

Supplementary Table 1

| <b>Supplementary Table 1. Genes differentially expressed in roots of <i>A. halleri</i> 5 h after leaf wounding.</b>  |              |         |   |                                  |  |
|--|--------------|---------|---|----------------------------------|--|
| Given are AGI number, the ratio of the microarray signal of wounded vs. non-wounded plants calculated from the arithmetic mean of log-transformed values, annotation, short gene name, and functional or regulatory class for selected relevant classes. Microarray expression signals of shown genes changed by > 1.5-fold (increase or decrease) in response to leaf wounding, compared to non-wounded controls ( $P < 0.05$ ). Plants were transferred into a hydroponic culture solution supplemented with 0.5 $\mu\text{M}$ Cd 5 d prior to simulated herbivory on a single leaf. Annotations are underlined for genes differentially expressed in response to wounding when compared to controls in both <i>A. halleri</i> and in <i>A. thaliana</i> . OPDA: 12-oxo-phytodienoic acid. |              |         |   |                                  |  |
| AGI Number   | Signal ratio | P value | Annotation  | Name                             | Class  |
| At3g60420  | 2.93         | 0.0087  | <u>unknown protein, PRIB5 domain, phosphoglycerate mutase domain</u>  |                                  | OPDA response  |
| At3g16450  | 2.08         | 0.0018  | <u>jacalin lectin family protein</u>  |                                  |  |
| At1g64160  | 1.95         | 0.0067  | disease resistance-responsive family protein / dirigent family protein  |                                  | NaCl response/ Methyl jasmonate response                           |
| At5g22530  | 1.93         | 0.0022  | unknown protein   |                                  |  |
| At5g43580  | 1.91         | 0.0261  | putative serine-type endopeptidase inhibitor  |                                  | NaCl response/ Methyl jasmonate response                           |
| At5g52710  | 1.90         | 0.0007  | heavy-metal-associated domain-containing protein  |                                  | Metal homeostasis  |
| At4g36060  | 1.84         | 0.0258  | basic helix-loop-helix (bHLH) family protein, putative transcription factor   |                                  |  |
| At1g52890  | 1.81         | 0.0275  | no apical meristem (NAM) family protein 19, NAC domain containing, putative transcription factor                      | ANAC019                          | Local herbivory response/ Methyl jasmonate response                |
| At1g72360  | 1.80         | 0.0032  | ethylene-responsive element-binding family protein, putative transcription factor                                     |                                  |  |
| At3g24550  | 1.80         | 0.0478  | proline extensin-like receptor kinase 1   | PERK1                            |  |
| At4g33420  | 1.79         | 0.0004  | <u>peroxidase 47 precursor, putative peroxidase, haem peroxidase domain</u>   | PER47<br>SPE1/<br>ARGDC/<br>ADC1 | Methyl jasmonate response  |
| At2g16500  | 1.78         | 0.0340  | arginine decarboxylase 1, polyamine biosynthesis peroxidase 54 precursor, putative peroxidase, haem peroxidase domain | PER54                            |  |
| At5g06730  | 1.73         | 0.0346  | <u>trypsin inhibitor protein 2, putative trypsin inhibitor</u>  | TI2                              | Methyl jasmonate response  |
| At3g11930  | 1.69         | 0.0072  | universal stress protein (USP) family protein   |                                  |  |
| At5g40000  | 1.67         | 0.0209  | AAA-type ATPase family protein  |                                  | NaCl response  |
| At1g71450  | 1.65         | 0.0274  | putative AP2 domain-containing transcription factor   |                                  |  |
| At2g36120  | 1.65         | 0.0194  | pseudogene, glycine-rich protein  |                                  |  |
| At3g12145  | 1.64         | 0.0230  | putative polygalacturonase inhibitor/ leucine-rich repeat protein   | FLR1                             |  |
| At3g49530  | 1.63         | 0.0042  | no apical meristem (NAM) family protein 62, NAC domain containing, putative transcription factor                      | ANAC062                          | NaCl response  |
| At3g57530  | 1.62         | 0.0217  | calcium-dependent protein kinase 32   | CPK32                            |  |
| At5g61660  | 1.62         | 0.0470  | glycine-rich protein  |                                  | NaCl response  |
