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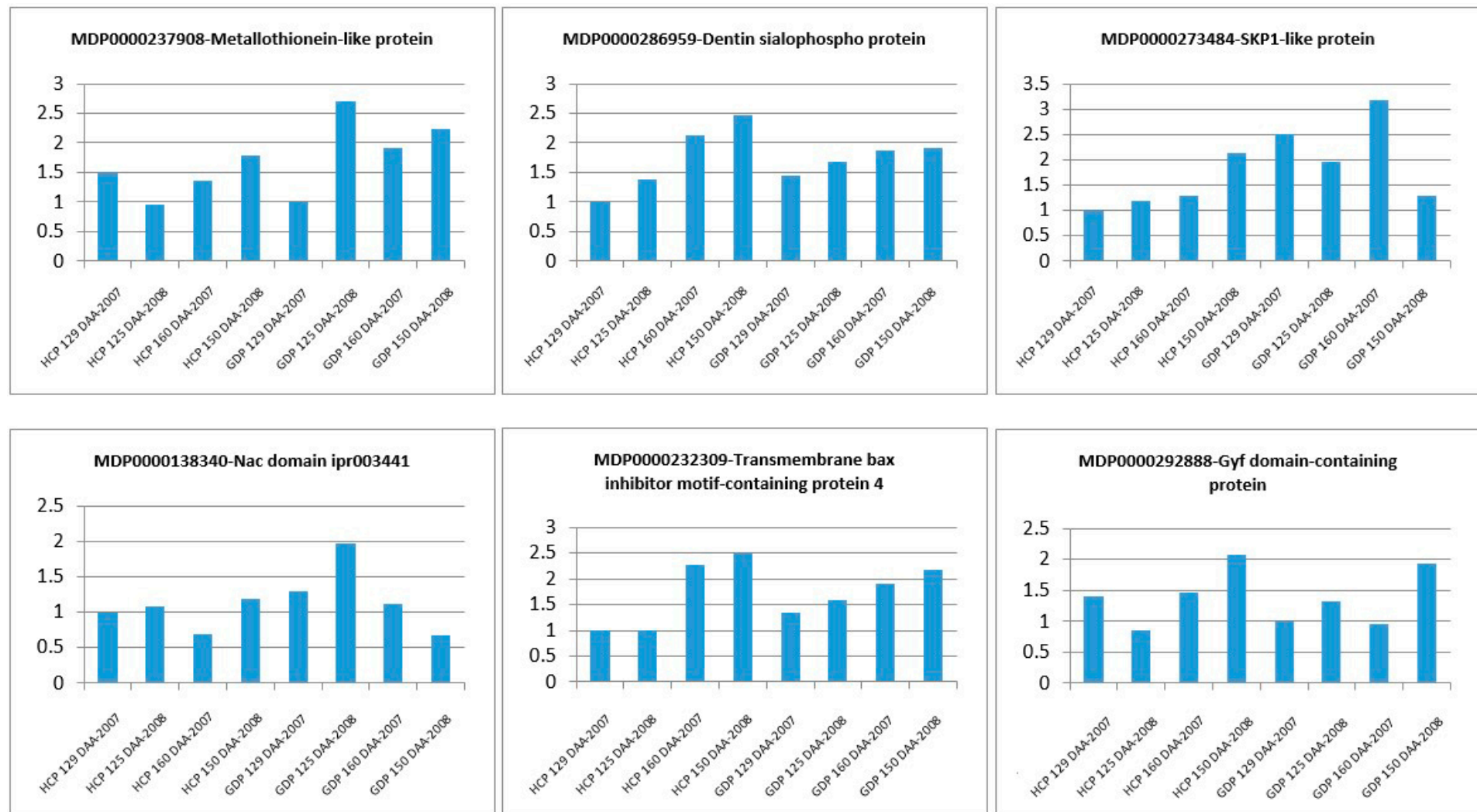
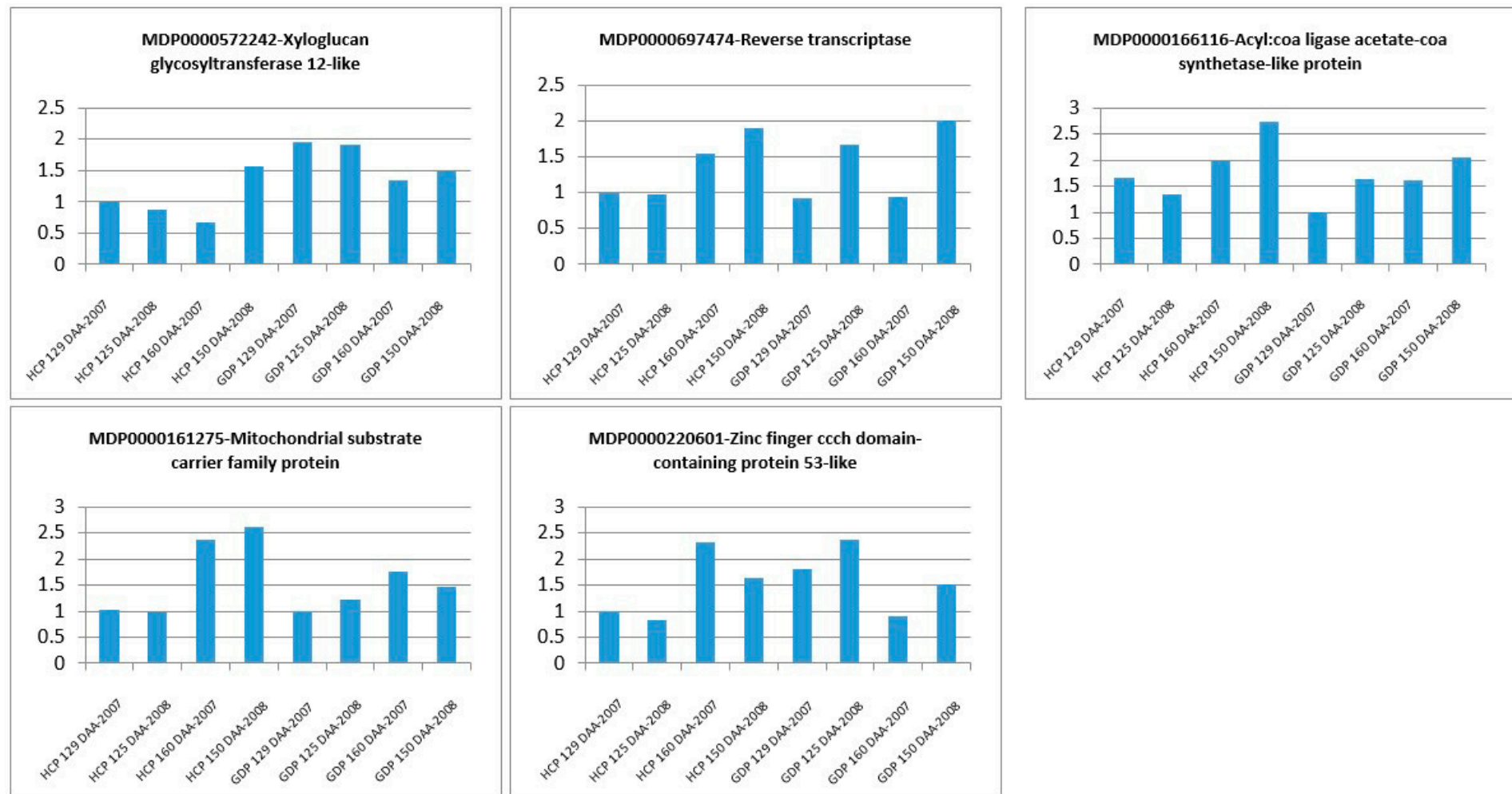