| At5g61600  | 1.61         | 0.0146  | ethylene-responsive element-binding family protein, putative transcription factor                                     |                                  | Cold-, drought- and UVB-stress response                            |
| At3g23250  | 1.59         | 0.0397  | myb domain protein 15, myb family transcription factor  | MYB15                            | Methyl jasmonate response  |
| At1g18300  | 1.58         | 0.0365  | NUDX hydrolase homolog 4, MutT-like protein   | NUDT4                            |  |
| At5g51440  | 1.57         | 0.0022  | 23.5 kDa mitochondrial small heat shock protein   | HSP23.5-M                        | OPDA response  |
| At5g47220  | 1.57         | 0.0416  | ethylene-responsive element-binding factor 2, transcription factor  | ERF2                             | Cold-, drought- and UVB-stress response/ Methyl jasmonate response |
| At3g23820  | 1.56         | 0.0068  | <u>UDP-D-Glucuronate 4-epimerase 6, similar to NAD-dependent epimerase/dehydratase family protein</u>                 | GAE6                             |  |
| At1g70230  | 1.55         | 0.0012  | unknown protein   |                                  | NaCl response/Methyl jasmonate response                            |
| At1g61660  | 1.55         | 0.0052  | basic helix-loop-helix (bHLH) family protein, putative transcription factor   |                                  |  |
| At1g34360  | 1.55         | 0.0160  | translation initiation factor 3 (IF-3) family protein   |                                  |  |
| At1g61740  | 1.55         | 0.0012  | unknown protein   |                                  |  |
| At1g21910  | 1.55         | 0.0364  | AP2 domain-containing transcription factor family protein, DREB subfamily of Ap2/EREBP protein family                 |                                  | Methyl jasmonate response  |
| At4g38400  | 1.55         | 0.0020  | expansin-like family protein 2  | EXLA2                            | NaCl response  |
| At5g49520  | 1.54         | 0.0359  | WRKY family transcription factor 48   | WRKY48                           |  |
| At2g47190  | 1.54         | 0.0241  | myb domain protein 2, myb family transcription factor   | MYB2                             |  |
| At5g22520  | 1.54         | 0.0040  | unknown protein   |                                  |  |
| At1g59740  | 1.53         | 0.0042  | proton-dependent oligopeptide transport (POT) family protein  |                                  |  |

Supplementary Table 1

| AGI Number | Signal ratio | P value | Annotation  | Name              | Class   |
|------------|--------------|---------|---|-------------------|---|
| At2g37130  | 1.53         | 0.0052  | peroxidase 21 precursor, putative peroxidase, haem peroxidase domain  | PER21             |   |
| At2g47400  | 1.52         | 0.0030  | CP12 domain-containing protein, chloroplast stroma  | CP12-1            |   |
| At2g39650  | 1.52         | 0.0364  | unknown protein   |                   |   |
| At1g72940  | 1.51         | 0.0057  | putative disease resistance protein (TIR-NBS class)   |                   | Methyl jasmonate response                           |
| At4g00890  | 1.50         | 0.0354  | proline-rich family protein, putative glycosyl hydrolase  |                   |   |
| At1g13340  | 1.50         | 0.0085  | family 10 protein<br>unknown protein  |                   |   |
| At2g40095  | 0.67         | 0.0163  | unknown protein, contains alpha/beta hydrolase-related domain   |                   |   |
| At5g40030  | 0.67         | 0.0190  | putative serine/threonine protein kinase  |                   |   |
| At1g80760  | 0.66         | 0.0023  | major intrinsic protein (MIP) family, putative water channel, NOD26-like intrinsic protein 6;1  | NIP6;1            |   |
| At1g68500  | 0.66         | 0.0232  | unknown protein   |                   |   |
| At5g52190  | 0.66         | 0.0309  | sugar isomerase (SIS) domain-containing protein   |                   |   |
| At5g59520  | 0.66         | 0.0141  | ZRT-, IRT-related protein 2, ZIP family zinc transporter  | ZIP2              | Metal homeostasis                                   |
| At3g51540  | 0.66         | 0.0406  | unknown protein   |                   |   |
| At1g54120  | 0.66         | 0.0124  | unknown protein   |                   | Methyl jasmonate response                           |
| At4g17215  | 0.66         | 0.0009  | unknown protein   |                   |   |
| At1g47480  | 0.66         | 0.0327  | unknown protein, similar to CXE carboxylesterase  |                   |   |
| At2g42710  | 0.66         | 0.0100  | ribosomal protein L1 family protein   |                   |   |
| At1g68620  | 0.66         | 0.0165  | unknown protein, similar to CXE carboxylesterase  |                   |   |
| At1g18140  | 0.66         | 0.0125  | laccase 1, putative laccase, multicopper oxidase, diphenol oxidase family protein   | LAC1              |   |
| At4g24790  | 0.66         | 0.0234  | putative DNA-directed DNA polymerase  |                   |   |
| At5g06490  | 0.66         | 0.0018  | zinc finger (C3HC4-type RING finger) family protein   | L5D               | Upregulated under iron deficiency                   |
| At1g03700  | 0.66         | 0.0001  | integral membrane family protein  |                   |   |
| At3g13610  | 0.66         | 0.0036  | oxidoreductase, 2OG-Fe(II) oxygenase family protein   |                   | Upregulated under iron deficiency                   |
| At3g48450  | 0.66         | 0.0010  | putative nitrate-responsive NOI protein   |                   |   |
| At5g02050  | 0.65         | 0.0085  | mitochondrial glycoprotein family protein / MAM33 family protein  |                   |   |
| At1g10170  | 0.65         | 0.0082  | NF-X1 type zinc finger family protein   |                   |   |
| At3g45253  | 0.65         | 0.0083  | non-LTR retrotransposon family (LINE)   |                   |   |
| At2g40320  | 0.65         | 0.0006  | unknown protein, similar to steroid hormone receptor/transcription factor   |                   |   |
| At1g43020  | 0.65         | 0.0328  | unknown protein, similar to putative ternary complex factor MIP1  |                   |   |
| At3g13950  | 0.65         | 0.0049  | unknown protein   |                   |   |
| At4g30270  | 0.65         | 0.0261  | endo-xyloglucan transferase / xyloglucan endo-1,4-beta-D-glucanase  | MERI5B/<br>MERI-5 | Local herbivory response/ Methyl jasmonate response |
| At5g42655  | 0.65         | 0.0114  | unknown protein, similar to disease resistance-responsive family protein, nucleoporin-related domain  |                   |   |
| At4g38340  | 0.65         | 0.0068  | RWP-RK domain-containing protein  |                   |   |
| At1g70310  | 0.64         | 0.0078  | spermidine synthase 2 (SPDSYN2) / putrescine aminopropyltransferase 2   | SPDS2             |   |
| At2g33460  | 0.64         | 0.0326  | Rop-interactive CRIB motif-containing protein 1, Cdc42/Rac-interactive binding (CRIB) motif, interacts with GTP-bound Rop1, possible role in microtubule organization | RIC1              |   |
| At2g31930  | 0.64         | 0.0278  | unknown protein   |                   |   |
| At5g05360  | 0.64         | 0.0194  | unknown protein   |                   |   |
| At3g02430  | 0.64         | 0.0339  | unknown protein   |                   |   |
| At5g02420  | 0.64         | 0.0011  | unknown protein   |                   |   |
| At5g02740  | 0.63         | 0.0178  | unknown protein, nucleotide binding   |                   | NaCl response                                       |
| At1g20330  | 0.63         | 0.0164  | S-adenosyl-methionine-sterol-C-methyltransferase 2  | SMT2              |   |
| At2g25680  | 0.63         | 0.0447  | unknown protein, similar to sulfate transporter   |                   |   |
| At2g29220  | 0.63         | 0.0145  | putative lectin protein kinase  |                   |   |
| At2g30395  | 0.63         | 0.0112  | ovate family protein 17, unknown function   | OFF17             |   |
| At1g74670  | 0.63         | 0.0136  | putative gibberellin-responsive protein   |                   | Local herbivory response, NaCl response             |
| At3g62830  | 0.63         | 0.0488  | UDP-glucuronic acid decarboxylase 2, NAD-dependent epimerase/dehydratase family protein, synthesis of UDP-xylose  | USX2              |   |
| At2g27370  | 0.63         | 0.0458  | integral membrane family protein  |                   |   |

Supplementary Table 1

| AGI Number | Signal ratio | P value | Annotation  | Name         | Class  |
|------------|--------------|---------|---|--------------|--|
| At5g47200  | 0.63         | 0.0115  | Arabidopsis Rab GTPase homolog D2b, GTP-binding protein   | RABD2b/Rab1A |  |
| At4g38950  | 0.63         | 0.0173  | kinesin motor family protein, similar to kinesin heavy chain  |              | Upregulated under iron deficiency                                  |
| At5g19970  | 0.63         | 0.0303  | unknown protein   |              | Methyl jasmonate response  |
| At4g04460  | 0.63         | 0.0280  | aspartyl protease family protein  |              |  |