Figure S1. Cont.



**Figure S1.** Low differential expression of genes identified with differential display. Samples with 0 to 3-fold differences in expression relative to the control were classified as low differential expression. Expression is separated by sample tested and plotted against fold expression relative to the  $\beta$ -tubulin control expression.

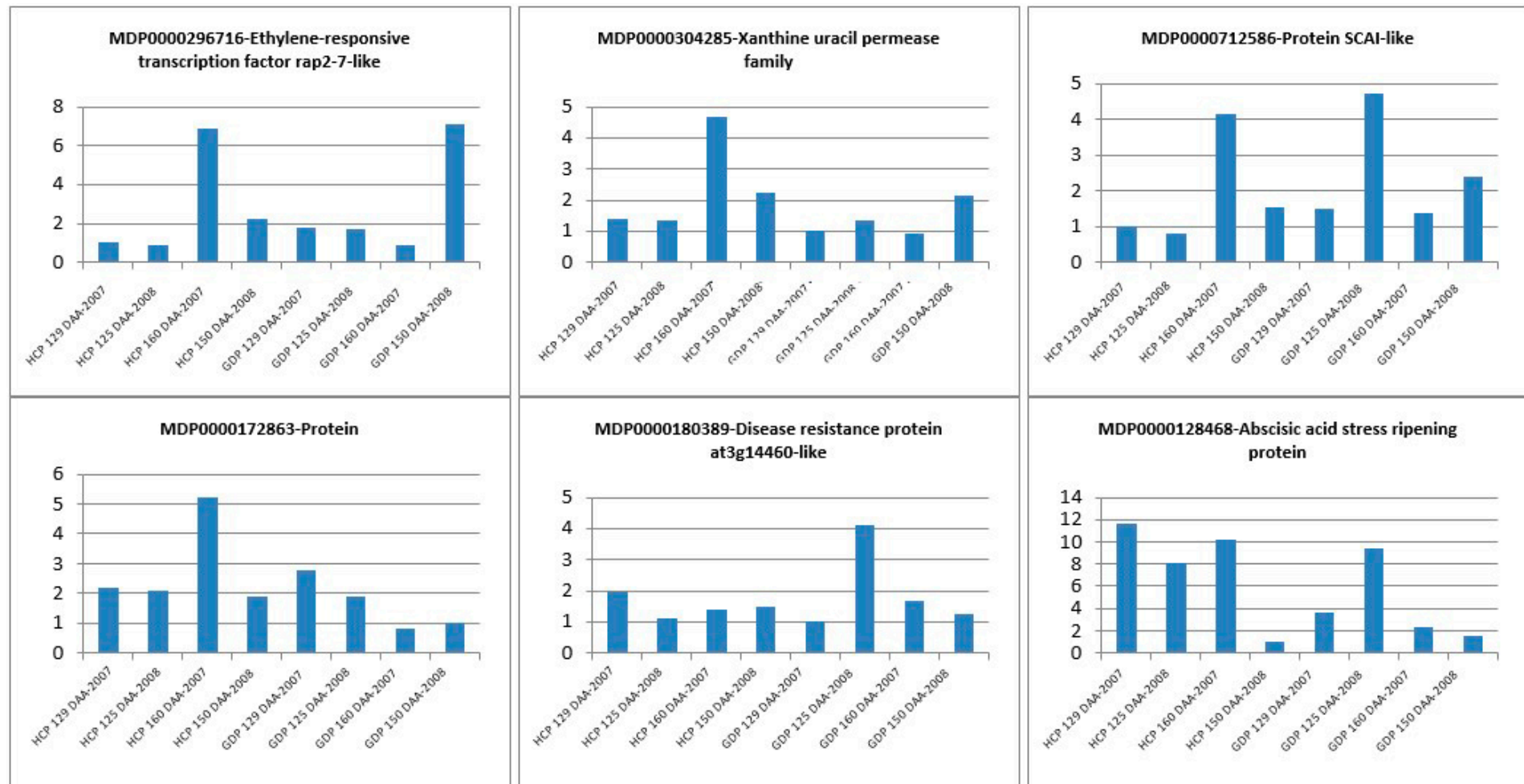
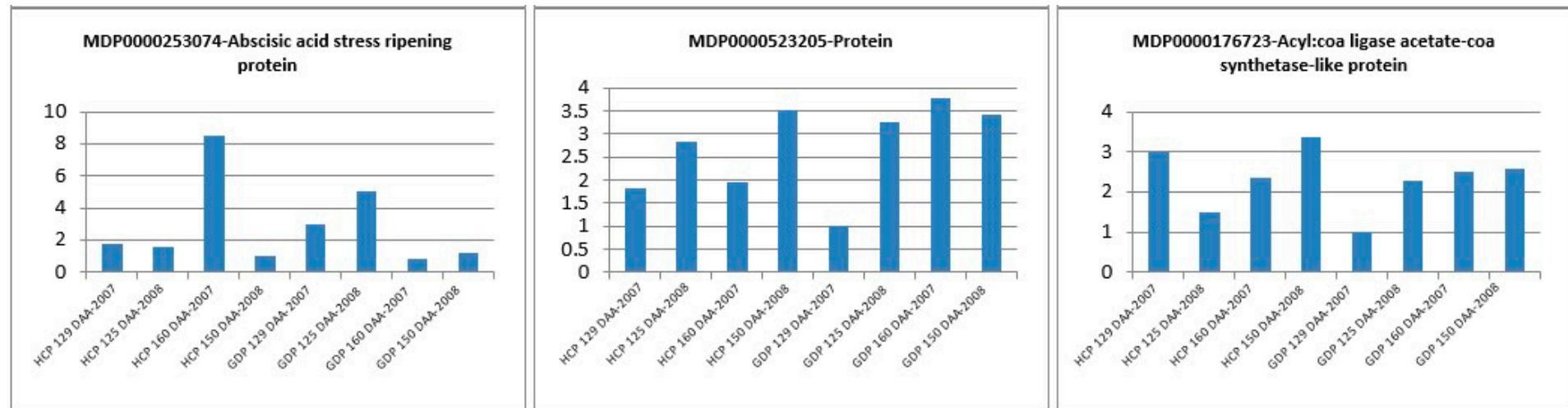


Figure S2. Cont.



**Figure S2.** Seasonally-variable differential expression of genes identified with differential display. Samples with over 3-fold differential expression between samples, but not consistent between seasons were classified as seasonally-variable. Expression is separated by sample tested and plotted against fold expression relative to the  $\beta$ -tubulin control expression.