| At3g01513  | 0.62         | 0.0167  | unknown protein   |              |  |
| At3g21700  | 0.62         | 0.0043  | unknown protein, similar to GTP-binding family protein, similar to Rab-type Ras small GTPase  |              |  |
| At1g09560  | 0.62         | 0.0391  | germin-like protein 5, manganese ion binding, nutrient reservoir  | GLP5         |  |
| At5g35935  | 0.62         | 0.0238  | copa-like retrotransposon family  |              |  |
| At2g17130  | 0.62         | 0.0053  | regulatory mitochondrial isocitrate dehydrogenase subunit 2 / NAD+ isocitrate dehydrogenase subunit 2   | IDH2         |  |
| At3g07720  | 0.61         | 0.0044  | kelch repeat-containing protein   |              | Upregulated under iron deficiency                                  |
| At2g35790  | 0.61         | 0.0138  | unknown protein   |              |  |
| At1g78020  | 0.61         | 0.0340  | senescence-associated protein-related   |              |  |
| At5g44460  | 0.61         | 0.0030  | calcium-binding protein, putative   |              |  |
| At5g03570  | 0.61         | 0.0049  | iron-regulated protein 2, vacuolar membrane Ni sequestering membrane transport protein  | IREG2        | Upregulated under iron deficiency/ Metal homeostasis               |
| At5g22390  | 0.61         | 0.0007  | unknown protein   |              |  |
| At4g33150  | 0.61         | 0.0134  | lysine-ketoglutarate reductase/saccharopine dehydrogenase bifunctional enzyme   | LKR/ SDH     |  |
| At4g02940  | 0.61         | 0.0056  | oxidoreductase, 2OG-Fe(II) oxygenase family protein Arabidopsis NAC domain containing protein 71, no apical meristem (NAM) family protein, putative |              | Methyl jasmonate response  |
| At4g17980  | 0.60         | 0.0202  | transcription factor  | ANAC071      |  |
| At5g05840  | 0.60         | 0.0013  | unknown protein   |              |  |
| At4g26410  | 0.60         | 0.0171  | unknown protein   |              |  |
| At3g49840  | 0.60         | 0.0213  | proline-rich family protein   |              |  |
| At5g20270  | 0.60         | 0.0045  | heptahelical transmembrane protein 1, unknown function  | HHP1         | Methyl jasmonate response  |
| At5g58010  | 0.59         | 0.0445  | basic helix-loop-helix (bHLH) family protein, putative transcription factor   |              |  |
| At5g35630  | 0.59         | 0.0251  | glutamine synthetase 2  | GS2          |  |
| At4g02090  | 0.59         | 0.0392  | unknown protein   |              |  |
| At2g30620  | 0.58         | 0.0143  | histone H1.2  | H1.2         |  |
| At3g44990  | 0.58         | 0.0334  | xyloglucan:xyloglucosyl transferase 8, putative xyloglucan endotransglycosylase, putative endo-xyloglucan transferase                               | XTR8         | Cold-, drought- and UVB-stress response/ Methyl jasmonate response |
| At3g12820  | 0.58         | 0.0003  | myb domain protein 10, myb family transcription factor  | MYB10        | Upregulated under iron deficiency                                  |
| At3g51160  | 0.58         | 0.0117  | GDP-D-mannose-4,6-dehydratase 2, first step in the de novo synthesis of GDP-L-fucose  | MUR1         |  |
| At3g62280  | 0.57         | 0.0138  | GDSL-motif lipase/hydrolase family protein  |              |  |
| At4g19680  | 0.57         | 0.0020  | iron-responsive transporter 2, ZRT-, IRT-related protein, ZIP family iron transporter   | IRT2         | Upregulated under iron deficiency/ Metal homeostasis               |
| At1g59960  | 0.57         | 0.0119  | putative aldo/keto reductase  |              |  |
| At3g19010  | 0.56         | 0.0058  | oxidoreductase, 2OG-Fe(II) oxygenase family protein   |              | Methyl jasmonate response  |
| At4g35720  | 0.55         | 0.0244  | unknown protein   |              |  |
| At2g29250  | 0.55         | 0.0052  | putative lectin protein kinase  |              |  |
| At1g27740  | 0.55         | 0.0006  | basic helix-loop-helix (bHLH) family protein, putative transcription factor   |              |  |
| At5g60530  | 0.55         | 0.0468  | late embryogenesis abundant protein-related / LEA protein-related   |              |  |
| At1g30220  | 0.55         | 0.0013  | putative inositol transporter 2 sugar transporter family protein, major facilitator superfamily   | INT2         |  |
| At2g15830  | 0.55         | 0.0204  | unknown protein   |              |  |
| At2g19410  | 0.54         | 0.0002  | protein kinase family protein, putative serine/threonine protein kinase   |              | Upregulated under iron deficiency                                  |
| At3g23730  | 0.54         | 0.0443  | putative xyloglucan:xyloglucosyl transferase, putative xyloglucan endotransglycosylase, putative endo-xyloglucan transferase                        |              |  |
| At2g14247  | 0.53         | 0.0051  | unknown protein   |              |  |
| At2g41240  | 0.53         | 0.0397  | basic helix-loop-helix (bHLH) family protein, putative transcription factor   |              |  |
| At5g22430  | 0.52         | 0.0191  | unknown protein   |              |  |

Supplementary Table 1

| AGI Number | Signal ratio | P value | Annotation   | Name            | Class   |
|------------|--------------|---------|--|-----------------|---|
| At4g33666  | 0.52         | 0.0004  | unknown protein  |                 |   |
| At4g30120  | 0.52         | 0.0128  | heavy metal ATPase 3, P1B-type (CPX) Cd/Zn/Pb ATPase   | HMA3            | Upregulated under iron deficiency/ Metal homeostasis                |
| At1g69050  | 0.51         | 0.0282  | unknown protein  |                 |   |
| At5g15180  | 0.51         | 0.0332  | peroxidase 56 precursor, putative peroxidase, haem peroxidase domain   | PER56           |   |
| At4g33730  | 0.51         | 0.0094  | <u>putative pathogenesis-related protein</u>   |                 |   |
| At2g34910  | 0.50         | 0.0358  | unknown protein  |                 |   |
| At3g61410  | 0.50         | 0.0001  | unknown protein, similar to protein kinase family protein, U-box domain-containing protein   |                 | Upregulated under iron deficiency                                   |
| At5g63180  | 0.50         | 0.0024  | pectate lyase family protein   |                 | NaCl response   |
| At3g61930  | 0.48         | 0.0109  | unknown protein  |                 | Upregulated under iron deficiency                                   |
| At2g36100  | 0.48         | 0.0476  | <u>integral membrane family protein</u>  |                 |   |
| At3g58060  | 0.48         | 0.0039  | metal tolerance protein 8, cation diffusion facilitator family of membrane transport proteins, putative Mn transporter   | MTP8            | Upregulated under iron deficiency/ Metal homeostasis                |
| At2g28160  | 0.45         | 0.0011  | Fe-deficiency induced transcription factor 1, basic helix-loop-helix (bHLH) family protein   | FIT1/<br>bHLH29 | Upregulated under iron deficiency/ Metal homeostasis/ OPDA response |
| At3g53460  | 0.42         | 0.0134  | 29 kDa ribonucleoprotein, chloroplast / RNA-binding protein cp 29  | CP29            |   |
| At5g45105  | 0.41         | 0.0000  | <u>ZRT-, IRT-related protein 8, ZIP family putative zinc transporter</u>   | ZIP8            | Metal homeostasis   |
| At4g25790  | 0.39         | 0.0069  | <u>putative pathogenesis-related protein, allergen V5/Tpx-1-related family protein</u>   |                 |   |
| At5g57625  | 0.39         | 0.0278  | <u>putative pathogenesis-related protein, allergen V5/Tpx-1-related family protein</u>   |                 |   |
| At1g73120  | 0.36         | 0.0007  | <u>unknown protein</u>   |                 | Upregulated under iron deficiency                                   |
| At2g17500  | 0.36         | 0.0094  | auxin efflux carrier family protein  |                 | Methyl jasmonate response   |
| At3g12900  | 0.34         | 0.0000  | oxidoreductase, 2OG-Fe(II) oxygenase family protein  |                 | Upregulated under iron deficiency                                   |
| At5g02780  | 0.31         | 0.0000  | <u>In2-1-like protein, putative glutathione-S-transferase, ferric reduction oxidase 2, ferric-chelate reductase, responsible for the majority of iron(III)-chelate reduction at the root surface</u> |                 | Upregulated under iron deficiency                                   |
| At1g01580  | 0.28         | 0.0131  | <u>OBP3-responsive gene 3, basic helix-loop-helix (bHLH) family protein, putative transcription factor</u>   | FRO2            | Upregulated under iron deficiency/ Metal homeostasis                |
| At3g56980  | 0.28         | 0.0016  | <u>Arabidopsis H+-ATPASE 7, plasma membrane P-type proton ATPase</u>   | bHLH039         | Upregulated under iron deficiency/ Metal homeostasis                |
| At3g60330  | 0.24         | 0.0099  | <u>metal tolerance protein 3, cation diffusion facilitator family of membrane transport proteins, vacuolar</u>   | AHA7            | Upregulated under iron deficiency/ OPDA response                    |
| At3g58810  | 0.19         | 0.0012  | <u>sequestration of Zn/Co</u>  | MTP3            | Upregulated under iron deficiency/ metal homeostasis/ OPDA response |